

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 10-K

(Mark One)

[X]

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934
For fiscal year ended September 30, 2018

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TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to .

Commission File Number: 0-25434

Brooks Automation, Inc.

(Exact name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction of
Incorporation or Organization)

15 Elizabeth Drive
Chelmsford, Massachusetts
(Address of Principal Executive Offices)

04-3040660
(I.R.S. Employer
Identification No.)

01824
(Zip Code)

978-262-2400

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class Name of Each Exchange on Which Registered
Common Stock, \$0.01 par value The Nasdaq Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act:

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes [X] No []

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934.
Yes [] No [X]

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes [X] No []

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).
Yes [X] No []

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to the Form 10-K. [X]

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

- Large accelerated filer [X] Accelerated filer []
Non-accelerated filer [] Smaller reporting company []
Emerging growth company []

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. []

Indicate by check mark whether the registrant is a shell company (as defined in Exchange Act Rule 12b-2). Yes [] No [X]

The aggregate market value of the registrant's Common Stock, \$0.01 par value, held by non-affiliates of the registrant as of March 31, 2018, was approximately \$1,303,513,402 based on the closing price per share of \$27.08 on that date on the Nasdaq Stock Market. As of March 31, 2018, 70,539,856 shares of the registrant's Common Stock, \$0.01 par value, were outstanding. As of November 15, 2018, 71,776,483 shares of the registrant's Common Stock, \$0.01, par value, were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement involving the election of directors, which is expected to be filed within 120 days after the end of the registrant's fiscal year, are incorporated by reference in Part III of this Report.

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Information Relating to Forward-Looking Statements

Certain statements in this Form 10-K constitute forward-looking statements, which are subject to the safe harbor provisions created by the Private Securities Litigation Reform Act of 1995. Certain, but not all, of the forward-looking statements in this report are specifically identified as forward-looking, by use of phrases and words such as “we believe,” “we estimate,” “we expect,” “may,” “should,” “could,” “intend,” “likely,” and other future-oriented terms. The identification of certain statements as “forward-looking” is not intended to mean that other statements not specifically identified are not forward-looking. Forward-looking statements include, but are not limited to, statements that relate to our future revenue, margin, costs, earnings, product development, demand, acceptance and market share, competitiveness, market opportunities and performance, levels of research and development, or R&D, the success of our marketing, sales and service efforts, outsourced activities and operating expenses, anticipated manufacturing, customer and technical requirements, the ongoing viability of the solutions that we offer and our customers’ success, tax expenses, our management’s plans and objectives for our current and future operations and business focus, the expected benefits and other statements relating to our divestures and acquisitions, the levels of customer spending, general economic conditions, the sufficiency of financial resources to support future operations, and capital expenditures. Such statements are based on current expectations and are subject to risks, uncertainties, and changes in condition, significance, value and effect, including without limitation those discussed within Item 1 A, “Risk Factors” and elsewhere in this report and other documents we file from time to time with the Securities and Exchange Commission, or SEC, such as our quarterly reports on Form 10-Q and our current reports on Form 8-K. Such risks, uncertainties and changes in condition, significance, value and effect could cause our actual results, performance or achievements to differ materially from those expressed in this report and in ways we cannot readily foresee. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof and are based on information currently and reasonably known to us. We do not undertake any obligation to release the results of any revisions to these forward-looking statements, which may be made to reflect events or circumstances that occur after the date of this report or to reflect the occurrence or effect of anticipated or unanticipated events. Precautionary statements made herein should be read as being applicable to all related forward-looking statements wherever they appear in this report.

Unless the context indicates otherwise, references in this report to “we”, “us”, “our” and other similar references mean Brooks Automation, Inc. and its consolidated subsidiaries.

PART I**Item 1. Business****Overview**

We are headquartered in Chelmsford, Massachusetts and have operations in North America, Asia, and Europe. Today we serve two distinct and unrelated markets; the semiconductor capital equipment market and the life sciences sample management market. We believe our leadership positions and our global support capability in each of these markets make us a valued business partner to the largest semiconductor capital equipment device makers, and pharmaceutical and life science research institutions in the world. Our offerings are also applied to other adjacent technology and industrial markets. We provide customer support services for our products globally. In total, we employ approximately 1,550 regular full-time employees worldwide and have sales in more than 50 countries.

Since our founding in 1978, we have been a leading partner to the global semiconductor manufacturing markets. In our early days of our business, we developed and marketed automated handling equipment for semiconductor manufacturers. Since then, we have expanded our products and services through product development initiatives and acquisitions, and we are now recognized as a leading provider of vacuum robots, vacuum automation systems, wafer carrier contamination control systems, and reticle storage solutions to the global semiconductor capital equipment industry. Over the last three fiscal years, we acquired one company to support the semiconductor market: Tec-Sem Group AG, a Switzerland-based manufacturer of semiconductor fabrication automation equipment with a focus on reticle storage management, which we acquired in April 2018. Prior to fiscal year 2016, we made several acquisitions to support our business in the semiconductor market, some of which are described further in the Notes to our Consolidated Financial Statements included elsewhere in this Form 10-K. We have invested in research and development initiatives to advance the offerings acquired in these acquisitions, as well as vacuum automation and services offerings. Our

business supporting the semiconductor capital equipment and adjacent markets provided approximately 69% of our revenue in fiscal year 2018.

In the fourth quarter of fiscal year 2018, we entered into a definitive agreement to sell our semiconductor cryogenics business to Edwards Vacuum LLC (a member of the Atlas Copco Group) for approximately \$675.0 million in cash subject to customary adjustments. We originally acquired the cryogenics business in 2005 as part of the acquisition of Helix Technology Corporation. The closing of our sale of the cryogenics business is subject to various closing conditions and regulatory approvals. As part of this sale, we will transfer our intellectual property, or IP, for our cryogenics pump products, but not our IP related to our semiconductor automation or life sciences businesses. The semiconductor cryogenics business has been classified as discontinued operations and, unless otherwise noted, the description of our business in this report relates solely to our continuing operations and does not include the operations of our semiconductor cryogenics business.

We have served the life sciences sample management market since 2011. The original strategic linkage between this business and our semiconductor business was our ability to leverage our core technology competencies in automation and cryogenics. In life sciences, we applied these competencies to provide automated ultra-cold freezer systems and then to expand into a portfolio of products and services to assist customers in efficiently managing the end-to-end “cold chain of custody” of their compound and biological samples. Today, we are a leading provider of the life sciences sample management solutions for automated cold sample stores, off-site storage services, and consumables and instruments. We are also a provider of software offerings which enable or enhance our customers’ visibility into their sample inventories, and laboratory services at our storage service locations, both of which are expected to help our customers accelerate their research and development efforts. Taken together, we believe our life sciences product and services offerings allow our customers to maintain a complete “cold chain of custody” and related workflow solutions for their samples. Our business supporting the life science sample management market provided approximately 31% of our revenue in fiscal year 2018.

Our life sciences sample management product and service solutions portfolio are a result of strategic acquisitions and internal research and development initiatives. Our competencies in automation and cryogenics provided us a differentiated capability to advance the product set with higher functioning automation, automation-ready consumables, and management of samples and automation in ultra-cold environments. We leveraged the storage solutions acquired before 2013 and our expertise and developed and commercialized a full line of advanced automated ultra-cold freezer offerings. The Twinbank™ platform was launched in 2014 and sells under two primary offerings, the SampleStore™ II which provides -20°C high volume storage for chemical compounds and the BioStore™ II which provides -80°C high volume storage for biological samples. In 2016, we launched the BioStore™ III Cryo, a smaller, automated, liquid nitrogen-cooled freezer that operates at temperatures as low as -196°C for automated storage of the most temperature sensitive of biological samples. We also expanded our consumables and instruments offerings with development of new products, and have successfully commercialized BioStudies, a bioinformatics software platform that enables customers to manage sample collections and development efforts distributed across the globe.

In the last three fiscal years, we have completed six acquisitions of companies or assets to expand and enhance our life science offerings. These include three companies providing off-site storage and sample management services.

- In November of 2015, we acquired BioStorage Technologies, Inc., a full-service outsourcing sample management business, supporting customers in the United States, Europe, and Asia with an integrated solution for off-site storage services, transportation services, laboratory services and software-based inventory management.
- In July 2017, we acquired assets and liabilities of Pacific Bio-Material Management, Inc. and Novare, LLC, two companies with operations in California and New York, respectively, providing off-site storage, transportation, and management services for biological samples.
- In April 2018, we acquired BioSpeciMan Corporation, a Canada-based provider of off-site storage services for biological sample materials.

The recent acquisitions in life sciences also added cryogenic temperature management products, software products and consumable products to our portfolio.

- In November 2016, we completed the acquisition of Cool Lab, LLC, a subsidiary of BioCision, LLC, a provider of cryogenic product solutions that assist in managing temperature stability of biological samples in a laboratory environment.
- In August 2017, we acquired certain assets and liabilities from RURO, Inc related to FreezerPro®, a web-based software platform which aids customers in their sample management needs and became the exclusive distributor of BiobankPro®, a software system that manages sample processing and storage while providing a single location for research and clinical data and related analysis.
- In October 2017, we acquired 4titude Limited, a U.K.-based manufacturer of scientific consumables used in a variety of genomic analytical applications.

On September 26, 2018, we entered into a definitive agreement to acquire GENEWIZ Group, or GENEWIZ, a leading provider of genomic services, based in New Jersey with operations throughout the United States, Asia, and Europe. We completed this acquisition on November 15, 2018. Please refer to Note 23, "Subsequent Events" to our Consolidated Financial Statements included under "Item 8, Financial Statements and Supplementary Data" of this Form 10-K.

Through the acquisitions described above, we have expanded product offerings, accelerated product development cycles, broadened our installed base and added customer relationships to our business. We have also divested certain products that did not hold leadership positions in our core markets. As such, we use acquisitions and divestitures to strengthen our portfolio and achieve increased growth and profitability. For further information on our acquisitions and equity investments, please refer to Note 4, "Acquisitions," and Note 8, "Equity Method and Other Investments," to our Consolidated Financial Statements included under "Item 8, Financial Statements and Supplementary Data" of this Form 10-K.

We believe the life science sample management market is generally more stable than the semiconductor capital equipment market and we expect that it will grow more quickly than our semiconductor business as a result of the expanding need for storage and retention of compound and biological samples. In the life science market, revenue streams from storage services are more predictable than the sale of automated freezers and other equipment. As we have expanded our life science offerings of consumables, infrastructure services and storage services, we have seen these more stable revenue streams increase to account for approximately 56% of our Brooks Life Sciences segment revenue in fiscal year 2018.

Segments

We have two operating and reportable segments consisting of Brooks Semiconductor Solutions Group segment and Brooks Life Sciences segment. For further information on our operating segments, please refer to Note 20, "Segment and Geographic Information" to our Consolidated Financial Statements included under "Item 8, Financial Statements and Supplementary Data" of this Form 10-K.

Brooks Semiconductor Solutions Group Segment

Brooks Semiconductor Solutions Group is a leader in mission-critical wafer automation and contamination controls solutions and services that are designed to improve throughput, yield, and cost of ownership of complex processing equipment, or tools, in semiconductor fabrication plants, or fabs. Our product offerings include vacuum and atmospheric robots, turnkey vacuum and atmospheric wafer handling systems, as well as wafer carrier clean and reticle storage systems. We also capture the complete life cycle of value through a global service network of expert application and field engineers who are located close to our customers. Our services include rapid refurbishment of robots to stringent specifications, upgrades to improve equipment productivity, and proactive monitoring and diagnostics for predictive risk management and improved up-time of the installed base.

Markets and Customers

The demand for semiconductors and semiconductor manufacturing equipment is cyclical, resulting in periodic expansions and contractions of this market. While the services element of our semiconductor business is generally more stable, the cyclical nature of the capital equipment business causes sales from products to vary quarterly based on short-term market demands. It is not unusual for these variations in sales to be up or down 10% to 20% in sequential quarters.

The principal markets served by the Brooks Semiconductor Solutions Group segment include the following:

- *Semiconductor capital equipment market*

Each year, the global semiconductor industry makes significant capital investments in equipment to keep up with advancements in semiconductor technology, to add manufacturing capacity and to improve productivity within existing fabs. We are recognized as a market leader in three critical sub-segments: vacuum automation for wafer handling; contamination control; and automation for advanced packaging. As discussed above, the global semiconductor capital equipment industry is cyclical, but we believe that it possesses a long-term growth profile driven by the demand for increasingly sophisticated consumer electronics, automotive and smart appliance products, growth in data centers, the expansion of the Internet-of-Things which increasingly connects various appliances and devices to servers, and mobile platforms. The demand for higher performance, lower power consumption and reduced size for all of these products is enabled by advancements in the technology and processes used for the manufacturing of the devices. We believe this trend continues to provide market opportunities for the Brooks Semiconductor Solutions Group to be a valued partner in providing vacuum automation, carrier contamination control and automation for advanced packaging to support the industry's needs.

We have been a long-term partner to device manufacturers and original equipment manufacturers, or OEMs, who are the providers of tools to fabs. We maintain collaborative relationships with our customers for the innovative design of solutions that enable our customers to have a valued wafer process advantage and improved cost of ownership in the fab. Our global network of technical specialists provides extensive support to our customers in all regions, including the key semiconductor markets in Korea, Taiwan, China, Japan, Europe and the United States.

The production of advanced semiconductor chips requires many complex and logistically challenging manufacturing activities. Silicon wafers must go through hundreds of process steps in order to create billions of microscopic transistors and connect them in both horizontal and vertical layers to produce a functioning integrated circuit, or IC. These initial fabrication steps, which are referred to in the industry as front-end processes, are repeated many times on a single wafer to create the desired pattern on the silicon wafer. Up to 50% of these processes are performed in tools that operate under vacuum conditions, such as removing, depositing, or measuring materials on wafer surfaces. As the complexity of semiconductors has increased, the number of process steps that occur in a vacuum environment have also increased, resulting in a greater need for vacuum automation technology solutions.

The increase in packing density of components in mobile devices has led the industry to devise new advanced packaging techniques for chip interconnectivity using what is called wafer level packaging, or WLP. This advanced packaging technology is a process of combining multiple wafers together prior to cutting them into pieces and then forming them onto a packaging substrate where they are ultimately divided into the multitude of chips. The recent

increased adoption of WLP has increased the need for a contaminant free and high purity manufacturing environment, resulting in higher demand for our semiconductor offerings tailored to handle full wafer forms.

In addition to the more complex automation challenges brought by technology shifts in device and packaging structures, there is also an increased demand for wafer carrier devices that provide safe and clean transport of wafers between tools during the manufacturing process. Large scale semiconductor fabs may use thousands of these carriers. There is also growing demand for wafer carrier cleaning and conditioning tools used to remove microscopic particles, organic compounds and water that are attracted to the inside surface of the carrier. Automated cleaning and conditioning of the carrier devices are also in demand by customers looking to improve yields. Similarly, as Lithography also requires cleaner controlled environments, our reticles solutions provide contamination control for highly valued reticles or masks that are used in printing the technological features onto the wafer.

· *Adjacent capital equipment markets*

There are a few adjacent and capital equipment markets that use manufacturing processes similar to the semiconductor manufacturing industry. These markets include microelectromechanical devices, or MEMs, light-emitting diodes, or LEDs, Organic Light Emitting Diodes, or OLEDs, and touch screen technology. These markets and semiconductor capital equipment market share common customers and utilize similar technology applications. For example, LEDs are manufactured using vacuum systems and handling processes similar to those used in semiconductor manufacturing.

We believe the desire for efficient, higher throughput and extremely clean manufacturing for semiconductor wafer fabs, the chip packaging process and other industrial or high performance electronic-based products and processes have created a substantial market for us in the following offerings: (i) substrate handling automation, which is related to moving the wafers in a semiconductor fab, (ii) tool automation, which moves wafers from station-to-station, (iii) vacuum systems technology to create and sustain the clean environment necessary for fabricating various products, and (iv) automated contamination control systems to clean and condition wafer carriers.

Product and Service Offerings

The principal offerings of the Brooks Semiconductor Solutions Group segment consist of: (i) wafer handling robotics and systems and (ii) semiconductor contamination control solutions. The segment also provides support services, including repair, diagnostic and installation, as well as spare parts and productivity enhancement upgrades to enhance tool productivity.

Wafer handling robotics and systems offerings - include vacuum robots, atmospheric robotic modules, and tool automation systems that provide precision handling and clean wafer environments. In the semiconductor industry, wafer handling robotics represents a critical technology in the highly complex production tools in the world's most advanced wafer fabs. A typical customer tool is designed and built around a process chamber and uses automation technology to move wafers in and out of the chamber. We specialize in developing and building the automated handling systems and the vacuum technologies used in these tools. We provide individual components within an OEM customer system and complete integrated handling systems. We provide automation products that are used for both atmospheric pressure and vacuum-based tools and are designed to improve performance and productivity of the manufacturing process.

Contamination control solutions - include automated cleaning and inspection systems for wafer carriers, reticle pod cleaners, and stockers, which are automated systems that store wafers or reticles. Our products are used to remove critical airborne contamination within the workflow of the manufacturing process. Our solutions contribute to improving yields, productivity and process stability in the manufacturing process which requires an ultra-clean manufacturing environment.

Within the semiconductor industry, we sell our products and services to the world's major semiconductor chip makers and OEMs, who provide process tools to the IC makers for the manufacture of chips. Our customers outside the semiconductor industry are broadly diversified. We have major customers in North America, Europe and Asia. Although we ship much of our equipment OEMs in the United States, a large percentage of these OEM tools are ultimately

installed in semiconductor fabs that are outside of North America. We also provide support services to leading OEMs, fabs and foundries across the globe.

Brooks Life Sciences Segment

Brooks Life Sciences is a global leader of comprehensive sample management solutions, providing life science and bioscience customers with complete end-to-end “cold chain of custody” solutions to advance scientific research and support drug development. Our sample management solutions are focused on providing customers with the highest level of sample quality, security, availability, intelligence and integrity throughout the life cycle of samples. Our solutions include automated ultra-cold storage systems, off-site storage services, transport services, laboratory services, consumables and instruments. We also provide informatics solutions that manage samples throughout our customers’ research discovery and development work flows.

As referenced above, we completed the acquisition of GENEWIZ Group on November 15, 2018, subsequent to the end of our fiscal year 2018. GENEWIZ is a leading global provider of genomic analysis and gene synthesis services. We believe GENEWIZ’s solutions will significantly expand our offerings to our existing sample management customers. GENEWIZ has been in business since 1999 and provides analysis of millions of samples collected by researchers in pharmaceutical, academic, government, and clinical areas.

Life Science Market

Brooks Life Sciences serves a broad range of end markets within the life sciences industry to address a confluence of life science industry trends, such as technology, information management and new sophisticated tools and applications. With the advent of biologics and personalized medicine, biological samples have become critical assets to the success of drug and therapy pipelines, and the proper management and protection of these samples has gained increased importance to our customers. We believe this trend has created a sizable market opportunity for Brooks Life Sciences to provide comprehensive sample management solutions.

We believe that the total addressable market for sample management solutions is currently expanding as a result of an increasing number of samples being stored globally. The market is fragmented, so we are initially focused on marketing our products and services within biopharma, which encompasses drug discovery research and development along with related clinical research, to government and commercially-sponsored biobanks, as well as to healthcare and academic research institutions. Together, this presents a significant addressable market for our comprehensive sample management solutions.

Brooks Life Sciences currently serves more than 1200 customers around the globe with sample management solutions, including a majority of the top-20 global bio-pharmaceutical companies. Due to the comprehensive nature of our sample management solutions that include automated ultra-cold storage management systems, consumables and instruments, as well as services and informatics, we are continuing to expand our customer base and geographic reach to increase our revenue streams and to deliver consistent growth over the long-term. GENEWIZ has more than 4000 customers globally, which includes many of our sample management customers.

Product and Service Offerings

The principal offerings of the Brooks Life Sciences segment include the following:

Automated cold storage systems – provides stand-alone systems that can store up to two million samples each in temperature ranges from +4°C to -196°C. Our systems provide high throughput capability and optimized storage of multi-format tubes and plates, and increased storage capacity while maintaining consistent temperature profiles across stored samples. We also provide support services for our installed base of storage systems.

Sample management services - includes a complete range of services consisting of on-site and off-site sample storage, cold chain logistics, sample transport and collection relocation, bio-processing solutions (inclusive of sample preparation, and genomic and cell culture analysis), disaster recovery and business continuity, as well as project management and consulting.

Consumables and Instruments - includes a complete range of unique consumables, including multiple formats of racks, tubes, caps, plates and foils, which support storage of samples prior to placing them in ultra-cold storage environment. A comprehensive range of instruments used for labeling, bar coding, capping, de-capping, auditing, sealing, peeling, and piercing tubes and plates complement our consumables. Our newly acquired 4titude offerings include a range of products aimed at the genomic sample preparation and services market for polymerase chain reactions, or PCR, & sequencing, imaging, plate sealing, liquid handling, forensic and next generation sequencing, or NGS, sample processing.

Informatics - provides sample intelligence software solutions and integration of customer technology. Our informatics suite also provides laboratory work flow scheduling for life science tools and instrument work cells, sample inventory and logistics, environmental and temperature monitoring, clinical trial and consent management, as well as planning, data management, virtualization, and visualization of sample collections marketed under the brands of FreezerPro®, BioBankPro® and BioStudies™.

Genomic Services - provides gene sequencing analysis and gene synthesis, a service which enables the fast expanding research of gene-based healthcare discoveries and therapies through our acquisition of GENEWIZ. GENEWIZ is a full-service provider of genomic services, with offerings including Sanger sequencing, gene synthesis, molecular biology, high throughput and NGS sequencing, bioinformatics, and good laboratory practices, or GLP, regulatory services.

Sales, Marketing and Customer Support

We market and sell the majority of our semiconductor products and services in Asia, Europe, the Middle East and North America through our direct sales organization. The sales process for our products is often multilevel, involving a team comprised of individuals from sales, marketing, engineering, operations and senior management. In many cases we assign a team to a customer and that team engages the customer at different levels of its organization to facilitate planning, provide product customization when required, and ensure open communication and support.

The majority of our life sciences sales are completed through our direct Brooks Life Sciences sales force, particularly our store systems and services. In addition, we supplement the sale of consumables and instruments through distributors that reach a broad range of customers. In regions with emerging life science industries such as China, India and the Middle East, we leverage local distributors to assist with the sales process for store systems. The sales process for our larger sample management systems may take 6 to 18 months to complete and it involves a team typically comprised of individuals from sales, marketing, engineering and senior management.

We typically provide product warranties for a period of one to two years depending on the product type.

Our marketing activities include participation in trade shows, delivery of seminars, participation in industry forums, distribution of sales literature and white papers, publication of press releases and articles in business and industry publications. We maintain sales and service centers in Asia, Europe, the Middle East and North America to enhance support and communication with our customers. These facilities, together with our headquarters, house local support capabilities and demonstration equipment for our customers to evaluate. We encourage customers to discuss features and applications of our demonstration equipment with our engineers who are located at these facilities.

Competition

Brooks Semiconductor Solutions Group segment operates in a variety of market segments of varying breadth with differing competitors and competitive dynamics. The semiconductor and adjacent technology markets, as well as process equipment manufacturing industries, are highly competitive and characterized by continual changes and technology improvements. A significant portion of equipment automation is still done by the OEMs themselves. Our competitors among merchant vacuum robot automation suppliers include primarily Japanese companies, such as Daihen Corporation, Daikin Industries, Ltd., Sumitomo Heavy Industries, and Rorze Corporation. Atmospheric tool automation is typically less demanding technologically, has fewer barriers to entry and has a larger field of competitors. We compete directly with other equipment automation suppliers of atmospheric modules and systems, such as Hirata Corporation, Kawasaki

Heavy Industries, Ltd., Genmark Automation, Inc., Rorze Corporation, Sankyo Seisakusho Co., Ltd., TDK Corporation and Sinfonia Technology Co., Ltd.

We believe our customers will purchase our equipment, automation products and vacuum subsystems as long as our products continue to provide the necessary throughput, reliability, contamination control and accuracy at an acceptable price. We believe our semiconductor offerings are competitive with respect to all of these factors. We cannot guarantee, however, that we will be successful in selling our products to OEMs who currently satisfy a portion of their automation needs in-house or from other independent suppliers, regardless of the performance or price of our products.

Given the breadth of Brooks Life Sciences sample management solutions, there are no direct competitors for the comprehensive set of automation, consumables, instruments, services and informatics solutions we provide to our customers. However, each of the business lines within the Life Sciences business has unique competitors. This would include Hamilton Company and Liconic AG for automation systems, Thermo-Fisher for consumables and services, LabCorp and Covance for services, as well as BGI, Integrated DNA Technologies, Eurofins and GenScript for genomic services.

Research and Development

Our research and development efforts are focused on developing new products and enhancing the functionality, degree of integration, reliability and performance of our existing products. Our engineering, marketing, operations and management personnel leverage their close collaborative relationships with their counterparts in customer organizations in an effort to proactively identify market demands that helps us refocus our research and development investment to match our customers' demands. With the rapid pace of change that characterizes the markets we serve, it is essential for us to provide high-performance, reliable products in order to maintain our leadership position in both our Brooks Semiconductor Solutions Group and Brooks Life Sciences businesses.

Our research and development spending were \$46.9 million, \$39.9 million and \$44.2 million during fiscal years 2018, 2017 and 2016, respectively.

We invest in research and development initiatives within our Brooks Semiconductor Solutions Group segment to maintain continued leadership positions in the markets we serve. We have recently launched our newest Vacuum Automation platform, MagnaTran LEAP™, for the advanced technologies related to manufacturing 10 nanometer design rule semiconductor chips. MagnaTran LEAP is well positioned to deliver clean, accurate and fast wafer transport for the fast growing Deposition and Etch market.

We have developed and continue to develop automated biological sample storage solutions for operating in ultra-low temperature environments within the Brooks Life Sciences segment. We have developed the Twin-bank platform, including an expansion of the product range for a smaller, more space-efficient automated storage system marketed under the brands of SampleStore™ SE and BioStore™ SE and introduced the BioStore™ III Cryo automated cryogenic sample management system which offer sample automation, cold chain management and improved security and accessibility while maintaining sample protection within the storage environment.

Manufacturing and Service

Our manufacturing operations include product assembly, integration and testing. We implement quality assurance procedures that include standard design practices, reliability testing and analysis, supplier and component selection procedures, vendor controls, manufacturing process controls, and service processes that ensure high-quality performance of our products. Our major manufacturing facilities are located in Chelmsford, Massachusetts; Yongin-City, South Korea; and Manchester, United Kingdom. Our manufacturing operations are designed to provide high quality, low cost, differentiated products to our customers in short lead times through responsive and flexible processes and sourcing strategies. We utilize lean manufacturing techniques for a large portion of our manufacturing, including manufacture of assemblies that we have outsourced to competitive regions, including Asia. We expect to continue to broaden our sourcing of certain portions of our manufacturing process to ensure we continue to provide high quality products at competitive costs. We also believe the continued sourcing of portions of our manufacturing processes in these regions allows us to better serve our customers who have operations in these regions.

We have service and support locations close to our customers to provide rapid response to their service needs. Our principal service and support locations include Chelmsford, Massachusetts; Fremont, California; Chu Bei City, Taiwan; Yongin-City, South Korea; Yokohama, Japan; Shanghai, China; Singapore; Manchester, United Kingdom; and Kiryat-Gat, Israel. Our Brooks Life Sciences segment provides sample management storage and transportation services in Indianapolis, Indiana; Fresno, California; El Segundo, California; Torrance, California; Bronx, New York; Germany, China, and Singapore.

Patents and Proprietary Rights

We rely on patents, trade secret laws, confidentiality procedures, copyrights, trademarks and licensing agreements to protect our technology. Due to the rapid technological change that characterizes the life sciences, semiconductor, adjacent technology markets and related process equipment industries, we believe that the improvement of existing technology, reliance upon trade secrets, unpatented proprietary know-how and the development of new products may be as important as patent protection in establishing and maintaining a competitive advantage. Our policy is to require all employees to enter into proprietary information and nondisclosure agreements to protect trade secrets and know-how. We cannot guarantee that these efforts will meaningfully protect our trade secrets.

As of September 30, 2018, we owned approximately 365 issued U.S. patents, with various corresponding patents issued in foreign jurisdictions. We also had approximately 90 pending U.S. patent applications, with foreign counterparts of certain of these applications having been filed or which may be filed at the appropriate time. Our patents will expire at various dates through 2036.

Backlog

Backlog for the Brooks Semiconductor Solutions Group segment offerings totaled approximately \$124 million as of September 30, 2018 as compared to approximately \$86 million at September 30, 2017. Backlog for the Brooks Semiconductor Solutions Group segment includes all purchase orders for which our customers have scheduled delivery, regardless of the expected delivery date, and consists principally of orders for products and service agreements. Substantially all of this backlog consists of orders scheduled to be delivered within the next 12 months.

Backlog for the Brooks Life Sciences segment offerings totaled \$273 million as of September 30, 2018 as compared to approximately \$250 million at September 30, 2017. Backlog for the Brooks Life Sciences segment includes all purchase orders for which customers have scheduled delivery, regardless of the expected delivery date, and consists of orders for products and service agreements. In addition, it includes estimated revenue for future services related to our BioStorage business for which contracts have been secured. Final revenue realized will vary based on volumes, prices, duration, and other factors. Storage contracts vary in length of time, with some being short term and some indefinite. We include the estimated value for time periods in the contract up to a maximum of 5 years.

Geographic Information

Our top 10 customers accounted for approximately 34% of our consolidated revenue in fiscal year 2018. No customers accounted for more than 10% of our consolidated revenue for fiscal year 2018.

Net revenue for the fiscal years ended September 30, 2018, 2017 and 2016 based upon the source of the order by geographic area is as follows (in thousands):

| | Year Ended September 30, | | |
|-----------------------|--------------------------|-------------------|-------------------|
| | 2018 | 2017 | 2016 |
| North America | \$ 233,243 | \$ 174,432 | \$ 157,426 |
| Asia / Pacific/ Other | 262,706 | 255,825 | 196,117 |
| Europe: | | | |
| <i>United Kingdom</i> | 51,690 | 37,283 | 31,342 |
| <i>Rest of Europe</i> | 83,921 | 59,959 | 49,127 |
| | <u>\$ 631,560</u> | <u>\$ 527,499</u> | <u>\$ 434,012</u> |

The majority of our net revenue in North America is generated in the United States which amounted to \$232.7 million, \$172.9 million and \$156.9 million, respectively, during fiscal years ended September 30, 2018, 2017 and 2016.

The geographic location of an OEM is not indicative of where our products will eventually be used. The geographic area for our orders is determined by the onward sale of an OEM system which incorporates our sub-systems and/or components.

Property, plant and equipment by geographic area as of September 30, 2018 and 2017 are as follows (in thousands):

| | September 30, | |
|-----------------------|------------------|------------------|
| | 2018 | 2017 |
| North America | \$ 50,614 | \$ 50,908 |
| Asia / Pacific/ Other | 492 | 547 |
| Europe: | | |
| <i>United Kingdom</i> | 5,494 | 2,848 |
| <i>Rest of Europe</i> | 3,388 | 2,678 |
| | <u>\$ 59,988</u> | <u>\$ 56,981</u> |

Property, plant and equipment located in the United States amounted to \$50.5 million and \$50.7 million, respectively, at September 30, 2018 and 2017.

Environmental Matters

We are subject to federal, state, local environmental laws and regulations, and the environmental laws and regulations of the foreign national and local jurisdictions in which we have manufacturing facilities. We believe we are materially in compliance with all such laws and regulations.

Compliance with foreign, federal, state, and local laws and regulations has not had, and is not expected to have, an adverse effect on our capital expenditures, competitive position, financial condition or results of operations.

Employees

At September 30, 2018, we had 1,548 full time employees. In addition, we employ part time workers and contractors. We consider our relationships with our employees to be good.

Available Information

We file annual, quarterly, and current reports, proxy statements, and other documents with the SEC, under the Securities Exchange Act of 1934, as amended, or the Exchange Act. The public may read and copy any materials that we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. Also, the SEC maintains an Internet website that contains reports, proxy and information statements, and other information regarding issuers, including Brooks Automation, Inc., that file electronically with the SEC. The public can obtain any documents that we file with the SEC at www.sec.gov.

Our internet website address is <http://www.brooks.com>. Through our website, we make available, free of charge, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports, as soon as reasonably practicable after such materials are electronically filed, or furnished to, the SEC. These SEC reports can be accessed through the investors section of our website. The information found on our website is not part of this or any other report we file with or furnish to the SEC.

Item 1A. Risk Factors

Factors That May Affect Future Results

You should carefully consider the risks described below and the other information in this report before deciding to invest in shares of our common stock. These are the risks and uncertainties we believe are most important for you to consider. Additional risks and uncertainties not presently known to us, which we currently deem immaterial or which are similar to those faced by other companies in our industry or business in general, may also impair our business operations. If any of the following risks or uncertainties actually occurs, our business, financial condition and operating results would likely suffer. In that event, the market price of our common stock could decline and you could lose all or part of your investment.

Risks Relating to Our Industry

Due in part to the cyclical nature of the semiconductor manufacturing industry and related industries, as well as due to volatility in worldwide capital and equity markets, we have previously incurred operating losses and may have future losses.

Our business is largely dependent on capital expenditures in the semiconductor manufacturing industry and other businesses employing similar manufacturing technologies. The semiconductor manufacturing industry in turn depends on current and anticipated demand for integrated circuits and the products that use them. In recent years, these businesses have experienced unpredictable and volatile business cycles due in large part to rapid changes in demand and manufacturing capacity for semiconductors, and these cycles have had an impact on our business, sometimes causing declines in revenue and operating losses. We could experience future operating losses during an industry downturn. If an industry downturn continues for an extended period of time, our business could be materially harmed. Conversely, in periods of rapidly increasing demand, we could have insufficient inventory and manufacturing capacity to meet our customers' needs on a timely basis, which could result in the loss of customers and various other expenses that could reduce gross margins and profitability.

We face competition which may lead to price pressure and otherwise adversely affect our sales.

We face competition throughout the world in each of our product and service areas, including from the competitors discussed in Part I, Item 1, "Business - Competition" as well as from internal automation capabilities at larger OEMs. Many of our competitors have substantial engineering, manufacturing, marketing and customer support capabilities. In addition, strategic initiatives in China to encourage local semiconductor manufacturing and supply chain could increase competition from domestic equipment manufacturers in China. We expect our competitors to continue to improve the performance of their current products and services and to introduce new products, services and technologies that could adversely affect sales of our current and future products and services. New products, services and technologies developed by our competitors or more efficient production of their products or provisions of their services could require us to make significant price reductions or decide not to compete for certain orders. If we fail to respond adequately to pricing pressures or fail to develop products with improved performance or better quality services with respect to the other factors on which we compete, we could lose customers or orders. If we are unable to compete effectively, our business and prospects could be materially harmed.

Risks Relating to Our Operations

Our operating results could fluctuate significantly, which could negatively impact our business.

Our revenue, operating margins and other operating results could fluctuate significantly from quarter to quarter depending upon a variety of factors, including:

- demand for our products as a result of the cyclical nature of the semiconductor manufacturing industry and the markets upon which the industry depends or otherwise;
- changes in the timing and terms of product orders by our customers as a result of our customer concentration or otherwise;

- changes in the demand for the mix of products and services that we offer;
- timing and market acceptance of our new product and services introductions;
- delays or problems in the planned introduction of new products or services, or in the performance of any such products following delivery to customers or the quality of such services;
- new products, services or technological innovations by our competitors, which can, among other things, render our products less competitive due to the rapid technological changes in the markets in which we provide products and services;
- the timing and related costs of any acquisitions, divestitures or other strategic transactions;
- our ability to reduce our costs in response to decreased demand for our products and services;
- our ability to accurately estimate customer demand, including the accuracy of demand forecasts used by us;
- disruptions in our manufacturing process or in the supply of components to us;
- write-offs for excess or obsolete inventory;
- competitive pricing pressures; and
- increased amount of investment into the infrastructure to support our growth, including capital equipment, research and development, as well as selling and marketing initiatives to support continuous product innovation, technological capability enhancements and sales efforts. The timing of revenue generation coupled with the increased amount of investment may result in operating losses.

As a result of these risks, we believe that reference to past performance for comparisons of our revenue and operating results may not be meaningful, and that these comparisons may not be an accurate indicator of our future performance.

If we do not continue to introduce new products and services that reflect advances in technology in a timely and effective manner, our products and services may become obsolete and our operating results will suffer.

Our success is dependent on our ability to respond to the technological changes present in the markets we serve. The success of our product development and introduction of products to market depends on our ability to:

- identify and define new market opportunities, products and services in accurate manner;
- obtain market acceptance of our products and services;
- innovate, develop and commercialize new technologies and applications in a timely manner;
- adjust to changing market conditions;
- differentiate our offerings from our competitors' offerings;
- obtain and maintain intellectual property rights where necessary;
- continue to develop a comprehensive, integrated product and service strategy;
- price our products and services appropriately; and
- design our products to high standards of manufacturability so that they meet customer requirements.

If we cannot succeed in responding in a timely manner to technological and/or market changes or if the new products and services that we introduce do not achieve market acceptance, our competitive position would diminish which could materially harm our business and our prospects.

The global nature of our business exposes us to multiple risks.

During fiscal years ended September 30, 2018 and 2017, approximately 63% and 67% of our revenue was derived from sales outside of North America. We expect that international sales, including increased sales in Asia, will continue to account for a significant portion of our revenue. We maintain a global footprint of sales, service and repair operations. As a result of our international operations, we are exposed to many risks and uncertainties, including:

- longer sales-cycles and time to collection;
- tariff and international trade barriers;
- fewer or less certain legal protections for intellectual property and contract rights abroad;
- different and changing legal and regulatory requirements in the jurisdictions in which we operate;
- government currency control and restrictions on repatriation of earnings;
- fluctuations in foreign currency exchange and interest rates, particularly in Asia and Europe; and
- political and economic instability, changes, hostilities and other disruptions in regions where we operate.

Negative developments in any of these areas in one or more countries could result in a reduction in demand for our products, the cancellation or delay of orders already placed, threats to our intellectual property, difficulty in collecting receivables, and a higher cost of doing business, any of which could materially harm our business and profitability.

Our business could be materially harmed if we fail to adequately integrate the operations of the businesses that we have acquired or may acquire.

We have made in the past, and may make in the future, acquisitions or significant investments in businesses with complementary products, services and/or technologies. Our acquisitions present numerous risks, including:

- difficulties in integrating the operations, technologies, products and personnel of the acquired companies and realizing the anticipated synergies of the combined businesses;
- defining and executing a comprehensive product strategy;
- managing the risks of entering markets or types of businesses in which we have limited or no direct experience;
- the potential loss of key employees, customers and strategic partners of ours or of acquired companies;
- unanticipated problems or latent liabilities, such as problems with the quality of the installed base of the target company's products or infringement of another company's intellectual property by a target company's activities or products;
- problems associated with compliance with the acquired company's existing contracts;
- difficulties in managing geographically dispersed operations; and
- the diversion of management's attention from normal daily operations of the business.

If we acquire a new business, we may expend significant funds, incur additional debt or issue additional securities, which may negatively affect our operations and be dilutive to our stockholders. In periods following an acquisition, we

will be required to evaluate goodwill and acquisition-related intangible assets for impairment. If such assets are found to be impaired, they will be written down to estimated fair value, with a charge against earnings. The failure to adequately address these risks or the impairment of any assets could materially harm our business and financial results.

The announcement and pendency of the sale of our semiconductor cryogenics business to Atlas Copco could have an adverse effect on our stock price and/or our business, results of operations, financial condition and prospects.

The announcement and pendency of the sale of our semiconductor cryogenics business to Edwards Vacuum LLC (a member of the Atlas Copco Group) pursuant to the asset purchase agreement we entered into on August 27, 2018 could disrupt our business in the following ways, among others:

- customers may determine to delay or defer purchase decisions with regard to our cryogenics products or terminate and/or attempt to renegotiate their relationships with us as a result of the pending sale, whether pursuant to the terms of their existing agreements with us or otherwise;
- investors and customers may perceive that the loss of annual revenue generated by our cryogenics business, which was \$196.1 million in fiscal year 2018, will negatively impact our growth potential, regardless of the impact our acquisition of GENEWIZ may have on our revenue and results of operations; and
- the attention of our management may be directed toward the completion of the pending sale and related matters, and their focus may be diverted from the day-to-day business operations of our company, including from other opportunities that might otherwise be beneficial to us.

Should any of these matters occur, they could adversely affect our stock price or harm our business, results of operations, financial condition and prospects.

Obtaining required approvals necessary to satisfy the conditions to the completion of the sale of our semiconductor cryogenics business may delay or prevent completion of the pending sale.

The completion of the sale of our semiconductor cryogenics business to Atlas Copco is conditioned upon the approval of the Committee on Foreign Investment in the United States (CFIUS). We intend to pursue all required approvals in accordance with the terms of the asset purchase agreement. No assurance, however, can be given that the required approvals will be obtained and, even if all such approvals are obtained, no assurance can be given as to the terms, conditions and timing of the approvals or that the approvals will satisfy the terms of the asset purchase agreement.

Inability to complete the sale of our semiconductor cryogenics business could negatively impact our business, financial condition, results of operations or our stock price.

The completion of the sale of our semiconductor cryogenics business to Atlas Copco is subject to a number of conditions, including, among others, clearance under the HSR Act, approval of CFIUS, the receipt of any required third party consents and there not having been a material adverse effect with respect to such business, and there can be no assurance that the conditions to the completion of the pending sale will be satisfied. The asset purchase agreement may also be terminated by us and Atlas Copco in certain specified circumstances, including if the sale has not been consummated by April 15, 2019. While the potential sale is pending and if the pending sale is not completed, we will be subject to several risks, including:

- the current trading price of our common stock may reflect a market assumption that the sale will be completed;
- we expect to incur substantial transaction costs in connection with the pending sale whether or not it is completed;

- under the asset purchase agreement, we are subject to certain restrictions on the conduct of our business prior to the completion of the pending sale, which restrictions could adversely affect our ability to realize certain of our business strategies or take advantage of certain business opportunities;
- we may be limited in our ability to repay our \$350.0 million senior secured incremental term loan facility under our Credit Agreement, dated as of October 4, 2017, used to fund a portion of the cash purchase price of our acquisition of GENEWIZ on November 15, 2018; and
- The negative perception of investors and customers of our semiconductor cryogenics business if the sale is not consummated and our inability to operate the business in the same manner as before the announcement of the proposed sale.

Any of these risks could have a material adverse effect on our business, financial condition, results of operations and stock price.

Expanding within current markets introduces new competitors and commercial risks.

A key part of our growth strategy is to continue expanding within the life sciences sample management market. As part of this strategy, we expect to diversify our product sales and service revenue by leveraging our core technologies, which requires investments and resources which may not be available as needed. We cannot guarantee that we will be successful in leveraging our capabilities into the life sciences sample management market to meet all the needs of new customers and to compete favorably. Because a significant portion of our growth potential may be dependent on our ability to increase sales within the life science sample management market, our inability to successfully expand within such market may adversely impact future financial results.

Changes in key personnel could impair our ability to execute our business strategy.

The continuing service of our executive officers and essential engineering, technical and management personnel, together with our ability to attract and retain such personnel, is an important factor in our continuing ability to execute our strategy. There is substantial competition to attract such employees and the loss of any such key employees could have a material adverse effect on our business and operating results. The same could be true if we were to experience a high turnover rate among engineering and technical personnel and we were unable to replace them.

Our failure to protect our intellectual property could adversely affect our future operations.

Our ability to compete is significantly affected by our ability to protect our intellectual property. We rely upon patents, trade secret laws, confidentiality procedures, copyrights, trademarks and licensing agreements to protect our technology. Existing trade secret, trademark and copyright laws offer only limited protection. Our success depends in part on our ability to obtain and enforce patent protection for our products both in the United States and in other countries. We own numerous U.S. and foreign patents, and we intend to file additional applications, as appropriate, for patents covering our products and technology. Any issued patents owned by or licensed to us may be challenged, invalidated or circumvented, and the rights under these patents may not provide us with competitive advantages. In addition, the laws of some countries in which our products are or may be developed, manufactured or sold may not fully protect our products. Due to the rapid technological change that characterizes the semiconductor and adjacent technology markets, we believe that the improvement of existing technology, reliance upon trade secrets and unpatented proprietary know-how and the development of new products may be as important as patent protection in establishing and maintaining competitive advantage. To protect trade secrets and know-how, it is our policy to require all technical and management personnel to enter into nondisclosure agreements.

We cannot guarantee that the steps we have taken to protect our intellectual property will be adequate to prevent the misappropriation of our technology. Other companies could independently develop similar or superior technology without violating our intellectual property rights. In the future, it may be necessary to engage in litigation or like activities to enforce our intellectual property rights, to protect our trade secrets or to determine the validity and scope of proprietary rights of others, including our customers. This could require us to incur significant expenses and to divert the efforts and attention of our management and technical personnel from our business operations.

The expiration of our patents over time could lead to an increase of competition and a decline in our revenue.

One of our main competitive strengths is our technology, and we are dependent on our patent rights and other intellectual property rights to maintain our competitive position. Our current patents will expire from time to time through 2035 which could result in increased competition and declines in product and service revenue.

We may be subject to claims of infringement of third-party intellectual property rights, or demands that we license third-party technology, which could result in significant expense and prevent us from using our technology.

There has been substantial litigation regarding patent and other intellectual property rights in the semiconductor-related industries. We have in the past been, and may in the future be, notified that we may be infringing intellectual property rights possessed by third parties. We cannot guarantee that infringement claims by third parties or other claims for indemnification by customers or end-users of our products resulting from infringement claims will not be asserted in the future or that such assertions, whether or not proven to be true, will not materially and adversely affect our business, financial condition and results of operations.

We cannot predict the extent to which we might be required to seek licenses or alter our products so that they no longer infringe the rights of others. We also cannot guarantee that licenses will be available or the terms of any licenses we may be required to obtain will be reasonable. Similarly, changing our products or processes to avoid infringing the rights of others may be costly or impractical and could detract from the value of our products. If a judgment of infringement were obtained against us, we could be required to pay substantial damages and a court could issue an order preventing us from selling one or more of our products. Further, the cost and diversion of management attention brought about by such litigation could be substantial, even if we were to prevail. Any of these events could result in significant expense to us and may materially harm our business and our prospects.

Unexpected events could disrupt our sample storage operations and adversely affect our reputation and results of operations.

Unexpected events, including fires or explosions at our facilities, natural disasters, such as tornadoes, hurricanes and earthquakes, war or terrorist activities, unplanned power outages, supply disruptions and failure of equipment or systems, could adversely affect our reputation and results of operations. Our Brooks Life Sciences' service customers rely on us to securely store and timely retrieve and transport their critical samples, and these events could result in service disruptions, physical damage to one or more key storage facilities and the customer samples stored in those facilities, the temporary closure of one or more key operating facilities or the temporary disruption of service, each of which could negatively impact our reputation and results of operations. Our primary storage facility is located in Indianapolis, Indiana, an area of the United States that can be prone to tornado and other severe weather events.

If our manufacturing sites were to experience a significant disruption in operations, our business could be materially harmed, while the failure to estimate customer demand accurately could result in excess or obsolete inventory.

We have a limited number of manufacturing facilities for our products and we have moved portions of our manufacturing to third parties, including some in lesser developed countries. If the operations at any one of these facilities were disrupted as a result of a natural disaster, fire, power or other utility outage, work stoppage or other similar event, our business could be seriously harmed because we may be unable to manufacture and ship products and parts to our customers in a timely fashion. The impact of any disruption at one of our facilities may be exacerbated if the disruption occurs at a time when we need to rapidly increase our manufacturing capabilities to meet increased demand or expedited shipment schedules.

Moreover, if actual demand for our products is different than expected, we may purchase more/fewer component parts than necessary or incur costs for canceling, postponing or expediting delivery of such parts. If we purchase inventory in anticipation of customer demand that does not materialize, or if our customers reduce or delay orders, we may incur excess inventory charges. Any or all of these factors could materially and adversely affect our business, financial condition and results of operations.

Our business could be materially harmed if one or more key suppliers fail to continuously deliver key components of acceptable cost and quality.

We currently obtain many of our key components on an as-needed, purchase order basis from numerous suppliers. In some cases we have only a single source of supply for key components and materials used in the manufacturing of our products. Further, we are increasing our sourcing of products in Asia, and particularly in China, and we do not have a previous history of dealing with many of these suppliers. Our inability to obtain components or materials in required quantities or of acceptable cost and quality and with the necessary continuity of supply could result in delays or reductions in product shipments to our customers. In addition, if a supplier or sub-supplier suffers a production stoppage or delay for any reason, including natural disasters such as the tsunamis that affected Japan and Thailand, this could result in a delay or reduction in our product shipments to our customers. Any of these contingencies could cause us to lose customers, result in delayed or lost revenue and otherwise materially harm our business.

Our business could be adversely affected by a decline in the availability of raw materials.

We are dependent on the availability of certain key raw materials and natural resources used in our products and various manufacturing processes, and we rely on third parties to supply us with these materials in a cost-effective and timely manner. Our access to raw materials may be adversely affected if our suppliers' operations were disrupted as a result of limited or delayed access to key raw materials and natural resources which may result in increased cost of these items. While most of the raw materials used in our products and various manufacturing processes are commercially available, we rely in some cases on materials that have a limited supply and are considered rare Earth elements, such as helium. If the supply of these elements is drastically reduced, it may lead to price increases which could result in higher costs of our products and corresponding revenue declines and have a material adverse impact on our business, financial condition and results of operations.

Our outsource providers may fail to perform as we expect.

Outsource providers have played and will continue to play a key role in our manufacturing operations and in many of our transactional and administrative functions, such as information technology and facilities management. Although we attempt to select reputable providers and secure their performance on terms documented in written contracts, it is possible that one or more of these providers could fail to perform as we expect and such failure could have an adverse impact on our business.

Our business relies on certain critical information systems and a failure or breach of such a system could harm our business and results of operations and, in the event of unauthorized access to a customer's data or our data, incur significant legal and financial exposure and liabilities.

We maintain and rely upon certain critical information systems for the effective operation of our business. These information systems include telecommunications, the internet, our corporate intranet, various computer hardware and software applications, network communications and e-mail. These information systems may be owned and maintained by us, our outsource providers or third parties such as vendors and contractors. These information systems are subject to attacks, failures, and access denials from a number of potential sources including viruses, destructive or inadequate code, power failures, and physical damage to computers, hard drives, communication lines and networking equipment. To the extent that these information systems are under our control, we have implemented security procedures, such as virus protection software and emergency recovery processes, to mitigate the outlined risks. However, security procedures for information systems cannot be guaranteed to be failsafe and our inability to use or access these information systems at critical points in time, or unauthorized releases of confidential information, could unfavorably impact the timely and efficient operation of our business.

Confidential information stored on these information systems could also be compromised. If a third party gains unauthorized access to our data, including any information regarding our customers, such security breach could expose us to a risk of loss of this information, loss of business, litigation and possible liability. These security measures may be breached as a result of third-party action, including intentional misconduct by computer hackers, employee error, malfeasance or otherwise. Additionally, third parties may fraudulently attempt to induce employees or customers into disclosing sensitive information such as user names, passwords or other information in order to gain access to our

customers' data or our data, including our intellectual property and other confidential business information, or our information technology systems. Because the techniques used to obtain unauthorized access, or to sabotage systems, change frequently and generally are not recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures. Any security breach could result in a loss of confidence by our customers, damage our reputation, disrupt our business, lead to legal liability and negatively impact our future sales.

Our goodwill and intangible assets may become impaired.

As of September 30, 2018, we had \$255.9 million of goodwill and \$100.0 million in net intangible assets as a result of our acquisitions. We periodically review our goodwill and the estimated useful lives of our identifiable intangible assets, taking into consideration any events or circumstances that might result in either a diminished fair value, or for intangible assets, a revised useful life. These events and circumstances include significant changes in the business climate, legal factors, operating performance indicators, advances in technology and competition. Any impairment or revised useful life could have a material and adverse effect on our financial position and results of operations, and could harm the trading price of our common stock.

Changes in tax rates or tax regulation could affect results of operations.

As a global company, we are subject to taxation in the United States and various other countries. Significant judgment is required to determine and estimate worldwide tax liabilities. Our future annual and quarterly effective tax rates could be affected by numerous factors, including changes in the: applicable tax laws; composition of pre-tax income in countries with differing tax rates; and/or establishment of a valuation allowance against deferred tax assets based on the assessment of their realizability prior to expiration. In addition, we are subject to regular examination by the Internal Revenue Service and state, local and foreign tax authorities. We regularly assess the likelihood of favorable or unfavorable outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. Although we believe our tax estimates are reasonable, there can be no assurance that any final determination will not be materially different from the treatment reflected in our historical income tax provisions and accruals, which could materially and adversely affect our financial condition and results of operations.

The implementation of tariffs and export controls on our products may have a material impact on our business.

Our global business operations and supply chain may be disrupted by the additional tariffs imposed on our products.

As of July 6, 2018, the United States imposed a 25% tariff on a list of products that included certain parts and components made in China and imported into the United States for incorporation with our products. We are implementing operational changes that should mitigate the impact of the 25% tariff on our imports into the United States from China. As a result of these operational changes, we do not expect that the increase in these tariffs will have a significant impact on our business, supply chain, operations or financial results. However, if the United States increases the amount of these tariffs or adds additional items to the list of products subject to tariff, tariffs could materially adversely affect our business, financial results and operations.

In addition to the increased tariffs imposed by the United States, China has implemented additional retaliatory tariffs on products made in the United States. While these tariffs currently do not materially impact us, if China increases its tariffs or places additional tariffs or other nations impose tariffs on our products, it could materially adversely affect our business, financial results and operations.

We are subject to numerous governmental regulations.

We are subject to federal, state, local and foreign regulations, including environmental regulations and regulations relating to the design and operation of our products and control systems. We might incur significant costs as we seek to ensure that our products meet safety and emissions standards, many of which vary across the states and countries in which our products are used. In the past, we have invested significant resources to redesign our products to comply with these directives. Compliance with future regulations, directives, and standards could require us to modify or redesign

some products, make capital expenditures, or incur substantial costs. If we do not comply with current or future regulations, directives, and standards:

- we could be subject to fines;
- our production or shipments could be suspended; and
- we could be prohibited from offering particular products in specified markets.

Any of these events could materially and adversely affect our business, financial condition and results of operations.

Regulations and customer demands related to conflict minerals may adversely affect us.

The Dodd-Frank Wall Street Reform and Consumer Protection Act imposes disclosure requirements regarding the use in components of our products of “conflict minerals” mined from the Democratic Republic of Congo and adjoining countries, whether the components of our products are manufactured by us or third parties. This requirement could affect the pricing, sourcing and availability of minerals used in the manufacture of components we use in our products. In addition, there are additional costs associated with complying with the disclosure requirements and customer requests, such as costs related to our due diligence to determine the source of any conflict minerals used in our products. We may face difficulties in satisfying customers who may require that all of the components of our products are certified as conflict mineral free and/or free of numerous other hazardous materials.

Unfavorable currency exchange rate fluctuations may lead to lower operating margins, or may cause us to raise prices, which could result in reduced sales.

Currency exchange rate fluctuations could have an adverse effect on our sales and results of operations and we could experience losses with respect to forward exchange contracts into which we may enter. Unfavorable currency fluctuations could require us to increase prices to foreign customers, which could result in lower net sales by us to such customers. Alternatively, if we do not adjust the prices for our products in response to unfavorable currency fluctuations, our results of operations could be materially and adversely affected. In addition, most sales made by our foreign subsidiaries are denominated in the currency of the country in which these products are sold and the currency they receive in payment for such sales could be less valuable as compared to the U.S. dollar at the time of receipt as a result of exchange rate fluctuations. From time to time, we enter into forward exchange contracts to reduce currency exposure. However, we cannot be certain that our efforts will be adequate to protect us against significant currency fluctuations or that such efforts will not expose us to additional exchange rate risks, which could materially and adversely affect our results of operations.

Risk related to the referendum of the United Kingdom’s membership in the European Union

In June 2016, a majority of voters in the United Kingdom voted “for” the Referendum of the United Kingdom’s Membership in the European Union, referred to as Brexit, approving the exit of the United Kingdom from the European Union, which triggered volatility in exchange rate fluctuations of the U.S. dollar against foreign currencies in which we conduct our business. We may experience volatility in exchange rates as the United Kingdom negotiates its exit from the European Union. As described in Item 7A, “Quantitative and Qualitative Disclosures About Market Risk”, of this Form 10-K, most of our foreign currency denominated transactions are conducted in Euros, British Pounds and a variety of Asian currencies. Sales in currencies other than the U.S. dollar were approximately 34% and 38%, respectively, of our total sales during fiscal years 2018 and 2017. If a dollar strengthens, our revenue denominated in foreign currencies may be adversely affected when translated into U.S. dollars.

The announcement of Brexit has also created global economic uncertainty, which may cause our customers to closely monitor their costs and reduce their spending on our products and services. The effects of Brexit depend on any agreements the United Kingdom makes to retain access to European Union markets either during a transitional period or more permanently. The measures could potentially disrupt the markets we serve and may cause us to lose customers and employees. In addition, Brexit could lead to legal uncertainty and potentially divergent national laws and regulations as the United Kingdom determines which E.U. laws to replace or replicate. Any of these effects of Brexit, among others, could adversely affect our business, results of operations and financial condition.

Our indebtedness may adversely affect our ability to operate our business, generate cash flows and make payments on such indebtedness

On October 4, 2017, we entered into a \$200.0 million Senior Secured Term Loan Facility, or term loan, with Morgan Stanley Senior Funding, Inc., JPMorgan Chase Bank, N.A. and Wells Fargo Securities, LLC. The term loan matures and becomes fully payable on October 4, 2024. We would be required to redeem the term loan at the principal amount then outstanding upon occurrence of certain events, as described in the term loan agreement. For further information on this transaction, please refer to Note 11, "Debt" to our Consolidated Financial Statements included in Item 8 "Financial Statements and Supplementary Data" of this Form 10-K.

Our ability to pay interest and repay the principal for our indebtedness is dependent upon our ability to manage our business operations and maintain sufficient liquidity to service such debt. The loan borrowings are subject to variable interest rates which create exposure to interest rate risk. Interest rate increases may result in higher cost of servicing the loan and reduce our profitability and cash flows. The terms of our debt covenants could limit our ability to raise additional funds and the manner in which we conduct our business. We have the ability to refinance the term loan and obtain additional indebtedness as long as we maintain a certain level of liquidity and earnings, as specified in the loan agreement. If our liquidity and earnings are reduced below a certain level, we will have limited ability to service the term loan and obtain additional debt financing. Our failure to comply with these restrictive covenants could also result in an event of default which, if not cured or waived, could result in the acceleration of all or a portion of our indebtedness. Accordingly, a default would have a material adverse effect on our business and our lender would have the right to exercise its rights and remedies to collect, which would include the right to foreclose on our assets.

Risks Relating to Our Customers

Because we rely on a limited number of customers for a large portion of our revenue, the loss of one or more of these customers could materially harm our business.

We receive a significant portion of our revenue in each fiscal period from a relatively limited number of customers, and that trend is likely to continue. Sales to our ten largest customers accounted for approximately 34%, 35% and 35%, respectively, of our total revenue in the fiscal years ended September 30, 2018, 2017 and 2016. The loss of one or more of these major customers, a significant decrease in orders from one of these customers, or the inability of one or more customers to make payments to us when they are due could materially affect our revenue, business and reputation. In addition, there has been and may continue to be significant consolidation among some of our largest OEM customers, which could lead to increased pressure to reduce the price of our products and/or decreased market share of our products with the combined companies.

Because of the lengthy sales cycles of many of our products, we may incur significant expenses before we generate any revenue related to those products.

Our customers may need several months to test and evaluate our products. This increases the possibility that a customer may decide to cancel an order or change its plans, which could reduce or eliminate our sales to that customer. The impact of this risk can be magnified during the periods in which we introduce a number of new products, as has been the case in recent years. As a result of this lengthy sales cycle, we may incur significant research and development expenses, and selling, general and administrative expenses before we generate the related revenue for these products, and we may never generate the anticipated revenue if our customer cancels an order or changes its plans.

In addition, many of our products will not be sold directly to the end-user but will be components of other products manufactured by OEMs. As a result, we rely on OEMs to select our products from among alternative offerings to be incorporated into their equipment at the design stage; so-called design-ins. The OEMs' decisions often precede the generation of volume sales, if any, by a year or more. Moreover, if we are unable to achieve these design-ins from an OEM, we would have difficulty selling our products to that OEM because changing suppliers after design-ins involves significant cost, time, effort and risk on the part of that OEM.

Customers generally do not make long term commitments to purchase our products and our customers may cease purchasing our products at any time.

Sales of our products are often made pursuant to individual purchase orders and not under long-term commitments and contracts. Our customers frequently do not provide any assurance of minimum or future sales and are not prohibited from purchasing products from our competitors at any time. Accordingly, we are exposed to competitive pricing pressures on each order. Our customers also engage in the practice of purchasing products from more than one manufacturer to avoid dependence on sole-source suppliers for certain of their needs. The existence of these practices makes it more difficult for us to increase price, gain new customers and win repeat business from existing customers.

We may face claims for liability related to damages of customer materials attributed to the failure of our products or services, exposing us to significant financial or reputational harm.

Our automation products for the semiconductor manufacturing market are used in the handling and movement of silicon wafers at various points in the production process, and our automated cold storage systems for the life sciences sample management market are used in the handling, movement and storage of biological and chemical samples. We also provide sample storage services to customers where we store their biological and chemical samples at our facilities. In any case, damage to our customers' materials may be attributed to a failure of our products or services which could lead to claims for damages made by our customers and could also harm our relationship with our customers and damage our reputation in each of these industries, resulting in material harm to our business.

Risks Relating to Owning Our Securities

Our stock price is volatile.

The market price of our common stock has fluctuated widely. From the beginning of fiscal year 2017 through the end of fiscal year 2018, our stock price fluctuated between a high of \$39.60 per share and a low of \$12.89 per share. Consequently, the current market price of our common stock may not be indicative of future market prices, and we may be unable to sustain or increase the value of an investment in our common stock. Factors affecting our stock price may include:

- variations in operating results from quarter to quarter;
- changes in earnings estimates by analysts or our failure to meet analysts' expectations;
- changes in the market price per share of our public company customers;
- market conditions in the semiconductor and other industries into which we sell products and services;
- global economic conditions;
- political changes, hostilities or natural disasters such as hurricanes and floods;
- low trading volume of our common stock; and
- the number of firms making a market in our common stock.

In addition, the stock market has in the past experienced significant price and volume fluctuations. These fluctuations have particularly affected the market prices of the securities of high technology companies like ours. These market fluctuations could adversely affect the market price of our common stock.

We may not pay dividends on our common stock.

Holders of our common stock are only entitled to receive dividends when and if they are declared by our Board of Directors. Although we have declared cash dividends on our common stock for the past several years, we are not

required to do so and may reduce or eliminate our cash dividends in the future. This could adversely affect the market price of our common stock.

Provisions in our charter documents and, Delaware law may delay or prevent an acquisition of us, which could decrease the value of your shares.

Our restated certificate of incorporation and by-laws and Delaware law contain provisions that could make it harder for a third party to acquire us without the consent of our Board of Directors. These provisions include limitations on actions by our stockholders by written consent, the inability of stockholders to call special meetings and the potential for super majority votes of our stockholders in certain circumstances. In addition, our Board of Directors has the right to issue preferred stock without stockholder approval, which could be used to dilute the stock ownership of a potential hostile acquirer.

Our restated certificate of incorporation makes us subject to the anti-takeover provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits publicly held Delaware corporations to which it applies from engaging in a “business combination” with an “interested stockholder” for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. This provision could discourage others from bidding for our shares of common stock and could, as a result, reduce the likelihood of an increase in the price of our common stock that would otherwise occur if a bidder sought to buy our common stock.

Delaware law also imposes restrictions on mergers and other business combinations between us and any holder of 15% or more of our outstanding common stock. Although we believe these provisions provide for an opportunity to receive a higher bid by requiring potential acquirers to negotiate with our Board of Directors, these provisions apply even if the offer may be considered beneficial by stockholders. If a change of control or change in management is delayed or prevented, the market price of our common stock could decline.

Our certificate of incorporation authorizes the issuance of shares of blank check preferred stock.

Our certificate of incorporation provides that our Board of Directors is authorized to issue from time to time, without further stockholder approval, up to 1,000,000 shares of preferred stock in one or more series and to fix and designate the rights, preferences, privileges and restrictions of the preferred stock, including dividend rights, conversion rights, voting rights, redemption rights and terms of redemption and liquidation preferences. Such shares of preferred stock could have preferences over our common stock with respect to dividends and liquidation rights. Our issuance of preferred stock may have the effect of delaying or preventing a change in control. Our issuance of preferred stock could decrease the amount of earnings and assets available for distribution to the holders of common stock or could adversely affect the rights and powers, including voting rights, of the holders of common stock. The issuance of preferred stock could have the effect of decreasing the market price of our common stock.

Item 1B. *Unresolved Staff Comments*

None.

Item 2. *Properties*

Our corporate headquarters and primary manufacturing/research and development facilities are currently located in three buildings in Chelmsford, Massachusetts.

We maintained the following principal facilities as of September 30, 2018:

| <u>Location</u> | <u>Functions</u> | <u>Square Footage (Approx.)</u> | <u>Ownership Status/Lease Expiration</u> |
|----------------------------|--|---------------------------------|--|
| Chelmsford, Massachusetts | Corporate headquarters, training, manufacturing, R&D and sales & support | 298,000 | Owned |
| Indianapolis, Indiana | Sample storage, sales & support | 98,000 | September 2023 |
| Yongin-City, South Korea | Manufacturing, R&D and sales & support | 48,600 | September 2019 |
| Fremont, California | Manufacturing, R&D and sales & support | 44,940 | August 2025 |
| Manchester, United Kingdom | Manufacturing, R&D and sales & support | 44,670 | December 2019 |
| Chu Bei City, Taiwan | Sales & support | 28,600 | June 2020 |

Our Brooks Semiconductor Solutions Group segment utilizes the facilities in Chelmsford, Massachusetts; Fremont, California; South Korea, Germany and Taiwan. Our Brooks Life Sciences segment utilizes the facilities in Manchester, United Kingdom; Indianapolis, Indiana; Chelmsford, Massachusetts; Bronx, New York; and Fremont, California.

We maintain additional sales, support and training offices in Texas, Europe (France and Germany), Asia (China, Japan and Singapore) and the Middle East (Israel). We also maintain sample storage facilities in China, Germany and Singapore.

Item 3. *Legal Proceedings*

We are subject to various legal proceedings, both asserted and unasserted, that arise in the ordinary course of business. We cannot predict the ultimate outcome of such legal proceedings or in certain instances provide reasonable ranges of potential losses. However, as of the date of this report, we believe that none of these claims will have a material adverse effect on our consolidated financial condition or results of operations. In the event of unexpected subsequent developments and given the inherent unpredictability of these legal proceedings, there can be no assurance that our assessment of any claim will reflect the ultimate outcome and an adverse outcome in certain matters could, from time-to-time, have a material adverse effect on our consolidated financial condition or results of operations in particular quarterly or annual periods.

Item 4. *Mine Safety Disclosures*

Not applicable.

PART II**Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities**

Our common stock is traded on the Nasdaq Stock Market LLC under the symbol "BRKS." The following table sets forth the high and low intraday sales prices per share of our common stock as reported by the Nasdaq Stock Market LLC and the cash dividends declared per common share for the periods indicated:

| | <u>Market Price</u> | | <u>Dividends Declared</u> |
|---------------------------------------|---------------------|------------|---------------------------|
| | <u>High</u> | <u>Low</u> | |
| Fiscal Year Ended September 30, 2018: | | | |
| First quarter | \$ 34.39 | \$ 22.54 | \$ 0.10 |
| Second quarter | 30.15 | 23.30 | 0.10 |
| Third quarter | 36.36 | 24.88 | 0.10 |
| Fourth quarter | 39.60 | 28.71 | 0.10 |
| Fiscal Year Ended September 30, 2017: | | | |
| First quarter | \$ 17.80 | \$ 12.89 | \$ 0.10 |
| Second quarter | 22.40 | 16.68 | 0.10 |
| Third quarter | 29.60 | 21.14 | 0.10 |
| Fourth quarter | 30.36 | 21.78 | 0.10 |

Number of Holders

As of November 9, 2018, there were 535 holders of record of our common stock.

Dividend Policy

Dividends are declared at the discretion of our Board of Directors and depend on actual cash flow from operations, our financial condition, capital requirements and any other factors our Board of Directors may consider relevant. Future dividend declarations, as well as the record and payment dates for such dividends, will be determined by our Board of Directors on a quarterly basis.

On November 6, 2018, our Board of Directors approved a cash dividend of \$0.10 per share payable on December 20, 2018 to common stockholders of record on December 7, 2018.

Comparative Stock Performance

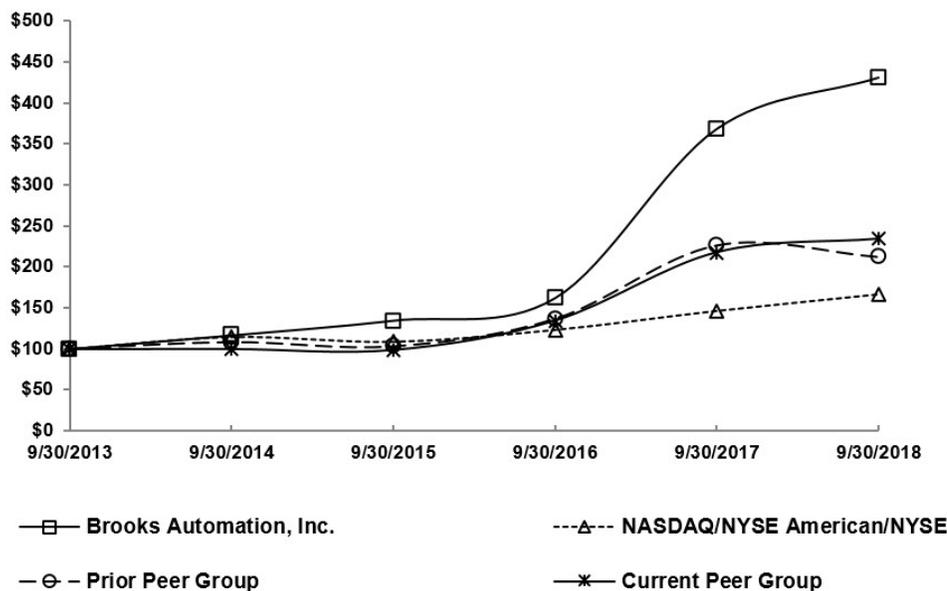
The following graph compares the cumulative total shareholder return (assuming reinvestment of dividends) from investing \$100 on September 30, 2013, and plotted at the last trading day of each of the fiscal years ended September 30, 2014, 2015, 2016, 2017 and 2018, in each of (i) our Common Stock; (ii) the Nasdaq/NYSE MKT/NYSE Index of companies; (iii) a peer group for the fiscal year ended September 30, 2018 ("Current Peer Group"), and (iv) a peer group for the fiscal year ended September 30, 2016 ("Prior Peer Group").

The Current Peer Group for the year ended September 30, 2018 is comprised of Advanced Energy Industries, Inc., Axcelis Technologies Inc., Bio Rad Laboratories Inc., Bruker Corp., Cabot Microelectronics Corp., Coherent Inc., Entegris, Inc., Formfactor Inc., Haemonetics Corp., MKS Instruments, Inc., MTS Instruments, Inc., Novanta Inc., Rudolph Technologies Inc., Ultra Clean Holdings, Inc., Varex Imaging Corp. and Veeco Instruments Inc. The Prior Peer Group is comprised of Advanced Energy Industries, Inc., Bruker Corp., Entegris, Inc., Formfactor Inc., MKS Instruments, Inc., Photonics, Inc., Teradyne Inc., Ultra Clean Holdings, Inc., Veeco Instruments Inc. and Xcerra Corp. The Current Peer Group was expanded to include life sciences companies due to the growing percentage of our revenue from the Brooks Life Sciences segment.

The stock price performance on the graph below is not necessarily indicative of future price performance.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN*

Among Brooks Automation, Inc., the NASDAQ/NYSE American/NYSE Index, Prior Peer Group and Current Peer Group



*\$100 invested on 9/30/13 in stock or index, including reinvestment of dividends. Fiscal year ending September 30.

| | 9/30/2013 | 9/30/2014 | 9/30/2015 | 9/30/2016 | 9/30/2017 | 9/30/2018 |
|---------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Brooks Automation, Inc. | \$100.00 | \$116.63 | \$134.58 | \$162.05 | \$368.09 | \$430.52 |
| Nasdaq/NYSE American/NYSE | 100.00 | 114.58 | 108.82 | 123.26 | 146.27 | 166.32 |
| Prior Peer Group | 100.00 | 108.15 | 102.93 | 136.64 | 226.47 | 212.25 |
| Current Peer Group | 100.00 | 100.20 | 99.03 | 134.83 | 217.75 | 234.16 |

The information included under the heading “Comparative Stock Performance” in Item 5 of “this report” shall not be deemed to be “soliciting material” or subject to Regulation 14A, shall not be deemed “filed” for purposes of Section 18 of the Exchange Act, or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act.

Issuer’s Purchases of Equity Securities

On September 29, 2015, our Board of Directors approved a share repurchase program for up to \$50.0 million worth of our common stock. The timing and amount of any shares to be repurchased under this program will be based on market and business conditions, legal requirements and other factors and may be commenced or suspended at any time at our discretion. There were no shares repurchased under this program during fiscal year ended September 30, 2018.

Item 6. Selected Financial Data

The selected consolidated financial data ⁽¹⁾⁽⁵⁾ set forth below should be read in conjunction with our Consolidated Financial Statements and notes thereto and “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” appearing elsewhere in this report.

| | Year Ended September 30, | | | | |
|--|---------------------------------------|-----------|-------------|-------------|----------------|
| | 2018 (2) | 2017 | 2016 (2) | 2015 (4) | 2014 (4)(6) |
| | (In thousands, except per share data) | | | | |
| Revenue | \$631,560 | \$527,499 | \$434,012 | \$406,874 | \$344,934 |
| Gross profit | 246,081 | 198,887 | 156,689 | 132,766 | 114,106 |
| Operating income (loss) | 31,409 | 14,319 | (17,054) | (22,564) | (37,800) |
| Income (loss) from continuing operations | 67,717 | 10,687 | (85,457) | (12,523) | (23,171) |
| Income from discontinued operations, net of tax | 48,747 | 51,925 | 15,981 | 26,744 | 54,693 |
| Net income (loss) attributable to Brooks Automation, Inc. | 116,575 | 62,612 | (69,476) | 14,221 | 31,361 |
| Basic net income (loss) per share attributable to Brooks Automation, Inc. common stockholders: | | | | | |
| Income (loss) from continuing operations | 0.96 | 0.15 | (1.25) | (0.19) | (0.35) |
| Income from discontinued operations, net of tax | 0.69 | 0.75 | 0.23 | 0.40 | 0.82 |
| Basic net income (loss) per share attributable to Brooks Automation, Inc. | \$ 1.65 | \$ 0.90 | \$ (1.01) | \$ 0.21 | \$ 0.47 |
| Diluted net income (loss) per share attributable to Brooks Automation, Inc. common stockholders: | | | | | |
| Income (loss) from continuing operations | \$ 0.96 | \$ 0.15 | \$ (1.25) | \$ (0.18) | \$ (0.34) |
| Income from discontinued operations, net of tax | 0.69 | 0.74 | 0.23 | 0.39 | 0.81 |
| Diluted net income (loss) per share attributable to Brooks Automation, Inc. | \$ 1.65 | \$ 0.89 | \$ (1.01) | \$ 0.21 | \$ 0.46 |
| Dividend declared per share | \$ 0.40 | \$ 0.40 | \$ 0.40 | \$ 0.40 | \$ 0.34 |

| | As of September 30, | | | | |
|---|---------------------|-----------|-----------|-----------|-----------|
| | 2018 | 2017 | 2016 | 2015 | 2014 |
| | (In thousands) | | | | |
| Cash and cash equivalents and marketable securities | \$ 251,227 | \$104,292 | \$ 91,221 | \$214,030 | \$245,456 |
| Working capital ⁽³⁾ | 98,650 | 50,738 | 54,651 | 45,319 | 40,870 |
| Total assets | 1,095,257 | 766,628 | 685,905 | 758,702 | 777,227 |
| Total capital lease obligation | — | — | — | — | 8,298 |
| Total equity | 717,832 | 607,644 | 553,690 | 632,045 | 642,889 |

| | Year Ended September 30, 2018 | | | |
|--|---------------------------------------|--------------------|---------------|----------------|
| | First Quarter | Second Quarter (2) | Third Quarter | Fourth Quarter |
| | (In thousands, except per share data) | | | |
| Revenue | \$ 142,599 | \$ 156,952 | \$ 172,363 | \$ 159,646 |
| Gross profit | 54,259 | 62,386 | 66,816 | 62,620 |
| Operating income | 4,925 | 10,321 | 12,547 | 3,616 |
| Net income attributable to Brooks Automation, Inc. | 16,486 | 67,020 | 22,717 | 10,352 |
| Basic net income per share | 0.23 | 0.95 | 0.32 | 0.15 |
| Diluted net income per share | 0.23 | 0.95 | 0.32 | 0.15 |

| | Year Ended September 30, 2017 | | | |
|--|---------------------------------------|----------------|---------------|----------------|
| | First Quarter | Second Quarter | Third Quarter | Fourth Quarter |
| | (In thousands, except per share data) | | | |
| Revenue | \$ 126,138 | \$ 130,401 | \$ 136,387 | \$ 134,573 |
| Gross profit | 44,250 | 48,077 | 52,593 | 53,967 |
| Operating income | 5,024 | 3,031 | 4,341 | 1,923 |
| Net income attributable to Brooks Automation, Inc. | 13,871 | 14,005 | 17,350 | 17,386 |
| Basic net income per share | 0.20 | 0.20 | 0.25 | 0.25 |
| Diluted net income per share | 0.20 | 0.20 | 0.25 | 0.25 |

- (1) We make acquisitions frequently and includes the operation results from these acquisitions in the results of operations from the dates of the acquisitions. Please refer to Note 4, "Acquisitions" to our Consolidated Financial Statements for additional information.
- (2) Operating income (loss) and net income (loss) includes a charge of \$76.5 million during fiscal year 2016 related to an additional valuation allowance against our U.S. net deferred tax assets and a benefit of \$77.2 million during fiscal year 2018 due to the partial reversal of the valuation allowance against U.S. net deferred tax assets. Please refer to Note 12, "Income Taxes" to our Consolidated Financial Statements for additional information.
- (3) The calculation of working capital excludes "Cash and cash equivalents" and "Marketable securities".
- (4) Working capital amounts were adjusted to reflect the reclassification of current deferred tax assets and liabilities to non-current in accordance with Accounting Standard Update 2015-17, Income Taxes (Topic 740): Balance Sheet Classification of Deferred Taxes, issued by the Financial Accounting Standards Board. We reclassified \$16.4 million and \$18.2 million, respectively, of net deferred tax assets from current to non-current at September 30, 2015 and September 30, 2014.
- (5) On August 27, 2018, we entered into an agreement to sell the Cryogenics business. We determined that the Cryogenics business met the criteria of being reported as a discontinued operation as of September 30, 2018. As a result, the selected financial data presented for current period and prior periods have been revised to reflect the discontinued operation classification. Please refer to Note 3, "Discontinued Operations" to our consolidated financial statements for additional information.
- (6) In March 2014, we entered into an agreement to sell the Granville-Phillips Gas Analysis & Vacuum Measurement, or Granville-Phillips. In the second quarter of fiscal year 2014, we determined that the Granville-Phillips business met the criteria of being reported as a discontinued operation. As a result, the selected financial data presented for periods prior to the second quarter of fiscal year 2014 has been revised to present the operating results of the Granville-Phillips business as a discontinued operation.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The Management's Discussion and Analysis of Financial Condition and Results of Operations, or MD&A, describes principal factors affecting the results of our operations, financial condition and liquidity, as well as our critical accounting policies and estimates that require significant judgment and thus have the most significant potential impact on our Consolidated Financial Statements. Our MD&A is organized as follows:

- *Overview.* This section provides a general description of our business and operating segments, recent developments, as well as a brief discussion and overall analysis of our business and financial performance, including key developments affecting us during fiscal years ended September 30, 2018, 2017 and 2016.
- *Critical Accounting Policies and Estimates.* This section discusses accounting policies and estimates that require us to exercise subjective or complex judgments in their application. We believe these accounting policies and estimates are important to understanding the assumptions and judgments incorporated in our reported financial results.

- *Results of Operations.* This section provides an analysis of our financial results for the fiscal year ended September 30, 2018 compared to the fiscal year ended September 30, 2017 and for the fiscal year ended September 30, 2017 compared to the fiscal year ended September 30, 2016.
- *Liquidity and Capital Resources.* This section provides an analysis of our liquidity and changes in cash flows, as well as a discussion of available borrowings and contractual commitments.

You should read the MD&A in conjunction with our Consolidated Financial Statements and related notes in this Form 10-K. In addition to historical information, the MD&A contains forward-looking statements that involve risks and uncertainties. You should read "Information Related to Forward-Looking Statements" included above in this Form 10-K and "Item 1A. Risk Factors" for a discussion of important factors that could cause our actual results to differ materially from our expectations.

OVERVIEW

General

We are a leading global provider of automation and cryogenic solutions for multiple markets. We primarily serve two distinct and unrelated markets: the semiconductor capital equipment market and the life sciences sample management market. We believe our leadership positions and our global support capability in each of these markets makes us a valued business partner to the largest semiconductor capital equipment and device makers, and pharmaceutical and life science research institutions in the world. Our offerings are also applied to other adjacent technology and industrial markets, and we provide customer support services globally.

In the semiconductor capital equipment market, equipment productivity and availability are critical factors for our customers, who typically operate equipment under demanding temperature and/or pressure environments. We are a leader in wafer automation and contamination controls solutions and services that are designed to improve throughput, yield, and cost of ownership of tools in semiconductor fabs. Our product offerings include vacuum and atmospheric robots, turnkey vacuum and atmospheric wafer handling systems, as well as wafer carrier cleaning and reticle storage systems. We also capture the complete life cycle of value through our global service network of expert application and field engineers who are located close to our customers. Our services include rapid refurbishment of robots to stringent specifications, upgrades to improve equipment productivity, and proactive monitoring and diagnostics for predictive risk management and improved up-time of the installed base. Although the demand for semiconductors and semiconductor manufacturing equipment is cyclical resulting in periodic expansions and contractions, we expect the semiconductor equipment market to remain one of our principal markets as we continue making investments to maintain and grow our semiconductor product and service offerings. A majority of our research and development spending advances our current product lines and drives innovations for new product offerings. We invest in research and development initiatives within the Brooks Semiconductor Solutions Group segment to maintain continued leadership position in the markets we serve. We have recently launched our newest Vacuum Automation platform, MagnaTran LEAP™, for the rapidly emerging advanced technologies related to manufacturing 10 nanometer design rule semiconductor chips. MagnaTran LEAP is well positioned to deliver clean, accurate and fast wafer transport available for the fast-growing Deposition and Etch markets. In addition, we expect to continue to support and expand our technology and product offerings for the semiconductor market through acquisitions. In 2018, we acquired Tec-Sem Group AG, or Tec-Sem, a Switzerland-based provider of semiconductor fabrication automation equipment with a focus on reticle management. The acquisition is expected to enhance our contamination controls solutions offerings.

In the life sciences sample management market, we utilize our core competencies and capabilities in automation and cryogenics to provide comprehensive bio-sample management solutions to a broad range of end markets within the life sciences industry. Our offerings include automated ultra-cold storage freezers, consumable sample storage containers, instruments which assist in the workflow of sample management, and both on-site and off-site full sample management services. We expect the life sciences sample management market to remain one of our principal markets for our product and service offerings and provide favorable opportunities for the growth of our overall business. Over the past several years, we have acquired and developed essential capabilities required to strategically address the sample management needs across multiple end markets within the life sciences industry.

In November of 2015, we acquired BioStorage Technologies, a full-service outsourcing sample management business, for a total purchase price of \$125.2 million, net of cash acquired. The acquisition provided us with the capability to support customers with an integrated, comprehensive set of sample management products, services and solutions. In July 2017, we acquired substantially all of the assets and liabilities of Pacific Bio-Material Management, Inc., or PBMMI, and Novare, LLC, or Novare, for a total purchase price of \$34.1 million, net of cash acquired. PBMMI and Novare provide storage, transportation, management, and cold chain logistics of biological materials. The acquisition is expected to expand our existing capabilities with respect to sample management and integrated cold chain storage and transportation solutions. We acquired Cool Lab, LLC, a subsidiary of BioCision, LLC, which provides a range of cryogenic product solutions that assist in managing the temperature stability of therapeutics, biological samples and related biomaterials in ultra-cold environments, in November 2016. We held an equity interest in BioCision prior to the acquisition of Cool Lab and collaborated in the development of advanced solutions in temperature-controlled environments. The aggregate purchase price of \$15.2 million consisted of a cash payment of \$4.8 million, a liability to the seller of \$0.1 million and a non-cash consideration of \$10.3 million measured at fair value on the acquisition date. We have made several investments in developing new consumable and instrument offerings since the acquisitions of FluidX and Cool Lab.

In fiscal year 2017, we launched BioStudies, a bioinformatics sample intelligence software platform that enables customers to manage their global samples. In August 2017, we acquired certain assets and liabilities related to FreezerPro® web-based software platform from RURO, Inc. for a total purchase price of \$5.5 million. RURO, Inc. provides sample management software across multiple end markets, including academic research, government, pharmaceutical, biotech, and healthcare. We expect the acquisition of FreezerPro to complement our BioStudies offerings and extend our informatics solutions to address laboratories, biobanks or enterprises that manage biological samples. In October 2017, we acquired all of the outstanding capital stock of 4titude Limited, or 4titude, a U.K.-based manufacturer of scientific consumables for biological sample materials used in a variety of genomic and DNA analytical applications, for a total purchase price of \$65.1 million, net of cash acquired. The acquisition has expanded our existing offerings of consumables and instruments within the Brooks Life Sciences segment. In April 2018, we acquired BioSpeciMan Corporation, or BioSpeciMan, a Canadian provider of storage services for biological sample materials. We made a total cash payment of \$5.2 million, net of cash acquired and subject to working capital adjustments. The acquisition is expected to expand customer relationships and geographic reach within our growing sample management storage services business.

On September 26, 2018, we entered into a definitive agreement to acquire GENEWIZ, a leading provider of genomic services, based in New Jersey with operations throughout the United States, Asia, and Europe for a cash price of \$450.0 million, subject to customary adjustments. We completed this acquisition on November 15, 2018. Please refer to Note 23, “Subsequent Events” to our Consolidated Financial Statements included under “Item 8, Financial Statements and Supplementary Data” of this Form 10-K.

Since entering the life sciences industry, we have also strengthened and broadened our product portfolio and market reach by investing in internal product development. During fiscal years 2018, 2017 and 2016, more than 24% of our cumulative research and development spending was focused on innovating and advancing solutions in the life sciences sample management market. We expect to continue investing in research and development and making strategic acquisitions with the objective of expanding our offerings in the life sciences sample management market. Within the Brooks Life Sciences segment, we have developed and continue to develop automated biological sample storage solutions for operating in ultra-low temperature environments. We have developed the Twin-bank platform which provides -20°C and -80°C ultracold storage and the BioStore™ III Cryo for -190°C cryogenic storage.

Recent Developments

In the fourth quarter of fiscal year 2018, we entered into a definitive agreement to sell our semiconductor cryogenics business to Edwards Vacuum LLC (a member of the Atlas Copco Group) for approximately \$675.0 million in cash, subject to customary adjustments. We originally acquired the cryogenics business in 2005 as part of the acquisition of Helix Technology Corporation. The closing of our sale of the cryogenics business is subject to various closing conditions and regulatory approvals. The semiconductor cryogenics business has been classified as discontinued operations and, unless otherwise noted, the description of our business in this report relates solely to our continuing operations and does not include the operations of our semiconductor cryogenics business.

As discussed above, on November 15, 2018, we completed our acquisition of GENEWIZ for a cash purchase price of \$450.0 million, which is subject to customary adjustments. We financed a portion of the cash purchase price through a new \$350.0 million senior secured incremental term loan, under our Credit Agreement, dated October 4, 2017. Please refer to the "Liquidity and Capital Resources" section below for a detailed description of the senior secured incremental term loan.

Segments

We have two operating and reportable segments consisting of Brooks Semiconductor Solutions Group and Brooks Life Sciences. For additional information on our operating segments and the related restructuring actions, as well as segment revenues and their operating results, please refer to Note 17, "Restructuring and Other Charges" and Note 20, "Segment and Geographic Information" to our Consolidated Financial Statements included in Item 8 "Financial Statements and Supplementary Data" of this Form 10-K.

The Brooks Semiconductor Solutions Group segment provides a variety of products, services and solutions that enable improved throughput and yield in controlled operating environments, as well as an extensive range of support services. The solutions include atmospheric and vacuum robots, robotic modules, tool automation systems, and contamination control of wafer carrier front opening unified pods. The support services include repair services, diagnostic support services, and installation services in support of the products, which enable our customers to maximize process tool uptime and productivity. This segment also provides end-user customers with spare parts and productivity enhancement upgrades to maximize tool productivity.

The Brooks Life Sciences segment provides comprehensive life cycle sample management solutions for life science and bioscience customers to advance scientific research and support drug development. The segment's product offerings include automated cold sample management systems for compound and biological sample storage, equipment for sample preparation and handling, consumables, and informatics that help customers manage samples throughout their research discovery and development work flows. The segment's service offerings include sample storage and support services provided to a wide range of life science customers, including pharmaceutical companies, biotechnology companies, biobanks and research institutes.

Business and Financial Performance

Fiscal Year Ended September 30, 2018 Compared to Fiscal Year Ended September 30, 2017

Results of Operations - We reported revenue of \$631.6 million for fiscal year 2018 compared to \$527.5 million for fiscal year 2017, an increase of \$104.1 million, or 20%. Gross margin was 39.0% for fiscal year 2018 compared to 37.7% for fiscal year 2017, an increase in gross profit of \$47.2 million. Operating expenses were \$214.7 million for fiscal year 2018 compared to \$184.6 million for fiscal year 2017, an increase of \$30.1 million. Operating income was \$31.4 million for fiscal year 2018 compared to \$14.3 million for fiscal year 2017, an increase of \$17.1 million, which was primarily attributable to the revenue growth and gross margin improvement, partially offset by higher operating expenses. We generated income from continuing operations of \$67.7 million during fiscal year 2018 as compared to \$10.7 million in fiscal year 2017. This increase was primarily attributable to the decrease in income taxes of \$50.6 million driven by the release of the tax valuation allowance of \$77.2 million and an increase in operating income of \$17.1 million. These increases were partially offset by higher net non-operating expenses of \$11.2 million compared to the prior fiscal year, primarily related to increased interest expense of \$9.1 million due to the term loan, higher foreign exchanges losses of \$1.0 million and the impact of a \$1.8 million gain recorded on the settlement of our investment in Biocision, LLC, during fiscal year 2017. Please refer to the "Results of Operations" section below for a detailed discussion of our financial results for the fiscal year 2018 compared to fiscal year 2017.

Cash Flows and Liquidity - Cash and cash equivalents and marketable securities were \$251.2 million at September 30, 2018 as compared to \$104.3 million at September 30, 2017. The increase in cash and cash equivalents and marketable securities of \$146.9 million was primarily attributable to cash inflows of \$197.6 million related to proceeds from the term loan and cash inflows of \$74.0 million generated from our operating activities, partially offset by cash payments of \$85.8 million related to acquisitions, cash outflows of \$28.3 million related to dividend payments made to

our shareholders, as well as capital expenditure payments of \$12.8 million. Please refer to the "Liquidity and Capital Resources" section below for a detailed discussion of our liquidity and changes in cash flows for fiscal year 2018 compared to fiscal year 2017.

Fiscal Year Ended September 30, 2017 Compared to Fiscal Year Ended September 30, 2016

Results of Operations- We generated revenue of \$527.5 million during fiscal year 2017 compared to \$434.0 million during fiscal year 2016, an increase of \$93.5 million, or 22%. Gross margin was 37.7% for fiscal year 2017 as compared to 36.1% for fiscal year 2016, an increase in gross profit of \$42.2 million. Operating expenses were \$184.6 million during fiscal year 2017 as compared to \$173.7 million during fiscal year 2016, an increase of \$10.8 million. Operating income was \$14.3 million during fiscal year 2017 as compared to a loss of \$17.1 million during fiscal year 2016, an increase of \$31.4 million, which was primarily attributable to the revenue growth and gross margin improvement, partially offset by higher operating expenses. We generated income from continuing operations of \$10.7 million during fiscal year 2017 as compared to a loss of \$85.4 million during fiscal year 2016. This increase of \$96.1 million was primarily attributable to a lower income tax provision of \$62.9 million which is mostly due to a \$76.5 million valuation allowance recorded against U.S. net deferred tax assets during fiscal year 2016, as well as higher operating income of \$31.4 million during fiscal year 2017. Please refer to the "Results of Operations" section below for a detailed discussion of our financial results for the fiscal year 2017 compared to fiscal year 2016.

Cash Flows and Liquidity - Cash and cash equivalents and marketable securities were \$104.3 million at September 30, 2017 as compared to \$91.2 million at September 30, 2016. The increase in cash and cash equivalents and marketable securities of \$13.1 million was primarily attributable to cash inflows of \$96.2 million generated from our operating activities, partially offset by cash outflows related to acquisitions of \$44.8 million, dividends payments to our shareholders of \$27.9 million, and capital expenditure payments of \$12.7 million during fiscal year 2017. Please refer to the "Liquidity and Capital Resources" section below for a detailed discussion of our liquidity and changes in cash flows for fiscal year 2017 compared to fiscal year 2016.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of the Consolidated Financial Statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. On an ongoing basis, we evaluate our estimates, including those related to revenue, intangible assets, goodwill, inventories, income taxes, and stock-based compensation. We base our estimates on historical experience and various other assumptions that are believed to be reasonable under the circumstances. We evaluate current and anticipated worldwide economic conditions, both in general and specifically in relation to the semiconductor and life science industries, that serve as a basis for making judgments about the carrying values of assets and liabilities that are not readily determinable based on information from other sources. Actual results may differ from these estimates under different assumptions or conditions that could have a material impact on our financial condition and results of operations.

We believe that the assumptions and estimates associated with the following critical accounting policies involve significant judgment and thus have the most significant potential impact on our Consolidated Financial Statements.

Revenue Recognition

We generate revenue from the sale of products and services. A description of our revenue recognition policies is included in the Note 2, "Summary of Significant Accounting Policies" in the Notes to the Consolidated Financial Statements included in Item 8 "Financial Statements and Supplementary Data" of this Form 10-K.

Although most of our sales agreements contain standard terms and conditions, certain agreements contain multiple elements or non-standard terms and conditions. We exercise judgment in interpreting the commercial terms and determining when all revenue recognition criteria have been met to ensure revenue was recognized in the appropriate accounting period. Moreover, judgment is required to properly identify the units of accounting in multiple element arrangements and determine the manner in which revenue should be allocated among separate units of accounting. We exercise judgment in determining whether the deliverables specified in these arrangements should be treated as separate

units of accounting for revenue recognition purposes, and, if so, how the consideration should be allocated among the elements and when revenue for each element should be recognized. We allocate revenue to each element in the contractual arrangement based on the selling price hierarchy that may require us to estimate the selling price of certain deliverables that are not sold separately or where third-party evidence of pricing is not observable. Our estimate of selling price impacts the amount and timing of revenue recognized in multiple element arrangements. While changes in the allocation of the estimated sales price between the units of accounting will not affect the total revenue amount recognized for a particular sales arrangement, any material changes in these allocations could impact the timing of revenue recognition that could have a material effect on our financial condition and results of operations.

We recognize revenue for certain arrangements based on the percentage of completion method and develop profit estimates for long-term contracts based on total revenue expected to be generated from the project and total costs anticipated to be incurred. Significant judgment is required in estimating such total costs and measuring the progress of the project completion, as well as whether a loss is expected to be incurred on the contract. We use certain assumptions and develop estimates based on a number of factors, including the degree of required product customization and the customer's existing environment based on installation work, as well as our historical experience, project plans and an assessment of the risks and uncertainties inherent in the contract related to implementation delays or performance issues that may or may not be within our control. We estimate a loss on a contract by comparing total estimated contract revenue to the total estimated contract costs and recognize a loss during the period in which it becomes probable and can be reasonably estimated. We review profit estimates for long-term contracts during each reporting period and revise them based on changes in circumstances.

If our judgment regarding revenue recognition proves incorrect, our revenue in particular periods may be adversely affected and could have a material impact on our financial condition and results of operations.

Business Combinations

We account for business acquisitions using the purchase method of accounting, in accordance with which assets acquired and liabilities assumed are recorded at their respective fair values at the acquisition date. The fair value of the consideration paid, including contingent consideration, is assigned to the assets acquired and liabilities assumed based on their respective fair values. Goodwill represents the excess of the purchase price over the estimated fair values of the assets acquired and liabilities assumed.

Significant judgment is used in determining fair values of assets acquired and liabilities assumed, as well as intangibles and their estimated useful lives. Fair value and useful life determinations are based on, among other factors, estimates of future expected cash flows, royalty cost savings and appropriate discount rates used in computing present values. These judgments may materially impact the estimates used in allocating acquisition date fair values to assets acquired and liabilities assumed, as well as our current and future operating results. Actual results may vary from these estimates that may result in adjustments to goodwill and acquisition date fair values of assets and liabilities during a measurement period or upon a final determination of asset and liability fair values, whichever occurs first. Adjustments to fair values of assets and liabilities made after the end of the measurement period are recorded within our operating results.

Changes in the fair value of a contingent consideration resulting from a change in the underlying inputs are recognized in results of operations until the arrangement is settled.

Intangible Assets, Goodwill and Other Long-Lived Assets

We have identified intangible assets and generated significant goodwill as a result of our acquisitions. Intangible assets other than goodwill are valued based on estimated future cash flows and amortized over their estimated useful lives. Goodwill is tested for impairment annually or more often if impairment indicators are present, at the reporting unit level. Intangible assets other than goodwill and long-lived assets are subject to impairment testing if events and circumstances indicate that the carrying amount of an asset or a group of assets may not be recoverable.

The goodwill impairment test is performed at the reporting unit level. A reporting unit is either an operating segment or one level below it, which is referred to as a "component." The level at which the impairment test is

performed requires an assessment of whether the operations below an operating segment constitute a self-sustaining business, in which case testing is generally performed at this level.

We have two operating and reportable segments consisting of Brooks Semiconductor Solutions Group and Brooks Life Sciences. We have five reporting units, including four reporting units within the Brooks Semiconductor Solutions Group operating segment and one reporting unit which is the Brooks Life Sciences operating segment.

We perform our annual goodwill impairment assessment on April 1st of each fiscal year. In accordance with ASC 350, *Intangibles- Goodwill and Other*, we initially assess qualitative factors to determine whether the existence of events or circumstances indicates that it is more likely than not that the fair value of a reporting unit is less than its carrying value. If we determine, based on this assessment, that it is more likely than not that the fair value of the reporting unit is less than its carrying value, we perform a quantitative goodwill impairment test by comparing the reporting unit's fair value with its carrying value. An impairment loss is recognized for the amount by which the reporting unit's carrying value exceeds its fair value, up to the total amount of goodwill allocated to the reporting unit. No impairment loss is recognized if the fair value of the reporting unit exceeds its carrying value.

We determine fair values of our reporting units based on an income approach in accordance with the discounted cash flow method, or DCF Method. The DCF Method is based on projected future cash flows and terminal value estimates discounted to their present values. Terminal value represents a present value an investor would pay on the valuation date for the rights to the cash flows of the business for the years subsequent to the discrete cash flow projection period. We consider the DCF Method to be the most appropriate valuation technique since it is based on management's long-term financial projections. Due to the cyclical nature of the semiconductor equipment market, management's projections as of the valuation date are considered more objective since market metrics of peer companies fluctuate during the cycle. In addition, we also compare aggregate values of our net corporate assets and reporting unit fair values to our overall market capitalization and use certain market-based valuation techniques to test the reasonableness of the reporting unit fair values determined in accordance with the DCF Method. The observable inputs used in the DCF Method include discount rates that are at or above our weighted-average cost of capital. We derive discount rates that are commensurate with the risks and uncertainties inherent in the respective businesses and our internally developed projections of future cash flows.

We completed the annual goodwill impairment test for our five reporting units as of April 1, 2018 and determined that no adjustment to goodwill was necessary since the fair value of each reporting unit was significantly in excess of the carrying value of each reporting unit. We conducted a qualitative assessment for three reporting units within the Brooks Semiconductor Solutions Group segment and determined that it was not likely that their fair values were less than their carrying values. As a result of the analysis, we did not perform the quantitative assessment for these reporting units and did not recognize impairment losses. We also performed the quantitative goodwill impairment test for the fourth reporting unit within the Brooks Semiconductor Solutions Group segment and for the Brooks Life Sciences reporting unit. We determined that no adjustment to goodwill was necessary for these two reporting units since their fair values significantly exceeded their respective carrying values. We evaluate a reporting unit's goodwill for impairment between annual tests if events occur or circumstances change that would more likely than not reduce the fair value of such reporting unit below its carrying value.

Application of the goodwill impairment test requires judgment based on market and operational conditions at the time of the evaluation, including management's best estimates of the reporting unit's future business activity and the related estimates and assumptions of future cash flows from the assets that include the associated goodwill. Different assumptions of forecasted sales volumes, product costs, future cash flows, risk-adjusted weighted average cost of capital discount rate, as well as long-term growth rate projections used in the DCF model could result in different estimates of the reporting unit's fair value as of each testing date.

We are required to test long-lived assets, other than goodwill, for impairment when impairment indicators are present. For purposes of this test, long-lived assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. If we determine that indicators of potential impairment are present, we assess the recoverability of the long-lived asset group by comparing its undiscounted future cash flows to its carrying value. If the carrying value of the long-lived asset group exceeds its future cash flows, we determine fair values of the individual net assets within the long-lived asset group to

assess potential impairment. If the aggregate fair values of the individual net assets of the group are less than their carrying values, an impairment loss is recognized for an amount in excess of the group's aggregate carrying value over its fair value. The loss is allocated to the assets within the group based on their relative carrying values, with no asset reduced below its fair value. We did not test our long-lived assets for impairment during fiscal years 2018, and 2017 since no events indicating impairment occurred during the periods then ended.

Inventory

We state our inventory at the lower of cost or market amount and make adjustments to reduce the inventory cost to its net realizable value by providing estimated reserves for obsolete or unmarketable inventory. The reserves are established for the difference between the cost of inventory and its estimated market value based on assumptions related to future demand and market conditions. We fully reserve for inventories and non-cancelable purchase orders for inventory deemed obsolete. We perform periodic reviews of our inventory to identify excess inventories on hand. We compare on-hand inventory balances to anticipated inventory usage based on our recent historical activity and anticipated or forecasted demand for our products developed through our planning systems and sales and marketing inputs.

We adjust the reserves for obsolete or unmarketable inventory and record additional inventory write downs based on unfavorable changes in estimated customer demand or actual market conditions that may differ from management projections.

Deferred Income Taxes

We record a valuation allowance to reduce our deferred tax assets to the amount that is more likely than not will be realized. We consider recent historical income, estimated future taxable income, carry-forward periods of tax attributes, the volatility of the semiconductor industry and ongoing tax planning strategies in assessing the need for the valuation allowance. Throughout fiscal year 2017 we maintained a full valuation allowance against our U.S. net deferred tax assets along with those of certain foreign tax-paying components. We evaluate the realizability of our deferred tax assets by tax-paying component and assess the need for a valuation allowance on an annual and quarterly basis. We evaluate the profitability of each tax-paying component on a historic cumulative basis and on a forward-looking basis while performing this analysis. After evaluating all the relevant positive and negative evidence as of March 31, 2018, we concluded that it was more likely than not that a substantial portion of the U.S. deferred tax assets would be realized. In the second quarter of fiscal year 2018 we reached a significant level of cumulative profitability in the U.S., coupled with an improved outlook of U.S. earnings. During the full fiscal year 2018, we reduced our U.S. valuation against our U.S. net deferred tax assets resulting in a tax benefit of \$77.2 million. The remaining portion of our U.S. valuation allowance is related to the realizability of certain state tax credits and net operating loss carry-forwards. We continue to maintain valuation allowances against net deferred tax assets in certain foreign tax-paying components as of the end of fiscal year 2018.

Stock-Based Compensation

We measure compensation cost for all employee stock awards at fair value on the date of grant and recognize compensation expense over the service period for awards expected to vest. The fair value of restricted stock units is determined based on the number of shares granted and the closing price of our common stock quoted on Nasdaq on the date of grant, and the fair value of stock options is determined using the Black-Scholes valuation model. Such fair values are recognized as expense over the service period, net of estimated forfeitures. The estimation of stock awards that will ultimately vest requires significant judgment. We consider many factors when estimating expected forfeitures, including types of awards, employee class, and historical experience. In addition, for stock-based awards where vesting is dependent upon achieving certain operating performance goals, we estimate the likelihood of achieving the performance goals. Actual results, and future changes in estimates, may differ from our current estimates.

Recently Issued Accounting Pronouncements

For a summary of recently issued accounting pronouncements applicable to our Consolidated Financial Statements which is incorporated here by reference, please refer to Note 2, "Summary of Significant Accounting Policies" in the

RESULTS OF OPERATIONS**Fiscal Year Ended September 30, 2018 Compared to Fiscal Year Ended September 30, 2017****Revenue**

We reported revenue of \$631.6 million for fiscal year 2018 compared to \$527.5 million for fiscal year 2017, an increase of \$104.1 million, or 20%.

Our Brooks Semiconductor Solutions Group segment reported revenue of \$435.0 million for fiscal year 2018 compared to \$378.8 million for fiscal year 2017. The increase of \$56.2 million, or 15%, reflects increases in revenues from robotic automation products, systems and related services business, partially offset by a decline in revenues from our contamination control systems. These increases include revenues generated by the Tec-Sem acquisition of \$11.6 million which we acquired in the third quarter of fiscal year 2018.

Our Brooks Life Sciences segment reported revenue of \$196.5 million for fiscal year 2018 compared to \$148.7 million for fiscal year 2017. The increase of \$47.8 million, or 32%, included organic growth of \$22.6 million, or 14%. The organic growth was broad-based across all major product lines, including sample storage services, automated storage systems, including the BioStore III Cryo, consumables, instruments and informatics. Acquisitions accounted for \$25.2 million of the increase compared to fiscal year 2017, which consisted of \$15.6 million from the acquisition of 4titude, \$8.1 million from the acquisition of PBMMI, and \$0.5 million from the acquisition of BioSpeciMan.

We anticipate continued growth in revenue from our Brooks Life Sciences segment through our internally-developed products and services and through our acquired businesses. We will continue to seek opportunities to expand our market share in the semiconductor and adjacent technology markets served by our Brooks Semiconductor Solutions Group segment. These markets are cyclical, and often fluctuate significantly from quarter to quarter. Demand for our Brooks Semiconductor Solution Group products is affected by these cycles.

Revenue generated outside the United States amounted to \$398.9 million, or 63% of total revenue, for fiscal year 2018 compared to \$354.6 million, or 67% of total revenue, for fiscal year 2017.

Gross Margin

We reported gross margins of 39.0% for fiscal year 2018 compared to 37.7% for fiscal year 2017. Gross margin increased 1.9% in the Brooks Semiconductor Solutions Group segment and decreased 0.1% in the Brooks Life Sciences segment. Cost of revenue for fiscal year 2018 included \$4.9 million of charges for amortization related to completed technology as compared to \$3.9 million incurred during fiscal year 2017. Additionally, cost of revenue for fiscal year 2018 also included \$1.9 million of inventory step-up charges, compared to \$0.5 million for fiscal year 2017.

Our Brooks Semiconductor Solutions Group segment reported gross margins of 40.0% for fiscal year 2018 compared to 38.0% for fiscal year 2017. Margins improved on the impact of product mix, volume leverage of fixed costs, and lower charges related to warranty and excess and obsolete inventory. Cost of revenue during fiscal year 2018 included \$3.4 million of amortization related to completed technology compared to \$2.5 million during fiscal year 2017. During fiscal years 2018 and 2017, cost of revenue included \$0.7 million and \$0.1 million, respectively, of inventory step-up charges.

Our Brooks Life Sciences segment reported gross margins of 36.7% for fiscal year 2018 compared to 36.8% for fiscal year 2017. Margins benefitted from recent acquisitions and the continued growth of our BioStorage services, which carries higher than average gross margins. These benefits were offset by lower margins in our manufactured automated stores business, which experienced cost overruns in the areas of production and project management. Cost of revenue during fiscal year 2018 included \$1.5 million of amortization related to completed technology as compared to \$1.4 million incurred during fiscal year 2017. During fiscal year 2018 and 2017, cost of revenue included \$1.2 million and \$0.4 million, respectively, of inventory step-up charges.

Research and Development

Research and development expenses were \$46.9 million in fiscal year 2018 compared to \$39.9 million in fiscal year 2017. The increase of \$7.1 million was due to increased expense of \$4.2 million within the Brooks Semiconductor Solutions Group segment and \$2.8 million within the Brooks Life Sciences segment. Higher research and development expenses during fiscal year 2018 as compared to fiscal year 2017 were primarily attributable increased investments for new product development in both of our segments.

Selling, General and Administrative

Selling, general and administrative expenses were \$167.0 million in fiscal year 2018 compared to \$141.5 million in fiscal year 2017. The increase of \$25.5 million was primarily attributable to: (i) higher employee-related costs driven by increased incentive bonuses and higher salaries resulting from hiring additional personnel to support the growth of our business, (ii) higher amortization costs due to acquisitions during the period, (iii) higher operating expenses related to the acquisitions of PBMMI, 4titude, Tec-Sem and BioSpeciMan and (iv) higher stock-based compensation expense driven mostly by higher estimates of the expected payout related to the achievement of performance goals for our performance-based awards. Fiscal year 2018 also included a loss recovery from an insurance claim which partially offset the increases described above.

Amortization expense related primarily to customer relationships was \$19.3 million and \$13.2 million, respectively, during fiscal years 2018 and 2017.

Restructuring Charges

We recorded restructuring charges of \$0.7 million during fiscal year 2018 as compared to \$3.1 million during fiscal year 2017.

Restructuring Charges Incurred During Fiscal Year Ended September 30, 2018

Restructuring charges of \$0.7 million incurred during fiscal year 2018 were related to severance costs and consisted primarily of actions initiated during the fourth quarter of fiscal year 2018. Of these charges, \$0.3 million related to the integration of Tec-Sem which was acquired during fiscal year 2018 as part of our Brooks Semiconductor Solutions Group segment and \$0.3 million related to the announced closure of our Denmark facility which will eliminate redundancies in our Brooks Life Sciences segment. Cost savings realized during fiscal year 2018 related to these actions were nominal as these actions were initiated during the fourth quarter of fiscal year 2018.

Restructuring Charges Incurred During Fiscal Year Ended September 30, 2017

Restructuring charges of \$3.1 million incurred during fiscal year 2017 were related to severance costs and consisted of \$1.7 million related to restructuring actions initiated during fiscal year 2017 and \$1.4 million related to restructuring actions initiated in prior periods.

The charges from restructuring actions initiated during fiscal year 2017 were primarily related to the action to streamline field service operations in our Brooks Semiconductor Solutions Group segment. This action had been completed as of September 30, 2017 and resulted in approximately \$1.9 million in annualized cost of revenue reductions. We realized approximately \$1.9 million and \$0.8 million, respectively, of cost savings related to this action during fiscal year 2018 and 2017.

The charges from actions initiated prior to fiscal year 2017 was primarily related to the consolidation of the Jena, Germany repair facility into the Chelmsford, Massachusetts repair operation. This restructuring action was initiated to streamline the service repair operations and reduce the overhead cost structure within our Brooks Semiconductor Solutions Group segment. This restructuring action was substantially completed as of September 30, 2017. We recognized \$0.8 million cost savings related to this action during the fiscal year 2017 and \$1.5 million during fiscal year 2018. Total cost savings from this action consisted of \$1.0 million of cost of revenue reductions and \$0.6 million of selling, general and administrative expense reductions.

The charges from actions initiated prior to fiscal year 2017 also include a small portion of charges from the company-wide restructuring action initiated in fiscal year 2016 to streamline business operations and improve competitiveness and overall profitability. This action had been completed as of September 30, 2017. Cost savings from this action were \$13.1 million during fiscal year 2017. Savings realized during fiscal year 2017 consisted of \$4.3 million of cost of revenue reductions, \$2.6 million of research and development expense reductions, and \$6.1 million of selling, general and administrative expense reductions.

Non-Operating Income (Expenses)

Gain on Settlement of Equity Method Investment - During fiscal year 2017, we recognized a gain of \$1.8 million on the settlement of the equity method investment in BioCision which was included as a part of the non-cash consideration for an acquisition of Cool Lab.

Interest income – During fiscal years 2018 and 2017, we recorded interest income of \$1.9 million and \$0.5 million respectively, which represented interest earned on our marketable securities.

Interest expense – During fiscal years 2018 and 2017, we recorded interest expense of \$9.5 million and \$0.4 million, respectively. The increase in interest expense during fiscal year 2018 primarily related to the term loan originated in October 2017. Please refer to the “Liquidity and Capital Resources” section below for further information on the term loan.

Other expenses, net – During fiscal years 2018 and 2017 we recorded other expenses, net of \$3.3 million and \$1.7 million, respectively. The \$1.6 million increase in expense was primarily attributable to higher foreign currency exchange losses of \$1.0 million recognized during fiscal year 2018 as compared to the corresponding period of the prior year, as well as gains recognized in fiscal year 2017 related to a pension settlement of \$0.3 million and sale of property, plant and equipment of \$0.2 million. Please refer to Item 7A, “Quantitative and Qualitative Disclosures About Market Risk – Currency Rate Exposure” in this Annual Report on Form 10-K for additional information about these currency exchange losses.

Income Tax Provision

We recorded an income tax benefit on continuing operations of \$47.3 million in fiscal year 2018 compared to an income tax provision of \$3.4 million in fiscal year 2017. The income tax benefit during fiscal year 2018 was driven primarily by the reversal of the valuation allowance against a substantial portion of the U.S. net deferred tax assets. We have estimated the toll charge on our taxable foreign earnings, net of foreign tax credits, associated with the enactment of the Tax Cuts and Jobs Act during fiscal year 2018 to be \$8.0 million. This amount is an offset to the valuation allowance reversal recorded during the year and is included in the full year tax benefit reported. The tax benefit for fiscal year 2018 also included a \$0.7 million tax benefit related to the re-measurement of net U.S. deferred tax liabilities to account for the reduced 21 percent statutory Federal income tax rate. The overall benefit for fiscal year 2018 was partially offset by the tax provisions on earnings in our foreign jurisdictions during the year.

Equity in Earnings of Equity Method Investments

We incurred losses of \$0.5 million from our investment in BioCision during fiscal year 2017. Our investment in BioCision was settled during the first quarter of fiscal year 2017 as a part of the non-cash consideration for the acquisition of Cool Lab on November 28, 2016. Prior to closing the equity investment, we traditionally recorded the income and losses related to the equity method investment in BioCision one quarter in arrears. During fiscal year 2017, we recorded two additional months of activity in the carrying value of the investment as a result of its settlement. We deemed the amount of \$0.2 million related to two additional months of activity to be insignificant.

Discontinued Operations

We incurred revenue and net income from discontinued operations of \$196.1 million and \$48.7 million, respectively for fiscal year 2018 related to our semiconductor cryogenics business as compared to \$165.4 million and \$51.9 million, respectively for fiscal year 2017. The net income is inclusive of income from the UCI joint venture in 2018 and 2017. The income from discontinued operations only includes direct operating expenses incurred that (1) are clearly

identifiable as costs being disposed of upon completion of the sale and (2) will not be continued by the Company on an ongoing basis. Indirect expenses which supported the Cryogenics business, and which will remain as part of the continuing operations, are not reflected in income from discontinued operations.

Fiscal Year Ended September 30, 2017 Compared to Fiscal Year Ended September 30, 2016

Revenue

We reported revenue of \$527.5 million for fiscal year 2017 compared to \$434.0 million for fiscal year 2016, an increase of \$93.5 million, or 22%.

Our Brooks Semiconductor Solutions Group segment reported revenue of \$378.8 million for fiscal year 2017 compared to \$325.9 million for fiscal year 2016. The increase of \$52.9 million, or 16%, reflects increases in revenues from contamination control systems and robotic automation products and systems, partially offset by a decline in revenues from services.

The robotic automation products revenue has historically included revenue from patent royalties and sales of third party atmospheric robots under a distribution agreement in North America. During fiscal year 2016, these revenue streams stopped, driving a decline of \$8.7 million attributable to the expiration of certain patents and \$13.0 million from exiting the atmospheric robot distribution arrangement. Royalty income generated from the expired patents was \$8.7 million in fiscal years 2016. Product revenue from the atmospheric robot distribution arrangement was \$13.0 million in fiscal years 2016. There was no royalty income and no revenue from the atmospheric robot distribution arrangement generated during fiscal year 2017.

Our Brooks Life Sciences segment reported revenue of \$148.7 million for fiscal year 2017 compared to \$108.1 million for fiscal year 2016. The increase of \$40.6 million, or 38%, was primarily driven by organic growth of \$25.3 million, or 23%. The organic growth was primarily attributable to sample storage services, automated storage systems, including the BioStore III Cryo, and consumables and instruments. Acquisitions accounted for \$15.3 million of the increase compared to fiscal year 2016, which consisted of \$8.2 million from two additional months of revenue from BioStorage acquired on November 30, 2015, \$3.7 million from the acquisition of Cool Labs, and \$3.4 million from the acquisition of PBMMI.

Revenue generated outside the United States amounted to \$354.6 million, or 67% of total revenue, for fiscal year 2017 compared to \$277.1 million, or 64% of total revenue, for fiscal year 2016.

Gross Margin

We reported gross margins of 37.7% for fiscal year 2017 compared to 36.1% for fiscal year 2016. Gross margin increased in the Brooks Semiconductor Solutions Group segment and Brooks Life Sciences segment by 1.9 percentage points and 0.7 percentage points, respectively. Cost of revenue for fiscal year 2017 included \$3.9 million of charges for amortization related to completed technology as compared to \$4.2 million incurred during fiscal year 2016. Additionally, cost of revenue for fiscal year 2017 also included \$0.5 million of inventory step-up charges, compared to \$0.6 million for fiscal year 2016.

Our Brooks Semiconductor Solutions Group segment reported gross margins of 38.0% for fiscal year 2017 compared to 36.1% for fiscal year 2016. Product margins increase was driven by improved operating leverage from higher revenue and the outcome of product cost optimization efforts. Service margins increase was driven by lower material costs for robot repair, and cost savings from the restructuring actions that resulted in reduced repair operations costs and increased field service productivity. Please refer to the "Restructuring Charges" section below for further information on the restructuring actions. Cost of revenue during fiscal year 2017 included \$2.5 million of amortization related to completed technology compared to \$2.7 million during fiscal year 2016. During fiscal years 2017 and 2016, cost of revenue included \$0.1 million and \$0.6 million, respectively, of inventory step-up charges.

Our Brooks Life Sciences segment reported gross margins of 36.8% for fiscal year 2017 compared to 36.1% for fiscal year 2016. The increase was driven by improved cost management on large stores projects, volume leverage driven by organic revenue growth, favorable contributions from recent acquisitions and savings from the recent

restructuring actions, partially offset by increased expenses supporting the transition to in-sourcing of manufacturing from a contract provider to our Manchester location and expenses related to the consolidation of our Cool Labs operations. Please refer to the "Restructuring Charges" section below for further information on these restructuring actions. Cost of revenue during fiscal year 2017 included \$1.4 million of amortization related to completed technology as compared to \$1.5 million during fiscal year 2016. Additionally, cost of revenue for fiscal year 2017 included \$0.4 million of inventory step-up charges. There were no such charges during fiscal year 2016.

Research and Development

Research and development expenses were \$39.9 million in fiscal year 2017 compared to \$44.2 million in fiscal year 2016. The decrease of \$4.3 million reflects expense reductions of \$2.6 million within the Brooks Semiconductor Solutions Group segment and \$1.7 million within the Brooks Life Sciences System segment. Lower research and development expenses during fiscal year 2017 as compared to fiscal year 2016 were primarily attributable to the full year realization of savings from restructuring actions initiated prior to fiscal year 2017 and the progression of certain projects from the development stage to market which resulted in lower project spending.

Selling, General and Administrative

Selling, general and administrative expenses were \$141.5 million in fiscal year 2017 compared to \$119.3 million in fiscal year 2016. The increase of \$22.2 million was primarily attributable to: (i) higher compensation costs primarily driven by increased headcounts, and increased incentive bonuses and commissions, (ii) higher stock-based compensation expense related primarily to performance above targets, (iii) higher merger-related costs during fiscal years 2017, (iv) higher amortization expense during fiscal years 2017, (v) higher outside service costs and (vi) higher operating expenses as a result of the PBMMI acquisition. These increases were partially offset by lower depreciation expense in information technology systems.

Amortization expense related primarily to customer relationships was \$13.2 million and \$10.8 million, respectively, during fiscal years 2017 and 2016.

Restructuring Charges

We recorded restructuring charges of \$3.1 million during fiscal year 2017 as compared to \$10.2 million during fiscal year 2016.

Restructuring Charges Incurred During Fiscal Year Ended September 30, 2017

Restructuring charges of \$3.1 million incurred during fiscal year 2017 were related to severance costs and consisted of \$1.7 million related to restructuring actions initiated during fiscal year 2017 and \$1.4 million related to restructuring actions initiated in prior periods.

The charges from restructuring actions initiated during fiscal year 2017 was primarily related to streamlined field service operations in our Brooks Semiconductor Solutions Group segment. This action had been completed as of September 30, 2017 and resulted in approximately \$1.9 million in annualized cost of revenue reductions. We realized approximately \$1.9 million and \$0.8 million, respectively, of cost savings during fiscal year 2018 and 2017.

The charges from actions initiated prior to fiscal year 2017 were primarily related to the consolidation of the Jena, Germany repair facility into the Chelmsford, Massachusetts repair operation. This restructuring action was initiated to streamline the service repair operations and reduce the overhead cost structure within our Brooks Semiconductor Solutions Group segment. This restructuring action was substantially completed as of September 30, 2018. We recognized \$0.8 million cost savings related to this action during the fiscal year 2017 and \$1.5 million during fiscal year 2018. Total annualized cost savings from this action consisted of \$1.0 million of cost of revenue reductions and \$0.6 million of selling, general and administrative expense reductions.

The charges from actions initiated prior to fiscal year 2017 also include a small portion of charges from the company-wide restructuring action initiated in fiscal year 2016 to streamline business operations and improve competitiveness and overall profitability. This action had been completed as of September 30, 2017. Cost savings from

this action were \$13.1 million and \$5.8 million, respectively, during fiscal year 2017 and 2016. Savings realized during fiscal year 2017 consisted of \$4.3 million of cost of revenue reductions, \$2.6 million of research and development expense reductions, and \$6.1 million of selling, general and administrative expense reductions.

Restructuring Charges Incurred During Fiscal Year Ended September 30, 2016

Restructuring charges of \$10.2 million incurred during fiscal year 2016 were related to severance costs which consisted of \$8.9 million related to restructuring actions initiated during fiscal year 2016 and \$1.3 million related to restructuring actions initiated in prior periods.

Charges from restructuring actions initiated during fiscal year 2016 consisted of: (i) \$3.1 million attributable to the Brooks Life Sciences segment to streamline the segment's management structure, integrate acquisitions, consolidate facility and improve profitability, (ii) \$1.2 million attributable to the Brooks Semiconductor Solutions Group segment to consolidate our Jena, Germany repair facility into our Chelmsford, Massachusetts repair operation, and (iii) \$4.5 million of costs related to the company-wide restructuring action to streamline business operations, improve competitiveness and overall profitability.

These actions in the Brooks Life Sciences segment resulted in approximately \$3.8 million in annual pre-tax cost savings, including \$1.0 million of cost of revenue reductions and \$2.9 million of selling, general and administrative expense reductions. Total cost savings realized as a result of these restructuring initiatives amounted to \$5.1 million, of which \$1.3 million were realized prior to fiscal year 2017 and \$3.8 million were realized during fiscal year 2017.

Our restructuring actions initiated in prior periods was primarily related to the Brooks Semiconductor Solutions segment to integrate Contact, and to close and transfer the Mistelgau, Germany manufacturing operations to a contract manufacturer.

Non-Operating Income (Expenses)

Gain on Settlement of Equity Method Investment – During fiscal year 2017, we recognized a gain of \$1.8 million on the settlement of the equity method investment in BioCision which was included as a part of the non-cash consideration for an acquisition of Cool Lab.

Interest income – During both fiscal years 2017 and 2016, we recorded interest income of \$0.5 million, which represented interest earned on our marketable securities.

Interest expense – During fiscal years 2017 and 2016, we recorded interest expense of 0.4 million and \$0.2 million, respectively.

Other expenses, net – During fiscal years 2017 and 2016 we recorded other expenses, net of \$1.7 million and \$1.4 million, respectively. The \$0.3 million increase in expense was primarily attributable to higher foreign currency exchange losses of \$0.4 million recognized during fiscal year 2017 and higher losses of \$0.2 million during fiscal year 2017 as compared to fiscal year 2016 related to fair value measurement of convertible debt securities in BioCision. These increases were partially offset by a gain on pension settlement of \$0.3 million recognized during fiscal year 2017.

Income Tax Provision

We recorded an income tax provision on continuing operations of \$3.4 million in fiscal year 2017 compared to an income tax provision of \$66.3 million in fiscal year 2016. The continuing operations income tax provision for fiscal year 2017 was primarily comprised of the provision on our earnings during that fiscal year. The continuing operations income tax provision for fiscal year 2016 was primarily driven by the establishment of a full valuation allowance against our U.S. net deferred tax assets during that year.

Equity in Earnings of Equity Method Investments

We incurred losses of \$0.5 million from our investment in BioCision during fiscal year 2017 compared to losses of \$1.1 million during fiscal year 2016. Our investment in BioCision was settled during the first quarter of fiscal year 2017

as a part of the non-cash consideration for the acquisition of Cool Lab on November 28, 2016. Prior to closing the equity investment, we traditionally recorded the income and losses related to the equity method investment in BioCision one quarter in arrears. During fiscal year 2017, we recorded two additional months of activity in the carrying value of the investment as a result of its settlement. We deemed the amount of \$0.2 million related to two additional months of activity to be insignificant.

Discontinued Operations

We incurred revenue and net income from discontinued operations of \$165.4 million and \$51.9 million, respectively for fiscal year 2017 related to our semiconductor cryogenics business as compared to \$126.3 million and \$16.0 million, respectively for fiscal year 2016. The net income is inclusive of income from the UCI joint venture in 2017 and 2016. The income from discontinued operations only includes direct operating expenses incurred that (1) are clearly identifiable as costs being disposed of upon completion of the sale and (2) will not be continued by the Company on an ongoing basis. Indirect expenses which supported the cryogenics business, and which will remain as part of the continuing operations, are not reflected in income from discontinued operations.

LIQUIDITY AND CAPITAL RESOURCES

A considerable portion of our revenue is dependent on the demand for semiconductor capital equipment which historically has experienced periodic downturns. We believe that we have adequate resources to satisfy our working capital, financing activities, debt service and capital expenditure requirements for the next twelve months. The cyclical nature of our served markets and uncertainty in the current global economic environment make it difficult for us to predict longer-term liquidity requirements with sufficient certainty. We may be unable to obtain any required additional financing on terms favorable to us, if at all. If adequate funds are not available to us on acceptable terms or otherwise, we may be unable to successfully develop or enhance products and services, respond to competitive pressure or take advantage of acquisition opportunities, any of which could have a material adverse effect on our business, financial condition and operating results.

The discussion of our cash flows and liquidity that follows does not include the impact of the disposition of our cryogenics business and is stated on a total company consolidated basis.

Overview of Cash Flows and Liquidity

Our cash, cash equivalents and marketable securities as of September 30, 2018 and 2017 consist of the following (in thousands):

| | Year Ended September 30, | |
|----------------------------------|---------------------------------|-------------------|
| | 2018 | 2017 |
| Cash and cash equivalents | \$ 197,708 | \$ 101,622 |
| Short-term marketable securities | 46,281 | 28 |
| Long-term marketable securities | 7,237 | 2,642 |
| | <u>\$ 251,226</u> | <u>\$ 104,292</u> |

Our cash, cash equivalents and marketable securities were \$251.2 million as of September 30, 2018. Our cash balances are held in numerous locations throughout the world, with the substantial majority of those amounts located outside of the United States. As of September 30, 2018, we had cash and cash equivalents of \$197.7 million, of which \$84.7 million was held outside of the United States. If these funds are needed for the U.S. operations, we would need to repatriate these funds. As a result of recent changes in U.S. tax legislation, any repatriation in the future would not result in U.S. federal income tax. Our intent is to permanently reinvest these funds outside of the U.S. and our current operating plans do not demonstrate a need to repatriate these funds for our U.S. operations. We had marketable securities of \$53.5 million and \$2.7 million, respectively, as of September 30, 2018 and 2017. Our marketable securities are generally readily convertible to cash without an adverse impact.

Fiscal Year Ended September 30, 2018 Compared to Fiscal Year Ended September 30, 2017*Overview*

Cash and cash equivalents and marketable securities were \$251.2 million at September 30, 2018 as compared to \$104.3 million at September 30, 2017. The increase in cash and cash equivalents and marketable securities of \$146.9 million was primarily attributable to cash inflows of \$197.6 million related to proceeds from the term loan and cash inflows of \$74.0 million generated from our operating activities, partially offset by cash payments of \$85.8 million related to acquisitions, cash outflows of \$28.3 million related to dividend payments made to our shareholders, as well as capital expenditure payments of \$12.8 million.

Operating Activities

Cash flows from operating activities can fluctuate significantly from period to period as earnings, working capital needs and the timing of payments for income taxes, restructuring activities and other charges impact reported cash flows.

Cash flows provided by operating activities were \$74.0 million during fiscal year 2018 comprised primarily of earnings of \$120.6 million, including net income of \$116.5 million and the impact of non-cash related charges of \$4.1 million. Partially offsetting these items were the uses of cash of \$46.6 million related to the changes in our operating assets and liabilities. The changes in operating assets and liabilities that resulted in a use of cash consisted primarily of an increase in accounts receivable as a result of higher revenue and an increase in inventory levels to support the growth of our business. These uses of cash were partially offset by sources of cash related primarily to increases in accounts payable as well as increased accrued compensation and tax withholdings. Cash flows provided by operating activities were \$96.2 million during fiscal year 2017 and were comprised primarily of earnings of \$96.9 million, including net income of \$62.6 million and the impact of non-cash related earnings of \$34.3 million. Partially offsetting these items were uses of cash of \$0.7 million related to the changes in our operating assets and liabilities.

Net income from discontinued operations contributed \$48.7 million and \$51.9 million for fiscal years ended 2018 and 2017, respectively, in the net income referenced for the respective periods above. Cash flows from operations will be negatively impacted in future periods by the completion of sale of our cryogenic business.

Investing Activities

Cash flows from investing activities consist primarily of cash used for acquisitions, capital expenditures and purchases of marketable securities as well as cash proceeds generated from sales and maturities of marketable securities. Cash used in investing activities was \$148.5 million during fiscal year 2018 as compared to \$54.2 million during the fiscal year 2017. Cash used in investing activities of \$148.5 million during fiscal year 2018 included cash payments of \$85.8 million for acquisitions, \$69.7 million for the purchases of marketable securities and \$12.8 million of capital expenditures, partially offset by cash inflows from sales and maturities of marketable securities of \$19.1 million and \$0.7 million in proceeds from other investments and sales of property, plant and equipment. Cash used in investing activities of \$54.2 million during fiscal year 2017 included \$44.8 million for acquisitions and \$12.7 million of capital expenditures, offset by \$3.6 million of proceeds from sales and maturities of marketable securities.

Capital expenditures are made primarily for increasing capacity, replacing equipment, supporting new product development and improving information technology infrastructure. Capital expenditures were \$12.8 million during fiscal year 2018 as compared to \$12.7 million during the fiscal year 2017.

Financing Activities

Cash provided by financing activities was \$170.3 million during fiscal year 2018 as compared to \$25.9 million used in financing activities during fiscal year 2017. Cash provided by financing activities during fiscal year 2018 included cash inflows of \$197.6 million related to proceeds from the term loan originated in October 2017, partially offset by cash dividend payments to our shareholders of \$28.3 million and principal payments on the term loan of \$1.5 million. Cash used in financing activities was \$25.9 million during fiscal year 2017 and related primarily to cash dividend payments to our shareholders.

Fiscal Year Ended September 30, 2017 Compared to Fiscal Year Ended September 30, 2016*Overview*

Cash and cash equivalents and marketable securities were \$104.3 million at September 30, 2017 as compared to \$91.2 million at September 30, 2016. The increase in cash and cash equivalents and marketable securities of \$13.1 million was primarily attributable to cash inflows of \$96.2 million generated from our operating activities, partially offset by cash outflows related to acquisitions of \$44.8 million, dividends payments to our shareholders of \$27.9 million, and capital expenditure payments of \$12.7 million during fiscal year 2017.

Operating Activities

Cash flows provided by operating activities were \$96.2 million during fiscal year 2017 and were comprised primarily of earnings of \$96.9 million, including net income of \$62.6 million and the impact of non-cash related earnings of \$34.3 million. Partially offsetting these items were uses of cash of \$0.7 million related to the changes in our operating assets and liabilities. The changes in operating assets and liabilities that resulted in a use of cash consisted primarily of an increase in accounts receivable as a result of higher revenue and an increase in inventory levels to support the growth of our business. These uses of cash were partially offset by sources of cash related primarily to increases in accounts payable as well as increased accrued compensation and tax withholdings and restructuring costs. Cash flows provided by operating activities were \$39.5 million during fiscal year 2016 and were comprised primarily of earnings of \$39.3 million, including the impact of non-cash related earnings of \$108.8 million and a net loss of \$69.5 million. Partially offsetting these items were sources of cash of \$0.2 million related to the changes in our operating assets and liabilities.

Net income from discontinued operations contributed \$51.9 million and \$16.0 million for fiscal years ended 2017 and 2016, respectively, in the net income referenced for the respective periods above.

Investing Activities

Cash used in investing activities was \$54.2 million during fiscal year 2017 as compared to \$10.9 million during fiscal year 2016. Cash used in investing activities of \$54.2 million during fiscal year 2017 included \$44.8 million for acquisitions and \$12.7 million of capital expenditures, offset by \$3.6 million of proceeds from sales and maturities of marketable securities. Cash used in investing activities of \$10.9 million during fiscal year 2016 included \$125.2 million for the acquisition of BioStorage, \$12.8 million of capital expenditures and the disbursement of \$1.8 million for a loan provided to BioCision, partially offset by \$139.4 million proceeds from sales and maturities of marketable securities.

Capital expenditures are made primarily for increasing capacity, replacing equipment, supporting new product development and improving information technology infrastructure. Capital expenditures were \$12.7 million during fiscal year 2017 as compared to \$12.8 million during fiscal year 2016.

Financing Activities

Cash used in financing activities was \$25.9 million during fiscal year 2017 as compared to \$26.0 million during fiscal year 2016. Cash used in financing activities in both fiscal years 2017 and 2016 related primarily to cash dividend payments to our shareholders of \$27.9 million and \$27.5 million, respectively, partially offset by proceeds from issuance of common stock.

Capital Resources***Senior Secured Term Loan Facility***

On October 4, 2017, we entered into a \$200.0 million term loan with Morgan Stanley Senior Funding, Inc., JPMorgan Chase Bank, N.A. and Wells Fargo Securities, LLC. The term loan was issued at \$197.6 million, or 98.8% of its par value, resulting in a discount of \$2.4 million, or 1.2%, which represented loan origination fees paid at the closing. The loan proceeds are used for acquisition and general corporate purposes.

As of September 30, 2018, the outstanding term loan principal balance was \$198.5 million, excluding unamortized deferred financing costs of \$2.4 million. The term loan matures and becomes fully payable on October 4, 2024. Installment principal payments equal to 0.25% of the initial principal amount of the term loan are payable on the last day of each quarter, with any remaining principal amount becoming due and payable on the maturity date. During fiscal year 2018, we made principal payments of \$1.5 million under the term loan. Subject to certain conditions stated in the term loan agreement, we may redeem the term loan at any time at our option without a significant premium or penalty, except for a repricing transaction, as defined in the term loan agreement. We would also be required to redeem the term loan at the principal amount then outstanding upon the occurrence of certain events, as set forth in the term loan agreement.

Borrowings under the term loan bear variable interest rates, at our option, based on either LIBOR, the federal funds effective rate or the prime rate plus an applicable percentage. As a result, we may experience exposure to interest rate risk due to the potential volatility associated with the variable interest rates on the term loan. If rates increase, we may be subject to higher costs of servicing the loan which could reduce our profitability and cash flows. During fiscal year 2018, the weighted average stated interest rate on the term loan was 4.4%. During fiscal year 2018, we incurred cash interest expense of \$8.7 million on the term loan. Our debt service requirements are expected to be funded through our existing sources of liquidity and operating cash flows.

The term loan agreement contains certain customary representations and warranties, covenants and events of default. As of September 30, 2018, we were in compliance with all covenants and conditions under the term loan agreement.

On November 15, 2018, entered into a new \$350.0 million senior secured incremental term loan, under our Credit Agreement, dated October 4, 2017 to finance a portion of the cash purchase price of our acquisition of GENEWIZ which was completed on that same date.

Line of Credit Facility

We maintain a revolving line of credit with Wells Fargo Bank, N.A. and JPMorgan Chase Bank, N.A that provides for revolving credit financing of up to \$75.0 million, subject to borrowing base availability, as defined in the credit agreement. The line of credit matures on October 4, 2022. The proceeds from the line of credit are available for permitted acquisitions and general corporate purposes.

As of September 30, 2018, we had approximately \$47.5 million available for borrowing under the line of credit. We anticipate that our available borrowings under the line of credit will reduce upon the closure of the sale of our semiconductor cryogenics business. There were no amounts outstanding pursuant to the line of credit as of September 30, 2018. The amount of funds available for borrowing under the line of credit arrangement may fluctuate each period based on our borrowing base availability. The line of credit contains certain customary representations and warranties, a financial covenant, affirmative and negative covenants, as well as events of default. We were in compliance with the line of credit covenants as of September 30, 2018. Although we believe we will be able to generate sufficient cash in the United States and foreign jurisdictions to fund future operating costs, we secured the revolving line of credit as an additional assurance for maintaining liquidity in the United States during potentially severe downturns of the cyclical semiconductor market, as well as for strategic investments and acquisitions.

Shelf Registration Statement

On July 27, 2016, we filed a registration statement on Form S-3 with the SEC to sell securities, including common stock, preferred stock, warrants, debt securities, depository shares, purchase contracts and purchase units in amounts to be determined at the time of an offering. Any such offering, if it does occur, may happen in one or more transactions. The specific terms of any securities to be sold will be described in supplemental filings with the SEC. This registration statement will expire on July 27, 2019.

Dividends

Our Board of Directors declared the following dividends during the fiscal years 2018 and 2017 (in thousands, except per share data):

| <u>Declaration Date</u> | <u>Dividend per Share</u> | <u>Record Date</u> | <u>Payment Date</u> | <u>Total</u> |
|--|---------------------------|--------------------|---------------------|--------------|
| Fiscal Year Ended September 30, 2018: | | | | |
| November 8, 2017 | \$ 0.10 | December 1, 2017 | December 22, 2017 | \$ 7,040 |
| January 31, 2018 | 0.10 | March 2, 2018 | March 23, 2018 | 7,050 |
| April 30, 2018 | 0.10 | June 1, 2018 | June 22, 2018 | 7,058 |
| July 31, 2018 | 0.10 | September 7, 2018 | September 28, 2018 | 7,066 |
| Fiscal Year Ended September 30, 2017 | | | | |
| November 9, 2016 | \$ 0.10 | December 2, 2016 | December 23, 2016 | \$ 6,952 |
| January 31, 2017 | 0.10 | March 3, 2017 | March 24, 2017 | 6,962 |
| April 27, 2017 | 0.10 | June 2, 2017 | June 23, 2017 | 6,972 |
| August 1, 2017 | 0.10 | September 8, 2017 | September 29, 2017 | 6,980 |

On November 6, 2018, our Board of Directors approved a cash dividend of \$0.10 per share of our common stock. The total dividend of approximately \$7.2 million will be paid on December 20, 2018 to shareholders of record at the close of business on December 7, 2018. Dividends are declared at the discretion of our Board of Directors and depend on actual cash flow from operations, our financial condition, capital requirements and any other factors our Board of Directors may consider relevant. We intend to pay quarterly cash dividends in the future; however, the amount and timing of these dividends may be impacted by the cyclical nature of certain markets we serve. We may reduce, delay or cancel a quarterly cash dividend based on the severity of a cyclical downturn.

Share Repurchase Program

On September 29, 2015, our Board of Directors approved a share repurchase program for up to \$50.0 million worth of our common stock. The timing and amount of any shares repurchased are based on market and business conditions, legal requirements and other factors and may be commenced or suspended at any time at our discretion. There were no shares repurchased under this program during fiscal year 2018.

Contractual Obligations and Requirements

Our contractual obligations were as follows at September 30, 2018 (in thousands):

| | <u>Total</u> | <u>Less than One Year</u> | <u>One to Three Years</u> | <u>Four to Five Years</u> | <u>Thereafter</u> |
|---|-------------------|---------------------------|---------------------------|---------------------------|-------------------|
| Contractual Cash Obligations: | | | | | |
| Operating leases | \$ 12,232 | \$ 3,842 | \$ 3,922 | \$ 2,621 | \$ 1,847 |
| Pension and other post-retirement benefit plans | 4,688 | 433 | 876 | 894 | 2,485 |
| Term loan | 196,071 | 2,000 | 4,000 | 4,000 | 186,071 |
| Other purchase commitments | 89,761 | 87,111 | 2,282 | 368 | — |
| Total contractual cash obligations | <u>\$ 302,752</u> | <u>\$ 93,386</u> | <u>\$ 11,080</u> | <u>\$ 7,883</u> | <u>\$ 190,403</u> |
| Other Commercial Commitments: | | | | | |
| Letters of credit | \$ 2,233 | \$ 1,716 | \$ 517 | \$ — | \$ — |
| Total commitments | <u>\$ 304,985</u> | <u>\$ 95,102</u> | <u>\$ 11,597</u> | <u>\$ 7,883</u> | <u>\$ 190,403</u> |

The letters of credit of approximately \$2.2 million are related primarily to customer advances and other performance obligations at September 30, 2018. These arrangements guarantee the refund of advance payments received from our customers in the event that the product is not delivered or warranty obligations are not fulfilled in accordance with the contract terms. These obligations could be called by the beneficiaries at any time before the expiration date of the particular letter of credit if we fail to meet certain contractual requirements. None of these obligations were called during fiscal year 2018, and we currently do not anticipate any of these obligations to be called in the near future.

As of September 30, 2018, the total amount of net unrecognized tax benefits for uncertain tax positions and the accrual for the related interest was \$3.5 million, all of which represents a potential future cash outlay. In comparison to September 30, 2017 where the balance was \$3.9 million. The reduction largely has to do with the statute of limitations lapsing on certain positions throughout the year. We are unable to make a reasonably reliable estimate of the timing of the cash settlement for this liability since the timing of future tax examinations by various tax jurisdictions and the related resolution is uncertain.

Off-Balance Sheet Arrangements

As of September 30, 2018, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of SEC Regulation S-K.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to a variety of market risks, including changes in interest rates affecting the return on our cash and cash equivalents, short-term and long-term investments and fluctuations in foreign currency exchange rates.

Interest Rate Exposure

Our \$200.0 million term loan bears variable interest rates which subjects us to interest rate risk. Our primary interest rate risk exposure results from changes in the short-term LIBOR rate, the federal funds effective rate and the prime rate. As of September 30, 2018, the weighted average stated interest rate on the term loan was 4.4%. At September 30, 2018, the outstanding term loan principal balance was \$198.5 million, excluding unamortized deferred financing costs of \$2.4 million. During fiscal year 2018, we incurred interest expense of \$8.7 million on the term loan. A hypothetical 100 basis point change in interest rates would result in a \$2.0 million change in interest expense incurred during fiscal year 2018.

Our cash and cash equivalents consist principally of money market securities which are short-term in nature. At September 30, 2018 and 2017, our aggregate short-term and long-term investments were \$53.5 million and \$2.7 million, respectively, and consisted mostly of highly rated corporate debt securities and municipal securities. At September 30, 2018, the unrealized loss position on marketable securities was insignificant, which is included in "Accumulated other comprehensive income" in the Consolidated Balance Sheets. There were no securities in an unrealized loss position as of September 30, 2017. A hypothetical 100 basis point change in interest rates would result in an annual change of approximately \$1.0 million and less than \$0.1 million, respectively, in interest income earned in fiscal years 2018 and 2017.

Currency Rate Exposure

We have transactions and balances denominated in currencies other than the U.S. dollar. Most of these transactions or balances are denominated in Euros, British Pounds and a variety of Asian currencies. Sales in currencies other than the U.S. dollar were 34% and 38%, respectively, of our total sales for fiscal years ended September 30, 2018 and 2017. These sales were made primarily by our foreign subsidiaries, which have cost structures that substantially align with the currency of sale.

In the normal course of our business, we have liquid assets denominated in non-functional currencies which include cash, short-term advances between our legal entities and accounts receivable which are subject to foreign currency exposure. Such balances were approximately \$84.7 million and \$51.6 million, respectively, at September 30, 2018 and 2017, and related to the Euro, British Pound and a variety of Asian currencies. We mitigate the impact of potential currency translation losses on these short-term intercompany advances by the timely settlement of each transaction, generally within 30 days. We also utilize forward contracts to mitigate our exposures to currency movement. We incurred foreign currency losses of \$3.3 million and \$2.3 million, respectively, in fiscal years 2018 and 2017, which related to the currency fluctuation on these balances between the time the transaction occurred and the ultimate settlement of the transaction. A hypothetical 10% change in foreign exchange rates would result in a change of \$4.9 million and \$0.5 million, respectively, in our net income during fiscal year 2018 and 2017.

Item 8. Financial Statements and Supplementary Data

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| Consolidated Statements of Operations for the years ended September 30, 2018, 2017 and 2016 | 53 |
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The supplementary quarterly financial information required by this Item 8 is included in Part II, Item 6, “Selected Financial Data”, and is incorporated herein by reference.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
Brooks Automation, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Brooks Automation, Inc. and its subsidiaries as of September 30, 2018 and 2017, and the related consolidated statements of operations, of comprehensive income (loss), of changes in equity, and of cash flows for each of the three years in the period ended September 30, 2018, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of September 30, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of September 30, 2018 and 2017, and the results of their operations and their cash flows for each of the three years in the period ended September 30, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of September 30, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Basis for Opinions

The Company’s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management’s Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company’s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (“PCAOB”) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As described in Management’s Report on Internal Control over Financial Reporting, management has excluded Tec-Sem Group AG and 4titude, Ltd. from its assessment of internal control over financial reporting as of September 30, 2018, because they were acquired by the Company in purchase business combinations during 2018. We have also excluded Tec-Sem Group AG and 4titude, Ltd. from our audit of internal control over financial reporting. Tec-Sem Group AG and

4titude, Ltd. are wholly-owned subsidiaries whose total assets and total revenues excluded from management's assessment and our audit of internal control over financial reporting represent approximately 2% and 4%, respectively, of the related consolidated financial statement amounts as of and for the year ended September 30, 2018.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
November 29, 2018

We have served as the Company's auditor since 2016.

BROOKS AUTOMATION, INC.
CONSOLIDATED BALANCE SHEETS

| | September 30, 2018 | September 30, 2017 |
|--|---|-----------------------|
| | (In thousands, except share and per share data) | |
| Assets | | |
| Current assets | | |
| Cash and cash equivalents | \$ 197,708 | \$ 101,622 |
| Marketable securities | 46,281 | 28 |
| Accounts receivable, net | 125,192 | 93,465 |
| Inventories | 96,986 | 73,397 |
| Prepaid expenses and other current assets | 31,741 | 22,594 |
| Current assets held for sale | 66,148 | 60,671 |
| Total current assets | 564,056 | 351,777 |
| Property, plant and equipment, net | 59,988 | 56,981 |
| Long-term marketable securities | 7,237 | 2,642 |
| Long-term deferred tax assets | 43,798 | 1,692 |
| Goodwill | 255,876 | 207,154 |
| Intangible assets, net | 99,956 | 83,504 |
| Other assets | 5,294 | 6,325 |
| Non-current assets held for sale | 59,052 | 56,553 |
| Total assets | \$ 1,095,257 | \$ 766,628 |
| Liabilities and Stockholders' Equity | | |
| Current liabilities | | |
| Current portion of long term debt | \$ 2,000 | \$ — |
| Accounts payable | 55,873 | 49,100 |
| Deferred revenue | 25,884 | 22,564 |
| Accrued warranty and retrofit costs | 6,340 | 5,479 |
| Accrued compensation and benefits | 29,322 | 23,877 |
| Accrued restructuring costs | 659 | 1,708 |
| Accrued income taxes payable | 6,746 | 11,417 |
| Accrued expenses and other current liabilities | 30,405 | 24,808 |
| Current liabilities held for sale | 7,388 | 7,825 |
| Total current liabilities | 164,617 | 146,778 |
| Long-term debt | 194,071 | — |
| Long-term tax reserves | 1,102 | 1,687 |
| Long-term deferred tax liabilities | 7,135 | 3,748 |
| Long-term pension liabilities | 4,255 | 1,783 |
| Other long-term liabilities | 5,547 | 4,336 |
| Non-current liabilities held for sale | 698 | 652 |
| Total liabilities | 377,425 | 158,984 |
| Commitments and contingencies (Note 22) | | |
| Stockholders' Equity | | |
| Preferred stock, \$0.01 par value - 1,000,000 shares authorized, no shares issued or outstanding | — | — |
| Common stock, \$0.01 par value - 125,000,000 shares authorized, 84,164,130 shares issued and 70,702,261 shares outstanding at September 30, 2018, 83,294,848 shares issued and 69,832,979 shares outstanding at September 30, 2017 | 841 | 833 |
| Additional paid-in capital | 1,898,434 | 1,874,918 |
| Accumulated other comprehensive income | 13,587 | 15,213 |
| Treasury stock, at cost- 13,461,869 shares | (200,956) | (200,956) |
| Accumulated deficit | (994,074) | (1,082,364) |
| Total stockholders' equity | 717,832 | 607,644 |
| Total liabilities and stockholders' equity | \$ 1,095,257 | \$ 766,628 |

The accompanying notes are an integral part of these consolidated financial statements.

BROOKS AUTOMATION, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

| | Year Ended September 30, | | |
|--|--------------------------|------------------|--------------------|
| | 2018 | 2017 | 2016 |
| (In thousands, except per share data) | | | |
| Revenue | | | |
| Products | \$ 482,389 | \$ 406,986 | \$ 335,923 |
| Services | 149,171 | 120,513 | 98,089 |
| Total revenue | <u>631,560</u> | <u>527,499</u> | <u>434,012</u> |
| Cost of revenue | | | |
| Products | 288,323 | 249,396 | 212,029 |
| Services | 97,156 | 79,216 | 65,294 |
| Total cost of revenue | <u>385,479</u> | <u>328,612</u> | <u>277,323</u> |
| Gross profit | <u>246,081</u> | <u>198,887</u> | <u>156,689</u> |
| Operating expenses | | | |
| Research and development | 46,936 | 39,875 | 44,241 |
| Selling, general and administrative | 167,022 | 141,549 | 119,292 |
| Restructuring charges | 714 | 3,144 | 10,210 |
| Total operating expenses | <u>214,672</u> | <u>184,568</u> | <u>173,743</u> |
| Operating income (loss) | 31,409 | 14,319 | (17,054) |
| Interest income | 1,881 | 464 | 452 |
| Interest expense | (9,520) | (408) | (157) |
| Gain on settlement of equity method investment | — | 1,847 | — |
| Other expenses, net | (3,304) | (1,702) | (1,383) |
| Income (loss) before income taxes and earnings of equity method investments | 20,466 | 14,520 | (18,142) |
| Income tax provision (benefit) | (47,251) | 3,380 | 66,250 |
| Income (loss) before equity in earnings of equity method investments | 67,717 | 11,140 | (84,392) |
| Equity in earnings of equity method investments | — | (453) | (1,065) |
| Income (loss) from continuing operations | 67,717 | 10,687 | (85,457) |
| Income from discontinued operations, net of tax | 48,747 | 51,925 | 15,981 |
| Net income (loss) | <u>\$ 116,464</u> | <u>\$ 62,612</u> | <u>\$ (69,476)</u> |
| Net loss attributable to noncontrolling interest | 111 | — | — |
| Net income (loss) attributable to Brooks Automation, Inc. | <u>\$ 116,575</u> | <u>\$ 62,612</u> | <u>\$ (69,476)</u> |
| Basic net income (loss) per share attributable to Brooks Automation, Inc. common stockholders: | | | |
| Income (loss) from continuing operations | \$ 0.96 | \$ 0.15 | \$ (1.25) |
| Income from discontinued operations, net of tax | 0.69 | 0.75 | 0.23 |
| Basic net income (loss) per share | <u>\$ 1.65</u> | <u>\$ 0.90</u> | <u>\$ (1.01)</u> |
| Diluted net income (loss) per share attributable to Brooks Automation, Inc. common stockholders: | | | |
| Income (loss) from continuing operations | \$ 0.95 | \$ 0.15 | \$ (1.25) |
| Income from discontinued operations, net of tax | 0.69 | 0.74 | 0.23 |
| Diluted net income (loss) per share | <u>\$ 1.64</u> | <u>\$ 0.89</u> | <u>\$ (1.01)</u> |
| Dividend declared per share | <u>\$ 0.40</u> | <u>\$ 0.40</u> | <u>\$ 0.40</u> |
| Weighted average shares used in computing net income per share: | | | |
| Basic | 70,489 | 69,575 | 68,507 |
| Diluted | 70,937 | 70,485 | 68,507 |

The accompanying notes are an integral part of these consolidated financial statements.

BROOKS AUTOMATION, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

| | <u>Year Ended September 30,</u> | | |
|--|---------------------------------|------------------|--------------------|
| | <u>2018</u> | <u>2017</u> | <u>2016</u> |
| | (In thousands) | | |
| Net income (loss) | \$ 116,464 | \$ 62,612 | \$ (69,476) |
| Other comprehensive (loss) income, net of tax: | | | |
| Cumulative foreign currency translation adjustments | (1,651) | (221) | 8,844 |
| Unrealized (losses) gains on marketable securities, net of tax effects of \$0, \$0 and \$58 for fiscal years 2018, 2017 and 2016 | (111) | 2 | (106) |
| Actuarial gains (losses), net of tax effects of (\$49), (\$74) and \$161 for fiscal years 2018, 2017 and 2016 | 136 | 525 | (322) |
| Pension settlement | — | (259) | — |
| Pension curtailment | — | — | 852 |
| Total other comprehensive (loss) income, net of tax | (1,626) | 47 | 9,268 |
| Comprehensive loss attributable to noncontrolling interest | 111 | — | — |
| Comprehensive income (loss) | <u>\$ 114,949</u> | <u>\$ 62,659</u> | <u>\$ (60,208)</u> |

The accompanying notes are an integral part of these consolidated financial statements.

BROOKS AUTOMATION, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

| | Year Ended September 30, | | |
|--|--------------------------|-------------------|------------------|
| | 2018 | 2017 | 2016 |
| | (In thousands) | | |
| Cash flows from operating activities | | | |
| Net income (loss) | \$ 116,464 | \$ 62,612 | \$ (69,476) |
| Adjustments to reconcile net income (loss) to net cash provided by operating activities: | | | |
| Depreciation and amortization | 37,429 | 28,149 | 28,046 |
| Gain on settlement of equity method investment | — | (1,847) | — |
| Impairment of other assets | — | — | 807 |
| Stock-based compensation | 19,822 | 17,278 | 11,737 |
| Amortization of premium on marketable securities and deferred financing costs | 710 | 252 | 339 |
| Earnings of equity method investments | (6,788) | (9,381) | (2,380) |
| Loss recovery on insurance claim | (1,103) | — | — |
| Deferred income tax benefit | (45,217) | 517 | 70,273 |
| Pension settlement | — | (259) | — |
| Other gains on disposals of assets | (758) | (406) | (41) |
| Changes in operating assets and liabilities, net of acquisitions: | | | |
| Accounts receivable | (28,463) | (11,178) | (1,796) |
| Inventories | (24,365) | (12,792) | 8,565 |
| Prepaid expenses and other current assets | (3,676) | (5,829) | (428) |
| Accounts payable | 5,457 | 7,846 | (5,143) |
| Deferred revenue | 2,791 | 8,049 | (3,290) |
| Accrued warranty and retrofit costs | (157) | 1,602 | 290 |
| Accrued compensation and tax withholdings | 5,978 | 5,565 | (3,234) |
| Accrued restructuring costs | (1,080) | (4,241) | 3,860 |
| Accrued pension costs | — | (32) | (811) |
| Accrued expenses and other current liabilities | (3,080) | 10,319 | 2,229 |
| Net cash provided by operating activities | <u>73,964</u> | <u>96,224</u> | <u>39,547</u> |
| Cash flows from investing activities | | | |
| Purchases of property, plant and equipment | (12,787) | (12,677) | (12,848) |
| Purchases of technology intangibles | — | (240) | — |
| Purchases of marketable securities | (69,692) | — | (12,901) |
| Sales of marketable securities | 1,584 | 3,590 | 139,388 |
| Maturities of marketable securities | 17,482 | — | — |
| Proceeds from divestitures | — | — | — |
| Disbursement for a loan receivable | — | — | (1,821) |
| Acquisitions, net of cash acquired | (85,755) | (44,791) | (125,248) |
| Proceeds from other investments | 500 | (170) | (250) |
| Proceeds from sales of property, plant and equipment | 200 | 100 | 2,806 |
| Net cash used in investing activities | <u>(148,468)</u> | <u>(54,188)</u> | <u>(10,874)</u> |
| Cash flows from financing activities | | | |
| Proceeds from term loan | 197,554 | — | 366 |
| Proceeds from issuance of common stock | 2,826 | 2,040 | 1,888 |
| Payment of deferred financing costs | (318) | (28) | (708) |
| Repayment of term loan | (1,500) | — | — |
| Common stock dividends paid | (28,285) | (27,932) | (27,503) |
| Net cash provided by (used in) financing activities | <u>170,277</u> | <u>(25,920)</u> | <u>(25,957)</u> |
| Effects of exchange rate changes on cash and cash equivalents | 313 | 420 | 1,648 |
| Net increase in cash and cash equivalents | 96,086 | 16,536 | 4,364 |
| Cash and cash equivalents, beginning of period | 101,622 | 85,086 | 80,722 |
| Cash and cash equivalents, end of period | <u>\$ 197,708</u> | <u>\$ 101,622</u> | <u>\$ 85,086</u> |
| Supplemental disclosures: | | | |
| Cash paid for interest | \$ 6,537 | \$ 200 | \$ 114 |
| Cash paid for income taxes, net | 21,051 | 8,142 | 4,930 |
| Supplemental disclosure of non-cash investing and financing activities: | | | |
| Deferred financing costs included in accounts payable | — | 423 | — |
| Fair value of non-cash consideration for the acquisition of Cool Lab, LLC | — | 10,348 | — |

The accompanying notes are an integral part of these consolidated financial statements.

BROOKS AUTOMATION, INC.
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

| | Common Stock Shares | Common Stock at Par Value | Additional Paid-In Capital | Accumulated Other Comprehensive Income | Accumulated Deficit | Treasury Stock | Total Brooks Automation, Inc. Stockholders' Equity | Noncontrolling Interests in Subsidiaries | Total Equity |
|--|-----------------------------------|------------------------------------|----------------------------------|---|------------------------|---------------------|---|--|-------------------|
| | (In thousands, except share data) | | | | | | | | |
| Balance September 30, 2015 | 81,093,052 | \$ 811 | \$ 1,846,357 | \$ 5,898 | \$ (1,020,065) | \$ (200,956) | \$ 632,045 | \$ — | \$ 632,045 |
| Shares issued under restricted stock and purchase plans, net | 1,127,218 | 10 | (2,391) | | | | (2,381) | | (2,381) |
| Stock-based compensation | | | 11,737 | | | | 11,737 | | 11,737 |
| Common stock dividends declared, at \$0.40 per share | | | | | | | | | |
| Net loss | | | | | (27,503) | | (27,503) | | (27,503) |
| Foreign currency translation adjustments | | | | 8,844 | (69,476) | | (69,476) | | (69,476) |
| Changes in unrealized gains on marketable securities, net of tax effects of \$58 | | | | | | | 8,844 | | 8,844 |
| Actuarial losses arising in the year, net of tax effects of \$161 | | | | (106) | | | (106) | | (106) |
| Pension curtailment | | | | (322) | | | (322) | | (322) |
| | | | | 852 | | | 852 | | 852 |
| Balance September 30, 2016 | 82,220,270 | 821 | 1,855,703 | 15,166 | (1,117,044) | (200,956) | 553,690 | — | 553,690 |
| Shares issued under restricted stock and purchase plans, net | 1,074,578 | 12 | 1,937 | | | | 1,949 | | 1,949 |
| Stock-based compensation | | | 17,278 | | | | 17,278 | | 17,278 |
| Common stock dividends declared, at \$0.40 per share | | | | | | | | | |
| Net income | | | | | (27,932) | | (27,932) | | (27,932) |
| Foreign currency translation adjustments | | | | (221) | 62,612 | | 62,612 | | 62,612 |
| Changes in unrealized losses on marketable securities, net of tax effects of \$0 | | | | | | | (221) | | (221) |
| Actuarial gains arising in the year, net of tax effects of (\$74) | | | | 2 | | | 2 | | 2 |
| Pension settlement | | | | 525 | | | 525 | | 525 |
| | | | | (259) | | | (259) | | (259) |
| Balance September 30, 2017 | 83,294,848 | 833 | 1,874,918 | 15,213 | (1,082,364) | (200,956) | 607,644 | — | 607,644 |
| Shares issued under restricted stock and purchase plans, net | 869,282 | 8 | 2,818 | | | | 2,826 | | 2,826 |
| Stock-based compensation | | | 19,822 | | | | 19,822 | | 19,822 |
| Common stock dividends declared, at \$0.40 per share | | | | | | | | | |
| Acquisition of noncontrolling interest | | | 876 | | | | (28,285) | | (28,285) |
| Net income | | | | | 116,575 | | 876 | 111 | 987 |
| Foreign currency translation adjustments | | | | (1,651) | | | 116,575 | (111) | 116,464 |
| Changes in unrealized losses on marketable securities, net of tax effects of \$0 | | | | | | | (1,651) | | (1,651) |
| Actuarial gains arising in the year, net of tax effects of (\$49) | | | | (111) | | | (111) | | (111) |
| | | | | 136 | | | 136 | | 136 |
| Balance September 30, 2018 | <u>84,164,130</u> | <u>\$ 841</u> | <u>\$ 1,898,434</u> | <u>\$ 13,587</u> | <u>\$ (994,074)</u> | <u>\$ (200,956)</u> | <u>\$ 717,832</u> | <u>\$ —</u> | <u>\$ 717,832</u> |

The accompanying notes are an integral part of these consolidated financial statements.

BROOKS AUTOMATION, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Nature of the Business

Brooks Automation, Inc. (“Brooks”, or the “Company”) is a leading global provider of automation and cryogenic solutions for multiple markets. The Company primarily serves two distinct and unrelated markets: the semiconductor capital equipment market and the life sciences sample management market. The Company believes its leadership positions and its global support capability in each of these markets makes it a valued business partner to the largest semiconductor capital equipment and device makers, and pharmaceutical and life science research institutions in the world. The Company’s offerings are also applied to other adjacent technology and industrial markets, and the Company provides customer support services globally.

In the fourth quarter of fiscal year 2018, the Company entered into a definitive agreement to sell its semiconductor cryogenics business to Edwards Vacuum LLC (a member of the Atlas Copco Group), (the “Disposition”). The Company determined that the cryogenics business met the “held for sale” criteria and the “discontinued operations” criteria in accordance with Financial Accounting Standard Boards (“FASB”) Accounting Standards Codification (“ASC”) 205, *Presentation of Financial Statements*, (“FASB ASC 205”) as of September 30, 2018 (please refer to Note 3, “Discontinued Operations” for further information about the discontinued business). The Consolidated Balance Sheets and Consolidated Statements of Operations, and the notes to the Consolidated Financial Statements were restated for all periods presented to reflect the discontinuation of the cryogenics business, in accordance with FASB ASC 205. The discussion in the notes to these Consolidated Financial Statements, unless otherwise noted, relate solely to the Company’s continuing operations.

2. Summary of Significant Accounting Policies

Principles of Consolidation and Basis of Presentation

The accompanying Consolidated Financial Statements include the accounts of the Company and its majority-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation. The Company applies equity method of accounting to investments that provide it with ability to exercise significant influence over the entities in which it lacks controlling financial interest and is not a primary beneficiary.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America (“GAAP”) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported amounts of revenue and expenses during the reporting period. Significant estimates are associated with recording accounts receivable, inventories, goodwill, intangible assets other than goodwill, long-lived assets, derivative financial instruments, deferred income taxes, warranty and pension obligations, revenue recognized in accordance with the percentage of completion method, and stock-based compensation expense. The Company assesses the estimates on an ongoing basis and records changes in estimates in the period they occur and become known. Actual results could differ from these estimates.

Business Combinations

The Company accounts for business acquisitions using the acquisition method of accounting, in accordance with which assets acquired and liabilities assumed are recorded at their respective fair values at the acquisition date. The fair value of the consideration paid, including contingent consideration, is assigned to the assets acquired and liabilities assumed based on their respective fair values. Goodwill represents excess of the purchase price over the estimated fair values of the assets acquired and liabilities assumed.

Significant judgments are used in determining fair values of assets acquired and liabilities assumed, as well as intangibles. Fair value and useful life determinations are based on, among other factors, estimates of future expected cash flows, royalty cost savings and appropriate discount rates used in computing present values. These judgments may materially impact the estimates used in allocating acquisition date fair values to assets acquired and liabilities assumed, as well as the Company's current and future operating results. Actual results may vary from these estimates which may result in adjustments to goodwill and acquisition date fair values of assets and liabilities during a measurement period or upon a final determination of asset and liability fair values, whichever occurs first. Adjustments to fair values of assets and liabilities made after the end of the measurement period are recorded within the Company's operating results.

Foreign Currency Translation

Certain transactions of the Company and its subsidiaries are denominated in currencies other than their functional currency. Foreign currency exchange gains (losses) generated from the settlement and remeasurement of these transactions are recognized in earnings and presented within "Other (expense) income, net" in the Company's Consolidated Statements of Operations. Net foreign currency transaction and remeasurement losses totaled \$3.3 million, \$2.3 million and \$1.9 million for the fiscal years ended September 30, 2018, 2017 and 2016, respectively.

The determination of the functional currency of the Company's subsidiaries is based on their financial and operational environment and is the local currency of all of the Company's foreign subsidiaries. The subsidiaries' assets and liabilities are translated into the reporting currency at period-end exchange rates, while revenue, expenses, gains and losses are translated at the average exchange rates during the period. Gains and losses from foreign currency translations are recorded in accumulated other comprehensive income in the Company's Consolidated Balance Sheets and presented as a component of comprehensive income (loss) in the Company's Consolidated Statements of Comprehensive Income (Loss).

Derivative Financial Instruments

All derivatives, whether designated as a hedging relationship or not, are recorded in the Consolidated Balance Sheets at fair value. The accounting for changes in fair value of a derivative instrument depends on whether it has been designated and qualifies as part of a hedging relationship and the type of hedging relationship. For those derivative instruments that are designated and qualify as hedging instruments, the Company must designate the hedging instrument as a fair value hedge, cash flow hedge or a hedge of a net investment in a foreign operation based on the exposure being hedged. Certain derivatives held by the Company are not designated as hedges but are used in managing exposure to changes in foreign exchange rates.

A fair value hedge is a derivative instrument designated for the purpose of hedging the exposure of changes in fair value of an asset or a liability resulting from a particular risk. If the derivative is designated as a fair value hedge, the changes in the fair value of the derivative and of the hedged item attributable to the hedged risk are both recognized in the results of operations and presented in the same caption in the Consolidated Statements of Operations and Consolidated Statements of Comprehensive Income (Loss).

A cash flow hedge is a derivative instrument designated for the purpose of hedging the exposure to variability in future cash flows resulting from a particular risk. If the derivative is designated as a cash flow hedge, the effective portions of changes in the fair value of the derivative are recorded in accumulated other comprehensive income and recognized in the results of operations when the hedged item affects earnings. Ineffective portions of changes in the fair value of cash flow hedges are recognized in the results of operations.

A hedge of a net investment in a foreign operation is achieved through a derivative instrument designated for the purpose of hedging the exposure of changes in value of investments in foreign subsidiaries. If the derivative is designated as a hedge of a net investment in a foreign operation, the effective portions of changes in the fair value of the derivative are recorded in other comprehensive income as a part of the foreign currency translation adjustment. Ineffective portions of net investment hedges are recognized in the results of operations.

For derivative instruments not designated as hedging instruments, changes in fair value are recognized in the Consolidated Statements of Operations as gains or losses consistent with the classification of the underlying risk.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist of cash deposits and cash equivalents, marketable securities, derivative instruments and accounts receivable. All of the Company's cash, cash equivalents, marketable securities and derivative instruments are maintained by major financial institutions.

The Company invests cash not used in operations in investment grade, high credit quality securities in accordance with the Company's investment policy which provides guidelines and limits regarding investments type, concentration, credit quality and maturity terms aimed at maintaining liquidity and reducing risk of capital loss.

The Company regularly monitors the creditworthiness of its customers and believes that it has adequately provided for exposure to potential credit losses. The Company's ten largest customers accounted for approximately 34%, 35% and 35% of its consolidated revenue for the fiscal years ended September 30, 2018, 2017 and 2016, respectively. No customers accounted for more than 10% of the Company's consolidated revenue for fiscal years 2018, 2017 and 2016.

Fair Value of Financial Instruments

The Company's financial instruments consist of cash and cash equivalents, marketable securities, derivative instruments, term loan, accounts receivable, and accounts payable. Marketable securities, derivative instruments and term loan are measured at fair value based on quoted market prices or observable inputs other than quoted market prices for identical or similar assets or liabilities. The carrying amounts of cash, cash equivalent, accounts receivable and accounts payable approximate their fair value due to their short-term nature.

Cash and Cash Equivalents

Cash and cash equivalents consist of cash and highly liquid investments with original maturities of three months or less that are readily convertible to known amounts of cash. At September 30, 2018 and 2017, cash equivalents were \$50.6 million and less than \$0.1 million, respectively. Cash equivalents are reported at cost which approximates their fair value due to their short-term nature and varying interest rates.

Accounts Receivable, Allowance for Doubtful Accounts and Sales Returns

Trade accounts receivable do not bear interest and are recorded at the invoiced amount. The Company maintains an allowance for doubtful accounts representing its best estimate of probable credit losses related to its existing accounts receivable and their net realizable value. The Company determines the allowance based on a number of factors, including an evaluation of customer credit worthiness, the age of the outstanding receivables, economic trends and historical experience. The Company reviews its allowance for doubtful accounts on a quarterly basis and adjusts the balance based on the Company's estimates of the receivables' recoverability in the period the changes in estimates occur and become known. Accounts receivable balances are written off against the allowance for doubtful accounts when the Company determines that the balances are not recoverable. Provisions for doubtful accounts are recorded in "Selling, general and administrative expenses" in the Consolidated Statements of Operations. The Company determines the allowance for sales returns based on its best estimate of probable customer returns. Provisions for sales returns are recorded in "Revenue" in the Consolidated Statements of Operations. The Company does not have any off-balance-sheet credit exposure related to its customers.

Inventories

Inventories are stated at the lower of cost or market determined on a first-in, first-out basis and include the cost of materials, labor and manufacturing overhead. The Company reports inventories at their net realizable value and provides reserves for excess, obsolete or damaged inventory based on changes in customer demand, technology and other economic factors.

Fixed Assets, Intangible Assets and Impairment of Long-lived Assets

Property, plant and equipment are stated at cost, net of accumulated depreciation. Depreciation expense is computed based on the straight-line method and charged to results of operations to allocate the cost of the assets over their estimated useful lives, as follows:

| | |
|---------------------------------|---------------|
| Buildings | 10 - 40 years |
| Computer equipment and software | 3 - 7 years |
| Machinery and equipment | 2 - 10 years |
| Furniture and fixtures | 3 - 10 years |

Leasehold improvements are amortized over the shorter of their estimated useful lives or the remaining terms of the respective leases. Equipment used for demonstrations to customers is included in machinery and equipment and depreciated over its estimated useful life. Repair and maintenance costs are expensed as incurred.

The Company has developed software for internal use. Internal and external labor costs incurred during the application development stage of a project are capitalized. Costs incurred prior to application development and post implementation are expensed as incurred. Training and data conversion costs are expensed as incurred. As of September 30, 2018, and 2017, the Company had cumulative capitalized direct costs of \$5.6 million and \$4.7 million, respectively, associated with development of software for its internal use. These capitalized costs are included within "Property, plant and equipment, net" in the accompanying Consolidated Balance Sheets. During fiscal year 2018, the Company capitalized direct costs of \$0.9 million associated with development of software for its internal use.

Cost of disposed assets and the associated accumulated depreciation are derecognized upon their retirement or at the time of disposal, and the resulting gain or loss is included in the Company's results of operations.

The Company identified finite-lived intangible assets other than goodwill as a result of acquisitions. Finite-lived intangible assets are valued based on estimated future cash flows and amortized over their estimated useful lives based on methods that approximate the pattern in which the economic benefits are expected to be realized.

Finite-lived intangibles assets and fixed assets are tested for impairment when indicators of impairment are present. For purposes of this test, long-lived assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. If the Company determines that indicators of potential impairment are present, it assesses the recoverability of long-lived asset group by comparing its undiscounted future cash flows to its carrying value. The future cash flow period is based on the future service life of the primary asset within the long-lived asset group. If the carrying value of the long-lived asset group exceeds its future cash flows, the Company determines fair values of the individual net assets within the long-lived asset group to assess potential impairment. If the aggregate fair values of the individual net assets of the group are less than their carrying values, an impairment loss is recognized for an amount in excess of the group's aggregate carrying value over its fair value. The loss is allocated to the assets within the group based on their relative carrying values, with no asset reduced below its fair value.

Finite-lived intangible assets are amortized over their useful lives, as follows:

| | |
|------------------------|--------------|
| Patents | 7 - 15 years |
| Completed technology | 3 - 10 years |
| Customer relationships | 3 - 11 years |

Goodwill

Goodwill represents the excess of a purchase price over the fair value of net tangible and identifiable intangible assets of the businesses acquired by the Company. Goodwill is tested for impairment annually or more often if impairment indicators are present at the reporting unit level. The Company has elected April 1st as its annual goodwill impairment assessment date. If the existence of events or circumstances indicates that it is more likely than not that fair

values of the reporting units are below their carrying values, the Company performs additional impairment tests during interim periods to evaluate goodwill for impairment.

Application of the goodwill impairment test requires significant judgment based on market and operational conditions at the time of the evaluation, including management's best estimate of future business activity and the related estimates of future cash flows from the assets and the reporting units that include the associated goodwill. These periodic evaluations could cause management to conclude that impairment factors exist, requiring an adjustment of these assets to their then-current fair market values. Future business conditions and/or activity could differ materially from the projections made by management which could result in additional adjustments and impairment charges.

The goodwill impairment test is performed at the reporting unit level. A reporting unit is either an operating segment or one level below it, which is referred to as a "component". The level at which the impairment test is performed requires an assessment of whether the operations below an operating segment constitute a self-sustaining business, in which case testing is generally performed at this level.

In accordance with ASC 350, *Intangibles- Goodwill and Other* ("ASC 350"), the Company first assesses qualitative factors to determine whether the existence of events or circumstances indicates that it is more likely than not that the fair value of a reporting unit is less than its carrying value. If the Company determines, based on this assessment, that it is more likely than not that the fair value of the reporting unit is less than its carrying value, it performs a quantitative goodwill impairment test by comparing the reporting unit's fair value with its carrying value. An impairment loss is recognized for the amount by which the reporting unit's carrying value exceeds its fair value, up to the total amount of goodwill allocated to the reporting unit.

The Company determines fair values of its reporting units based on an income approach in accordance with the discounted cash flow method, or DCF Method. The DCF Method is based on projected future cash flows and terminal value estimates discounted to their present values. Terminal value represents a present value an investor would pay on the valuation date for the rights to the cash flows of the business for the years subsequent to the discrete cash flow projection period. The observable inputs used in the DCF Method include discount rates set above the Company's weighted-average cost of capital. The Company derives discount rates that are commensurate with the risks and uncertainties inherent in the respective businesses and its internally developed projections of future cash flows. The Company considers the DCF Method to be the most appropriate valuation technique since it is based on management's long-term financial projections. Due to the cyclical nature of the semiconductor equipment market, management's projections as of the valuation date are considered more objective since market metrics of peer companies fluctuate during the cycle. In addition, the Company also compares aggregate values of its net corporate assets and reporting unit fair values to its overall market capitalization and uses certain market-based valuation techniques to test the reasonableness of the reporting unit fair values determined in accordance with the DCF Method.

Deferred Financing Costs

The Company records commitment fees and other costs directly associated with obtaining the term loan and line of credit financing as deferred financing costs which are presented within "Other assets" in the accompanying Consolidated Balance Sheets. Deferred financing costs were \$2.9 million and \$0.5 million at both September 30, 2018 and 2017. Such costs are amortized over the term of the related financing arrangement and included in "Interest expense" in the accompanying Consolidated Statements of Operations. Amortization expense incurred during fiscal years ended September 30, 2018 and 2017 was not material and was included in interest expense in the accompanying Consolidated Statements of Operations. Please refer to Note 10, "Line of Credit" and Note 11, "Debt" for further information on this arrangement.

Warranty Obligations

The Company offers warranties on the sales of certain of its products and records warranty obligations for estimated future claims at the time revenue is recognized. Warranty obligations are estimated based on historical experience and management's estimate of the level of future claims.

Defined Benefit Pension Plans

The cost and obligations of the Company's defined benefit pension plans are calculated based on certain assumptions related to the estimated benefits that employees earn while working, the amount of which cannot be completely determined until the benefit payments cease. Key assumptions used in accounting for these employee benefit plans include the discount rate, expected return on plan assets and rate of increase in employee compensation levels. Assumptions are determined based on Company data and appropriate market indicators in consultation with third-party actuaries, and are evaluated each year as of the plans' measurement date.

Revenue Recognition

The Company generates revenue from the following sources:

- Products, including sales of tool automation and automated cold sample management systems, atmospheric and vacuum robots, contamination control solutions, as well as consumables and spare parts.
- Services, including repairs, upgrades, diagnostic support, installation, as well as biological sample and other support services.

The Company recognizes revenue for such products and services when it is realized or realizable and earned. Revenue is considered realized and earned when all of the following revenue recognition criteria have been met: (i) persuasive evidence of an arrangement exists; (ii) delivery has occurred or services have been rendered; (iii) the fee is fixed or determinable; and (iv) collectability is probable. The Company recognizes shipping and handling fees billed to customers as revenue and includes the related costs in "Cost of revenue" in the accompanying Consolidated Statements of Operations. Revenue is presented net of taxes assessed by governmental authorities on revenue-producing transactions. Revenue from software products generated during fiscal years ended September 30, 2018 and 2017 was insignificant.

Products

Revenue from the sale of products is recognized upon their delivery to customers, provided all other revenue recognition criteria have been met. Delivery is considered complete when both of the following conditions have been met: (i) legal title and risk of loss have transferred to the customer upon product shipment or delivery; and (ii) the Company has reliably demonstrated that products have met their required specifications prior to shipment and, as a result, the Company possesses an enforceable claim right to amounts recognized as revenue. Revenue is recognized upon obtaining a customer technical acceptance if the Company was not able to demonstrate that products have met their required specifications prior to shipment and / or legal title and risk of loss did not transfer to the customer upon product shipment or delivery. Revenue from third-party sales for which the Company does not meet the criteria for gross revenue recognition is recognized on a net basis. All other revenue is recognized on a gross basis.

Customer allowances and rebates consist primarily of volume discounts and other incentive programs. Customer allowance and rebate amounts are estimated based on historical experience, contractual terms and expected level of sales during the qualifying incentive program period. The Company records customer allowances and rebates as a reduction of revenue at the time of product sale since they represent a reduction in purchase price.

Revenue from product sales that involve significant customization, which include primarily automated cold sample management systems, is recognized based on the percentage of completion method. The Company recognizes revenue as work progresses based on a percentage of actual labor hours incurred on the project to-date and total estimated labor hours expected to be incurred on the project. The Company develops profit estimates for long-term contracts based on total revenue expected to be generated from the project and total costs anticipated to be incurred. These estimates are based on a number of factors, including the degree of required product customization and the customer's existing environment based on installation work, as well as the Company's historical experience, project plans and an assessment of the risks and uncertainties inherent in the contract related to implementation delays or performance issues that may or may not be within the Company's control. The Company estimates a loss on a contract by comparing total estimated contract revenue to the total estimated contract costs and recognizes a loss during the period in which it becomes

probable and can be reasonably estimated. The Company reviews profit estimates for long-term contracts during each reporting period and revises them based on changes in circumstances.

The Company uses the completed contract method for certain arrangements that involve significant product customization and include contractual terms and customer rights disallowing the use of the percentage of completion method. The Company recognizes revenue for these arrangements upon completion or substantial completion of the project, provided all other revenue recognition criteria have been met. The project is considered substantially complete when the Company receives acceptance and remaining tasks are perfunctory or inconsequential and in control of the Company. Generally, the terms of long-term contracts provide for progress billings based on completion of milestones or other defined phases of work. In certain instances, payments collected from customers in advance of recognizing the related revenue are recorded as deferred revenue.

Services

Service revenue is generally recognized ratably over the period of performance, provided all other revenue recognition criteria have been met. Payments due or received from the customers prior to rendering the associated services are recorded as deferred revenue. Revenue from repair services or upgrades of customer-owned equipment is recognized upon completion of the repair effort and the shipment of the repaired product back to the customer. If the repairs or the upgrades include installation, revenue is generally recognized when the installation is completed unless the installation period is longer term in nature and the project is accounted for on percentage-of-completion basis.

Multiple Element Arrangements

Certain customer arrangements related to the sale of automated cold sample management systems and contamination control solution products represent multiple element arrangements that include product, service and other elements. The Company allocates arrangement consideration to each deliverable that has a standalone value based upon the selling price hierarchy which requires the Company to use vendor-specific objective evidence (the "VSOE") of selling price if it exists, or a third-party evidence (the "TPE") of the selling price in the absence of VSOE. If neither VSOE nor TPE of selling price exists for a deliverable, the Company uses its best estimate of selling price (the "BESP") for that deliverable. The Company has not been able to establish VSOE or TPE for the deliverables included in the multiple element arrangements and, as a result, primarily uses BESP to allocate the arrangement consideration. The Company determines BESP based on the cost plus a reasonable margin approach and considers entity-specific, as well as external market factors, when developing such estimates.

The Company recognizes revenue for each deliverable that has a standalone value in accordance with its revenue recognition policies. Revenue allocated to the delivered elements is recognized at the time of delivery, provided all other revenue recognition criteria are met. Revenue allocated to the undelivered elements is deferred until the elements are delivered and all other revenue recognition criteria have been met.

Certain multiple element arrangements include the sale of automated cold sample management systems and contamination control solution products with installation services. Revenue allocated to the automated cold sample management systems and contamination control solution products is recognized in accordance with the Company's revenue recognition policies. Revenue allocated to the installation services is recognized based on the percentage-of-completion method or the completed contract method in which case it is deferred until the installation-related tasks have been completed.

Certain customer arrangements include contingent revenue provisions in which a portion of the selling price of a delivered element is contingent on meeting specified performance criteria or on delivery of other elements included in the arrangement. The amount of revenue recognized for these arrangements is limited to the lower of either: (i) the amount billed to the customer that is not contingent on obtaining a customer technical acceptance; or (ii) the value of the arrangement consideration allocated to the delivered elements.

Research and Development Expense

Research and development costs are expensed as incurred. Research and development costs consist primarily of personnel expenses related to development of new products, as well as enhancements and engineering changes to existing products and development of hardware and software components.

Stock-Based Compensation Expense

The Company measures stock-based compensation cost at fair value on the grant date and recognizes the expense over the service period for the awards expected to vest. The fair value of restricted stock units is determined based on the number of shares granted and the closing price of the Company's common stock quoted on Nasdaq on the date of grant.

The Company recognizes stock-based compensation expense on a straight-line basis, net of estimated forfeitures, over the requisite service period. The Company recognizes benefits from stock-based compensation in equity using the with-and-without approach for the utilization of tax attributes. The Company makes estimates of stock award forfeitures and a number of awards expected to vest which requires significant judgment. The Company considers many factors in developing forfeiture estimates, including award types, employee classes and historical experience. The Company assesses the likelihood of achieving the performance goals for stock-based awards that vest upon the satisfaction of these goals. Current estimates may differ from actual results and future changes in estimates.

The following table reflects stock-based compensation expense, excluding amounts related to discontinued operations, recorded during the fiscal years ended September 30, 2018, 2017 and 2016 (in thousands):

| | Year Ended September 30, | | |
|--|--------------------------|------------------|------------------|
| | 2018 | 2017 | 2016 |
| Restricted stock | \$ 18,081 | \$ 16,056 | \$ 10,859 |
| Employee stock purchase plan | 775 | 517 | 418 |
| Total stock-based compensation expense | <u>\$ 18,856</u> | <u>\$ 16,573</u> | <u>\$ 11,277</u> |

Valuation Assumptions for an Employee Stock Purchase Plan

The fair value of shares issued under the employee stock purchase plan is estimated on the commencement date of each offering period using the Black-Scholes option-pricing model with the following weighted average assumptions for the fiscal years ended September 30, 2018, 2017 and 2016:

| | Year Ended September 30, | | |
|-------------------------|--------------------------|----------|----------|
| | 2018 | 2017 | 2016 |
| Risk-free interest rate | 1.9 % | 0.9 % | 0.4 % |
| Volatility | 46 % | 34 % | 32 % |
| Expected life | 6 months | 6 months | 6 months |
| Dividend yield | 1.5 % | 3.4 % | 3.4 % |

The risk-free rate is based on the U.S. Treasury yield curve for notes with terms approximating the expected life of the shares granted. The expected stock price volatility is determined based on the Company's historic stock prices over a period commensurate with the expected life of the shares granted. The expected life represents the weighted average period over which the shares are expected to be purchased. Dividend yields are projected based on the Company's history of dividend declarations and management's intention for future dividend declarations.

Restructuring Expenses

The Company records restructuring expenses associated with management-approved restructuring actions, such as consolidation of duplicate infrastructure and reduction in force, to streamline its business operations and improve profitability and competitiveness. Restructuring expenses include severance costs, contract termination costs to vacate facilities and consolidate operations, and other costs directly associated with restructuring actions. The Company records severance and other employee termination costs associated with restructuring actions when it is probable that benefits

will be paid and the amounts can be reasonably estimated. The rates used in determining restructuring liabilities related to severance costs are based on existing plans, historical experience and negotiated settlements.

Income Taxes

The Company records income taxes using the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax bases, as well as operating loss and tax credit carryforwards. The Company's Consolidated Financial Statements contain certain deferred tax assets that were recorded as a result of operating losses, as well as other temporary differences between financial and tax accounting. A valuation allowance is established against deferred tax assets if, based upon the evaluation of positive and negative evidence and the extent to which that evidence is objectively verifiable, it is more likely than not that some or all of the deferred tax assets will not be realized.

Significant management judgment is required in determining the Company's income tax provision, the Company's deferred tax assets and liabilities and any valuation allowance recorded against those net deferred tax assets. The Company evaluates the weight of all available evidence to determine whether it is more likely than not that some portion or all of the net deferred income tax assets will not be realized.

The calculation of the Company's tax liabilities involves consideration of uncertainties in the application of complex tax regulations. The Company recognizes liabilities for uncertain tax positions based on a two-step process. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained upon an audit or an examination conducted by taxing authorities, including resolution of related appeals or litigation processes, if any. If the Company determines that a tax position will more likely than not be sustained, the second step requires the Company to estimate and measure the tax benefit as the largest amount that is more likely than not to be realized upon ultimate settlement. It is inherently difficult and subjective to estimate such amounts, as the Company has to determine the probability of various possible outcomes. The Company re-evaluates these uncertain tax positions on a quarterly basis. This evaluation is based on factors, such as changes in facts or circumstances, tax law, new audit activity and effectively settled issues. Determining whether an uncertain tax position is effectively settled requires judgment. A change in recognition or measurement may result in the recognition of a tax benefit or an additional charge to the tax provision.

Earnings Per Share

Basic income (loss) per share is determined by dividing net income (loss) by the weighted average common shares outstanding during the period. Diluted income (loss) per share is determined by dividing net income (loss) by diluted weighted average shares outstanding during the period. Diluted weighted average shares reflect the dilutive effect, if any, of potential common shares. To the extent their effect is dilutive, employee equity awards and other commitments to be settled in common stock are included in the calculation of diluted income per share based on the treasury stock method. Potential common shares are excluded from the calculation of dilutive weighted average shares outstanding if their effect would be anti-dilutive at the balance sheet date based on a treasury stock method or due to a net loss.

Recently Issued Accounting Pronouncements

In May 2014, the FASB issued new accounting guidance for reporting revenue recognition, ASC 606 *Revenue from Contracts with Customers* ("ASC 606"). The guidance provides for the recognition of revenue when promised goods or services are transferred to customers in an amount that reflects the consideration that is expected to be received for those goods or services. In addition, the guidance requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. The guidance also specifies the accounting for certain costs to obtain and fulfill a contract, as codified in ASC 340-40 *Accounting for Other Assets and Deferred Costs*, ("ASC 340-40").

The Company will adopt this standard effective October 1, 2018, using the modified retrospective method and will only apply this method to contracts that are not completed as of the effective date and all new contracts initiated on or after the effective date. The Company's quarterly results beginning with the quarter ended December 31, 2018 will be compliant with ASC 606. The Company's Annual Report on Form 10-K for the year ended September 30, 2019 will be the

Company's first Annual Report that will be issued in compliance with ASC 606. Comparative prior periods will not be restated.

The Company has established an implementation team to assist with its assessment of the impact of the new revenue guidance on its operations, consolidated financial statements and related disclosures. The implementation team is also responsible for evaluating and designing the necessary changes to the Company's business processes, policies, systems and controls to support recognition and disclosure under the new guidance. The implementation team has completed its procedures over the implementation of ASC 606 and has identified the necessary changes to the Company's processes, policies, systems and controls.

The Company expects to record a cumulative-effect adjustment as of October 1, 2018, which is expected to impact retained earnings by an amount not to exceed \$3 million. This adjustment is driven by the acceleration of revenue within the Semiconductor Solutions Group segment, and deferral of previously recognized revenue and commission expense within the Brooks Life Sciences segment. The anticipated adjustment within the Semiconductor Solutions Group segment is derived from the elimination of billing constraints that historically prevented the Company from recognizing revenue in excess of its right to bill. The anticipated adjustment within the Brooks Life Science segment is derived from the requirement to recognize revenue and commission expense associated with certain transactions over time under ASC 606, while historically these transactions have been recorded at a point in time. In accordance with the adoption of ASC 606, classification of certain balance sheet accounts will be impacted through the creation of contract assets and contract liabilities, and additional disclosures will be required. The Company's systems and internal control environment are not expected to be significantly impacted by the adoption of the standard. The Company will fully disclose the impacts of the new standard in connection with its Quarterly Report on Form 10-Q for the quarter ended December 31, 2018.

In accordance with the adoption of ASC 606, the Company expects to accelerate revenue related to semiconductor contamination control solutions as the Company is no longer required to restrain revenue in accordance with billing constraints defined in the contract with the customer. Under ASC 606, this constraint has been removed, permitting the Company to recognize revenue in an amount equivalent to the transfer of control that has occurred. This change will result in an anticipated impact to retained earnings of approximately \$1 million to \$2 million as of October 1, 2018. In addition, the Company expects to defer previously recognized revenue related to sample life cycle management solutions. Fees associated with the registration of biological samples are currently recognized at a point in time upon completion of the registration services, provided all other criteria for revenue recognition have been met. The adoption of the standard will result in revenue generated from registration fees being recognized ratably over the period of benefit, which is generally two years. This change will result in an anticipated impact to retained earnings of approximately \$2 million to \$4 million as of October 1, 2018. The Company expects this impact to retained earnings to be offset by the deferral of previously recognized commission expense. Sales commissions resulting from the acquisition of contracts with customers are currently expensed when incurred. Upon the adoption of the standard certain costs to obtain a contract will be required to be recorded as an asset when incurred and expensed as the transfer of control of the underlying performance obligations occur or over the estimated customer life, depending on the nature of the underlying contract. The Company expects this change to impact its commissions earned on contracts with a term greater than 12 months. This change will result in an anticipated impact to retained earnings of approximately \$0.8 million to \$1.4 million as of October 1, 2018 for contracts which are not completed as of the effective date. The adoption of ASC 606 will result in additional changes to the Company's retained earnings. The effect of these changes both individually and in the aggregate are expected to be insignificant and result from identification of additional performance obligations, reallocation of transaction consideration and changes to the timing and amount of revenue recognized for certain product and service offerings. The corresponding tax effect from these adjustment's will have an insignificant impact to the cumulative effect adjustment.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*, which replaces ASC 840 to set forth disclosure requirements related to leases. In accordance with provisions of the newly issued guidance, a lessee should recognize at the inception of the arrangement a right-of-use asset and a corresponding lease liability initially measured at the present value of lease payments over the lease term. For finance leases, interest on a lease liability should be recognized separately from the amortization of the right-of-use asset, while for operating leases, total lease costs are recorded on a straight-line basis over the lease term. For leases with a term of twelve months or less, a lessee is permitted to make an accounting policy election by class of underlying assets to forgo recognition of right-of-use assets and corresponding lease liabilities and record a lease expense on a straight-line basis. Entities should determine at the inception of the arrangement whether

a contract represents a lease or contains a lease which is defined as a right to control the use of identified property for a period of time in exchange for consideration. Additionally, entities should separate the lease components from the non-lease components and allocate the contract consideration on a relative standalone price basis in accordance with provisions of ASC 606. The guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2018 and should be adopted via a modified retrospective approach with certain optional practical expedients that entities may elect to apply. The Company expects to adopt the guidance during the first quarter of fiscal year 2020 and is currently evaluating the impact of this guidance on its financial position and results of operations.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments—Credit Losses (Topic 326)*, which amends ASC 326 to add, remove, and clarify disclosure requirements related to credit losses of financial instruments. The new guidance introduces a new "expected loss" impairment model which applies to most financial assets measured at amortized cost and certain other instruments, including trade and other receivables, loans, held-to-maturity debt securities and other financial assets. Entities are required to estimate expected credit losses over the life of financial assets and record an allowance against the assets' amortized cost basis to present them at the amount expected to be collected. Additionally, the guidance amends the impairment model for available for sale debt securities and requires entities to determine whether all or a portion of the unrealized loss on such debt security is a credit loss. The guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2019. Early adoption of the newly issued guidance is permitted for fiscal years, and interim periods within those years, beginning after December 15, 2018. The standard should be applied as a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective. The Company expects to adopt the guidance during the first quarter of fiscal year 2021 and is currently evaluating the impact of this guidance on its financial position and results of operations.

In January 2017, the FASB issued ASU 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business*, which amends ASC 805 to add, remove, and clarify disclosure requirements related to business combinations. This guidance revised the definition of a business to assist entities with evaluating whether a set of transferred assets and activities represents a business. Such a set of transferred assets and activities does not represent a business if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or a group of similar identifiable assets. If the threshold is not met, entities need to evaluate whether the set of assets and activities meets the requirement that a business includes, at a minimum, an input and a substantive process that together significantly contribute to the ability to create outputs. The guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2017 and should be adopted prospectively. Early adoption of the newly issued guidance is permitted. The Company is currently evaluating the impact of this guidance on its financial position and results of operations.

In March 2018, the FASB issued ASU 2018-02, *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*, which amends ASC 220 to add, remove, and clarify disclosure requirements related to reporting comprehensive income. This ASU gives entities the option to reclassify tax effects recorded in accumulated other comprehensive income as a result of tax reform to retained earnings. The entities have the option to apply the guidance retrospectively or in the period of adoption. The guidance requires entities to make new disclosures, regardless of whether they elect to reclassify tax effects. The guidance is effective for fiscal years beginning after December 15, 2018, and interim periods within those fiscal years. Early adoption in any period is permitted. The Company expects to adopt the guidance during the first quarter of fiscal year 2020 and is evaluating the effect that ASU 2018-02 will have on its consolidated financial statements and related disclosures.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement*, which amends ASC 820 to add and remove disclosure requirements related to fair value measurement. The amendments include new disclosure requirement for changes in unrealized gains or losses included in other comprehensive income (OCI) for recurring Level 3 fair value measurements held at the end of the reporting period and the range and weighted average used to develop significant unobservable inputs for Level 3 fair value measurements. The amendments eliminated disclosure requirements for amount of and reasons for transfers between Level 1 and Level 2, valuation processes for Level 3 fair value measurements, and policy for timing of transfers between levels of the fair value hierarchy. In addition, the amendments modified certain disclosure requirement to provide clarification or to promote appropriate exercise of discretion by

entities. ASU 2018-13 is effective for fiscal years beginning after December 15, 2019, including interim periods therein. Early adoption is permitted. The Company is currently evaluating the impact of this ASU.

In August 2018, the FASB issued ASU 2018-14, *Disclosure Framework — Changes to the Disclosure Requirements for Defined Benefit Plans*, which amends ASC 715 to add, remove, and clarify disclosure requirements related to defined benefit pension and other postretirement plans. The amendments require additional disclosure for the weighted-average interest crediting rates, a narrative description of the reasons for significant gains and losses, and an explanation of any other significant changes in the benefit obligation or plan assets. The amendment removes disclosure requirement for accumulated other comprehensive income expected to be recognized over the next year, information about plan assets to be returned to the entity, and the effects of a one-percentage-point change on the assumed health care costs and the effect of this change in rates on service cost, interest cost, and the benefit obligation for postretirement health care benefits. The ASU is effective for fiscal years ending after December 15, 2020. Early adoption is permitted. The ASU does not amend the interim disclosure requirements of ASC 715-20. The Company is currently evaluating the impact of this ASU.

Recently Adopted Accounting Pronouncements

In March 2016, the FASB issued ASU 2016-09, *Compensation-Stock Compensation (Topic 718): Improvement to Employee Share-Based Payment Accounting*, which amends ASC 718 to add, remove, and clarify disclosure requirements related to stock compensation. This guidance was issued to simplify accounting for share-based payment awards issued to employees. The amendment requires recognition of excess tax benefits or deficiencies within income tax expense or benefit and changes their presentation requirements on the statement of cash flows. Additionally, the entity can make an accounting policy election to either estimate the number of awards that are expected to vest, consistent with the current accounting guidance, or account for forfeitures as they occur. The guidance is effective for fiscal years, and interim periods within those years, beginning after December 15, 2016. Early adoption of the newly issued guidance is permitted. The Company adopted the guidance during the first quarter of fiscal year 2018. Upon adoption of this guidance, the Company made an accounting policy election to continue accounting for forfeitures by applying an estimated forfeiture rate. The adoption of this guidance did not have an impact on the stock compensation expense amount recognized during the year ended September 30, 2018 and accumulated deficit at September 30, 2018.

3. Discontinued Operations

On August 27, 2018, the Company entered into a definitive agreement to sell its semiconductor cryogenics business to Edwards Vacuum LLC (a member of the Atlas Copco Group) for \$675.0 million in cash. The purchase price is subject to adjustments for working capital and other items. The Company anticipates closing of the transaction in the first quarter of calendar year 2019 upon satisfaction of various closing conditions and regulatory approvals.

The semiconductor cryogenics business consists of the CTI pump business, Polycold chiller business, the related services business and the Company's 50% share in Ulvac Cryogenics, Inc., a joint venture based in Japan. The semiconductor cryogenics business was originally acquired by the Company in its 2005 merger with Helix Technology Corporation and is included in the Brooks Semiconductor Solutions Group segment as part of the segment.

In connection with the Disposition, the Company and Edwards entered into a transition service agreement, a supply agreement, and lease agreements. The transition service agreement outlines the information technology, people, and facility support the Company expects to provide to Edwards for a period from 1 month to 6 months after transaction closing date. The supply agreement allows the Company to purchase CTI and Polycold goods at cost from Edwards up to an aggregate amount equal to \$1.0 million during the one-year term after closing of the Disposition. The lease agreements will provide facility space to Edwards free of charge for three years after the transaction closing date. Edwards will have the option to renew each lease at the then current market rates after the initial three-year lease term has ended. This Disposition is consistent with the Company's long-standing strategy to increase shareholder value by accelerating the growth of its Life Sciences business with further acquisitions and strengthening its semiconductor automation business with opportunistic acquisitions.

The Disposition met the "held for sale" criteria and the "discontinued operation" criteria in accordance with FASB ASC 205 as of September 30, 2018. As such, its operating results have been reported as a discontinued operation for all periods presented.

The following table presents the financial results of discontinued operations (in thousands):

| | Fiscal Year Ended September 30, | | |
|---|--|------------------|------------------|
| | 2018 | 2017 | 2016 |
| Revenue | | | |
| Products | \$ 150,365 | \$ 126,638 | \$ 85,860 |
| Services | 45,731 | 38,748 | 40,451 |
| Total revenue | <u>196,096</u> | <u>165,386</u> | <u>126,311</u> |
| Cost of revenue | | | |
| Products | 85,350 | 73,714 | 55,144 |
| Services | 22,834 | 22,400 | 28,974 |
| Total cost of revenue | <u>108,184</u> | <u>96,114</u> | <u>84,118</u> |
| Gross profit | <u>87,912</u> | <u>69,272</u> | <u>42,193</u> |
| Operating expenses | | | |
| Research and development | 7,605 | 6,860 | 6,932 |
| Selling, general and administrative | 25,017 | 12,536 | 12,139 |
| Restructuring charges | 2 | 82 | 1,830 |
| Total operating expenses | <u>32,624</u> | <u>19,478</u> | <u>20,901</u> |
| Operating income | <u>55,288</u> | <u>49,794</u> | <u>21,292</u> |
| Interest income | | | |
| Interest expense | | | |
| Other (expense) income, net | 1,091 | 1,057 | 804 |
| Income before income taxes and earnings of equity method investment | <u>56,379</u> | <u>50,851</u> | <u>22,096</u> |
| Income tax provision | 14,420 | 8,760 | 9,560 |
| Income before equity in earnings of equity method investment | <u>41,959</u> | <u>42,091</u> | <u>12,536</u> |
| Equity in earnings of equity method investment | 6,788 | 9,834 | 3,445 |
| Net income | <u>\$ 48,747</u> | <u>\$ 51,925</u> | <u>\$ 15,981</u> |

The Company performed its annual goodwill impairment analysis in April 2018. This analysis was updated upon announcement of the Disposition for the year ended September 30, 2018. The Company has concluded that there is no impairment indicator related to the goodwill of the Disposition group at either date the impairment analysis was performed.

The following table presents the summarized financial information for Ulvac Cryogenics, Inc., the unconsolidated subsidiaries accounted for based on the equity method (in thousands):

| | September 30, | |
|-------------------------|----------------------|-------------|
| | 2018 | 2017 |
| Balance Sheets: | | |
| Current assets | \$ 69,302 | \$ 74,645 |
| Non-current assets | 21,338 | 16,829 |
| Current liabilities | 26,006 | 29,622 |
| Non-current liabilities | 8,397 | 7,860 |

| | Fiscal Year Ended September 30, | | |
|----------------------------------|---------------------------------|------------|-----------|
| | 2018 | 2017 | 2016 |
| Statements of Operations: | | | |
| Total revenue | \$ 94,652 | \$ 104,667 | \$ 68,054 |
| Gross profit | 34,982 | 41,241 | 23,586 |
| Operating Income | 18,405 | 26,340 | 10,571 |
| Net income | 13,345 | 19,451 | 7,492 |

The following table presents the significant non-cash items and capital expenditures for the discontinued operations that are included in the Consolidated Statements of Cash Flows (in thousands):

| | Fiscal Year Ended September 30, | | |
|--------------------------------------|---------------------------------|---------|----------|
| | 2018 | 2017 | 2016 |
| Depreciation and amortization | \$ 743 | \$ 919 | \$ 1,034 |
| Capital expenditures | 302 | 1,049 | 560 |
| Stock-based compensation | 966 | 705 | 460 |
| Earnings of equity method investment | (6,788) | (9,834) | (3,445) |

The carrying value of the assets and liabilities of the discontinued operations on the Consolidated Balance Sheet as of September 30, 2018 and September 30, 2017 were as follows (in thousands):

| | Fiscal Year Ended September 30, | |
|---|---------------------------------|-----------|
| | 2018 | 2017 |
| <u>Assets</u> | | |
| Accounts receivable, net | \$ 27,852 | \$ 27,363 |
| Inventories | 37,953 | 32,998 |
| Other current assets | 343 | 310 |
| Total current assets of discontinued operation | \$ 66,148 | \$ 60,671 |
| Property, plant and equipment, net | \$ 1,081 | \$ 1,481 |
| Goodwill | 26,485 | 26,485 |
| Intangibles, net | 14 | 16 |
| Equity method investment | 31,472 | 28,570 |
| Other assets | - | 1 |
| Total long-term assets of discontinued operation | \$ 59,052 | \$ 56,553 |
| <u>Liabilities</u> | | |
| Deferred revenue | \$ 1,052 | \$ 1,728 |
| Accrued warranty and retrofit costs | 2,464 | 2,574 |
| Accrued compensation and benefits | 3,648 | 3,189 |
| Other current liabilities | 224 | 334 |
| Total current liabilities of discontinued operation | \$ 7,388 | \$ 7,825 |
| Long-term liabilities of discontinued operation | \$ 698 | \$ 652 |

4. Acquisitions

Acquisitions Completed in Fiscal Year 2018

Acquisition of Tec-Sem

On April 6, 2018, the Company acquired approximately 93% of the outstanding capital stock of Tec-Sem Group AG (“Tec-Sem”), a Switzerland-based manufacturer of semiconductor fabrication automation equipment with a focus on reticle management. In the fourth quarter of fiscal year 2018, the Company acquired the remaining 7% noncontrolling interest upon the completion of certain procedural steps. The total cash payment to acquire the business was \$15.6 million, net of cash acquired and subject to working capital adjustments. The acquisition of Tec-Sem has expanded the Company’s contamination control solutions business within the Brooks Semiconductor Solutions Group segment.

The preliminary amounts recorded were as follows (in thousands):

| | Fair Value of Assets and Liabilities |
|--|---|
| Accounts receivable (approximates contractual value) | \$ 988 |
| Inventories | 4,297 |
| Prepaid expenses and other current assets | 4,038 |
| Property, plant and equipment | 85 |
| Intangible assets | 10,694 |
| Goodwill | 7,665 |
| Accounts payable | (1,049) |
| Accrued liabilities | (6,962) |
| Deferred tax liabilities | (1,391) |
| Accrued pension liability | (2,800) |
| Total purchase price, net of cash acquired | \$ 15,565 |

The Company applied variations of the income approach to estimate the fair values of the intangible assets acquired. The identifiable intangible assets include completed technology (excess earnings method) of \$8.4 million with a useful life of 10 years, backlog (excess earnings method) of \$1.6 million with a useful life of 1 year, and customer relationships (distributor method) of \$0.7 million with a useful life of 9 years. The intangible assets acquired are amortized over the total weighted average period of 8.6 years using methods that approximate the pattern in which the economic benefits are expected to be realized.

Goodwill of \$7.7 million largely reflects the potential synergies and expansion of technical capabilities to the Company's existing contamination control solutions business. The goodwill from this acquisition is reported within the Brooks Semiconductor Solutions Group segment and is not tax deductible.

As part of the acquisition, the Company assumed all the assets and liabilities of Tec-Sem’s Swiss defined benefit plan, which covered substantially all its full-time employees. At acquisition date, the plan was fully funded for each employee’s pension contribution plus an expected rate of return equal to the statutory discount rate. Total plan assets and plan liability were \$5.1 million and \$7.9 million, respectively, at acquisition date. The Company recorded a liability of \$2.8 million for the unfunded projected benefit obligation related to each plan participant’s future services.

The Company reports the results of operations for Tec-Sem in the Brooks Semiconductor Solutions Group segment. The revenues and net loss from Tec-Sem included in the Company's consolidated results for fiscal year 2018 were \$11.6 million and \$1.2 million, respectively. During fiscal year 2018, the net loss included \$0.7 million related to the step-up in value of the acquired inventories and \$2.1 million related to amortization expense of acquired intangible assets. During fiscal year 2018, the Company incurred \$0.9 million in transaction costs related to the Tec-Sem acquisition.

The escrow at closing had a balance of \$2.6 million which consisted of \$1.8 million related to satisfaction of the sellers' indemnification obligations with respect to their representations and warranties and other indemnities. The remaining \$0.8 million of the escrow balance is related to a performance obligation that the Company assumed at the acquisition date for the transfer of non-core wafer stocker technology to an unrelated third party. Upon successful delivery of such technology, the Company expects to collect a portion of the \$0.8 million which represent reimbursement of costs incurred to complete development.

The Company did not present a pro forma information summary for its consolidated results of operations for the fiscal years ended September 30, 2018 and 2017 as if the acquisition of Tec-Sem occurred on October 1, 2016 because such results were immaterial.

Acquisition of 4titude Limited

On October 5, 2017, the Company acquired all the outstanding capital stock of 4titude Limited (“4titude”), a U.K.-based manufacturer of scientific consumables for biological sample materials used in a variety of genomic and DNA analytical applications. The acquisition of 4titude has expanded the Company’s existing offerings of consumables and instruments within the Brooks Life Sciences segment. The aggregate purchase price of \$65.1 million, net of cash acquired, consisted primarily of a cash payment of \$64.8 million subject to working capital adjustments and the assumption of the seller’s liabilities of \$0.4 million.

The Company used a market participant approach to record the assets acquired and liabilities assumed in the 4titude acquisition as follows (in thousands):

| | Fair Value of Assets and Liabilities |
|--|---|
| Accounts receivable (approximates contractual value) | \$ 1,581 |
| Inventories | 2,667 |
| Prepaid expenses and other current assets | 140 |
| Property, plant and equipment | 1,555 |
| Intangible assets | 27,212 |
| Goodwill | 38,185 |
| Accounts payable | (286) |
| Accrued liabilities | (845) |
| Deferred tax liabilities | (5,090) |
| Total purchase price, net of cash acquired | <u>\$ 65,119</u> |

The Company applied variations of the income approach to estimate the fair values of the intangible assets acquired. The identified intangible assets include customer relationships (excess earnings method) of \$21.4 million with a useful life of 10 years, completed technology (relief from royalty method) of \$5.2 million with a useful life of 13 years, backlog (excess earnings method) of \$0.4 million with a useful life of 1 year and trademarks (excess earnings method) of \$0.2 million with a useful life of 1 year. The intangible assets acquired are amortized over the total weighted average period of 10.4 years using methods that approximate the pattern in which the economic benefits are expected to be realized.

At the acquisition date, a cash payment of \$0.4 million was placed into escrow which was ascribed to the purchase price. The escrow was related to satisfaction of the sellers' indemnification obligations with respect to their representations and warranties and other indemnities. The escrow balance was \$0.2 million as of September 30, 2018.

Goodwill represents the excess of the consideration paid over the fair value of the net assets acquired and has been assigned to the Brooks Life Sciences segment. Goodwill is primarily the result of expected synergies from combining the operations of 4titude with the Company’s operations and is not deductible for tax purposes.

The operating results of 4titude have been reflected in the results of operations for the Brooks Life Sciences segment. During fiscal year 2018, revenue and net loss from 4titude recognized in the Company’s results of operations were \$15.9 million and \$0.8 million, respectively. The net in fiscal year 2018 included recurring charges of \$4.1 million, related to amortization expense of acquired intangible assets. The net loss in fiscal year 2018 also included non-recurring charges of \$1.2 million related to the step-up in value of the acquired inventories. During fiscal year 2018, the Company incurred \$1.1 million in non-recurring transaction costs with respect to the 4titude acquisition.

The Company did not present a pro forma information summary for its consolidated results of operations for the fiscal years ended September 30, 2018 and 2017 as if the acquisition of 4titude occurred on October 1, 2016 because such results were immaterial.

Other

On April 20, 2018, the Company acquired BioSpeciMan Corporation (“BioSpeciMan”), a Canada-based provider of storage services for biological sample materials. BioSpeciMan, founded in 2002, provides temperature controlled biological sample storage services to an attractive mix of pharma, biotech and contract lab customers. This acquisition has expanded customer relationships and geographic reach within its growing sample management storage services business in the Brooks Life Sciences segment. The total cash payment made by the Company was \$5.2 million, net of cash acquired and subject to working capital adjustments.

The Company allocated the purchase price of \$5.2 million based on the fair value of the assets and liabilities acquired, which included \$0.3 million of accounts receivable, \$2.6 million of customer relationships, \$2.7 million of goodwill and \$0.7 million of assumed liabilities. The Company applied the excess earnings method, a variation of the income approach to determine the fair value of the customer relationship intangible asset. The purchase price allocation was based on a preliminary valuation which is subject to further adjustments within the measurement period when additional information becomes available. The goodwill from this acquisition is reported within the Brooks Life Sciences segment and is not tax deductible.

At the acquisition date, a cash payment of \$0.5 million was placed into escrow which was ascribed to the purchase price. The escrow was related to satisfaction of the sellers' indemnification obligations with respect to their representations and warranties and other indemnities.

The operating results of the acquisition have been reflected in the results of operations for the Brooks Life Sciences segment. The Company did not present a pro forma information summary for its consolidated results of operations for the fiscal years ended September 30, 2018 and 2017 as if the acquisition of BioSpeciMan occurred on October 1, 2016 because such results were immaterial.

Acquisitions Completed in Fiscal Year 2017**Acquisition of Pacific Bio-Material Management, Inc. and Novare, LLC**

On July 5, 2017, the Company entered into an asset purchase agreement with Pacific Bio-Material Management, Inc. (“PBMMI”) and Novare, LLC, a wholly owned subsidiary of PBMMI (collectively, the “sellers”), to acquire substantially all the assets and liabilities of the sellers’ business related to providing storage, transportation, management, and cold chain logistics of biological materials. The acquisition has expanded the Company’s existing capabilities with respect to sample management and integrated cold chain storage and transportation solutions within the Brooks Life Sciences segment. The Company paid to the sellers cash consideration of \$34.3 million, net of cash acquired and subject to working capital adjustments.

The Company used a market participant approach to record the assets acquired and liabilities assumed in the PBMMI acquisition. The amounts recorded were as follows (in thousands):

| | Fair Value of Assets and Liabilities |
|--|---|
| Accounts receivable (approximates contractual value) | \$ 2,800 |
| Prepaid expenses and other current assets | 267 |
| Property, plant and equipment | 2,887 |
| Intangible assets | 8,600 |
| Goodwill | 21,434 |
| Accounts payable | (699) |
| Accrued liabilities | (673) |
| Deferred revenue | (385) |
| Other liabilities | (103) |
| Total purchase price, net of cash acquired | <u>\$ 34,128</u> |

The Company applied variations of the income approach to estimate the fair values of the intangible assets acquired. The identified intangible assets include customer relationship intangible (excess-earnings method) of \$8.5 million and trademarks of \$0.1 million. The intangible assets acquired are amortized over the total weighted average period of 11.0 years using methods that approximate the pattern in which the economic benefits are expected to be realized.

At the acquisition date, a cash payment of \$3.3 million was placed into escrow which was ascribed to the purchase price. The escrow balance of \$3.3 million included \$2.9 million related to satisfaction of the sellers' indemnification obligations with respect to their representations and warranties and other indemnities, as well as \$0.4 million payable to the former owner of Novare as a compensation for a sale of his ownership interest. This escrow arrangement is administered by the Company on behalf of the sellers. The escrow balance related to satisfaction of the sellers' indemnification obligations was \$2.7 million as of September 30, 2018. The Novare escrow balance was reduced by its full amount as of September 30, 2018.

Goodwill represents the excess of the consideration transferred over the fair value of the net assets acquired and has been assigned to the Brooks Life Sciences segment. Goodwill is primarily the result of expected synergies from combining the operations of PBMMI with the Company's operations and is deductible for tax purposes.

The operating results of PBMMI have been reflected in the results of operations for the Brooks Life Sciences segment. During fiscal year 2018, revenue and net income from PBMMI recognized in the Company's results of operations were \$11.5 million and \$0.7 million, respectively. During fiscal year 2017, revenue and net income from PBMMI recognized in the Company's results of operations were \$3.4 million and \$0.8 million, respectively. During fiscal year ended September 30, 2018 and 2017, the net income included amortization expense of \$1.6 million and \$0.3 million, respectively, related to acquired intangible assets. During fiscal year 2018 and 2017, the Company incurred less than \$0.1 million and \$0.3 million in non-recurring transaction costs with respect to the PBMMI acquisition.

The Company did not present a pro forma information summary for its consolidated results of operations for the fiscal years ended September 30, 2017 and 2016 as if the acquisition of PBMMI occurred on October 1, 2015 because such results were immaterial.

Acquisition of Cool Lab, LLC

On November 28, 2016, the Company acquired 100% of the equity of Cool Lab, LLC ("Cool Lab") from BioCision, LLC ("BioCision"). The Company held a 20% equity ownership interest in BioCision prior to the acquisition. Cool Lab was established as a subsidiary of BioCision on November 28, 2016 upon the transfer of certain assets related to cell cryopreservation solutions. Cool Lab's offerings assist in managing the temperature stability of therapeutics, biological samples, and related biomaterials in ultra-cold and cryogenic environments. The acquisition of Cool Lab has allowed the Company to extend its comprehensive sample management solutions across the cold chain of custody, which is consistent with the other offerings it brings to its life sciences customers.

The aggregate purchase price of \$15.2 million consisted of a cash payment of \$4.8 million, a liability to the seller of \$0.1 million and the settlement of certain preexisting relationships with Cool Lab and BioCision, disclosed as non-cash consideration of \$10.3 million, which has been measured at fair value on the acquisition date.

The Company used a market participant approach to record the assets acquired and liabilities assumed in the Cool Lab acquisition. The amounts recorded were as follows (in thousands):

| | Fair Value of Assets and Liabilities |
|----------------------|---|
| Inventory | \$ 1,283 |
| Intangible assets | 6,100 |
| Goodwill | 8,527 |
| Accrued liabilities | (30) |
| Other liabilities | (686) |
| Total purchase price | <u>\$ 15,194</u> |

The Company applied variations of the income approach to estimate the fair values of the intangible assets acquired. The identified intangible assets include customer relationship with a certain customer (excess-earnings method) of \$3.6 million with a useful life of 3 years, completed technology (relief-from-royalty) of \$1.2 million with a useful life of 8 years, and other customer relationship (excess-earnings method) of \$1.3 million with a useful life of 10 years. The intangible assets acquired are amortized over the total weighted average period of 5.4 years using methods that approximate the pattern in which the economic benefits are expected to be realized, including percentage of revenue expected to be generated from sales to a certain customer over the contract term.

Goodwill represents the excess of the consideration transferred over the fair value of the net assets acquired and has been assigned to the Brooks Life Sciences segment. Goodwill is primarily the result of expected synergies from combining the operations of Cool Lab with the Company's operations and is deductible for tax purposes.

The Company recorded a liability of \$0.7 million in the purchase price allocation that represented a pre-acquisition contingency incurred on the acquisition date. The obligation is related to a rebate that is due to a particular customer if the annual product sales volume metrics exceed threshold amounts under the provisions of the contract with this customer assumed by the Company. Fair value of such liability was determined based on a probability weighted discounted cash flow model. The carrying amount of the liability was \$0.8 million and \$0.7 million, respectively, at September 30, 2018 and 2017.

The operating results of Cool Lab have been reflected in the results of operations for the Brooks Life Sciences segment. During fiscal year 2018, revenue and net loss from Cool Lab recognized in the Company's results of operations were \$3.7 million and \$0.2 million, respectively. During fiscal year 2017, revenue and net loss from Cool Lab recognized in the Company's results of operations were \$3.7 million and \$0.3 million, respectively. During fiscal year ended September 30, 2018, the net loss included charges of amortization expense \$1.6 million related to acquired intangible assets. During fiscal year ended September 30, 2017, the net loss included charges of \$0.4 million related to the step-up in value of the acquired inventories and amortization expense \$1.2 million related to acquired intangible assets. During fiscal year 2017, the Company also incurred \$0.4 million in non-recurring transaction costs with respect to the Cool Lab acquisition.

The Company did not present a pro forma information summary for its consolidated results of operations for the fiscal years ended September 30, 2017 and 2016 as if the acquisition of Cool Lab occurred on October 1, 2015 because such results were immaterial.

Other

On August 22, 2017, the Company acquired certain assets and liabilities of RURO, Inc., (the "seller"), a U.S.-based provider of sample management software solutions across multiple end markets, including academic research, government, pharmaceutical, biotech, and healthcare. The acquired FreezerPro® web-based software platform together with an exclusive license to sell and distribute RURO's BioBankPro® software has allowed the Company to complement its existing informatics offerings within the Brooks Life Sciences segment and extend its informatics solutions to address laboratories, biobanks or enterprises that manage biological samples.

The aggregate purchase price of \$5.5 million consisted of a cash payment of \$5.2 million and a liability to the seller of \$0.4 million. The Company allocated the purchase price of \$5.5 million to the assets acquired and liabilities assumed related to the acquisition at their fair values as of the acquisition date, of which \$0.1 million was ascribed to accounts receivable, \$4.0 million to intangible assets, \$1.6 million to goodwill assigned to the Brooks Life Sciences segment and \$0.2 million to deferred revenue. Fair values of intangible assets acquired of \$4.0 million consisted of customer relationship intangible assets of \$3.1 million and completed technology of \$0.9 million.

At the closing of the acquisition, a cash payment of \$0.5 million was placed into escrow which was ascribed to the purchase price. The escrow was related to satisfaction of the sellers' indemnification obligations with respect to their representations and warranties and other indemnities.

The operating results of the acquisition have been reflected in the results of operations for the Brooks Life Sciences segment. The Company did not present a pro forma information summary for its consolidated results of operations for fiscal years ended September 30, 2018 and 2017 as if the acquisition occurred on October 1, 2015.

Acquisitions Completed in Fiscal Year 2016

Acquisition of BioStorage Technologies, Inc.

On November 30, 2015, the Company completed its acquisition of BioStorage Technologies, Inc., or BioStorage, an Indiana-based global provider of comprehensive sample management and integrated cold chain solutions for the biosciences industry. These solutions include collection, transportation, processing, storage, protection, retrieval and disposal of biological samples. These solutions combined with the Company's existing offerings, particularly automation for sample storage and formatting, provide customers with fully integrated sample management cold chain solutions which will help them increase productivity, efficiencies and speed to market. This acquisition has allowed the Company to access a broader customer base that is storing samples at ultra-cold temperatures and simultaneously provide opportunities for BioStorage to use the Company's capabilities to expand into new markets.

The Company acquired 100% of the issued and outstanding shares of BioStorage. A cash payment of \$130.7 million, net of the seller's cash of \$2.8 million, resulted in a net cash outflow of \$128.0 million, including \$125.2 million ascribed to the purchase price and \$2.5 million for retention arrangements with certain employees based on the completion of a service retention period. The cash payment included a debt repayment of \$3.2 million and transaction costs of \$2.9 million paid by the Company on behalf of BioStorage.

On September 9, 2016, the Company reached a settlement with the sellers of BioStorage's stock related to certain working capital adjustments. On September 13, 2016, the Company received \$0.2 million of proceeds from the sellers as a result of such settlement, which was recorded as a decrease in the purchase price and goodwill.

The Company recorded the following assets acquired and liabilities assumed related to BioStorage at their fair values as of the acquisition date, from a market participant's perspective (in thousands):

| | Fair Value of Assets and Liabilities |
|---|---|
| Accounts receivable | \$ 16,942 |
| Prepaid expenses and other current assets | 321 |
| Property, plant and equipment | 14,345 |
| Intangible assets | 41,460 |
| Goodwill | 79,639 |
| Other assets | 53 |
| Debt assumed | (385) |
| Accounts payable | (1,708) |
| Accrued liabilities | (9,423) |
| Deferred revenue | (1,766) |
| Long-term deferred tax liabilities | (14,169) |
| Other liabilities | (61) |
| Total purchase price, net of cash acquired | \$ 125,248 |

At the acquisition date, a cash payment of \$5.4 million was placed into escrow which consisted of \$2.9 million ascribed to the purchase price and \$2.5 million related to retention arrangements with certain employees. The escrow balance was reduced by its full amount by the third quarter of fiscal year 2017.

The Company applied variations of the income approach to estimate the fair values of the intangibles assets acquired. The identified intangible assets include customer relationship (excess-earnings method) of \$36.6 million with a useful life of 11.0 years, and trademark (relief-from-royalty method) of \$4.9 million with a useful life of 8.0 years. The intangible assets acquired are amortized over the total weighted average period of 10.6 years using an accelerated depreciation method which approximates the pattern in which the economic benefits are expected to be realized.

Goodwill represents the excess of the consideration transferred over the fair value of the net assets acquired and has been assigned to the Company's Brooks Life Sciences segment. Goodwill is primarily the result of expected synergies from combining the operations of BioStorage with the Company's operations and is not deductible for tax purposes.

The operating results of BioStorage have been reflected in the results of operations for the Brooks Life Sciences segment. During fiscal year 2018, revenue and net income from BioStorage recognized in the Company's results of operations were \$74.7 million and \$12.6 million, respectively. During fiscal year 2017, revenue and net income from BioStorage recognized in the Company's results of operations were \$62.8 million and \$9.3 million, respectively. During fiscal year 2016, revenue and net income from BioStorage recognized in the Company's results of operations were \$44.6 million and \$2.4 million, respectively. During fiscal years ended September 30, 2018, 2017 and 2016, the net income included amortization expense of \$5.5 million, \$4.6 million and \$2.9 million, respectively, related to acquired intangible assets.

During fiscal years ended September 30, 2018, 2017 and 2016, the Company incurred \$0.3 million, \$0.3 million and \$3.2 million, respectively, in non-recurring transaction costs with respect to the BioStorage acquisition. The retention payment of \$2.5 million was recorded within prepaid expenses and other current assets at the acquisition date and is recognized as a compensation expense over the service period or upon a triggering event in the underlying change in control agreements. The retention payments were completed paid out by the first quarter of fiscal year 2017.

The following unaudited proforma financial information represents a summary of the consolidated results of operations for the Company and BioStorage for fiscal year 2016 as if the acquisition of BioStorage occurred on October 1, 2014 (in thousands):

| | <u>Year Ended September 30,</u> <u>2016</u> |
|---|--|
| Revenue | \$ 445,058 |
| Net loss | (79,377) |
| Basic loss per share | \$ (1.16) |
| Diluted loss per share | \$ (1.16) |
| Weighted average shares outstanding used in computing net loss per share: | |
| Basic | 68,507 |
| Diluted | 68,507 |

The unaudited pro forma information presented above reflects historical operating results of the Company and BioStorage and includes the impact of certain adjustments directly attributable to the business combination. The unaudited pro forma financial information is presented for informational purposes only and is not necessarily indicative of the results of operations that would have been achieved if the acquisition of BioStorage had taken place on October 1, 2014. During fiscal years ended September 30, 2016, the adjustments reflected in the unaudited pro forma information included aggregate amortization and depreciation expense of \$0.6 million, and tax effects of \$0.5 million. Additionally, the impact of restructuring charges of \$1.9 million was excluded from the proforma net loss during fiscal year ended September 30, 2016.

5. Marketable Securities

The Company invests in marketable securities that are classified as available-for-sale and recorded at fair value in the Company's Consolidated Balance Sheets. Marketable securities reported as current assets represent investments that mature within one year from the balance sheet date. Long-term marketable securities represent investments with maturity dates greater than one year from the balance sheet date.

Unrealized gains and losses are excluded from earnings and reported as a separate component of accumulated other comprehensive income until the security is sold or matures. Gains or losses realized from sales of marketable securities are computed based on the specific identification method and recognized as a component of "Other expenses, net" in the accompanying Consolidated Statements of Operations. During fiscal year 2018, the Company sold marketable securities with a fair value and amortized cost of \$1.6 million each and recognized nominal net losses. The Company collected

cash proceeds of approximately \$1.6 million from the sale of marketable securities and reclassified unrealized net holding losses of \$0.1 million from accumulated other comprehensive income into "Other expenses, net" in the accompanying Consolidated Statements of Operations as a result of these transactions. During fiscal year 2017, the Company sold marketable securities with fair values and amortized cost of \$3.6 million each and recognized net losses of less than \$0.1 million. The Company collected cash proceeds of \$3.5 million from the sale of marketable securities and reclassified unrealized net holding losses of approximately \$0.1 million from accumulated other comprehensive income into "Other (expense) income, net" in the accompanying Consolidated Statements of Operations as a result of these transactions.

The following is a summary of the amortized cost and the fair value, including accrued interest receivable, as well as unrealized holding gains (losses) on the short-term and long-term marketable securities as of September 30, 2018 and 2017 (in thousands):

| | Amortized Cost | Gross Unrealized Losses | Gross Unrealized Gains | Fair Value |
|--|-------------------|-------------------------------|------------------------------|------------------|
| September 30, 2018: | | | | |
| U.S. Treasury securities and obligations of U.S. government agencies | \$ 30,142 | \$ (65) | \$ — | \$ 30,077 |
| Bank certificates of deposits | 5,148 | — | 1 | 5,149 |
| Corporate securities | 14,763 | (30) | — | 14,733 |
| Municipal securities | 2,797 | (17) | — | 2,780 |
| Other debt securities | 779 | — | — | 779 |
| | <u>\$ 53,629</u> | <u>\$ (112)</u> | <u>\$ 1</u> | <u>\$ 53,518</u> |
| September 30, 2017: | | | | |
| Corporate securities | \$ 2,642 | \$ — | \$ — | \$ 2,642 |
| Other debt securities | 28 | — | — | 28 |
| | <u>\$ 2,670</u> | <u>\$ —</u> | <u>\$ —</u> | <u>\$ 2,670</u> |

The fair values of the marketable securities by contractual maturities at September 30, 2018 are presented below (in thousands).

| | Fair Value |
|--|------------------|
| Due in one year or less | \$ 46,281 |
| Due after one year through five years | 4,373 |
| Due after five years through ten years | — |
| Due after ten years | 2,864 |
| Total marketable securities | <u>\$ 53,518</u> |

Expected maturities could differ from contractual maturities because the security issuers may have the right to prepay obligations without prepayment penalties.

The Company reviews the marketable securities for impairment at each reporting period to determine if any of the securities have experienced an other-than-temporary decline in fair value. The Company considers factors, such as the length of time and extent to which the market value has been less than the cost, the financial condition and near-term prospects of the issuer, the Company's intent to sell, or whether it is more likely than not it will be required to sell the investment before recovery of its amortized cost basis. If the Company believes that an other-than-temporary decline in fair value has occurred, it writes down the investment to fair value and recognizes the credit loss in earnings and the non-credit loss in accumulated other comprehensive income. There were no marketable securities in unrealized loss position as of September 30, 2017. As of September 30, 2018, aggregate fair value of the marketable securities in unrealized loss position was \$43.0 million and was comprised primarily of U.S. Treasury securities, corporate securities, and municipal securities. Aggregate unrealized losses for these securities were insignificant as of September 30, 2018 and are presented in the table above. The securities in unrealized loss position as of September 30, 2018 were not considered other-than-temporarily impaired and, as such, the Company did not recognize impairment losses during the period then ended. The unrealized losses were attributable to changes in interest rates that impacted the value of the investments.

6. Property, Plant and Equipment

Property, plant and equipment were as follows as of September 30, 2018 and 2017 (in thousands):

| | September 30, | |
|---|------------------|------------------|
| | 2018 | 2017 |
| Buildings and land | \$ 47,745 | \$ 46,608 |
| Computer equipment and software | 56,982 | 55,352 |
| Machinery and equipment | 55,794 | 48,647 |
| Furniture and fixtures | 4,842 | 4,034 |
| Leasehold improvements | 19,433 | 18,045 |
| Capital projects in progress | 5,796 | 2,761 |
| | <u>190,592</u> | <u>175,447</u> |
| Less: accumulated depreciation and amortization | (130,604) | (118,466) |
| Property, plant and equipment, net | <u>\$ 59,988</u> | <u>\$ 56,981</u> |

Depreciation expense was \$12.5 million, \$10.1 million and \$12.2 million, respectively, for the fiscal years ended September 30, 2018, 2017 and 2016. The Company recorded \$0.9 million of additions to property, plant and equipment for which cash payments had not yet been made as of September 30, 2018.

7. Goodwill and Intangible Assets

Goodwill represents the excess of net book value over the estimated fair value of net tangible and identifiable intangible assets of a reporting unit. Goodwill is tested for impairment annually or more often if impairment indicators are present at the reporting unit level. The Company elected April 1st as its annual goodwill impairment assessment date. If the existence of events or circumstances indicates that it is more likely than not that fair values of the reporting units are below their carrying values, the Company performs additional impairment tests during interim periods to evaluate goodwill for impairment.

In accordance with ASC 350, the Company initially assesses qualitative factors to determine whether the existence of events or circumstances indicates that it is more likely than not that the fair value of a reporting unit is less than its carrying value. If the Company determines, based on this assessment, that it is more likely than not that the fair value of the reporting unit is less than its carrying value, it performs a quantitative goodwill impairment test by comparing the reporting unit's fair value with its carrying value. An impairment loss is recognized for the amount by which the reporting unit's carrying value exceeds its fair value, up to the total amount of goodwill allocated to the reporting unit. No impairment loss is recognized if the fair value of the reporting unit exceeds its carrying value.

The Company completed its annual goodwill impairment test as of April 1, 2018 and determined that no adjustment to goodwill was necessary since the fair value of each reporting unit was significantly in excess of the carrying value of each reporting unit. The Company conducted a qualitative assessment for three reporting units within the Brooks Semiconductor Solutions Group segment and determined that it was not likely that their fair values were less than their carrying values. As a result of the analysis, the Company did not perform the quantitative assessment for these reporting units and did not recognize impairment losses. The Company also performed the quantitative goodwill impairment test for the fourth reporting unit within the Brooks Semiconductor Solutions Group segment and for the Brooks Life Sciences reporting unit. The Company determined that no adjustment to goodwill was necessary for these two reporting units since their fair values significantly exceeded their respective carrying values. If events occur or circumstances change that would more likely than not reduce the fair value of any reporting unit below its carrying value, the Company will evaluate such reporting unit's goodwill for impairment between annual tests.

The following table sets forth the changes in the carrying amount of goodwill by operating segment for the year ended September 30, 2018 and 2017 (in thousands):

| | Brooks Semiconductor Solutions Group | Brooks Life Sciences | Other | Total |
|---|---|---------------------------------|--------------|-------------------|
| Gross goodwill, at September 30, 2016 | \$ 629,297 | \$ 135,301 | \$ 26,014 | \$ 790,612 |
| Accumulated goodwill impairments | (588,944) | — | (26,014) | (614,958) |
| Goodwill, net of accumulated impairments, at September 30, 2016 | 40,353 | 135,301 | — | 175,654 |
| Acquisitions and adjustments | (19) | 31,519 | — | 31,500 |
| Gross goodwill, at September 30, 2017 | \$ 629,278 | \$ 166,820 | \$ 26,014 | \$ 822,112 |
| Accumulated goodwill impairments | (588,944) | — | (26,014) | (614,958) |
| Goodwill, net of accumulated impairments, at September 30, 2017 | 40,334 | 166,820 | — | 207,154 |
| Acquisitions and adjustments | 7,629 | 41,093 | — | 48,722 |
| Gross goodwill, at September 30, 2018 | 636,907 | 207,913 | 26,014 | 870,834 |
| Accumulated goodwill impairments | (588,944) | — | (26,014) | (614,958) |
| Goodwill, net of accumulated impairments, at September 30, 2018 | <u>\$ 47,963</u> | <u>\$ 207,913</u> | <u>\$ —</u> | <u>\$ 255,876</u> |

During fiscal year 2018, the Company recorded a goodwill increase of \$41.0 million primarily related to the acquisitions of 4titude, TecSem and BioSpeciMan.

The components of the Company's identifiable intangible assets as of September 30, 2018 and 2017 are as follows (in thousands):

| | September 30, 2018 | | | September 30, 2017 | | |
|----------------------------|---------------------------|-------------------------------------|---------------------------|---------------------------|-------------------------------------|---------------------------|
| | Cost | Accumulated Amortization | Net Book Value | Cost | Accumulated Amortization | Net Book Value |
| Patents | \$ 5,302 | \$ 4,325 | \$ 977 | \$ 5,302 | \$ 4,019 | \$ 1,283 |
| Completed technology | 44,829 | 28,934 | 15,895 | 31,264 | 24,379 | 6,885 |
| Trademarks and trade names | 6,298 | 2,953 | 3,345 | 6,138 | 1,863 | 4,275 |
| Customer relationships | 142,489 | 62,750 | 79,739 | 115,596 | 44,535 | 71,061 |
| | <u>\$ 198,918</u> | <u>\$ 98,962</u> | <u>\$ 99,956</u> | <u>\$ 158,300</u> | <u>\$ 74,796</u> | <u>\$ 83,504</u> |

Amortization expense for intangible assets was \$24.2 million, \$17.1 million and \$14.8 million, respectively, for the fiscal years ended September 30, 2018, 2017 and 2016.

Estimated future amortization expense for the intangible assets as of September 30, 2018 is as follows (in thousands):

| | |
|---------------------------------|------------------|
| Fiscal year ended September 30, | |
| 2019 | \$ 23,187 |
| 2020 | 21,061 |
| 2021 | 14,752 |
| 2022 | 11,839 |
| 2023 | 9,423 |
| Thereafter | 19,694 |
| | <u>\$ 99,956</u> |

8. Equity Method and Other Investments

The Company accounts for certain of its investments using the equity method of accounting and records its proportionate share of the investee's earnings (losses) in its results of operations with a corresponding increase (decrease) in the carrying value of the investment.

BioCision, LLC

As of September 30, 2016, the Company held a 20% equity interest in BioCision, LLC, or BioCision, a privately-held company based in Larkspur, California, which was accounted for as an equity method investment. The carrying value of the investment in BioCision was \$1.7 million at September 30, 2016. During fiscal years ended September 30, 2016, the Company recorded a loss associated with BioCision of \$1.1 million.

The Company held a term loan receivable from BioCision as of September 30, 2016. The term loan was provided to BioCision to support its working capital requirements. The term loan had an aggregate principal amount of \$1.5 million and bore an annual interest rate of 10%. At September 30, 2016, the term loan was recorded at its carrying value of \$1.5 million and included in "Other assets" in the Company's Consolidated Balance Sheets.

The Company also held five-year convertible debt securities with a warrant agreement to purchase BioCision's preferred units as of September 30, 2016. The convertible debt securities and the warrant were purchased by the Company in fiscal year 2015 for a total purchase price of \$5.0 million. The convertible debt securities were accruing interest at the annual rate of 9%, and all principal and accrued interest were due at maturity. The convertible debt securities and the warrant were recorded at fair value during each reporting period, and the remeasurement gains and losses were recognized as a component of "Other (expense) income, net" in the Company's Consolidated Statements of Operations. During the fiscal year ended September 30, 2016, the Company recognized remeasurement gains of \$0.4 million related to these financial instruments.

On November 28, 2016, BioCision established Cool Lab as its subsidiary upon transferring certain assets related to cell cryopreservation solutions. The Company acquired a 100% equity interest of the subsidiary on that date for an aggregate purchase price of \$15.2 million, consisting of a cash payment of \$4.8 million, a liability to the seller of \$0.1 million, and non-cash consideration of \$10.3 million measured at fair value on the acquisition date.

The carrying value of the equity method investment in BioCision was \$1.2 million on November 28, 2016. The Company recorded a loss associated with BioCision of \$0.5 million from October 1, 2016 through the acquisition date. The equity method investment in BioCision was measured at fair value of \$3.1 million at the acquisition date, and as a result the Company recognized a gain of \$1.8 million upon the redemption of the equity method investment in its Consolidated Statements of Operations during fiscal year ended September 30, 2017. On November 28, 2016, convertible debt, warrant and the term loan with carrying values of \$5.8 million, less than \$0.1 million and \$1.6 million, respectively, were measured at their fair values of \$5.6 million, less than \$0.1 million and \$1.6 million, respectively. As a result of such measurement, the Company recognized an aggregate loss of \$0.2 million upon the settlement of these financial instruments in "Other (expense) income, net" in its Consolidated Statements of Operations during the year ended September 30, 2017. Please refer to Note 4, "Acquisitions" for further information on the acquisition transaction.

9. Supplementary Balance Sheet Information

The following is a summary of accounts receivable at September 30, 2018 and 2017 (in thousands):

| | September 30, | |
|--------------------------------------|-------------------|------------------|
| | 2018 | 2017 |
| Accounts receivable | \$ 126,350 | \$ 94,927 |
| Less allowance for doubtful accounts | (1,113) | (1,381) |
| Less allowance for sales returns | (45) | (81) |
| Accounts receivable, net | <u>\$ 125,192</u> | <u>\$ 93,465</u> |

The allowance for doubtful accounts activity for the fiscal years ended September 30, 2018, 2017 and 2016 is as follows (in thousands):

| Description | Balance at Beginning of Period | Provisions | Reversals of Bad Debt Expense | Write-offs and Adjustments | Balance at End of Period |
|--------------------------------------|--------------------------------|------------|-------------------------------|----------------------------|--------------------------|
| 2018 Allowance for doubtful accounts | \$ 1,381 | \$ 708 | \$ (724) | \$ (252) | \$ 1,113 |
| 2017 Allowance for doubtful accounts | 1,543 | — | (131) | (31) | 1,381 |
| 2016 Allowance for doubtful accounts | 332 | 143 | 48 | 1,020 | 1,543 |

The allowance for sales returns activity for the fiscal years ended September 30, 2018, 2017 and 2016 is as follows (in thousands):

| Description | Balance at Beginning of Period | Provisions | Write-offs and Adjustments | Balance at End of Period |
|----------------------------------|--------------------------------|------------|----------------------------|--------------------------|
| 2018 Allowance for sales returns | \$ 81 | \$ (36) | \$ — | \$ 45 |
| 2017 Allowance for sales returns | 101 | (20) | — | 81 |
| 2016 Allowance for sales returns | 115 | (14) | — | 101 |

The following is a summary of inventories at September 30, 2018 and 2017 (in thousands):

| Inventories | September 30, | |
|-----------------------------------|------------------|------------------|
| | 2018 | 2017 |
| Raw materials and purchased parts | \$ 57,527 | \$ 53,234 |
| Work-in-process | 19,547 | 7,120 |
| Finished goods | 19,912 | 13,043 |
| Total inventories | \$ 96,986 | \$ 73,397 |

The activity for excess and obsolete inventory reserves is as follows for the fiscal years ended September 30, 2018, 2017 and 2016 (in thousands):

| Description | Balance at Beginning of Period | Provisions | Inventory Disposals and Adjustments | Balance at End of Period |
|---|--------------------------------|------------|-------------------------------------|--------------------------|
| 2018 Reserves for excess and obsolete inventory | \$ 17,734 | \$ 4,455 | \$ (7,236) | \$ 14,953 |
| 2017 Reserves for excess and obsolete inventory | 19,663 | 4,858 | (6,787) | 17,734 |
| 2016 Reserves for excess and obsolete inventory | 19,603 | 5,754 | (5,694) | 19,663 |

The activity for valuation allowance for deferred tax assets is as follows for the fiscal years ended September 30, 2018, 2017 and 2016 (in thousands):

| Description | Balance at Beginning of Period | Charged to Provisions | Charged to Other Accounts | Balance at End of Period |
|--|--------------------------------|-----------------------|---------------------------|--------------------------|
| 2018 Valuation allowance for deferred tax assets | \$ 92,297 | \$ (72,842) | \$ (874) | \$ 18,581 |
| 2017 Valuation allowance for deferred tax assets | 104,802 | (10,881) | (1,624) | 92,297 |
| 2016 Valuation allowance for deferred tax assets | 18,797 | 77,531 | 8,474 | 104,802 |

The Company establishes reserves for estimated cost of product warranties based on historical information. Product warranty reserves are recorded at the time product revenue is recognized, and retrofit accruals are recorded at the time retrofit programs are established. The Company's warranty obligation is affected by product failure rates, utilization levels, material usage, service delivery costs incurred in correcting a product failure and supplier warranties on parts delivered to the Company. The following is a summary of product warranty and retrofit activity on a gross basis,

excluding amounts related to discontinued operations, for the fiscal years ended September 30, 2018, 2017 and 2016 (in thousands):

| | <u>Amount</u> |
|---|-----------------|
| Balance at September 30, 2015 | \$ 4,255 |
| Accruals for warranties during the year | 5,851 |
| Costs incurred during the year | <u>(5,947)</u> |
| Balance at September 30, 2016 | 4,159 |
| Accruals for warranties during the year | 6,683 |
| Costs incurred during the year | <u>(5,363)</u> |
| Balance at September 30, 2017 | 5,479 |
| Accruals for warranties during the year | 5,209 |
| Costs incurred during the year | <u>(4,348)</u> |
| Balance at September 30, 2018 | <u>\$ 6,340</u> |

10. Line of Credit

On May 26, 2016, the Company and certain of its subsidiaries entered into a credit agreement with Wells Fargo Bank, N.A. (the "Wells Fargo"). The credit agreement provided for a five-year senior secured revolving line of credit (the "line of credit") of \$75.0 million. The agreement included sub-limits of up to \$25.0 million for letters of credit and \$7.5 million of swing loans at the time there is more than one lender under the credit agreement.

On October 4, 2017, the Company entered into a \$200.0 million Senior Secured Term Loan Facility (the "term loan") with Morgan Stanley Senior Funding, Inc., JPMorgan Chase Bank, N.A. and Wells Fargo Securities, LLC (collectively, the "lenders"). Coincident with the entry into the term loan agreement, the Company amended certain terms and conditions of the credit agreement and entered into an arrangement with Wells Fargo Bank, N.A. and JPMorgan Chase Bank, N.A. Based on the amended terms of the credit agreement, the line of credit continues to provide for revolving credit financing of up to \$75.0 million, subject to borrowing base availability. Borrowing base availability under the amended line of credit excludes collateral related to fixed assets and is redetermined periodically based on certain percentage of certain eligible U.S. assets, including accounts receivable and inventory. The line of credit matures on October 4, 2022 and expires no less than 90 days prior to the term loan expiration.

The sub-limits for letters of credit were reduced to \$7.5 million under the amended terms of the credit agreement. All outstanding borrowings under the credit agreement are guaranteed by the Company and BioStorage Technologies, Inc., its wholly-owned subsidiary ("guarantor"), and subordinated to the obligations under the term loan which are secured by a first priority lien on substantially all of the assets of the Company and the Guarantor, other than accounts receivable and inventory.

There were no amounts outstanding under the line of credit as of September 30, 2018 and September 30, 2017. The Company records commitment fees and other costs directly associated with obtaining line of credit financing as deferred financing costs, which are amortized over the term of the related financing arrangement. Deferred financing costs were \$0.5 million at both September 30, 2018 and September 30, 2017. The line of credit contains certain customary representations and warranties, a financial covenant and affirmative and negative covenants as well as events of default. The Company was in compliance with the line of credit covenants as of September 30, 2018 and September 30, 2017.

11. Debt

On October 4, 2017, the Company entered into a \$200.0 million term loan with the lenders. The term loan was issued at \$197.6 million, or 98.8% of its par value, resulting in a discount of \$2.4 million, or 1.2%, which represented loan origination fees paid at the closing. The Company incurred additional deferred financing costs of \$0.4 million during the year ended September 30, 2018. The loan proceeds are to be used for general corporate purposes, including acquisitions. The loan principal amount may be increased by an aggregate amount equal to \$75.0 million plus any voluntary repayments of the term loans plus any additional amount such that the secured leverage ratio of the Company is less than 3.00 to 1.00.

Under the term loan agreement, the Company may elect for the loan to bear an interest rate as Eurodollar Borrowings or as Alternate Base Rate Borrowings. Interest applicable to Eurodollar Borrowings is based on the Adjusted LIBO Rate plus applicable margin of 2.50%. The Adjusted LIBO Rate is the rate appearing on Bloomberg screen LIBOR01 which gets reset at the beginning of each selected interest period based on the LIBOR rate then in effect. Interest applicable to ABR Borrowings is based on the Alternate Base Rate plus applicable margin of 1.50%. Alternate Base Rate is determined based on the highest of: (a) the federal funds effective rate plus 0.50%, (b) prime rate plus 1.00%, or (c) one-month LIBOR rate plus 1.00%.

The Company's obligations under the term loan are also guaranteed by BioStorage Technologies, Inc. as the guarantor, subject to the terms and conditions of the term loan agreement. The Company and the guarantor granted the lenders a perfected first priority security interest in substantially all of the assets of the Company and the guarantor to secure the repayment of the term loan.

The term loan matures and becomes fully payable on October 4, 2024. The principal is payable in installments equal to 0.25% of the initial principal amount of the term loans on March 31st, June 30th, September 30th and December 31st of each year, commencing on March 31, 2018, with any remaining amount of principal becoming due and payable on the maturity date. All accrued and unpaid interest on Borrowings shall be due on the last day of each interest period elected by the Company for such Borrowings, except for interest periods of more than three months in which case all accrued and unpaid interest shall be due and payable every three months.

Subject to certain conditions stated in the term loan agreement, the Company may redeem the term loan at any time at its option without a significant premium or penalty, except for a repricing transaction, as defined in the term loan agreement. The Company would be required to redeem the term loan at the principal amount then outstanding upon occurrence of certain events, including (i) net proceeds received from the sale or other disposition of the Company's or guarantor's assets, subject to certain limitations, (ii) casualty and condemnation proceeds received by the Company or the guarantor, subject to certain exceptions, (iii) net proceeds received by the Company or the guarantor from the issuance of debt or disqualified capital stock after October 4, 2017. Commencing on December 31, 2018, the Company is required to make principal payments equal to the excess cash flow amount, as defined in the term loan agreement. Such prepayments are equal to 50% of the preceding year excess cash flow amount reduced by voluntary prepayments of the term loan, subject to certain limitations.

The Company records commitment fees and other costs directly associated with obtaining term loan financing as deferred financing costs which are presented as a reduction of the term loan principal balance. Such costs are accreted over the term of the loan using the effective interest rate method. At September 30, 2018, deferred financing costs were \$2.4 million.

During the year ended September 30, 2018, the weighted average stated interest rate paid on the term loan was 4.4%. During the year ended September 30, 2018, the Company incurred aggregate interest expense of \$9.1 million in connection with the term loan borrowings, including \$0.4 million of deferred financing costs amortization.

The term loan agreement contains certain customary representations and warranties, covenants and events of default. If any of the events of default occur and are not waived or cured within applicable grace periods, any unpaid amounts under the term loan agreement will bear an annual interest rate at 2.00% above the rate otherwise applicable under the terms and conditions of such agreement. The term loan agreement does not contain financial maintenance covenants. As of September 30, 2018, the Company was in compliance with all covenants and conditions under the term loan agreement.

The following are the future minimum principal payment obligations under the term loan as of September 30, 2018:

| | <u>Amount</u> |
|--------------------------------------|-------------------|
| Fiscal year ended September 30, | |
| 2019 | \$ 2,000 |
| 2020 | 2,000 |
| 2021 | 2,000 |
| 2022 | 2,000 |
| 2023 | 2,000 |
| Thereafter | 188,500 |
| Total outstanding principal balance | 198,500 |
| Unamortized deferred financing costs | (2,429) |
| | <u>196,071</u> |
| Term loan, current portion | 2,000 |
| Term loan, long-term portion | <u>\$ 194,071</u> |

As of September 30, 2018, estimated fair value of the term loan outstanding principal balance approximates its carrying value. The fair value was determined based on observable market inputs and classified within Level 2 of the fair value hierarchy due to a lack of an active market for this term loan or a similar loan instrument.

On November 15, 2018, in connection with the closing of the GENEWIZ Group (“GENEWIZ”) acquisition, the Company entered into an amendment of the existing term loan agreement which increased its outstanding principal balance to \$546.0 million. Please refer to Note 23, “Subsequent Events”, for further information on the term loan transaction and the acquisition.

12. Income Taxes

The components of the income tax provision (benefit) from continuing operations for the fiscal years are as follows (in thousands):

| | <u>Year Ended September 30,</u> | | |
|---|---------------------------------|-----------------|------------------|
| | <u>2018</u> | <u>2017</u> | <u>2016</u> |
| Current income tax provision (benefit): | | | |
| Federal | \$ — | \$ — | \$ (145) |
| State | 917 | 402 | (193) |
| Foreign | 7,608 | 7,499 | 4,709 |
| Total current income tax provision | <u>8,525</u> | <u>7,901</u> | <u>4,371</u> |
| Deferred income tax provision (benefit): | | | |
| Federal | (48,815) | (4,247) | 59,906 |
| State | (5,518) | (249) | 4,000 |
| Foreign | (1,443) | (25) | (2,027) |
| Total deferred income tax provision (benefit) | <u>(55,776)</u> | <u>(4,521)</u> | <u>61,879</u> |
| Income tax provision (benefit) | <u>\$ (47,251)</u> | <u>\$ 3,380</u> | <u>\$ 66,250</u> |

The components of income (loss) from continuing operations before income taxes and equity in earnings of equity method investments for the fiscal years are as follows (in thousands):

| | <u>Year Ended September 30,</u> | | |
|----------|---------------------------------|------------------|--------------------|
| | <u>2018</u> | <u>2017</u> | <u>2016</u> |
| Domestic | \$ 3,122 | \$ (13,211) | \$ (26,775) |
| Foreign | 17,344 | 27,731 | 8,633 |
| | <u>\$ 20,466</u> | <u>\$ 14,520</u> | <u>\$ (18,142)</u> |

The differences between the income tax provision (benefit) on income (loss) from continuing operations including income from equity in earnings (losses) of equity method investments and income taxes computed using the applicable U.S. statutory federal tax rates for the fiscal years ended September 30, 2018, 2017 and 2016 are as follows (in thousands):

| | Year Ended September 30, | | |
|---|--------------------------|-----------------|------------------|
| | 2018 | 2017 | 2016 |
| Income tax provision computed at federal statutory rate | \$ 5,014 | \$ 4,923 | \$ (6,722) |
| State income taxes, net of federal benefit | 692 | 137 | (374) |
| Foreign income taxed at different rates | 920 | (1,644) | (690) |
| Impact of investments in subsidiaries | (729) | (965) | (971) |
| Change in deferred tax asset valuation allowance | (75,918) | 319 | 76,486 |
| Net increase (reduction) in uncertain tax positions | 220 | 731 | (1,543) |
| Impact of U.S. federal tax rate change | 15,287 | — | — |
| Compensation | (701) | 579 | 743 |
| Tax credits | (1,633) | (1,151) | (1,555) |
| Merger costs | 1,405 | — | 503 |
| Transition Tax | 8,027 | — | — |
| Other | 165 | 451 | 373 |
| Income tax provision (benefit) | <u>\$ (47,251)</u> | <u>\$ 3,380</u> | <u>\$ 66,250</u> |

The Company has not provided income taxes on the outside basis differences of its foreign subsidiaries consistent with the indefinite reinvestment assertion. As of September 30, 2018, the cumulative unremitted earnings contributing to the outside basis difference amounted to approximately \$164.0 million. The basis difference for U.S. tax purposes is lower because the Company has U.S. tax basis in the foreign earnings as a result of the toll charge recognized during fiscal year 2018. The foreign earnings are expected to be reinvested in foreign operations and acquisitions. The Company has not accrued foreign withholding tax costs on unremitted earnings.

The significant components of the net deferred tax assets and liabilities as of September 30, 2018 and 2017 are as follows (in thousands):

| | September 30, | |
|--|------------------|-------------------|
| | 2018 | 2017 |
| Accruals and reserves not currently deductible | \$ 14,581 | \$ 18,747 |
| Federal, state and foreign tax credits | 27,923 | 25,413 |
| Other assets | 175 | 42 |
| Equity compensation | 5,926 | 7,615 |
| Net operating loss carryforwards | 16,790 | 50,882 |
| Inventory reserves and valuation | 6,520 | 9,847 |
| Deferred tax assets | <u>71,915</u> | <u>112,546</u> |
| Depreciation and intangible amortization | (19,476) | (21,200) |
| Deferred tax liabilities | <u>(19,476)</u> | <u>(21,200)</u> |
| Valuation allowance | (18,581) | (93,402) |
| Net deferred tax asset (liability) | <u>\$ 33,858</u> | <u>\$ (2,056)</u> |

The deferred tax assets on the balance sheet for September 30, 2018 also includes a \$2.8 million deferred tax charge related to the company's intercompany profit elimination. This amount is included in the net deferred tax asset recorded on the balance sheet.

ASC Topic 740, *Income Taxes*, requires that all available evidence, both positive and negative, be considered in determining, based on the weight of that evidence, whether a valuation allowance is needed. The weight given to the potential effect of negative and positive evidence should be commensurate with the extent to which it can be objectively verified. The more negative evidence that exists, (a) the more positive evidence is necessary and (b) the more difficult it is to support a conclusion that a valuation allowance is not needed for some portion or the entire deferred tax asset. A

cumulative loss in recent years is considered a significant piece of negative evidence that is difficult to overcome in assessing the need for a valuation allowance.

The Company evaluates the realizability of its deferred tax assets by tax-paying component and assesses the need for a valuation allowance on an annual and quarterly basis. The Company evaluates the profitability of each tax-paying component on a historic cumulative basis and a forward-looking basis in the course of performing this analysis. The Company evaluated all positive and negative evidence in concluding it was appropriate to establish a full valuation allowance against U.S. net deferred tax assets during fiscal year 2016. The company maintained this position throughout fiscal year 2017 and the first quarter of fiscal year 2018.

After evaluating all the relevant positive and negative evidence as of March 31, 2018, the Company concluded that it was more likely than not that a substantial portion of the U.S. deferred tax assets would be realized. In the second quarter of fiscal year 2018 the Company reached a significant level of cumulative profitability in the U.S., coupled with an improved outlook of U.S. earnings. During the full fiscal year 2018, the Company reduced its U.S. valuation against its U.S. net deferred tax assets resulting in a tax benefit of \$77.2 million. The remaining portion of the Company's U.S. valuation allowance is related to the realizability of certain state tax credits and net operating loss carry-forwards. The Company continues to maintain valuation allowances against net deferred tax assets in certain foreign tax-paying components as of the end of fiscal year 2018.

As of September 30, 2018, the Company had state and foreign net operating loss carry-forwards of approximately \$67.4 million and \$58.7 million, respectively. The state net operating losses are generated in various jurisdictions with different carryover periods and expire starting in 2019 through 2035. Certain foreign net operating loss carryovers will begin to expire in 2019.

As of September 30, 2018, the Company had federal research and development tax credit carry-forwards of \$20.4 million. These credit carry-forwards will expire at various dates beginning in 2019 through 2038. The Company also has \$11.0 million of state credits which begin to expire in 2019, while some of these credits have an unlimited carryover period.

During the fiscal year 2018, the Tax Cuts and Jobs Act ("Tax Reform") was enacted in the U.S., making significant tax law changes affecting the Company. The SEC issued Staff Accounting Bulletin 118 ("SAB 118"), which provided guidance for companies that had not completed the accounting for the income tax effects of Tax Reform. Under SAB 118, a company may report provisional amounts based on reasonable estimates where the accounting is incomplete. These amounts are subject to adjustments during a measurement period of up to one year beginning in the reporting period of the enactment date.

Upon the enactment of Tax Reform, the Company is subject to a toll charge in the U.S. on its previously untaxed accumulated foreign earnings. The Company recorded a tax impact of \$8.0 million, net of foreign tax credits, related to the toll charge during the fiscal year ended September 30, 2018. There are still incomplete components related to the accumulated foreign earnings and tax pools for older tax years that require additional time to analyze the data and complete the calculations. The Company will continue to refine these calculations through the quarter ended December 31, 2018 and continue to monitor legislative updates and clarifications and the related impact to the toll charge as recorded during the fiscal year 2018. The Company did not record any current cash U.S. federal tax provision for the toll charge because sufficient net operating loss carryovers and tax credits exist to offset the resulting tax.

The Company has performed studies to determine if there are any annual limitations on the federal net operating losses under the Section 382 of the Internal Revenue Code of 1986, as amended, or the Internal Revenue Code. As a result of these studies, the Company has determined that ownership changes have occurred primarily in connection with acquisitions when the Company has issued stock to the sellers, as well as ownership changes in the subsidiaries acquired by the Company. Certain limitations have been calculated, and the benefits of the net operating losses that will expire before utilization have not been recorded as deferred tax assets in the accompanying Consolidated Balance Sheets.

The Company maintains liabilities for uncertain tax positions. These liabilities involve judgment and estimation and are monitored based on the best information available. A reconciliation of the beginning and ending amount of the

consolidated liability for unrecognized income tax benefits during the fiscal years ended September 30, 2018, 2017 and 2016 is as follows (in thousands):

| | Total |
|---|-----------------|
| Balance at September 30, 2015 | \$ 2,191 |
| Reductions from settlements with taxing authorities | 4,165 |
| Reductions from lapses in statutes of limitations | (897) |
| Foreign exchange rate adjustment | (32) |
| Balance at September 30, 2016 | 5,427 |
| Additions for tax positions in current year | 1,869 |
| Reduction for tax positions in prior year | (3,485) |
| Net reductions from lapses in statutes of limitations | (431) |
| Foreign exchange rate adjustment | (2) |
| Balance at September 30, 2017 | 3,378 |
| Additions for tax positions in current year | 874 |
| Reduction for tax positions in prior year | (656) |
| Reductions from lapses in statutes of limitations | (353) |
| Balance at September 30, 2018 | <u>\$ 3,243</u> |

Included in the ending balance of unrecognized tax benefits for the fiscal year ended September 30, 2018 are \$3.0 million of tax benefits that if recognized would impact the effective tax rate. The Company recognizes interest related to unrecognized benefits as a component of the income tax provision (benefit), of which \$0.1 million, \$0.1 million and \$0.1 million, respectively, was recognized for the fiscal years ended September 30, 2018, 2017 and 2016. The statute of limitations lapsed on several uncertain tax positions in the foreign jurisdictions during fiscal year 2018 that resulted in a \$0.7 million reduction in gross unrecognized tax benefits that impacted the effective tax rate.

The Company is subject to U.S. federal income tax and state, local and international income taxes in various jurisdictions. The amount of income taxes paid is subject to the Company's interpretation of applicable tax laws in the jurisdictions in which it files.

In the normal course of business, the Company is subject to income tax audits in various global jurisdictions in which it operates. The years subject to examination vary for the U.S. and international jurisdictions, with the earliest tax year being 2011. Based on the outcome of these examinations or the expiration of statutes of limitations for specific jurisdictions, it is reasonably possible that the related unrecognized tax benefits could change from those recorded in the Company's Consolidated Balance Sheets. The Company currently anticipates that it is reasonably possible that the unrecognized tax benefits will be reduced by approximately \$0.1 million in the next 12 months.

13. Derivative Instruments

The Company has transactions and balances denominated in currencies other than the U.S. dollar. Most of these transactions or balances are denominated in Euros, British Pounds and a variety of Asian currencies. These transactions and balances, including short-term advances between the Company and its subsidiaries, subject the Company's operations to exposure from exchange rate fluctuations. The impact of currency exchange rate movement can be positive or negative in any period. The Company mitigates the impact of potential currency transaction gains and losses on short-term intercompany advances through timely settlement of each transaction, generally within 30 days.

The Company also enters into foreign exchange contracts to reduce its exposure to currency fluctuations. Under forward contract arrangements, the Company typically agrees to purchase a fixed amount of one currency in exchange for a fixed amount of another currency on specified dates with maturities of three months or less. These transactions do not qualify for hedge accounting. Net gains and losses related to these contracts are recorded as a component of "Other

(expense) income, net" in the accompanying Consolidated Statements of Operations and are as follows for the fiscal years ended September 30, 2018, 2017 and 2016 (in thousands):

| | <u>Fiscal Year Ended September 30,</u> | | |
|--|--|-------------|-------------|
| | <u>2018</u> | <u>2017</u> | <u>2016</u> |
| Realized gains (losses) on derivatives not designated as hedging instruments | \$ (330) | \$ (545) | \$ 1,434 |

The fair value of derivative instruments are as follows at September 30, 2018 and 2017 (in thousands):

| <u>As of September 30,</u> | <u>Fair Value of Assets</u> | | <u>Fair Value of Liabilities</u> | |
|---|-----------------------------|-------------|----------------------------------|-----------------|
| | <u>2018</u> | <u>2017</u> | <u>2018</u> | <u>2017</u> |
| Derivatives not designated as hedging instruments | | | | |
| Foreign exchange contracts | \$ 170 | \$ 4 | \$ (177) | \$ (146) |
| Total | <u>\$ 170</u> | <u>\$ 4</u> | <u>\$ (177)</u> | <u>\$ (146)</u> |

The fair values of the forward contracts described above are recorded in the Company's accompanying Consolidated Balance Sheets as "Prepaid expenses and other current assets" and "Accrued expenses and other current liabilities".

14. Postretirement Benefits

Defined Benefit Pension Plans

The Company has three active defined benefit pension plans (collectively, the "Plans"), including legacy Taiwan Plan, the legacy Switzerland Plan, and the newly acquired Tec-Sem Plan. The Plans cover substantially all of the Company's employees in Switzerland and Taiwan. Retirement benefits are generally earned based on years of service and the level of compensation during active employment, but the level of benefits varies within the Plans. Eligibility is determined in accordance with local statutory requirements.

The Company uses September 30th as a measurement date to determine net periodic benefit costs, benefit obligations and the value of plan assets for all plans. The following tables set forth the funded status and amounts recognized in the Company's Consolidated Balance Sheets as of September 30, 2018 and 2017 (in thousands):

| | September 30, | |
|--|---------------|----------|
| | 2018 | 2017 |
| Benefit obligation at beginning of fiscal year | \$ 3,565 | \$ 6,444 |
| Benefit obligation through acquisition | 7,852 | — |
| Service cost | 382 | 268 |
| Interest cost | 75 | 22 |
| Actuarial loss | (165) | (601) |
| Benefits paid | (685) | — |
| Employee contributions | 191 | — |
| Settlements paid | — | (2,526) |
| Foreign currency translation | (71) | (42) |
| Benefit obligation at end of fiscal year | \$ 11,144 | \$ 3,565 |
| Fair value of assets at beginning of fiscal year | \$ 2,225 | \$ 4,532 |
| Fair value of assets through acquisition | 5,052 | — |
| Actual return on plan assets | 69 | 55 |
| Disbursements | (685) | (51) |
| Employer contributions | 266 | 153 |
| Employee contributions | 191 | 101 |
| Settlements paid | — | (2,526) |
| Foreign currency translation | (40) | (39) |
| Fair value of assets at end of fiscal year | \$ 7,078 | \$ 2,225 |
| Accrued benefit obligation | \$ 4,066 | \$ 1,340 |

The accumulated benefit obligation of the Plans is \$10.6 million and \$3.1 million, respectively, at September 30, 2018 and 2017. All Plans have an accumulated benefit obligation and projected benefit obligation in excess of plans' assets at September 30, 2018.

The following table provides pension-related amounts and their classification within the accompanying Consolidated Balance Sheets as of September 30, 2018 and 2017 (in thousands):

| | September 30, | |
|-----------------------------------|---------------|----------|
| | 2018 | 2017 |
| Accrued compensation and benefits | \$ 431 | \$ 112 |
| Long-term pension liability | 3,635 | 1,228 |
| | \$ 4,066 | \$ 1,340 |

The Company bases its determination of pension expense on a market-related valuation of assets, which reduces year-to-year volatility. This market-related valuation recognizes investment gains or losses over a five-year period from the year in which they occur. Investment gains or losses represent the difference between the expected return calculated using the market-related value of assets and the actual return on assets. Since the market-related value of assets recognizes gains or losses over a five-year period, the future value of assets will be impacted as previously deferred gains or losses are recognized. At September 30, 2018 and 2017, the Company had cumulative unrecognized net actuarial gains less than \$0.1 million and \$0.4 million, respectively, which are amortized into net periodic benefit cost over the average remaining service period of active Plans' participants. At September 30, 2018 and 2017, the Company had cumulative unrecognized investment gains of \$0.5 million and losses of \$0.1 million, respectively, under the Plans which remain to be recognized in the calculation of the market-related values of assets.

The components of the Company's net pension cost for the fiscal years ended September 30, 2018, 2017 and 2016 are as follows (in thousands):

| | <u>Year Ended September 30,</u> | | |
|--------------------------------|---------------------------------|----------------|---------------|
| | <u>2018</u> | <u>2017</u> | <u>2016</u> |
| Service cost | \$ 382 | \$ 268 | \$ 546 |
| Interest cost | 75 | 22 | 66 |
| Amortization of losses | 5 | 7 | 1 |
| Expected return on plan assets | (66) | (130) | (156) |
| Net periodic pension cost | \$ 396 | \$ 167 | \$ 457 |
| Curtailement gain | — | — | (227) |
| Settlement (gain) loss | — | (259) | — |
| Total pension cost (gain) | <u>\$ 396</u> | <u>\$ (92)</u> | <u>\$ 230</u> |

The following changes in Plans' assets and benefit obligations were recognized in other comprehensive income (loss) as of September 30, 2018 and 2017 (in thousands):

| | <u>September 30,</u> | |
|---|----------------------|---------------|
| | <u>2018</u> | <u>2017</u> |
| Net (gain) loss | \$ (191) | \$ (577) |
| Amortization of net loss | (7) | (7) |
| Curtailement gain | — | — |
| Settlement gain | — | 259 |
| Total recognized in other comprehensive income (loss) | <u>(198)</u> | <u>(325)</u> |
| Total recognized in net periodic pension cost and other comprehensive income (loss) | <u>\$ 593</u> | <u>\$ 491</u> |

The settlement gain of \$0.3 million realized during fiscal year ended September 30, 2017 was recorded as a reduction of accumulated other comprehensive income (loss) and the pension cost during the period then ended. The curtailment gain of \$0.2 million incurred during fiscal years ended September 30, 2016 was reclassified from accumulated other comprehensive income (loss) into the results of operations during fiscal year 2016. Additionally, a curtailment gain of \$1.1 million was recognized as a reclassification from accumulated other comprehensive income and a corresponding reduction in pension liabilities during fiscal year ended September 30, 2016. Please refer to Note 15, "Stockholders' Equity", for further information on these reclassifications and their impact on the accumulated other comprehensive income and other comprehensive income during each fiscal year.

Weighted-average assumptions used to determine the projected benefit obligation for the fiscal years ended September 30, 2018, 2017 and 2016 are as follows:

| | <u>Year Ended September 30,</u> | | |
|---|---------------------------------|-------------|-------------|
| | <u>2018</u> | <u>2017</u> | <u>2016</u> |
| Discount rate | 1.04 % | 0.88 % | 0.40 % |
| Expected return on plan assets | 1.06 % | 1.75 % | 1.75 % |
| Expected rate of compensation increases | 1.19 % | 1.54 % | 1.31 % |

In selecting the appropriate discount rates for the Plans, the Company uses country-specific information, adjusted to reflect the duration of the particular plan. The expected return on plan assets is based on an evaluation of fixed income yield curves and equity return assumption studies applied to the Plans' asset allocations.

Plan Assets

The fair value of plan assets for the two Swiss Plans and the Taiwan Plan were \$6.8 million and \$0.3 million, respectively, at September 30, 2018. The assets of the Swiss Plans are invested in a collective fund with multiple employers through a Swiss insurance company, which is a customary practice for Swiss pension plans. The Company

does not have any rights or an investment authority over the Plan's assets which are invested primarily in highly rated debt securities.

The assets of the Taiwan Plan are invested with a trustee selected by the Taiwan government, and the Company has no investment authority over the Plan's assets.

The allocation of the Plans' assets at September 30, 2018 is as follows:

| | September 30, 2018 |
|---------------------------|-----------------------|
| Cash and cash equivalents | 3 % |
| Debt securities | 69 |
| Equity securities | 6 |
| Other | 22 |
| | <u>100 %</u> |

The fair values of pension assets by asset category and by level at September 30, 2018 are as follows (in thousands):

| | As of September 30, 2018 | | | |
|----------------------------------|--------------------------|-----------------|-------------|-----------------|
| | Level 1 | Level 2 | Level 3 | Total |
| Swiss Life collective foundation | \$ — | \$ 6,754 | \$ — | \$ 6,754 |
| Taiwan collective trust | — | 324 | — | 324 |
| Total | <u>\$ —</u> | <u>\$ 7,078</u> | <u>\$ —</u> | <u>\$ 7,078</u> |

The fair values of pension assets by asset category and by level at September 30, 2017 are as follows (in thousands):

| | As of September 30, 2017 | | | |
|----------------------------------|--------------------------|-----------------|-------------|-----------------|
| | Level 1 | Level 2 | Level 3 | Total |
| Swiss Life collective foundation | \$ — | \$ 1,886 | \$ — | \$ 1,886 |
| Taiwan collective trust | — | 339 | — | 339 |
| Total | <u>\$ —</u> | <u>\$ 2,225</u> | <u>\$ —</u> | <u>\$ 2,225</u> |

Please refer to Note 21, "Fair Value Measurements" for a description of the levels of inputs used to determine fair value measurements.

Benefit payments expected to be paid over the next five fiscal years and thereafter are as follows (in thousands):

| Fiscal year ended September 30, | |
|---------------------------------|--------|
| 2019 | \$ 266 |
| 2020 | 253 |
| 2021 | 267 |
| 2022 | 297 |
| 2023 | 293 |
| Thereafter | 117 |

The Company expects to contribute \$0.3 million to the Plans in fiscal year 2019 to meet the minimum funding requirements of the Plans.

Defined Contribution Plans

The Company sponsors a defined contribution plan that meets the requirements of Section 401(k) of the Internal Revenue Code. All United States employees who meet minimum age and service requirements are eligible to participate in the plans. The plans allow employees to invest, on a pre-tax basis, a percentage of their annual salary and bonus subject to statutory limitations. The Company matches a portion of their contributions on a pre-tax basis up to a maximum amount of 4.5% of deferred pay. The expense recognized for the defined contribution plans was \$3.4 million, \$3.0 million and \$3.1 million, respectively, for the fiscal years ended September 30, 2018, 2017 and 2016.

15. Stockholders' Equity

Preferred Stock

Total number of shares of preferred stock authorized for issuance was 1,000,000 shares at September 30, 2018 and 2017, respectively. Preferred stock has a par value of \$0.01 per share and may be issued at the discretion of the Board of Directors without stockholder approval with such designations, rights and preferences as the Board of Directors may determine. There were no shares of preferred stock issued or outstanding at September 30, 2018 or 2017, respectively.

Accumulated Other Comprehensive Income

The following is a summary of the components of accumulated other comprehensive income, net of tax, at September 30, 2018, 2017 and 2016 (in thousands):

| | Currency Translation Adjustments | Unrealized Gains (Losses) on Available- for-Sale Securities | Pension Liability Adjustments | Total |
|--|--|---|-------------------------------------|------------------|
| Balance at September 30, 2015 | \$ 6,545 | \$ 103 | \$ (750) | \$ 5,898 |
| Other comprehensive (loss) income before reclassifications | 8,844 | (231) | (322) | 8,291 |
| Amounts reclassified from accumulated other comprehensive income | — | 125 | 852 | 977 |
| Balance at September 30, 2016 | 15,389 | (3) | (220) | 15,166 |
| Other comprehensive income (loss) before reclassifications | (221) | (10) | 514 | 283 |
| Amounts reclassified from accumulated other comprehensive income | — | 12 | (248) | (236) |
| Balance at September 30, 2017 | 15,168 | (1) | 46 | 15,213 |
| Other comprehensive (loss) income before reclassifications | (1,651) | (110) | 124 | (1,637) |
| Amounts reclassified from accumulated other comprehensive income | — | (1) | 12 | 11 |
| Balance at September 30, 2018 | <u>\$ 13,517</u> | <u>\$ (112)</u> | <u>\$ 182</u> | <u>\$ 13,587</u> |

Unrealized net holding gains (losses) on available-for-sale marketable securities are reclassified from accumulated other comprehensive income into results of operations at the time of the securities' sale, as described in Note 5, "Marketable Securities." Gains (losses) related to defined benefit pension plan settlements are reclassified from accumulated other comprehensive income into results of operations at the time of the settlement, as described in Note 14, "Postretirement Benefits." Defined benefit pension plan curtailments are recognized as reclassifications from accumulated other comprehensive income and corresponding reductions in pension liabilities and net pension cost, as described in Note 14, "Postretirement Benefits."

16. Equity Incentive Plans

The Company's equity incentive plans are intended to attract and retain employees and provide an incentive for them to contribute to the Company's long-term growth and achievement of its long-range performance goals. The equity incentive plans consist of plans under which employees may be granted options to purchase shares of the Company's stock, restricted stock and other equity incentives. Restricted stock awards generally have a three-year vesting period. At September 30, 2018, a total of 3,006,971 shares were reserved and available for future grant under the equity incentive plans.

2015 Equity Incentive Plan

In accordance with the 2015 Equity Incentive Plan (the "2015 Plan") provisions, the Company may grant (i) restricted stock and other stock-based awards, (ii) nonqualified stock options, and (iii) options intended to qualify as incentive stock options under Section 422 of the Internal Revenue Code. All employees of the Company or any affiliate

of the Company, independent directors, consultants and advisors are eligible to participate in the 2015 Plan. The 2015 Plan provides for the issuance of a maximum of 5,000,000 shares of common stock in addition to the stock option and restricted stock awards granted out of the 2000 Plan that were canceled or forfeited after February 5, 2015 upon expiration of the 2000 Plan on March 31, 2015.

Restricted Stock Activity

The following table summarizes restricted stock unit activity for the fiscal year ended September 30, 2018:

| | Shares | Weighted Average Grant-Date Fair Value |
|-----------------------------------|------------------|---|
| Outstanding at September 30, 2017 | 2,474,011 | \$ 12.34 |
| Granted | 535,289 | 33.28 |
| Vested | (732,356) | 12.78 |
| Forfeited | (82,432) | 16.51 |
| Outstanding at September 30, 2018 | <u>2,194,512</u> | <u>\$ 17.20</u> |

The weighted average grant date fair value of restricted stock units granted during fiscal years 2018, 2017 and 2016 was \$33.28, \$14.43 and \$10.84 per share, respectively. The fair value of restricted stock units vested during fiscal years 2018, 2017 and 2016 was \$22.0 million, \$15.0 million and \$14.3 million, respectively. During fiscal years 2018, 2017 and 2016, the Company remitted \$7.3 million, \$4.7 million and \$4.4 million, respectively, for withholding taxes on vested restricted stock units, of which \$0.0 million, \$0.1 million and \$4.3 million, respectively, was paid by the Company. During fiscal years 2018, 2017 and 2016, the Company received \$7.3 million, \$4.6 million and \$0.1 million, respectively, in cash proceeds from employees to satisfy their tax obligations as a result of share issuances.

As of September 30, 2018, the future unrecognized stock-based compensation expense related to restricted stock units expected to vest is \$20.7 million and is expected to be recognized over an estimated weighted average amortization period of 1.5 years.

The Company grants restricted stock units that vest over a required service period and /or achievement of certain operating performance goals. Restricted stock units granted with performance goals may also have a required service period following the achievement of all or a portion of the goals. The following table reflects restricted stock units and stock awards granted during fiscal years ended September 30, 2018, 2017 and 2016:

| | Total Units | Time-Based Units | Stock Grants | Performance- Based Units |
|-------------------------------|-------------|---------------------|--------------|-----------------------------|
| Year ended September 30, 2018 | 535,289 | 213,893 | 36,774 | 284,622 |
| Year ended September 30, 2017 | 1,018,570 | 386,713 | 43,519 | 588,338 |
| Year ended September 30, 2016 | 1,690,582 | 744,250 | 86,082 | 860,250 |

Among the total restricted stock units granted, 134,993, 124,124, and 109,876 shares, respectively, were granted to the employees who belong to the discontinued operations in the year ended September 30, 2018, 2017 and 2016. As of November 7, 2018, only 61,000 shares granted to these employees were not vested and expected to be vested upon the closing of the Disposition.

Time-Based Grants

Restricted stock units granted with a required service period typically have three-year vesting schedules in which one-third of awards vest at the first anniversary of the grant date, one-third vest at the second anniversary of the grant date and one-third vest at the third anniversary of the grant date, subject to the award holders meeting service requirements.

Stock Grants

The stock awards granted to the members of the Company's Board of Directors include restricted stock awards and deferred restricted stock units.

Restricted stock awards granted during fiscal year 2018 and 2017 are subject to a one-year vesting period. Restricted stock awards granted during fiscal years 2016 vested on the grant date upon issuance.

Certain members of the Board of Directors have elected to defer receiving their annual awards of restricted stock units and related quarterly dividends until they attain a certain age or cease to provide services as the Company's Board members. Annual restricted stock units granted during fiscal years 2018 and 2017 are subject to a one-year vesting period. Annual restricted stock units granted during fiscal year 2016 vested on the grant date upon issuance.

Performance-Based Grants

Performance-based restricted stock units are earned based on the achievement of performance criteria established by the Human Resources and Compensation Committee and approved by the Board of Directors. The criteria for performance-based awards are weighted and have threshold, target and maximum performance goals.

Performance-based awards granted in fiscal year 2018, 2017 and 2016 allow participants to earn 100% of restricted stock units if the Company's performance meets its target goal for each applicable financial metric, and up to a maximum of 200% if the Company's performance for such metrics meets the maximum or stretch goal. Performance below the minimum threshold for each financial metric results in award forfeitures. Performance goals will be measured over a three-year period for each plan and at the end of the period to determine the number of units earned by recipients who continue to meet the service requirement. Around the third anniversary of each plan's grant date, the Company's Board of Directors determines the number of units earned for participants who continue to meet the service requirements on the vest date.

Employee Stock Purchase Plan

The Company maintains an employee stock purchase plan that allows its employees to purchase shares of common stock at a price equal to 85% of the fair market value of the Company's stock at the beginning or the end of the semi-annual period, whichever is lower. On February 8, 2017, the stockholders approved the 2017 Employee Stock Purchase Plan (the "2017 Plan") to replace the 1995 Employee Stock Purchase Plan (the "1995 Plan") which was terminated upon the expiration of the offering period ending on July 31, 2017. The 2017 Plan allows for purchases by employees of up to 1,250,000 shares of the Company's common stock. As of September 30, 2018, 1,123,326 shares of common stock remain available for purchase under the 2017 Plan. During fiscal year ended September 30, 2018, the Company issued 126,674 shares under the 2017 Plan. During fiscal years 2017, the Company issued 162,360 shares under the 1995 Plan.

17. Restructuring and Other Charges

Fiscal Year 2018 Activities

During fiscal year 2018, the Company incurred restructuring charges of \$0.7 million, primarily related to the planned closure of its Denmark facility and reduction in force at Tec-Sem.

During the fourth quarter of fiscal year 2018, the Company initiated an action to consolidate the operations at its Denmark facility into its operations at its Manchester, UK facility to eliminate cost redundancies. The \$0.3 million charge resulted from the Denmark action was related to Brooks Life Sciences segment.

During the fourth quarter of fiscal year 2018, the Company also initiated a post-acquisition reduction in force plan at Tec-Sem to maximize synergies with the Company's existing infrastructure. The \$0.3 million charge resulted from the Tec-Sem action was related to the Brooks Semiconductor Solutions Group segment.

Fiscal Year 2017 Activities

During fiscal year 2017, the Company recorded restructuring charges of \$3.1 million related to severance, including \$2.5 million attributable to the Brooks Semiconductor Solutions Group segment, \$0.4 million attributable to the Brooks Life Sciences segment and \$0.3 million attributable to the company-wide restructuring action.

The restructuring charges in the Brooks Semiconductor Solutions Group segment consisted of \$1.5 million of charges related to the actions initiated during fiscal year 2017 to streamline field service operations and optimize the cost structure and improve productivity, and \$1.0 million of charges related to the actions initiated prior to fiscal year 2017 primarily related to consolidate the Jena, Germany repair facility into the Chelmsford, Massachusetts repair operation.

Restructuring charges of \$0.3 million were related to the company-wide restructuring action initiated in fiscal year 2016 to streamline business operations, improve competitiveness and overall profitability.

Fiscal Year 2016 Activities

The Company recorded restructuring charges of \$10.2 million during fiscal year 2016 related to severance costs, including \$8.9 million related to restructuring actions initiated during fiscal year 2016 and \$1.3 million related to restructuring actions initiated in prior periods.

The Company's charges from restructuring actions initiated during fiscal year 2016 consisted of: (i) \$3.1 million attributable to the Brooks Life Sciences segment to streamline the segment's management structure, integrate acquisitions, consolidate facility and improve profitability, (ii) \$1.2 million attributable to the Brooks Semiconductor Solutions Group segment to consolidate its Jena, Germany repair facility into its Chelmsford, Massachusetts repair operation, and (iii) \$4.5 million related to the company-wide restructuring action to streamline business operations, improve competitiveness and overall profitability.

The Company's charges from restructuring actions initiated in prior periods was primarily related to the Brooks Semiconductor Solutions segment to integrate Contact, and to close and transfer the Mistelgau, Germany manufacturing operations to a contract manufacturer.

The following is a summary of activity related to the Company's restructuring and other charges, excluding amounts related to the discontinued operations, for the fiscal years ended September 30, 2018, 2017 and 2016 (in thousands):

| | Activity - Year Ended September 30, 2018 | | | |
|---|---|-----------------|-----------------|---|
| | Balance September 30, 2017 | Expenses | Payments | Balance September 30, 2018 |
| Total restructuring liabilities related to workforce termination benefits | \$ 1,708 | \$ 714 | \$ (1,763) | \$ 659 |

| | Activity - Year Ended September 30, 2017 | | | |
|---|---|-----------------|-----------------|---|
| | Balance September 30, 2016 | Expenses | Payments | Balance September 30, 2017 |
| Total restructuring liabilities related to workforce termination benefits | \$ 5,939 | 3,144 | (7,375) | 1,708 |

| | Activity - Year Ended September 30, 2016 | | | |
|---|---|-----------------|-----------------|---|
| | Balance September 30, 2015 | Expenses | Payments | Balance September 30, 2016 |
| Facility and other contract termination costs | \$ 433 | \$ 25 | \$ (458) | \$ — |
| Workforce-related termination benefits | 1,640 | 10,185 | (5,886) | 5,939 |
| Total restructuring liabilities | \$ 2,073 | \$ 10,210 | \$ (6,344) | \$ 5,939 |

Accrued restructuring costs of \$0.7 million as of September 30, 2018 are expected to be paid during fiscal year 2019.

18. Earnings per Share

The calculations of basic and diluted net income (loss) per share and basic and diluted weighted average shares outstanding are as follows for the fiscal years ended September 30, 2018, 2017 and 2016 (in thousands, except per share data):

| | Year Ended September 30, | | |
|--|--------------------------|------------------|--------------------|
| | 2018 | 2017 | 2016 |
| Income (loss) income from continuing operations | \$ 67,717 | \$ 10,687 | \$ (85,457) |
| Income from discontinued operations, net of tax | 48,747 | 51,925 | 15,981 |
| Net income | 116,464 | 62,612 | (69,476) |
| Net loss attributable to noncontrolling interest | 111 | — | — |
| Net income (loss) attributable to Brooks Automation, Inc. | <u>\$ 116,575</u> | <u>\$ 62,612</u> | <u>\$ (69,476)</u> |
| Weighted average common shares outstanding used in computing basic earnings per share | 70,489 | 69,575 | 68,507 |
| Dilutive restricted stock units | 448 | 910 | — |
| Weighted average common shares outstanding used in computing diluted earnings per share | <u>70,937</u> | <u>70,485</u> | <u>68,507</u> |
| Basic net income (loss) per share attributable to Brooks Automation, Inc. common stockholders: | | | |
| Income (loss) from continuing operations | \$ 0.96 | \$ 0.15 | \$ (1.25) |
| Income from discontinued operations, net of tax | 0.69 | 0.75 | 0.23 |
| Basic net income (loss) per share attributable to Brooks Automation, Inc. | <u>\$ 1.65</u> | <u>\$ 0.90</u> | <u>\$ (1.01)</u> |
| Diluted net income (loss) per share attributable to Brooks Automation, Inc. common stockholders: | | | |
| Income (loss) from continuing operations | \$ 0.95 | \$ 0.15 | \$ (1.25) |
| Income from discontinued operations, net of tax | 0.69 | 0.74 | 0.23 |
| Diluted net income (loss) per share attributable to Brooks Automation, Inc. common stockholders | <u>\$ 1.64</u> | <u>\$ 0.89</u> | <u>\$ (1.01)</u> |

Restricted stock units of 9,927 and 9,500, respectively during fiscal year 2018 and 2017 were excluded from the computation of diluted earnings per share as their effect would be anti-dilutive based on the treasury stock method. Restricted stock units of 859,000 during fiscal year 2016 were excluded from the computation of diluted earnings per share as a result of a net loss incurred during the period.

19. Significant Customers

No customers accounted for more than 10% of the Company's consolidated revenue during the fiscal years ended September 30, 2018, 2017 and 2016. No customers accounted for more than 10% of the Company's total receivables during the fiscal year ended September 30, 2018 and 2017.

20. Segment and Geographic Information

Operating segments are defined as components of an enterprise that engage in business activities for which discrete financial information is available and regularly reviewed by the chief operating decision maker in deciding how to allocate resources and to assess performance. The Company's Chief Executive Officer is the Company's chief operating decision maker.

The Company has two operating and reportable segments consisting of Brooks Semiconductor Solutions Group segment and Brooks Life Sciences segment.

The Brooks Semiconductor Solutions Group segment provides a variety of products, services and solutions that enable improved throughput and yield in controlled operating environments, as well as an extensive range of support services. The solutions include atmospheric and vacuum robots, robotic modules, tool automation systems, and contamination control of wafer carrier front opening unified pods. The support services include repair services, diagnostic support services, and installation services in support of the products, which enable the customers to maximize process tool uptime and productivity. This segment also provides end-user customers with spare parts and productivity enhancement upgrades to maximize tool productivity.

The Brooks Life Sciences segment provides comprehensive life cycle sample management solutions for life science and bioscience customers to advance scientific research and support drug development. The segment's product offerings include automated cold sample management systems for compound and biological sample storage, equipment for sample preparation and handling, consumables, and informatics that help customers manage samples throughout their research discovery and development work flows. The segment's service offerings include sample storage and support services provided to a wide range of life science customers, including pharmaceutical companies, biotechnology companies, biobanks and research institutes.

The Company evaluates the performance and future opportunities of its segments and allocates resources to them based on their revenue, operating income (loss) and returns on invested assets. Operating income (loss) for each segment includes selling, general and administrative expenses directly attributable to the segment. Amortization of acquired intangible assets (excluding completed technology), restructuring and other charges, pension settlement, in-process research and development, and other unallocated corporate expenses are excluded from the segments' operating income (loss). The Company's indirect overhead costs, which include various general and administrative expenses, are allocated among the segments based upon several cost drivers associated with the respective administrative function, including segment revenue, headcount, or benefits that each segment derives from a specific administrative function. Segment assets exclude cash, cash equivalents, marketable securities, deferred tax assets, assets held for sale and equity method investments.

The following is the summary of the financial information for the Company's operating and reportable segments for the fiscal years ended September 30, 2018, 2017 and 2016 (in thousands):

| | Brooks Semiconductor Solutions Group | Brooks Life Sciences | Total |
|---|--|-------------------------|-------------------|
| Fiscal Year Ended September 30, 2018 | | | |
| Revenue | | | |
| Products | \$ 390,087 | \$ 92,302 | \$ 482,389 |
| Services | 44,931 | 104,240 | 149,171 |
| Segment revenue | <u>\$ 435,018</u> | <u>\$ 196,542</u> | <u>\$ 631,560</u> |
| Gross profit | \$ 173,954 | \$ 72,127 | \$ 246,081 |
| Segment operating income | 58,373 | 1,160 | 59,533 |
| Depreciation expense | 3,869 | 7,433 | 11,302 |
| Fiscal Year Ended September 30, 2017 | | | |
| Revenue | | | |
| Products | \$ 340,233 | \$ 66,753 | \$ 406,986 |
| Services | 38,557 | 81,956 | 120,513 |
| Segment revenue | <u>\$ 378,790</u> | <u>\$ 148,709</u> | <u>\$ 527,499</u> |
| Gross profit | \$ 144,119 | \$ 54,768 | \$ 198,887 |
| Segment operating income | 40,110 | 1,410 | 41,520 |
| Depreciation expense | 4,592 | 4,694 | 9,286 |
| Fiscal Year Ended September 30, 2016 | | | |
| Revenue | | | |
| Products | \$ 289,377 | \$ 46,546 | \$ 335,923 |
| Services | 36,522 | 61,567 | 98,089 |
| Segment revenue | <u>\$ 325,899</u> | <u>\$ 108,113</u> | <u>\$ 434,012</u> |
| Gross profit | \$ 117,626 | \$ 39,063 | \$ 156,689 |
| Segment operating income (loss) | 16,634 | (6,451) | 10,183 |
| Depreciation expense | 5,158 | 3,496 | 8,654 |
| Assets: | | | |
| September 30, 2018 | \$ 264,452 | \$ 410,581 | \$ 675,033 |
| September 30, 2017 | 236,755 | 306,666 | 543,421 |

The following is a reconciliation of the Company's operating and reportable segments' operating income and segment assets to the corresponding amounts presented in the accompanying Consolidated Balance Sheets and Consolidated Statements of Operations for the fiscal years ended September 30, 2018, 2017 and 2016 (in thousands):

| | For the Year Ended September 30, | | |
|--|-------------------------------------|------------------|--------------------|
| | 2018 | 2017 | 2016 |
| Segment operating income | \$ 59,533 | \$ 41,520 | \$ 10,183 |
| Amortization of acquired intangible assets | 19,339 | 13,228 | 10,799 |
| Restructuring charges | 714 | 3,144 | 10,210 |
| Other unallocated corporate expenses | 8,071 | 10,829 | 6,228 |
| Total operating income | <u>\$ 31,409</u> | <u>\$ 14,319</u> | <u>\$ (17,054)</u> |

| | September 30, 2018 | September 30, 2017 |
|--|-----------------------|-----------------------|
| Segment assets | \$ 675,033 | \$ 543,421 |
| Cash, cash equivalents and marketable securities | 251,226 | 104,292 |
| Deferred tax assets | 43,798 | 1,692 |
| Assets held for sale | 125,200 | 117,223 |
| Total assets | \$ 1,095,257 | \$ 766,628 |

Revenue from external customers is attributed to geographic areas based on locations in which customer orders are placed. Net revenue by geographic area for the fiscal years ended September 30, 2018, 2017 and 2016 are as follows (in thousands):

| | Year Ended September 30, | | |
|-----------------------|--------------------------|-------------------|-------------------|
| | 2018 | 2017 | 2016 |
| North America | \$ 233,243 | \$ 174,432 | \$ 157,426 |
| Asia / Pacific/ Other | 262,706 | 255,825 | 196,117 |
| Europe: | | | |
| <i>United Kingdom</i> | 51,690 | 37,283 | 31,342 |
| <i>Rest of Europe</i> | 83,921 | 59,959 | 49,127 |
| | <u>\$ 631,560</u> | <u>\$ 527,499</u> | <u>\$ 434,012</u> |

The majority of the Company's net revenue in North America is generated in the United States which amounted to \$232.7 million, \$172.9 million and \$156.9 million, respectively, during fiscal years ended September 30, 2018, 2017 and 2016.

The geographic location of an OEM is not indicative of where the products will eventually be used. The geographic area for the orders is determined by the onward sale of an OEM system which incorporates the sub-systems and/or components.

Property, plant and equipment by geographic area as of September 30, 2018 and 2017 are as follows (in thousands):

| | September 30, | |
|-----------------------|------------------|------------------|
| | 2018 | 2017 |
| North America | \$ 50,614 | \$ 50,908 |
| Asia / Pacific/ Other | 492 | 547 |
| Europe: | | |
| <i>United Kingdom</i> | 5,494 | 2,848 |
| <i>Rest of Europe</i> | 3,388 | 2,678 |
| | <u>\$ 59,988</u> | <u>\$ 56,981</u> |

Property, plant and equipment located in the United States amounted to \$50.5 million and \$50.7 million, respectively, at September 30, 2018 and 2017.

21. Fair Value Measurements

The fair value measurement guidance establishes a fair value hierarchy which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The following levels of inputs may be used to measure fair value:

Level 1 Inputs: Quoted prices in active markets for identical assets or liabilities as of the reporting date. Active markets are those in which transactions for the asset and liability occur in sufficient frequency and volume to provide pricing information on an ongoing basis.

Level 2 Inputs: Observable inputs other than prices included in Level 1, including quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 Inputs: Unobservable inputs that are significant to the fair value of the assets or liabilities and reflect an entity's own assumptions in pricing assets or liabilities since they are supported by little or no market activity.

The Company measures certain assets, including the cost and equity method investments, at fair value on a nonrecurring basis when they are deemed to be other-than-temporarily impaired. The fair values of these investments are determined based on valuation techniques using the best information available, and may include quoted market prices, market comparables, and discounted cash flow projections. An impairment charge is recorded when the cost of the investment exceeds its fair value and this condition is determined to be other-than-temporary.

Financial Assets and Liabilities Measured at Fair Value on a Recurring Basis

The following tables summarize assets and liabilities measured and recorded at fair value on a recurring basis in the accompanying Consolidated Balance Sheets as of September 30, 2018 and 2017 (in thousands):

| Description | September 30, 2018 | Fair Value Measurements at Reporting Date Using | | |
|-------------------------------|--------------------|--|---|---|
| | | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) |
| Assets: | | | | |
| Cash equivalents | \$ 50,572 | \$ 50,572 | \$ — | \$ — |
| Available-for-sale securities | 53,518 | — | 53,518 | — |
| Foreign exchange contracts | 170 | — | 170 | — |
| Total Assets | \$ 104,260 | \$ 50,572 | \$ 53,688 | \$ — |
| Liabilities: | | | | |
| Foreign exchange contracts | 177 | — | 177 | — |
| Term loan | 196,071 | — | 196,071 | — |
| Total Liabilities | \$ 196,248 | \$ — | \$ 196,248 | \$ — |

| Description | September 30, 2017 | Fair Value Measurements at Reporting Date Using | | |
|-------------------------------|--------------------|--|---|---|
| | | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) |
| Assets: | | | | |
| Cash equivalents | \$ 45 | \$ 42 | \$ 3 | \$ — |
| Available-for-sale securities | 2,670 | — | 2,670 | — |
| Foreign exchange contracts | 4 | — | 4 | — |
| Total Assets | \$ 2,719 | \$ 42 | \$ 2,677 | \$ — |
| Liabilities: | | | | |
| Foreign exchange contracts | 146 | — | 146 | — |
| Total Liabilities | \$ 146 | \$ — | \$ 146 | \$ — |

Cash Equivalents

Cash equivalents of \$50.6 million and less than \$0.1 million, respectively, at September 30, 2018 and 2017 consist of money market funds and are classified within Level 1 of the fair value hierarchy because they are valued using quoted market prices in active markets. Cash equivalents of less than \$0.1 million as of September 30, 2017 consist primarily of Bank Certificate of Deposits and are classified within Level 2 of the fair value hierarchy because they are not actively traded.

Available-For-Sale Securities

Available-for-sale securities of \$53.5 million and \$2.7 million, respectively, at September 30, 2018 and 2017 consist of U.S. Treasury Securities, Municipal Securities, Bank Certificate of Deposits, U.S Corporate Securities and Other Debt Securities. The securities are valued using matrix pricing and benchmarking and classified within Level 2 of the fair value hierarchy because they are not actively traded. Matrix pricing is a mathematical technique used to value securities by relying on the securities' relationship to other benchmark quoted prices.

Foreign Exchange Contracts

Foreign exchange contract assets and liabilities amounted to \$0.2 million each at September 30, 2018. Foreign exchange contract assets and liabilities amounted to less than \$0.1 million and \$0.1 million, respectively, at September 30, 2017. Foreign exchange contract assets and liabilities are measured and reported at fair value based on observable market inputs and classified within Level 2 of the fair value hierarchy due to a lack of an active market for these contracts.

Term Loan

As of September 30, 2018, estimated fair value of the term loan outstanding principal balance approximates its carrying value. The fair value was determined based on observable market inputs and classified within Level 2 of the fair value hierarchy due to a lack of an active market for this term loan or a similar loan instrument.

Financial Assets and Liabilities Measured at Fair Value on a Nonrecurring Basis

During fiscal year 2018 and 2017, the Company did not record any material other-than-temporary impairments on financial assets required to be measured at fair value on a nonrecurring basis.

22. Commitments and Contingencies

Operating Leases Commitments

The Company leases manufacturing and office facilities and certain equipment under non-cancelable operating leases with lease expiration dates through 2025. Rent expense under the operating leases, excluding costs recorded as a component of restructuring charges, was \$5.3 million, \$4.0 million and \$4.5 million, respectively, for the fiscal years ended September 30, 2018, 2017 and 2016.

Future minimum lease commitments on non-cancelable operating leases and scheduled sublease payments as of September 30, 2018 are as follows (in thousands):

| <u>Year Ended September 30,</u> | <u>Gross Payments</u> | <u>Scheduled Sublease Payments</u> | <u>Net Payments</u> |
|---------------------------------|---------------------------|--|-------------------------|
| 2019 | \$ 3,842 | 9 | 3,833 |
| 2020 | 2,377 | — | 2,377 |
| 2021 | 1,545 | — | 1,545 |
| 2022 | 1,370 | — | 1,370 |
| 2023 | 1,251 | — | 1,251 |
| Thereafter | 1,847 | — | 1,847 |
| | <u>\$ 12,232</u> | <u>\$ 9</u> | <u>\$ 12,223</u> |

Letters of Credit

At September 30, 2018, the Company had \$2.2 million of letters of credit outstanding related primarily to customer advances and other performance obligations. These arrangements guarantee the refund of advance payments received from the Company's customers in the event that the product is not delivered or warranty obligations are not fulfilled in accordance with the contract terms. These obligations could be called by the beneficiaries at any time before the

expiration date of the particular letter of credit if the Company fails to meet certain contractual requirements. None of these obligations were called during fiscal years ended September 30, 2018, and the Company currently does not anticipate any of these obligations to be called in the near future.

Purchase Commitments

The Company has non-cancelable contracts and purchase orders for inventory of \$85.4 million at September 30, 2018.

Contingencies

The Company is subject to various legal proceedings, both asserted and unasserted, that arise in the ordinary course of business. The Company cannot predict the ultimate outcome of such legal proceedings or in certain instances provide reasonable ranges of potential losses. However, as of the date of this report, the Company believes that none of these claims will have a material adverse effect on its consolidated financial position or results of operations. In the event of unexpected subsequent developments and given the inherent unpredictability of these legal proceedings, there can be no assurance that the Company's assessment of any claim will reflect the ultimate outcome, and an adverse outcome in certain matters could, from time to time, have a material adverse effect on the Company's consolidated financial position or results of operations in particular quarterly or annual periods.

23. Subsequent Events

Acquisition

On September 26, 2018, the Company entered into a definitive agreement to acquire GENEWIZ, a leading provider of genomic services, based in New Jersey with operations throughout the United States, Asia, and Europe, for \$450.0 million in cash, subject to customary adjustments. The Company completed this acquisition on November 15, 2018.

Term Loan Modification

On November 15, 2018, in connection with the Company's acquisition of GENEWIZ, the Company entered into an amendment of the existing term loan agreement which increased its outstanding principal balance to \$546.0 million. The Company used the proceeds from this extended loan to pay a portion of the purchase price for GENEWIZ.

Dividend

On November 6, 2018, the Company's Board of Directors declared a cash dividend of \$0.10 per share payable on December 20, 2018 to common stockholders of record as of December 7, 2018. Dividends are declared at the discretion of the Company's Board of Directors and depend on the Company's actual cash flow from operations, its financial condition and capital requirements, as well as any other factors the Company's Board of Directors may consider relevant. Future dividend declarations, as well as the record and payment dates for such dividends, will be determined by the Company's Board of Directors on a quarterly basis.

Item 9. Changes in and Disagreements with Accountants on Financial Accounting and Financial Disclosure

Not applicable.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Under the supervision and with the participation of our management, including our chief executive officer and chief financial officer, we conducted an evaluation of our disclosure controls and procedures, as such term is defined under Rule 13a-15(e) promulgated under the Exchange Act. Disclosure controls and procedures are designed to ensure that information required to be disclosed by us in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported on a timely basis and that such information is accumulated and communicated to management, including the chief executive officer and chief financial officer, as appropriate, to allow timely decisions regarding required disclosure. Based upon this evaluation, our chief executive officer and our chief financial officer concluded that our disclosure controls and procedures were effective as of September 30, 2018, the end of the period covered by this annual report.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act, as a process designed by, or under the supervision of our chief executive and chief financial officers and effected by our board of directors, management and other personnel to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP and includes those policies and procedures that:

- pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and disposition of our assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that our receipts and expenditures are being made only in accordance with authorization of our management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risks that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the supervision and with the participation of our management, including our chief executive officer and chief financial officer, we conducted an assessment of the effectiveness of our internal control over financial reporting as of September 30, 2018. In making this assessment, we used the criteria set forth in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission. Based on our assessment, our management concluded that, as of September 30, 2018, our internal control over financial reporting was effective.

We excluded 4Titude and Tec-Sem from our assessment of internal control over financial reporting as of September 30, 2018 because they were acquired by the Company in a purchase business combination during fiscal year 2018. The total assets and total revenues of 4Titude and Tec-Sem, represent 2.2% and 4.4%, respectively, of the related consolidated financial statement amounts as of and for the year ended September 30, 2018.

The effectiveness of our internal control over financial reporting as of September 30, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears herein.

Changes in Internal Control Over Financial Reporting

There were no changes in internal control over financial reporting during the fiscal fourth quarter ended September 30, 2018, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item 10 is contained in our definitive proxy statement for our 2019 annual meeting of shareholders to be filed by us within 120 days after the close of our fiscal year, or the 2019 Proxy Statement, under the caption "Proposal No. 1-Election of Directors," "Other Matters-Section 16(a) Beneficial Ownership Compliance," "Other Matters-Standards of Conduct," "Other Matters-Stockholder Proposals and Recommendations for Directors" and "Corporate Governance" and is incorporated herein by reference.

Item 11. Executive Compensation

The information required by this Item 11 is contained under the caption "Corporate Governance and Director Compensation" and "Executive Officers" in the 2019 Proxy Statement to be filed by us within 120 days after the close of our fiscal year and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this Item 12 is contained under the caption "General Information-Security Ownership of Certain Beneficial Owners" and "Equity Compensation Plan Information" in the 2019 Proxy Statement to be filed by us within 120 days after the close of our fiscal year and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this Item 13 is contained under the caption "Related Party Transactions" and "Corporate Governance and Director Compensation" in the 2019 Proxy Statement to be filed by us within 120 days after the close of our fiscal year and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

The information required by this Item 14 is contained under the caption "Independent Auditor Fees and Other Matters" in the 2019 Proxy Statement to be filed by us within 120 days after the close of our fiscal year and is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules(a) *Financial Statements and Financial Statement Schedules*

- Consolidated Financial Statements of the Company and the related notes are included under Part II, Item 8, "Financial Statements and Supplementary Data" of this Form 10-K.
- Consolidated Financial Statements of ULVAC Cryogenics, Inc. as of as of June 30, 2018 and 2017 and for each of the periods ended June 30, 2018, 2017 and 2016 and the related notes are filed as Exhibit 99.2 hereto and incorporated herein by reference in this Form 10-K pursuant to Rule 3-09 of Regulation S-X.
- Other financial statement schedules are omitted because of the absence of conditions under which they are required or because the required information is given in the supplementary Consolidated Financial Statements or notes thereto.

(b) *Exhibits*

| Exhibit No. | Description |
|----------------|---|
| 3.01 | Restated Certificate of Incorporation of the Company (incorporated herein by reference to Exhibit 3.01 to the Company's registration statement on Form S-3 (Reg. No. 333-189582), filed on June 25, 2013). |
| 3.02 | Amended and Restated Bylaws (incorporated herein by reference to Exhibit 3.01 of the Company's current report on Form 8-K, filed on February 11, 2008). |
| 3.03 | Amendment to Amended and Restated Bylaws of the Company, dated August 1, 2017 (incorporated herein by reference to Exhibit 3.02 of the Company's quarterly report on Form 10-Q, filed on August 4, 2017 |
| 4.01 | Specimen Certificate for shares of the Company's common stock (incorporated herein by reference to the Company's registration statement on Form S-3 (Reg. No. 333-88320), filed on May 15, 2002). |
| 10.01 | Basic agreement between the Company and Ulvac Corporation dated August 17, 1981 (incorporated herein by reference to Exhibit 10.13 of the registration statement on Form S-2 (Reg. No. 2-84880) filed by Helix Technology Corporation). |
| 10.02 | Form of Indemnification Agreement for directors and officers of the Company (incorporated herein by reference to Exhibit 10.02 of the Company's annual report on Form 10-K, filed on November 17, 2017). |
| 10.03 | Employment Agreement, effective as of April 5, 2010, by and between Brooks Automation, Inc. and Stephen S. Schwartz (incorporated herein by reference to Exhibit 10.01 to the Company's quarterly report on Form 10-Q for the fiscal quarter ended March 31, 2010, filed on May 6, 2010). |
| 10.04 | Offer letter dated September 5, 2013 between the Company and Lindon G. Robertson (incorporated herein by reference to Exhibit 10.11 to the Company's 2013 10-K, filed on November 22, 2013). |
| 10.05 | Letter Agreement dated June 4, 2015 between Brooks Automation, Inc. and Lindon G. Robertson (incorporated herein by reference to Exhibit 10.4 to the Company's current report on Form 8-K, filed on June 9, 2015). |

- 10.06 [Offer Letter dated September 27, 2014, as revised, between the Company and Maurice Tenney, III \(incorporated herein by reference to Exhibit 10.01 to the Company's quarterly report on Form 10-Q for the quarter ended December 31, 2015, filed on February 3, 2016\).](#)
- 10.07 [Amended Offer Letter dated June 4, 2015, between the Company and Maurice Tenney, III \(incorporated herein by reference to Exhibit 10.02 to the Company's quarterly report on Form 10-Q for the quarter ended December 31, 2015, filed on February 3, 2016\).](#)
- 10.08 [Offer Letter dated June 12, 2014 between the Company and David C. Gray \(incorporated herein by reference to Exhibit 10.1 to the Company's quarterly report on Form 10-Q for the quarter ended December 31, 2014, filed on February 5, 2015\).](#)
- 10.09 [Letter Agreement dated November 1, 2016 between the Company and David E. Jarzynka \(incorporated herein by reference to Exhibit 10.1 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2017\).](#)
- 10.10 [Form of Non-Competition Agreement \(incorporated herein by reference to Exhibit 10.1 to the Company's current report on Form 8-K, filed on June 9, 2015\).](#)
- 10.11 [Form of Change in Control Agreement \(incorporated herein by reference to Exhibit 10.2 to the Company's current report on Form 8-K, filed on June 9, 2015\).](#)
- 10.12 [Second Amended and Restated 2000 Equity Incentive Plan, restated as of May 7, 2013 \(incorporated herein by reference to Exhibit 10.01 to the Company's current report on Form 8-K, filed on May 9, 2013\).](#)
- 10.13 [2017 Employee Stock Purchase Plan \(incorporated herein by reference to Exhibit 10.1 to the Company's current report on Form 8-K, filed on February 13, 2017\).](#)
- 10.14 [2015 Equity Incentive Plan \(incorporated herein by reference to Exhibit 10.1 to the Company's current report on Form 8-K, filed on February 5, 2015\).](#)
- 10.15 [Form of Restricted Stock Unit Award Notice under the 2000 Equity Incentive Plan \(incorporated herein by reference to Exhibit 10.18 to the Company's annual report on Form 10-K for the fiscal year ended September 30, 2011, as filed on November 28, 2011 \(the "2011 10-K"\)\)\).](#)
- 10.16 [Form of Restricted Stock Unit Award Notice under the 2015 Equity Incentive Plan \(incorporated herein by reference to Exhibit 10.17 of the Company's annual report on Form 10-K, filed on November 17, 2017\).](#)
- 10.17 [Executive Performance-Based Variable Compensation Plan \(incorporated herein by reference to Exhibit 10.01 to the Company's current report on Form 8-K, filed on January 29, 2016\).](#)
- 10.18 [Non-Employee Directors Stock Grant/Restricted Stock Unit Election Form under the 2000 Equity Incentive Plan \(incorporated herein by reference to Exhibit 10.42 to the 2010 10-K\).](#)
- 10.19 [Non-Employee Director Restricted Stock Unit Deferral Election Form under the 2015 Equity Incentive Plan \(incorporated herein by reference to Exhibit 10.20 of the Company's annual report on Form 10-K, filed on November 17, 2017\).](#)
- 10.20 [Brooks Automation, Inc. Amended and Restated Deferred Compensation Plan, as amended \(incorporated herein by reference to Exhibit 10.21 of the Company's annual report on Form 10-K, filed on November 17, 2017\).](#)

- 10.21 [Credit Agreement by and among Brooks Automation, Inc., BioStorage Technologies, Inc., Wells Fargo Bank, National Association and the Lenders parties thereto \(incorporated herein by reference to Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2016 filed on July 28, 2016\).](#)
- 10.22 [Guaranty and Security Agreement by and among Wells Fargo Bank, National Association and the Grantors and members of the Lender Group parties thereto \(incorporated herein by reference to Exhibit 10.3 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2016 filed on July 28, 2016\).](#)
- 10.23 [Consent and First Amendment to Credit Agreement, dated October 4, 2017, by and among Wells Fargo Bank, National Association, as Administrative Agent, Brooks Automation, Inc. and BioStorage Technologies Inc. \(incorporated herein by reference to Exhibit 10.24 of the Company's annual report on Form 10-K, filed on November 17, 2017\).](#)
- 10.24 [Credit Agreement dated October 4, 2017 by and among Brooks Automation, Inc., Morgan Stanley Senior Funding, Inc., and the lenders party thereto \(incorporated herein by reference to Exhibit 10.25 of the Company's annual report on Form 10-K, filed on November 17, 2017\).](#)
- 10.25 [Guarantee and Security Agreement dated October 4, 2017 by and among Brooks Automation, Inc., BioStorage Technologies, Inc., Morgan Stanley Senior Funding, Inc., as Administrative Agent for the lenders \(incorporated herein by reference to Exhibit 10.26 of the Company's annual report on Form 10-K, filed on November 17, 2017\).](#)
- 10.26 [Sales and Purchase Agreement dated October 5, 2017 by and among Brooks Automation Limited and the shareholders of 4titude Ltd \(incorporated herein by reference to Exhibit 10.27 of the Company's annual report on Form 10-K, filed on November 17, 2017\).](#)
- 10.27 [Agreement of Merger, dated as of September 26, 2018, by and among Brooks Automation, Inc., GENEWIZ Group, Darwin Acquisition Company, and Shareholder Representative Services L.L.C. \(incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed on November 15, 2018\).](#)
- 10.28 [Incremental Amendment, dated as of November 15, 2018, to that certain Credit Agreement dated as of October 4, 2017, among Brooks Automation, Inc., the several lenders party thereto from time to time and Morgan Stanley Senior Funding, Inc., as administrative agent for the Lenders \(incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on November 15, 2018\).](#)
- 10.29 [Asset Purchase Agreement dated August 27, 2018 among Brooks Automation, Inc., Edwards Vacuum LLC, and for certain sections thereof, Atlas Copco AB.](#)
- 21.01 [Subsidiaries of the Company.](#)
- 23.01 [Consent of PricewaterhouseCoopers LLP](#)
- 23.02 [Consent of PricewaterhouseCoopers Aarata LLC](#)
- 31.01 [Certification of the Company's Principal Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.](#)
- 31.02 [Certification of the Company's Principal Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.](#)

| | |
|------|---|
| 32 | Certification of the Company's Principal Executive Officer and Principal Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. |
| 99.1 | Report of Independent Auditors of ULVAC Cryogenics, Inc. |
| 99.2 | Consolidated Financial Statements of ULVAC Cryogenics, Inc. as of June 30, 2018 and 2017 and for each of the periods ended June 30, 2018, 2017 and 2016. |
| 101 | The following material from the Company's Annual Report on Form 10-K, for the year ended September 30, 2018, formatted in XBRL (Xtensible Business Reporting Language): (i) the Consolidated Balance Sheets; (ii) the Consolidated Statements of Operations; (iii) the Consolidated Statements of Comprehensive Income (Loss); (iv) the Consolidated Statements of Cash Flows; (v) the Consolidated Statements of Changes in Equity; and (vi) the Notes to Consolidated Financial Statements. |

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

BROOKS AUTOMATION, INC.

By: /S/ STEPHEN S. SCHWARTZ
 Stephen S. Schwartz
 Chief Executive Officer

Date: November 29, 2018

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

| <u>Signature</u> | <u>Title</u> | <u>Date</u> |
|---|--|-------------------|
| <u>/S/ STEPHEN S. SCHWARTZ</u> Stephen S. Schwartz | Director and Chief Executive Officer (Principal Executive Officer) | November 29, 2018 |
| <u>/S/ LINDON G. ROBERTSON</u> Lindon G. Robertson | Executive Vice President and Chief Financial Officer (Principal Financial Officer) | November 29, 2018 |
| <u>/S/ DAVID PIETRANTONI</u> David Pietrantonio | Vice President - Finance and Corporate Controller (Principal Accounting Officer) | November 29, 2018 |
| <u>/S/ A. CLINTON ALLEN</u> A. Clinton Allen | Director | November 29, 2018 |
| <u>/S/ ROBYN C. DAVIS</u> Robyn C. Davis | Director | November 29, 2018 |
| <u>/S/ JOSEPH R. MARTIN</u> Joseph R. Martin | Director | November 29, 2018 |
| <u>/S/ JOHN K. MCGILlicuddy</u> John K. McGillicuddy | Director | November 29, 2018 |
| <u>/S/ KRISHNA G. PALEPU</u> Krishna G. Palepu | Director | November 29, 2018 |
| <u>/S/ KIRK P. POND</u> Kirk P. Pond | Director | November 29, 2018 |
| <u>/S/ MICHAEL ROSENBLATT</u> Michael Rosenblatt | Director | November 29, 2018 |

| | | |
|---|----------|-------------------|
| <u>/S/ ALFRED WOOLLACOTT III</u> Alfred Woollacott III | Director | November 29, 2018 |
| <u>/S/ MARK S. WRIGHTON</u> Mark S. Wrighton | Director | November 29, 2018 |
| <u>/S/ ELLEN M. ZANE</u> Ellen M. Zane | Director | November 29, 2018 |

ASSET PURCHASE AGREEMENT

by and among

BROOKS AUTOMATION, INC.,

EDWARDS VACUUM LLC, and

ATLAS COPCO AB
(solely for Section 6.9)

Dated as of August 27, 2018

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EXECUTION

ASSET PURCHASE AGREEMENT

ASSET PURCHASE AGREEMENT dated as of August 27, 2018 (this “**Agreement**”), by and among BROOKS AUTOMATION, INC., a Delaware corporation (“**Seller**”), EDWARDS VACUUM LLC, a Delaware limited liability company (“**Purchaser**”) and, solely for the purposes of Section 6.9, ATLAS COPCO AB, a company incorporated under the laws of Sweden (“**Guarantor**”).

W I T N E S S E T H:

WHEREAS, Purchaser intends to purchase from Seller and the Selling Subsidiaries, and Seller and the Selling Subsidiaries intend to sell to Purchaser, the Acquired Assets upon the terms and subject to the conditions of this Agreement and the other Transaction Agreements; and

WHEREAS, Purchaser intends to assume from Seller and the Selling Subsidiaries, and Seller and the Selling Subsidiaries intend to assign to Purchaser, the Assumed Liabilities upon the terms and subject to the conditions of this Agreement and the other Transaction Agreements.

NOW, THEREFORE, in consideration of the premises set forth above and the respective covenants, agreements, representations and warranties hereinafter set forth, the Parties hereby agree as follows:

ARTICLE I. DEFINITIONS AND DOCUMENTARY CONVENTIONS

1.1 Definitions. The following terms shall have the following meanings and, unless stated otherwise, all references to “Section” or “Schedule” herein shall be to such Section or such Schedule to this Agreement:

“**Accounting Principles**” shall mean the methodology of calculating Net Working Capital set forth on Exhibit A, calculated in accordance with GAAP as in effect on the date of this Agreement.

“**Acquired A/R**” shall mean all accounts receivable arising from the sale of goods or provision of services by the Crimson Business in the Ordinary Course of Business.

“**Acquired Assets**” shall have the meaning set forth in Section 2.1.

“**Acquired Books and Records**” shall mean copies of all files, documents, books and records, including, without limitation, books of account, ledgers and general financial and accounting records, machinery and equipment maintenance files, environmental and operational records and reports with respect to the Acquired Assets, appraisals, customer purchasing histories, supplier lists, production data, quality control records and procedures, and customer complaints and inquiry files, in each case related to and used in the operation of the Acquired Assets at any time prior to the Closing Date; provided that Seller shall be entitled to remove or redact any information that does not relate to the Acquired Assets from such items; provided, further, that (1) Acquired Books and Records shall not include any personnel records, except to the extent copies of such personnel records are required to be provided to Purchaser and its Subsidiaries under applicable Governmental Rules, and (2) subject to the provisions of Section 6.5(b), Acquired

Books and Records shall not include copies of any corporate minutes or similar organizational materials of Seller and its Subsidiaries to the extent not necessary for the operation of the Crimson Business after the Closing. Seller and its Subsidiaries may retain copies of the Acquired Books and Records for historical record-keeping purposes, Tax purposes, accounting purposes or as otherwise required by applicable Governmental Rule or for purposes of fulfilling its obligations under the Transaction Agreements.

“Acquired Contracts” shall mean all of the contracts used or held for use in the Crimson Business in the Ordinary Course of Business and designated on Schedule 4.8 as an “Acquired Contract,” and all other contracts between a Selling Company, on the one hand, and a customer or supplier to the Crimson Business, on the other hand, relating to the provision of goods or services, or purchase of goods or services, by the Crimson Business and entered into in the Ordinary Course of Business. For the avoidance of doubt, “Acquired Contracts” shall include “Acquired Interests” with respect to Shared Contracts and shall not include the contracts set forth on Schedule 1.1(b).

“Acquired Interest” shall have the meaning set forth in Section 6.2(c).

“Acquired Inventory” shall mean all finished goods, raw materials, works-in-process, packaging, supplies, parts and other inventories used or held for use by the Crimson Business in the Ordinary Course of Business.

“Acquired IP” shall mean all of the Intellectual Property Rights owned by the Selling Companies and used or held for use in the Crimson Business (excluding the Intellectual Property Rights that are provided under the Transition Services Agreement and the Transitional Trademark License Agreement), including, without limitation, such Intellectual Property Rights listed on Schedule 2.1(d) hereto.

“Acquired Permits” shall mean all permits, licenses, franchises, authorizations, registrations and approvals obtained from Governmental Authorities by the Selling Companies and related to the Crimson Business to the extent the same may be Transferred under applicable law, including, without limitation, those listed on Schedule 2.1(f).

“Acquisition Proposal” means any inquiry, proposal or offer from any Person (other than Purchaser or any of its Affiliates) relating to the direct or indirect disposition, whether by sale, merger or otherwise, of all or any portion of the Crimson Business or the Acquired Assets, outside of the Ordinary Course of Business.

“Adjusted Closing Cash Consideration” shall have the meaning set forth in Section 2.4.

“Affiliate” shall mean, as to any Person, any other Person that, directly or indirectly, including through one or more intermediaries, is controlling, controlled by or under common control with such Person. For purposes of this definition, “control” shall mean having the direct or indirect power to direct or cause the direction of management or policies of a Person by reason of ownership of voting stock, contract or otherwise.

“Agreement” shall have the meaning set forth in the preamble.

“Alternative Arrangements” shall have the meaning set forth in [Section 6.2\(d\)](#).

“American Industries” shall mean Shelter American Industries, S.A. de C.V. as the “Service Company” under the Shelter Agreement and the provider of employees and related services to the Shelter Operator pursuant to a certain service agreement referred to in the Shelter Agreement by and between American Industries and the Shelter Operator.

“Asset Allocation Schedule” shall have the meaning set forth in [Section 8.1\(a\)](#).

“Assigned Lease” means the lease for the facility located at Jena, Germany.

“Assignment of Lease” means the assignment of the Assigned Lease from the applicable Selling Company to Purchaser in substantially the form attached hereto as [Exhibit I](#).

“Assumed Liabilities” shall have the meaning set forth in [Section 2.8\(a\)](#).

“Bill of Sale and Assignment and Assumption Agreement” means an assignment and assumption agreement substantially in the form of [Exhibit G](#).

“Business Day” shall mean any day other than (a) a Saturday or Sunday and (b) any day on which commercial banks in New York, New York, United States of America are authorized or required by Governmental Rule to close.

“Cap” shall have the meaning set forth in [Section 11.4\(a\)](#).

“Cash Consideration” shall mean \$675,000,000, less (i) one hundred percent (100%) of any dividend declared after the date of this Agreement by the Joint Venture with respect to the Seller’s interest therein only to the extent such dividends have been paid prior to the Closing, other than the annual dividends payable with respect to the Joint Venture’s fiscal year ended June 30, 2018, and (ii) 50% of the R&W Insurance Policy Cost (without regard to any supplemental costs payable in accordance with [Section 6.19](#)).

“CFIUS” means the Committee on Foreign Investment in the United States.

“CFIUS Clearance” shall have the meaning set forth in [Section 9.2\(b\)](#).

“Claim” shall have the meaning set forth in [Section 11.6\(a\)](#).

“Claim Notice” shall have the meaning set forth in [Section 11.6\(a\)](#).

“Closing” shall have the meaning set forth in [Section 3.1\(a\)](#).

“Closing Certificate” shall have the meaning set forth in [Section 2.4](#).

“Closing Date” shall have the meaning set forth in [Section 3.1\(a\)](#).

“Closing Date Net Working Capital” shall have the meaning set forth in Section 2.6.

“Code” shall have the meaning set forth in Section 8.1(a).

“Comparable Position” shall mean, with respect to any Transferred Employee, a position that is comparable to the type and level of position held by such Transferred Employee immediately prior to the Closing Date, at a geographic location that is within the greater of (i) 50 straight-line miles of the Transferred Employee’s home and (ii) the distance between the Transferred Employee’s home and place of work immediately prior to the Closing Date or, in the case of a Transferred Employee who is employed without a fixed office provided by a Selling Company immediately prior to the Closing Date, a position that enables such employee (including by providing such employee with the necessary resources) to continue to maintain such arrangement.

“Confidentiality Agreement” shall mean the Confidentiality and Non-Disclosure Agreement between Seller and Purchaser’s affiliate, Edwards Limited, dated April 3, 2018.

“Contract” or **“contract”** shall mean any written or oral contract, agreement or other legally binding instrument, including any written note, bond, mortgage, deed, indenture, commitment, purchase order, undertaking, promise, lease, sublease, license or sublicense or joint venture.

“Covered Employees” shall mean those employees of Seller and its Subsidiaries that provide services to the Crimson Business, who, as of the Closing Date (or such other time as is specified in the context where used or such other time as required under applicable law) shall be identified in accordance with Schedule 7.1(a) of this Agreement and shall be listed on Schedule 7.1(a) of this Agreement; provided, however, that unless otherwise required under applicable law, “Covered Employees” shall exclude (A) all former employees, (B) all individuals who, as of the Closing Date, are receiving long-term disability benefits under the long-term disability plans of Seller or any Selling Subsidiary, (C) all individuals who, as of the Closing Date, are receiving short-term disability benefits under the short-term disability plans of Seller or any Selling Subsidiary who do not accept employment with Purchaser within 13 weeks of the Closing Date (noting that a condition to acceptance of employment will be the ability to perform the subject responsibilities with no, or reasonable accommodations), and (D) any individual listed on Schedule 4.10(a).

“Covered Territories” shall have the meaning set forth in Schedule 8.2.

“Crimson Business” means the business unit of Seller operated by the Seller and through the other Selling Companies and the Joint Venture Entities involving the manufacture, marketing, sale, distribution, service (including maintenance services, repair, diagnostic services, installation, and productivity enhancement upgrades) and refurbishment of cryogenic vacuum pumps (including water pumps), chillers, coolers, compressors, refrigeration systems and spare

parts relating to each of the foregoing, currently known as the “CTI Cryogenics” and the “Polycold” product lines.

“Damages” shall mean any loss, Liability, demand, action, cause of action, award, Lien, cost, damage, judgment, deficiency, Tax, penalty, fine or expense, whether or not arising out of a Third Party Claim (including lost profits, interest, penalties, reasonable attorneys’ fees and expenses, associated with any of the foregoing or any indemnification claim hereunder relating thereto, court costs and all amounts paid in investigation, defense or settlement of any of the foregoing); provided, however, that, except with respect to Third-Party Claims, Damages will not include any indirect, special or consequential damages (which in the case of consequential damages were not reasonably foreseeable) or any punitive damages.

“Data Privacy Obligations” shall mean any applicable Governmental Rules regarding the safeguarding of Personal Data in accordance with applicable Governmental Rules.

“Data Room” shall mean the electronic data site for “Project Crimson” provided by Seller to Purchaser through IntraLinks Inc.

“Direct Claim” shall have the meaning set forth in Section 11.6(a).

“Dispute Notice” shall have the meaning set forth in Section 12.18.

“DOJ” shall mean the United States Department of Justice.

“DPA” means Section 721 of the Defense Production Act of 1950 (50 U.S.C. §4565).

“Employee Identification Guidelines” shall have the meaning set forth in Section 7.1(a)(i).

“Employment Costs” shall mean any and all employment and employee benefits-related Liabilities, obligations, claims, losses, costs and expenses.

“End Date” shall have the meaning set forth in Section 12.2(a)(ii).

“Enforceability Limitations” shall have the meaning set forth in Section 4.2.

“Environmental, Health and Safety Law” means any Governmental Rule related to (a) protection, preservation or cleanup of the environment or natural resources, (b) release to the environment of Hazardous Substances or (c) public health or worker health and safety.

“ERISA” shall mean the Employee Retirement Income Security Act of 1974, as amended, and the rules and regulations promulgated thereunder.

“ERISA Affiliate” shall mean, with respect to Seller and any of the Affiliates of Seller, any corporation or other trade or business that would be treated as a single employer with such Seller or Affiliate of Seller pursuant to Section 414 of the Code or Section 4001(a)(14) or 4001(b) of ERISA.

“Escrow Agent” shall mean ZB, National Association (d/b/a Amegy Bank), a national banking association.

“Escrow Agreement” shall mean the Escrow Agreement to be entered into by Purchaser, Seller and the Escrow Agent at the Closing, substantially in the form of Exhibit F.

“Escrow Amount” means \$2,531,250.

“EU Employees” shall have the meaning set forth in Section 7.1(g)(i).

“Excluded A/P” shall have the meaning set forth in Section 2.8(b)(i).

“Excluded A/R” shall mean all accounts receivable constituting the right to receive payments in respect of goods or services that do not constitute part of the Crimson Business.

“Excluded Assets” shall have the meaning set forth in Section 2.2.

“Excluded Liabilities” shall have the meaning set forth in Section 2.8(b).

“Excluded Taxes” shall mean (i) any and all Taxes (except the Purchaser’s portion of Transfer Taxes pursuant to Section 8.4) of or relating to the Crimson Business and the Acquired Assets, in each case with respect to the Pre-Closing Tax Period or relating to any event or transaction occurring on or prior to the Closing Date, (ii) any and all Taxes of the Seller (including the Seller’s portion of Transfer Taxes pursuant to Section 8.4 and any Taxes of Seller (or any member or Affiliate of the Seller) that become a Liability of the Purchaser under any common law doctrine of de facto merger or transferee or successor Liability or otherwise by operation of contract or law), (iii) any and all Taxes imposed on or with respect to the Excluded Assets, (iv) any Taxes described in clauses (i) and (iii) of the definition of “Permitted Liens”; provided, however, that Excluded Taxes shall not include, and Seller shall not be liable for a specific Excluded Tax liability to the extent that such liability or reserve therefor (to the extent of such reserve) is reflected as a current liability in the final determination of Net Working Capital pursuant to Section 2.6.

“Financial Schedules” shall have the meaning set for in Section 4.5.

“FTC” shall mean the United States Federal Trade Commission.

“Fundamental Representations” shall mean the representations and warranties contained in (a) Section 4.1 (incorporation and ownership), Section 4.2 (authority), Section 4.6(a) (title; condition; sufficiency), Section 4.9 (Tax matters), Section 4.10 (employee matters to the extent same relate to Taxes), Section 4.11(a) (title to Intellectual Property Rights), Section 4.23 (brokers) with respect to the Seller (collectively, **“Seller Fundamental Representations”**), and (b) Section 5.1 (existence), Section 5.2 (authority) and Section 5.5 (brokers) with respect to the Purchaser.

“GAAP” shall mean generally accepted accounting principles in the United States.

“Government Contract” shall mean, with respect to the Crimson Business, any Contract, task, purchase order or delivery order between Seller or any Selling Subsidiary and (a) Governmental Authority, (b) any prime contractor to any Governmental Authority or (c) any subcontractor of any tier in connection with or with respect to any Contract or agreement between another Person and any Governmental Authority.

“Government Contract Bid” shall mean any offer, proposal, bid, or quote for goods or services to be delivered by the Crimson Business that if awarded or accepted by a Governmental Authority would lead to a Government Contract.

“Governmental Authority” shall mean any national, federal, provincial, state or local court, governmental or administrative agency or commission or other governmental agency, authority, instrumentality or regulatory body, domestic or foreign.

“Governmental Rule” shall mean any statute, law, treaty, rule, code, ordinance, regulation or order of any Governmental Authority or any judgment, decree, injunction, writ, order or like action of any federal, state, provincial, or local court, arbitrator or other judicial tribunal of competent jurisdiction, domestic or foreign.

“Guaranteed Obligation” shall have the meaning set forth in [Section 6.9\(a\)](#).

“Guarantor” shall have the meaning set forth set forth in the preamble.

“Hazardous Substances” means any hazardous or toxic substances including, but not limited to, pollutants, contaminants, substances, materials or wastes, including without limitation petroleum or any fraction thereof, asbestos, and polychlorinated biphenyls, that are regulated as hazardous or toxic by Environmental, Health and Safety Laws.

“HSR Act” shall mean the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended.

“Indemnification Threshold” shall have the meaning set forth in [Section 11.4\(a\)](#).

“Indemnified Party” shall have the meaning set forth in [Section 11.6\(a\)](#).

“Indemnifying Party” shall have the meaning set forth in [Section 11.6\(a\)](#).

“Information” shall have the meaning set forth in [Section 4.22\(a\)](#).

“Intellectual Property Rights” means all right, title and interest arising from or in respect of any of the following, whether protected, registered, unregistered, created or arising under the laws of the United States or any other jurisdiction: (i) names and marks, trade names, service marks, certification marks, trade dress, brand names, corporate names, logos and other trade designations or source identifiers, including the goodwill associated with the foregoing; (ii) patents, patent applications, including any provisional, utility, design, continuation, continuation-in-part or divisional applications filed in, and all priority rights and rights under any international patent conventions, agreements or treaties, the United States or any other jurisdiction, and all reissues thereof and all reexamination certificates issuing therefrom; (iii) ownership rights,

including all related copyright registrations (other than any moral rights) to copyrightable works, including computer and electronic data processing programs and software (including that which presently is under development), documentation, software designs, technical and functional specifications; (iv) Trade Secrets; and (v) Internet domain names and social media sites; (vi) claims, causes of action and defenses relating to the enforcement of any of the foregoing and (vii) any other intellectual property or similar proprietary rights; in each of case (i) to (vii) above, including any registrations, applications, renewals or extensions of the foregoing with or by any Governmental Authority in any jurisdiction.

“Joint Venture” means Ulvac Cryogenics, Inc., a corporation organized under the laws of Japan.

“Joint Venture Entities” shall mean the Joint Venture and any of its Subsidiaries, including, without limitation, Ulvac Cryogenics Korea, Inc., a corporation organized under the laws of Korea, and Ulvac Cryogenics Ningbo, Inc., a corporation organized under the laws of the Peoples’ Republic of China.

“Knowledge of Seller” or words of similar import shall mean the actual knowledge of any Person set forth on Schedule 1.1(a) to this Agreement; provided, however, an individual shall be deemed to have actual knowledge (i) of a writing authored by such individual, and (ii) of information that a reasonable inquiry conducted by such individual would have disclosed.

“Leased Real Property” has the meaning set forth in Section 4.20(b).

“Leases” shall have the meaning set forth in Section 4.20(b).

“Legal Proceeding” shall have the meaning set forth in Section 4.7.

“Legal Restraint” shall mean any temporary restraining order, preliminary or permanent injunction or other order, decree, judgment or like action issued by any court of competent jurisdiction, or other Governmental Authority, or other legal restraint or prohibition.

“Liabilities” means any and all indebtedness, liabilities, commitments or obligations, whether accrued or fixed, known or unknown, absolute or contingent, matured or unmatured, liquidated or unliquidated, determined or determinable, on- or off-balance sheet and including those arising under any Contract, Legal Proceeding or Legal Restraint.

“Licensed IP” shall mean all of the Intellectual Property Rights licensed to Purchaser by Seller or any Selling Subsidiary or any Affiliate of the Seller or any Selling Subsidiary pursuant to the Transitional Trademark License Agreement.

“Liens” shall mean pledges, claims, liens (statutory or other), charges (including any conditional sale or other title retention agreement or lease in the nature thereof), encumbrances, security interests, mortgages, deed of trusts, equitable interests, pledges, conditions, easements, encroachments, rights-of-way, rights of first refusal, options, charges of any kind, sales of receivables with recourse against the Crimson Business, filings or agreements to file a financing statement as debtor under the Uniform Commercial Code or any similar statute (other than to reflect ownership by a third party of property leased to the Crimson Business under a lease that is

not in the nature of a conditional sale or title retention agreement), or subordination arrangements in favor of another Person, in each such case of any kind or nature whatsoever.

“Maquiladora Employees” shall mean those employees of American Industries assigned and providing services to Seller through the Shelter Operator with respect to the Crimson Business in Mexico pursuant to the Shelter Agreement.

“Material Contracts” shall have the meaning set forth in Section 4.8(a).

“Multiemployer Plans” shall mean any “multiemployer plan” within the meaning of Section 3(37) or 4001(a)(3) of ERISA or Section 414(f) of the Code contributed to by Seller or any of its Subsidiaries for the benefit of any Covered Employee or any beneficiary thereof.

“Net Working Capital” means accounts receivable, *plus* net inventory (in each case, to the extent included in the Acquired Assets), *minus* deferred revenue and accrued warranties, in each case determined in accordance with the Accounting Principles, *minus* any Excluded Liabilities that (a) Purchaser and Seller have agreed to have Purchaser pay on behalf of the Seller, or (b) are listed on Schedule 2.8.

“Net Working Capital Target” means \$54,985,000.

“NWC Dispute Notice” shall have the meaning set forth in Section 2.6.

“NWC Referee” shall have the meaning set forth in Section 2.6.

“NWC Statement” shall have the meaning set forth in Section 2.5.

“Ordinary Course of Business” shall mean the ordinary course of conduct of the Crimson Business and use of the Acquired Assets consistent with their past custom and practice (including with respect to quantity and frequency).

“Other Relevant Antitrust Law” shall mean any applicable foreign Governmental Rule with respect antitrust or competition law in jurisdictions reasonably determined by Purchaser to require a filing or other action as a condition to the Closing, including, without limitation, the following jurisdictions: Austria, Germany (or the European Union in lieu of Austria and Germany), China, South Korea and Japan.

“Owned Property Leases” means, collectively, those certain leases to be entered into on or prior to the Closing Date between Seller or the applicable Selling Subsidiary and Purchaser (or Purchaser’s designee) for all of Building 11, Chelmsford, Massachusetts and a portion of Building 12, Chelmsford, Massachusetts in the forms attached hereto as Exhibit F.

“Owned Real Property” has the meaning set forth in Section 4.20(a).

“Parties” shall mean Purchaser and Seller and solely for purposes of Section 6.9, Guarantor.

“Patent Assignment Agreements” shall mean one or more Patent Assignment Agreements between one or more Selling Companies and Purchaser, in the form attached as Exhibit C to this Agreement, as necessary for the transfer by the applicable Selling Companies to Purchaser of the Assigned Patents (as defined in such form) in the applicable U.S. and foreign jurisdictions.

“Permitted Liens” shall mean: (i) Liens for Taxes, assessments and governmental charges being contested in good faith by Seller or a Selling Subsidiary; (ii) Liens granted pursuant to judgments, decrees, attachments, awards or court proceedings that are being contested in good faith by Seller or a Selling Subsidiary that are disclosed in Schedule 4.9; (iii) Liens for Taxes either not due and payable or due but for which notice of assessment has not been given, and which may thereafter be paid without penalty; (iv) inchoate Liens, charges and privileges incidental to current operations or the Ordinary Course of Business (including mechanics’, carriers’, workmen’s, repairmen’s or other similar Liens) that are not due or delinquent and which are individually, or in the aggregate, not material to the Crimson Business or the Acquired Assets; (v) security given in the Ordinary Course of Business to any public utility, Governmental Authority or to any statutory or public authority; (vi) all encumbrances, covenants, easements, agreements and restrictions of record applicable to the land and buildings thereon which encumber the Owned Real Property (other than the property known as Building 15, Chelmsford, Massachusetts) or the Leased Real Property and that would be disclosed on a current title report or similar report or listing or on a current survey relating to such Owned Real Property or Leased Real Property that does not create a Liability and does not disturb the beneficial use and enjoyment of such Owned Real Property (other than the property known as Building 15, Chelmsford, Massachusetts) or the Leased Real Property, and (vii) present and future zoning and land use laws, regulations, ordinances and rulings; provided, however, that the aggregate of clauses (i) through (iv) above shall not exceed \$50,000.

“Permitted Schedule Additions” means amendments to the following Schedules included in the Side Letter: (i) Schedule 2.1(d) (Acquired IP) only to the extent of new Acquired IP or deletions to the extent of the natural expiration of protection or abandonment in the Ordinary Course of Business, if applicable; (ii) Schedule 2.1(h) (customer and supplier lists) only to reflect new customers; (iii) Schedule 2.1(j) (equipment) only to the extent of additions or deletions of equipment and machinery; (iv) Schedule 4.8 (Material Contracts) only to the extent of new customer and vendor Contracts or the completion of all obligations by all parties under such customer and vendor Contracts (except for obligations that by the terms of the Contract survive completion); (v) Schedule 4.9 (Permitted Liens) only to the extent of new Permitted Liens or the termination or amendment of existing Permitted Liens; (vi) Schedule 4.10(a) and Schedule 7.1(a) (employees) only to the extent necessary to update the list of employees and related information in accordance with Sections 4.10 and Section 7.1 and (vii) Schedule 4.11(b) only to the extent necessary to update the fees, responses or actions falling due within thirty (30) days following the Closing with respect to registered and applied for trademarks, patents, copyrights and Internet domain names; in each case, only to the extent of amendments to each such Schedule, that reflect only circumstances, events and conditions that (a) occur for the first time after the date hereof, (b) were not within the Knowledge of Seller as of the date hereof, (c) were completely within the Ordinary Course of Business, and (d) do not constitute, by themselves or together with the content of any Schedule, a misrepresentation by Seller under Article IV, a breach of the covenants set forth in Section 6.1, or the failure of a condition precedent under Article IX.

“Person” shall mean any individual, firm, corporation, partnership, limited liability company, trust, joint venture, Governmental Authority or other entity, and shall include any successor (by merger or otherwise) of such entity.

“Personal Data” shall have the meaning set forth in Section 4.22(a).

“Policy Limit” means the coverage limit of \$101,250,000 pursuant to the R&W Insurance Policy.

“Polycold Supply Agreement” shall mean the Polycold Supply Agreement between Seller and Purchaser, a copy of which is attached as Exhibit J to this Agreement.

“Post-Closing Crimson A/P” shall mean all accounts payable constituting the obligation to make payments in respect of goods or services to the extent such goods are physically received by, or such services are rendered to, the Crimson Business after the Closing Date.

“Pre-Closing Tax Period” shall mean all taxable periods (or portion thereof) ending on or prior to the Closing Date.

“Property Taxes” shall have the meaning set forth in Section 8.2(e).

“Purchase Price” shall have the meaning set forth in Section 2.3(b).

“Purchaser” shall have the meaning set forth in the preamble.

“Purchaser Cure Period” shall have the meaning as set forth in Section 12.2(a)(v).

“Purchaser Indemnitees” shall have the meaning set forth in Section 11.2.

“Purchaser Material Adverse Effect” shall have the meaning set forth in Section 5.1.

“Purchaser’s Workers Compensation Plan” shall have the meaning set forth in Section 7.1(c).

“R&W Insurance Policy” means the “Buy-Side Representations and Warranties Insurance Policy,” policy number 18BC1-5226-0037 (Project Crystal/Crimson), which includes coverage during the interim period between signing and Closing.

“R&W Insurance Policy Cost” means the R&W Insurance Policy premium and any and all costs and expenses actually paid or payable to the insurance broker, underwriter or insurer and their respective attorneys in connection with obtaining and binding the R&W Insurance Policy.

“R&W Policy Extension Bring Down” as defined in Section 6.19.

“Representatives” shall mean a Person’s officers, directors, managers, members, stockholders or employees or any investment banker, consultant, attorney, accountant or other advisor or representative retained by any of them.

“Restricted Assets” shall have the meaning set forth in Section 6.2(a).

“Restricted Contracts” shall have the meaning set forth in Section 6.2(a).

“Restricted Interest” shall have the meaning set forth in Section 6.2(c).

“Restricted Period” shall mean five (5) years after the Closing Date, provided, however, whenever this term is used to refer to actions or obligations within the European Union, it shall be limited to three (3) years after the Closing Date.

“Schedules” shall have the meaning set forth in preamble to Article IV.

“Seller” shall have the meaning set forth in the preamble.

“Seller Benefit Plans” shall mean each “employee benefit plan,” as defined in Section 3(3) of ERISA, each stock option, restricted stock, restricted stock unit, performance stock unit, stock purchase or other equity or equity-based compensation plan, bonus, or other cash or incentive compensation, benefit or incentive pay scheme or plan, each retention compensation, change in control compensation, benefit or incentive plan, each retiree medical or life insurance, supplemental retirement arrangement, each salary continuation plan, each vacation or paid time off policy, each deferred compensation or severance plan, arrangement or policy, each retirement and pension plan, each Seller Welfare Plan and each other employee fringe benefit or other benefit plan, arrangement or policy that is currently established, sponsored, maintained or otherwise contributed to by Seller or any of its Subsidiaries with respect to the Crimson Business or an ERISA Affiliate for the benefit of any Covered Employee, and any Multiemployer Plan.

“Seller Cure Period” shall have the meaning set forth in Section 12.2(a)(iv).

“Seller Fundamental Representations” shall have the meaning set forth in the definition of “Fundamental Representations” in Section 1.1.

“Seller Indemnitees” shall have the meaning set forth in Section 11.3.

“Seller Material Adverse Effect” shall mean a change, event or effect that results in a material adverse effect on the Crimson Business and the Acquired Assets (with such Acquired Assets taken as a whole), other than any change, event or effect relating to (a) general economic or regulatory, legislative or political conditions or securities, credit, financial or other capital markets conditions, in each case in the United States or any foreign jurisdiction (including interest rate and exchange rate fluctuations), (b) the failure to meet any forecasts, estimates or predictions in respect of revenues, earnings or other financial or operating metrics for any period (it being understood that facts or circumstances giving rise to or contributing to such failure may be deemed to constitute or taken into account in determining whether there has been a Seller Material Adverse Effect), (c) the execution and delivery of this Agreement or any other Transaction Agreement or to the public announcement or pendency of the transactions contemplated by the Transaction

Agreements, including the impact thereof on the relationship, contractual or otherwise, of Seller or any Selling Subsidiary with employees, labor unions, customers, suppliers, distributors, partners or similar relationships, or to the performance of any obligations under this Agreement or any other Transaction Agreement, (d) changes or conditions generally affecting the industries in which Seller or any of its Subsidiaries operate, (e) any natural disaster or any acts or threats of terrorism, military action or war or any escalation or worsening thereof, (f) changes (after the date of this Agreement) in applicable laws, regulations or accounting principles, (g) any Excluded Asset, Excluded Liability or the business, operations or financial statements of Seller except to the extent related to the Acquired Assets, the Crimson Business or the Financial Schedules or (h) the taking of any action or omitting to take any action at the request of or with the approval of Purchaser; provided further, however, that any event, occurrence, fact, condition or change referred to in clauses (a) and (d) through (f) immediately above shall be taken into account in determining whether a Seller Material Adverse Effect has occurred or could reasonably be expected to occur to the extent that such event, occurrence, fact, condition or change has a disproportionate effect on the Crimson Business compared to other participants in the industries in which the Crimson Business operates.

“Seller No-Hire Employee” shall mean an employee of Seller or any of its Subsidiaries (i) who is a manager or above, (ii) who regularly interacts with Seller’s customers or clients or (iii) with whom Purchaser or its Affiliates had contact by virtue of the transactions contemplated by this Agreement and the other Transaction Agreements.

“Seller’s Welfare Plan” shall have the meaning set forth in Section 7.1(b)(iv).

“Seller’s Workers Compensation Plan” shall have the meaning set forth in Section 7.1(c).

“Selling Companies” shall mean Seller and the Selling Subsidiaries.

“Selling Subsidiaries” shall mean the Subsidiaries of Seller that own or hold for use any Acquired Assets, are a party to any Acquired Contracts, or are subject to, or otherwise have any obligations in respect of, any Assumed Liabilities.

“Shared Contract” shall have the meaning set forth in Section 6.2(c).

“Shelter Agreement” shall mean that certain Shelter Agreement between Seller and the Shelter Operator effective as of December 9, 2005, as amended to date and as provided by this Agreement.

“Shelter Operator” shall mean AIM Servicios Administrativos, S. de R.L. de C.V. (successor to Grupo American Industries, S.A. de C.V.).

“Side Letter” shall mean a side letter, attaching any “supplemental schedules” that are necessary to make the representations and warranties set forth in this Agreement accurate and complete as of the Closing Date (such “supplemental schedules” to be provided as lists of additions and/or deletions, as appropriate, and not as replacement Schedules) and addressing certain other matters. Notwithstanding the foregoing, no such supplement or addition to, or deletion from, the Schedules which purports to correct any prior representation or cure the breach of any prior

warranty made in this Agreement shall be deemed to correct such representation or cure such breach for purposes of Section 9.1 or Article XI, except for Permitted Schedule Additions.

“Specified Compensation and Benefits” shall mean, with respect to any Transferred Employee, (i) a base salary, wages or annualized fixed or guaranteed remuneration, as applicable, (ii) variable/incentive/bonus pay programs (including, where applicable, sales commission plans), (iii) other benefit plans and arrangements and (iv) severance payments and other separation benefits in the event of a termination of employment for reasons other than cause, provided, however, that (a) in each of clauses (i) and (ii), are no less favorable than as provided to such Transferred Employee by Seller and its Subsidiaries on the Closing Date, (b) in each of clauses (iii) and (iv), the same as any other similarly situated employees of Purchaser with recognition of any such Transferred Employee’s service on or prior to the Closing, as applicable and (c) under no circumstances will a Transferred Employee be provided with equity or equity based compensation.

“Specified Period” shall mean one (1) year following the Closing Date.

“Straddle Period” shall mean, with respect to any Acquired Asset, any complete taxable period that includes, but does not end on, the Closing Date.

“Subsidiary” of any Person shall mean a corporation, company or other entity (i) more than 50% of whose outstanding shares or securities (representing the right to vote for the election of directors or other managing authority of such Person) are, or (ii) which does not have outstanding shares or securities (as may be the case in a partnership, limited liability company, joint venture or unincorporated association), but more than 50% of whose ownership interest representing the right to make decisions for such entity is, now or hereafter owned or controlled, directly or indirectly, by such Person, but such corporation, company or other entity shall be deemed to be a Subsidiary only so long as such ownership or control exists.

“Super Cap” means the Purchase Price minus the Assumed Liabilities.

“Target Closing Date” shall have the meaning set forth in Section 6.3.

“Tax” or **“Taxes”** shall mean all taxes, imposts, duties, withholdings, charges, fees, levies or other assessments of any kind whatsoever imposed by any Governmental Authority or other taxing authority, whether domestic or foreign (including income, excise, personal property, real property, unclaimed property, escheat, sales, use, occupation, transfer, conveyance, recording, customs, duties, payroll or other employment or unemployment related tax, license, registration, ad valorem, value added, withholding, social security, national insurance (or other similar contributions or payments), franchise, registration, estimated severance, stamp taxes, taxes based upon or measured by capital stock, net worth or gross receipts and other taxes), together with all interest, fines, penalties and additions attributable to or imposed with respect to such amounts.

“Tax Returns” shall have the meaning set forth in Section 8.2(a).

“Territory” shall have the meaning set forth in Section 7.4(b).

“Third-Party Claim” shall have the meaning set forth in Section 11.6(a).

“Trademark Assignment Agreement” shall mean one or more Trademark Assignment Agreements between one or more Selling Companies and Purchaser, in the form attached as Exhibit D to this Agreement, as necessary for the transfer by the applicable Selling Companies to Purchaser of the Assigned Trademarks (as defined in such form) in the applicable U.S. and foreign jurisdictions.

“Trade Secrets” shall mean any trade secrets or similar forms of protection for confidential information, including invention disclosures, formulae, recipes, specifications (including information regarding materials, ingredients, tools, apparatus, sources and vendors), procedures, processes, methods, techniques, ideas, creations, inventions and discoveries (whether patentable or unpatentable and whether or not reduced to practice), improvements, know-how, research and development, technical data, designs, models, algorithms, subroutines and similar confidential information.

“Transaction Agreements” shall mean this Agreement, the Transitional Trademark License Agreement, the Bill of Sale and Assignment and Assumption Agreement, the Transition Services Agreement, Owned Property Leases, the Assignment of Lease, the Patent Assignment Agreement, the Trademark Assignment Agreement, the Polycold Supply Agreement and such assignments of leases, stock powers, instruments of title and all other documents reasonably necessary to adequately convey to Purchaser title to the Acquired Assets in accordance with this Agreement.

“Transfer” or **“Transferred”** shall mean any sale, assignment, conveyance or other transfer with respect to assets or contracts, and any assignment, assumption or other transfer with respect to Liabilities.

“Transfer Taxes” shall mean all real and personal property transfer, documentary, sales, use, registration, value-added, stamp duty, real estate transfer, recording and any similar Taxes incurred in connection with this Agreement, the other Transaction Agreements and the transactions contemplated hereby and thereby.

“Transferred Employees” shall mean those Covered Employees who accept employment with Purchaser or any of its Subsidiaries and who commence such employment as of 11:59 p.m. on the Closing Date as well as those EU Employees set forth in Schedule 7.1(g) whose employment transfers to the Purchaser or any of its Subsidiaries under the Transfer Regulations.

“Transferred Employee Liabilities” shall mean any and all potential or actual Employment Costs, other than retirement and pension Liabilities, or any benefits under any Seller Benefit Plans, relating to each Transferred Employee (or any eligible dependent or beneficiary of a Transferred Employee) that (i) first become due or payable, or arise as a result of an event or events that first occurred, after 11:59 p.m. on the Closing Date, only to the extent such Liabilities accrue or relate to periods after the Closing Date, (ii) are otherwise expressly assumed by Purchaser or any of its Subsidiaries pursuant to this Agreement or any other Transaction Agreement (or in any Schedules or Exhibits thereto) or (iii) transfer automatically to Purchaser or any of its Subsidiaries under applicable Governmental Rules; provided, however, with respect to

clauses (ii) and (iii) above, only to the extent such Transferred Employee Liability is specifically described in Schedule 2.8.

“Transfer Regulations” shall mean collectively, the European Council Directive of March 12, 2001 (2001/23/EC) (the **“Directive”**), relating to the safeguarding of employees’ rights in the event of transfers of undertakings, businesses or parts of businesses and any country legislation implementing the Directive.

“Transitional Trademark License Agreement” means the Transitional Trademark License Agreement in the form attached hereto as Exhibit E.

“Transition Services Agreement” shall mean (i) the Transition Services Agreement between Seller and Purchaser, the form of which is attached as Exhibit B to this Agreement, and (ii) any related statements of work and service description attachments and other ancillary documents to be entered into pursuant thereto.

“Valuator” shall have the meaning set forth in Section 8.1(b).

“Warranty Escrow” shall mean an amount equal to \$950,000 as a separate escrow account (segregated from the Escrow Amount) held and administrated by the Escrow Agent under the Escrow Agreement.

“Warranty Expense” shall mean the amount, determined in accordance with the Accounting Principles, of expenses incurred in satisfying warranty claim costs in a manner consistent with the policies, pricing and practices employed by the Crimson Business prior to the Closing Date.

“WARN Act” shall have the meaning set forth in Section 7.2.

“Withdrawal Liability” has the meaning set forth in Section 4201 of ERISA.

“Workers Compensation Event” shall mean the event, injury, illness or condition giving rise to a worker’s compensation claim.

1.2 Exhibits and Schedules; Interpretation. The headings contained in the Transaction Agreements or in any Exhibit or Schedule thereto and in the table of contents to any such Transaction Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of such Transaction Agreement. All Exhibits and Schedules annexed to or referred to in any Transaction Agreement are hereby incorporated in and made a part of such Transaction Agreement as if set forth in full therein. Each capitalized term used in any Schedule or Exhibit but not otherwise defined therein, has the meaning specified in the applicable Transaction Agreement or this Agreement. When a reference is made in any Transaction Agreement to a Section, Subsection, Article, Exhibit or Schedule, such reference shall be to a Section, Subsection or Article of, or an Exhibit or Schedule to, such Transaction Agreement unless otherwise indicated. For all purposes under the Transaction Agreements, (a) definitions of terms shall apply equally to the singular and plural forms of the terms defined, (b) whenever the context may require, any pronoun shall include the corresponding masculine, feminine and neuter forms, (c) the terms “include,” “includes” and “including” shall be deemed followed by the words

“without limitation,” (d) the words “hereof,” “herein” and “hereunder” and words of similar import shall refer to the applicable Transaction Agreement as a whole and not to any particular provision of such Transaction Agreement and (e) the word “extent” in the phrase “to the extent” shall mean the degree to which a subject or other thing extends, and shall not simply mean “if.” The symbol “\$” shall mean lawful money of the United States of America, provided, however, that such symbol when used herein in reference to a Contract that is denominated in any other currency shall be deemed to mean the United States dollar equivalent of such other currency determined by reference to an internationally recognized exchange rate as of three (3) Business Days prior to the Closing. In the event of any conflict between this Agreement and any other Transaction Agreement, the terms of this Agreement shall control, except to the extent otherwise necessary under the applicable law. The parties have participated jointly in the negotiating and drafting of each Transaction Agreement. If an ambiguity or a question of intent or interpretation arises, each Transaction Agreement shall be construed as if drafted jointly by the parties, and no presumption or burden of proof shall arise favoring or disfavoring any party by virtue of the authorship of any provisions of any Transaction Agreement. The Transaction Agreements are in the English language only, which shall be controlling in all respects. No translation, if any, of the Transaction Agreements into any other language shall be of any force or effect in the interpretation of such Transaction Agreement or in a determination of the intent of any party thereto.

ARTICLE II. PURCHASE AND SALE OF ACQUIRED ASSETS

2.1 Acquired Assets. Upon the terms and subject to the conditions of this Agreement, on the Closing Date, Seller shall, and shall cause the applicable Selling Subsidiaries to, Transfer to Purchaser, and Purchaser shall purchase from Seller and the applicable Selling Subsidiaries, free and clear of any Liens other than Permitted Liens, all right, title and interest of Seller and such Selling Subsidiaries in and to all of the assets, properties and rights of every kind and nature, whether real, personal or mixed, tangible or intangible (including goodwill), wherever located and whether now existing or hereafter acquired (other than the Excluded Assets), which relate to, or are used or held for use in connection with, the Crimson Business (collectively, the “**Acquired Assets**”) including, without limitation, the following:

- (a) all Acquired Inventory;
- (b) all Acquired A/R;
- (c) all Acquired Contracts;
- (d) all Acquired IP;
- (e) all Acquired Books and Records;
- (f) all Acquired Permits;
- (g) all of the equity ownership interests, and appurtenant rights, in the Joint Venture owned by Seller;
- (h) all customer and supplier lists pertaining to the Crimson Business, including those set forth on Schedule 2.1(h);

(i) all prepaid expenses, credits, deposits (other than customer deposits) and advance payments to the extent related to the Crimson Business, including those set forth on Schedule 2.1(i);

(j) all furniture, fixtures, equipment (including office, computer and telephone equipment), machinery, tools, dies, molds and all other tangible personal property located at any Leased Real Property, at the facility of any Selling Company or any Affiliate of a Selling Company, or at any vendor, in each case that are owned by a Selling Company and that are used or held for use in the Crimson Business, including, without limitation, such assets set forth on Schedule 2.1(j);

(k) all trucks, tractors, trailers, railcars or other vehicles that are owned by the Selling Companies and used in the Crimson Business, including, without limitation, such assets listed on Schedule 2.1(k);

(l) all catalogs, sales promotion literature and advertising materials relating to the Crimson Business; provided, however, that Seller should be entitled to retain copies of any such materials that also relate to the Excluded Assets or any businesses of Selling Companies or their Affiliates other than the Crimson Business;

(m) all of the Selling Companies and their respective Affiliates' goodwill related to the Crimson Business;

(n) to the extent assignable, all rights under warranties, indemnities and all similar rights against third parties to the extent related to any of the Acquired Assets;

(o) all rights to any claims, suits, actions proceedings or investigations at law or in equity of any nature available to or being pursued by such Selling Company or its Affiliates to the extent related to the Crimson Business, the Acquired Assets or the Assumed Liabilities, whether arising by way of counterclaim or otherwise; and

(p) all insurance benefits, including rights and proceeds, arising from or relating to the Crimson Business, the Acquired Assets or the Assumed Liabilities.

2.2 Excluded Assets and Excluded Contracts. Notwithstanding anything to the contrary in this Agreement or any other Transaction Agreement, any assets that are not Acquired Assets shall not be Transferred to Purchaser pursuant to this Agreement or such other Transaction Agreement, and shall be retained by Seller and the Selling Subsidiaries, including the following (collectively, "**Excluded Assets**"): (i) any interests of Seller or any Selling Subsidiary in, to or under any Leased Real Property and in, to or under any other interest in real property (except as provided in the Assigned Lease and the Owned Property Leases), (ii) all Excluded A/R and all cash and cash equivalents, including marketable securities, (iii) all files, documents, books and records of Seller or any Selling Subsidiary other than the Acquired Books and Records, (iv) all records prepared in connection with the transactions contemplated by this Agreement and the other Transaction Agreements, (v) all rights of Seller and its Subsidiaries under this Agreement and the Transaction Agreements, (vi) any equity interest or security in any Selling Company, (vii) any and all Tax assets, including any Tax refunds, credits or claims, attributable in each case to any Pre-Closing Tax Period, (viii) any Shared Contracts or any interests in Shared Contracts, except to the extent of any Acquired Interests, (ix) except as otherwise specifically provided in this Agreement,

all the assets of and all the assets relating to the Seller Benefit Plans, (x) any assets the access to which is provided to Purchaser through the Transition Services Agreement, and (xi) all Intellectual Property Rights other than the Acquired IP.

2.3 Consideration. Upon the terms and subject to the conditions of this Agreement, as consideration for the transactions contemplated herein:

(a) Purchaser will assume the Assumed Liabilities in the manner set forth in Section 2.8.

(b) Purchaser will, in addition to assuming the Assumed Liabilities, pay to Seller, by wire transfer of immediately available funds to an account(s) designated by Seller, an amount equal to the Cash Consideration, subject to adjustment in accordance with Section 2.4 and Section 2.7. The assumption of Assumed Liabilities and the Cash Consideration, as adjusted in accordance with Section 2.4 and Section 2.7, shall be collectively referred to as the “**Purchase Price**.”

2.4 Estimated Cash Consideration. No later than two (2) Business Days prior to the Closing Date, Seller, pursuant to methods and procedures developed in consultation with Purchaser, shall cause to be prepared and delivered to Purchaser a certificate (which shall be subject to review by Purchaser) of an officer of the Seller, setting forth Seller’s good faith estimate as of the Closing of the Net Working Capital (such certificate, the “**Closing Certificate**”). For the purposes of making payments under Section 2.3(b) at the Closing, the Cash Consideration shall be increased or decreased, as applicable, by the amount by which the estimated Net Working Capital is greater than or less than the Net Working Capital Target (as adjusted, the “**Adjusted Closing Cash Consideration**”).

2.5 NWC Statement. As promptly as possible and in any event within ninety (90) days after the Closing Date, Purchaser will prepare or cause to be prepared, and will provide to Seller a written statement setting forth in reasonable detail its proposed determination of the Closing Date Net Working Capital (the “**NWC Statement**”).

2.6 NWC Dispute Notice. The NWC Statement will be final, conclusive and binding on the Parties unless Seller provides a written notice (a “**NWC Dispute Notice**”) to Purchaser no later than the thirtieth (30th) day after Purchaser’s delivery of the NWC Statement setting forth in reasonable detail (a) any item on the NWC Statement that Seller believes has not been prepared in accordance with the Accounting Principles and (b) the correct amount of such item in accordance with the Accounting Principles. Any item or amount to which no dispute is raised in the NWC Dispute Notice will be final, conclusive and binding on the Parties. Purchaser and Seller will attempt to resolve the matters raised in a NWC Dispute Notice in good faith. Fifteen (15) Business Days after delivery of the NWC Dispute Notice, either Purchaser or Seller may provide written notice to the other that it elects to submit the disputed items to Grant Thornton LLP and, if such firm shall decline such appointment, then such other nationally recognized independent accounting firm in the United States that is mutually acceptable Seller and Purchaser (the “**NWC Referee**”). The NWC Referee will promptly review only those items and amounts specifically set forth and objected to in the NWC Dispute Notice and resolve the dispute with respect to each such specific item and amount in accordance with the Accounting Principles; provided, however, that the NWC

Referee shall not assign a value to any item greater than the greatest value for such item, or lower than the lowest value of such item, claimed in any notice of disagreement presented to the such NWC Referee pursuant hereto. The fees and expenses of the NWC Referee will be borne by Seller and Purchaser in inverse proportion to the dollar amount of the items in dispute as submitted to the NWC Referee as to which such party prevails in the proceeding, which proportionate allocations shall also be determined by the NWC Referee. The decision of the NWC Referee with respect to the items of the NWC Statement submitted to it will be final, conclusive and binding on the Parties. Each of the Parties to this Agreement agrees to use its commercially reasonable efforts to cooperate with the NWC Referee and to cause the NWC Referee to resolve any dispute no later than thirty (30) Business Days after selection of the NWC Referee. The Net Working Capital as of the Closing as determined by the NWC Referee, by agreement of the Parties, or by Seller's failure to timely provide a NWC Dispute Notice shall be referred to herein as the "**Closing Date Net Working Capital.**"

2.7 Payment of Cash Consideration Adjustment. Promptly, and in any event no later than the fifth (5th) Business Day after final determination of the Net Working Capital in accordance with Section 2.6: (a) if the Closing Date Net Working Capital exceeds the estimated Net Working Capital set forth in the Closing Certificate, then Purchaser will pay such excess amount to Seller by wire transfer of immediately available funds; and (b) if Closing Date Net Working Capital is less than the estimated Net Working Capital set forth in the Closing Certificate, then Seller will pay to Purchaser an amount equal to such shortfall by wire transfer of immediately available funds; provided that if Excluded A/P as of the Closing Date is less than \$8,000,000, the amount payable pursuant to clause (a) or (b) above shall be adjusted such that any amount payable by the Purchaser shall be reduced, and any amount payable to the Purchaser shall be increased, by the amount that is equal to \$8,000,000 *minus* the actual aggregate amount of the Excluded A/P as of the Closing Date.

2.8 Assumed Liabilities; Excluded Liabilities.

(a) Subject to the terms of this Agreement, including this Section 2.8, on the Closing Date, Seller shall, or shall cause the Selling Subsidiaries to, Transfer to Purchaser, and Purchaser shall assume and agree to fully perform and discharge when due, in accordance with the terms thereof, the following Liabilities but, except with respect to clause (ii) and (iv) below, only to the extent arising out of or relating to the ownership and operation of the Crimson Business or the Acquired Assets after the Closing Date (the "**Assumed Liabilities**"):

- (i) any executory obligations under Acquired Contracts or Acquired Permits;
- (ii) any Transferred Employee Liabilities;
- (iii) Post-Closing Crimson A/P;
- (iv) 50% of any Transfer Taxes;
- (v) any executory obligations under the Assigned Lease;

(vi) Seller's obligations under the Guarantee (as defined in Schedule 6.20), only to the extent such obligations accrue from, or relate to, a default of the underlying obligations which are the subject of the Guarantee, that first occur after the Closing Date, until such time as Seller's obligations under the Guarantee have been released; and

(vii) Except as otherwise expressly provided in this Section 2.8(a), any Liabilities arising after the Closing Date from, related to or in connection with any Acquired Asset (or the ownership or operation thereof) or the operation of the Crimson Business;

provided, however, that in the case of clauses (i) through (iii), and (v) through (vii) above, no such Liability will be assumed by Purchaser to the extent such Liability arises as a result of any breach of Contract or violation of law (including, without limitation, any Environmental, Health and Safety Law) by any Selling Company or any of the applicable Affiliates of a Selling Company, or any other Person, on or prior to the Closing Date, and in the case of clause (ii) any matter referenced on Schedule 2.8 shall be considered an Excluded Liability. After the Closing Date, the Selling Companies shall not remain liable for any Assumed Liabilities.

(b) Unless Purchaser expressly assumes a Liability of a Selling Company or one or more of its Affiliates, including by operation of this Agreement or any Transaction Agreement, all such Liabilities shall be "**Excluded Liabilities**," and Purchaser shall not assume and shall not be responsible to pay, perform, satisfy or discharge Excluded Liabilities. Without limiting the generality of the foregoing, the "Excluded Liabilities" shall include, but not be limited to, the following:

(i) All accounts payable constituting obligations to make payments in respect of goods or services to the extent such goods are received by, or such services are rendered to, the Crimson Business prior to the Closing Date or by any other division of Seller at any time ("**Excluded A/P**");

(ii) Excluded Taxes;

(iii) all Employment Costs, pension, retirement and severance obligations for the Covered Employees on or prior to the Closing Date, other than Transferred Employee Liabilities except for those items set forth on Schedule 2.8;

(iv) all Liabilities of any Selling Company or any of the applicable Affiliates of a Selling Company arising from (A) any failure to pay any compensation or provide any benefit to an employee on or prior to the Closing, or (B) any claim of co-employment, joint employment or secondary employer liability with respect to the Maquiladora Employees;

(v) all Liabilities of each Selling Company and its Affiliates to the extent relating to or arising out of any Excluded Assets or their businesses, other than the Crimson Business;

(vi) all Liabilities of each Selling Company and its Affiliates arising or incurred in connection with the negotiation, preparation, investigation and performance of this Agreement, the Transaction Agreements and the transactions contemplated hereby and thereby,

including fees and expenses of counsel, accountants, consultants, advisers and other Representatives;

(vii) all Liabilities of any Selling Company or any of the applicable Affiliates of a Selling Company arising from the discharge of any Hazardous Substance, presence of a Hazardous Substance in, on or under any real property owned or leased by any Selling Company or any of their respective Affiliates, or breach of any Environmental, Health and Safety Law on or prior to the Closing Date;

(viii) all Liabilities of any Selling Company or any of the applicable Affiliates of a Selling Company arising from any violation of law on or prior to the Closing Date;

(ix) all Liabilities of any Selling Company or any of the applicable Affiliates of a Selling Company arising from any tort or breach of contract (other than breach of warranty to the extent of "repair or replace" warranty obligations) on or prior to the Closing Date;

(x) all Liabilities and obligations of any Selling Company or any of the applicable Affiliates of a Selling Company in connection with any Legal Proceeding arising out of, relating to or otherwise in respect of the operation of the Crimson Business or the Acquired Assets on or prior to the Closing;

(xi) Withdrawal Liability incurred on, prior to or as a result of the Closing and the transactions contemplated herein to occur simultaneously therewith; and

(xii) all Liabilities of any Selling Company or any of the applicable Affiliates of a Selling Company arising from any indebtedness.

(xiii) all Liabilities arising as a result of the alleged involvement of asbestos or lead in any products (including components or parts thereof) that each Selling Company or any of their Affiliates, or any of their predecessors in-interest for which a Selling Company or its Affiliate has successor Liability under applicable Governmental Rules, marketed, manufactured, offered for sale, sold, assembled, supplied, refurbished, used, distributed, or otherwise provided.

Seller shall, and shall cause each Selling Subsidiary to, pay and satisfy in due course all Excluded Liabilities which they are obligated to pay and satisfy.

2.9 Withholding. Notwithstanding any other provision in this Agreement, Purchaser, Seller, their respective Affiliates, and any other applicable payor shall have the right to deduct and withhold and pay over to the proper Governmental Authority any required Taxes from any payments to be made under any Transaction Agreement as required by applicable law, to the extent the Purchaser informs Seller of such proposed withholding and provides to Seller reasonable evidence of such requirement and any forms that may be prepared by Seller to eliminate the requirement for such withholding at least five (5) days prior to the date of any payment subject to such withholding. To the extent that amounts are so withheld, such withheld amounts shall be treated for all purposes of this Agreement as having been delivered and paid to the Seller or any other recipient of payment in respect of which such deduction or withholding was made. For any

amount withheld, Purchaser shall reasonably cooperate with Seller's efforts to obtain a refund of such amount from the applicable Governmental Authority.

ARTICLE III. CLOSING

3.1 Closing.

(a) The closing of the purchase and sale of the Acquired Assets, and the assignment and assumption of the Assumed Liabilities (the "**Closing**"), shall take place at the offices of Seller's outside counsel at 10:00 a.m. on the Target Closing Date; provided that if any of the conditions set forth in Articles IX and X hereof are not satisfied or, to the extent permitted by Governmental Rule, waived on the third Business Day prior to the Target Closing Date (other than conditions that by their terms are to be satisfied at the Closing, but subject to the satisfaction or waiver of such conditions at the Closing), the Closing shall take place on the earliest date that is no earlier than the third Business Day following the first date on which such conditions are satisfied or, to the extent permitted by Governmental Rule, waived (other than conditions that by their terms are to be satisfied at the Closing, but subject to the satisfaction or waiver of such conditions at the Closing), or at such other time or on such other date as may be agreed by Seller and Purchaser (the "**Closing Date**"). All transactions provided for herein to occur on and as of the Closing Date shall be deemed to have occurred simultaneously and to be effective as of 11:59 p.m. Eastern Time on the Closing Date.

(b) At the Closing, (i) Purchaser shall pay or cause to be paid to Seller (on behalf of itself and the Selling Subsidiaries), in immediately available funds by wire transfer to the bank accounts as are designated in writing by Seller at least three (3) Business Days prior to the Closing Date, cash in U.S. dollars in an aggregate amount equal to the Adjusted Closing Cash Consideration, less the Escrow Amount and the Warranty Escrow, which shall be paid to the Escrow Agent pursuant to the terms of the Escrow Agreement, (ii) Seller shall, or shall cause the relevant Selling Subsidiaries to, and Purchaser shall execute each Transaction Agreement and deliver each of the Transaction Agreements to the applicable counterparty thereto, (iii) subject to Section 6.2, Seller or the relevant Selling Subsidiary shall deliver or cause to be delivered to Purchaser the Side Letter (if applicable) and all bills of sale, assignments and other instruments of transfer or conveyance as may be required by each applicable third party, or under Governmental Rule, as the case may be, to transfer to Purchaser the Acquired Assets of Seller and the relevant Selling Subsidiaries, (iv) Purchaser shall deliver or cause to be delivered to Seller or the relevant Selling Subsidiary all assumption agreements and other instruments as may be required by each applicable third party, or under applicable Governmental Rule, to effect the assumption of the Assumed Liabilities, and (v) Purchaser shall have received the resignations of Seller's appointments to the board of the Joint Venture.

ARTICLE IV. REPRESENTATIONS AND WARRANTIES OF SELLER

Except as set forth on the Schedules to this Agreement delivered by Seller to Purchaser on the date hereof (the "**Schedules**"), Seller hereby represents and warrants to Purchaser as follows:

4.1 Incorporation and Ownership.

(a) Seller is a corporation duly incorporated and validly existing in good standing under the laws of the State of Delaware, and each of the Selling Subsidiaries is duly organized and validly existing in good standing under the laws of its jurisdiction of organization, each with all requisite power and authority to own its properties and conduct its business in all material respects as it is currently conducted, and each is duly qualified in each jurisdiction in which its ownership of property requires such qualification, except where the failure to so qualify would not, individually or in the aggregate, have a Seller Material Adverse Effect.

(b) Schedule 4.1 sets forth for each of the Joint Venture Entities: (i) its name and jurisdiction of incorporation, (ii) the number of shares of authorized capital stock of each class of its capital stock, (iii) the number of issued and outstanding shares of each class of its capital stock, the names of the holders thereof, and the number of shares held by each such holder, (iv) its directors and officers, and (v) each address of each such Joint Venture Entity. Each of the Joint Venture Entities is a corporation duly organized, validly existing, and in good standing under the laws of the jurisdiction of its incorporation. Each of the Joint Venture Entities is duly authorized to conduct business and is in good standing under the laws of each jurisdiction where such qualification is required, except where the failure to so qualify would not, individually or in the aggregate, have a Seller Material Adverse Effect. Each of the Joint Venture Entities has full corporate power and authority and all licenses, permits, and authorizations necessary to carry on the businesses in which it is engaged and in which it presently proposes to engage and to own and use the properties owned and used by it, except as would not have a Seller Material Adverse Effect. The Seller has delivered to Purchaser correct and complete copies of the articles of association and bylaws of each of the Joint Venture Entities (as amended to date). All of the issued and outstanding shares of capital stock of each of the Joint Venture Entities has been duly authorized and is validly issued, fully paid, and non-assessable. Seller holds of record and owns beneficially 50% of the outstanding shares of the Joint Venture, free and clear of any and all Liens. There are no outstanding or authorized Liens or other contracts or commitments that could require Seller or any of its Subsidiaries to sell, transfer, or otherwise dispose of any capital stock of the Joint Venture, or that could require the Joint Venture to sell, transfer, or otherwise dispose of any capital stock of any of the other Joint Venture Entities, or that could require any of the Joint Venture Entities to issue, sell, or otherwise cause to become outstanding any of its own capital stock (other than this Agreement with respect to the Joint Venture). There are no outstanding stock appreciation, phantom stock, profit participation, or similar rights with respect to any of the Joint Venture Entities. There are no voting trusts, proxies, or other agreements or understandings with respect to the voting of any capital stock of any of the Joint Venture Entities. The minute books (containing the records of meetings of the stockholders, the board of directors, and any committees of the board of directors), the stock certificate books, and the stock record books of the Joint Venture Entities are correct and complete in all material respects. None of the Joint Venture Entities is in default under or in violation of any provision of its charter or bylaws.

(c) Except for the Joint Venture, none of the Acquired Assets include any equity interest in any other Person.

4.2 Authority. Seller and each of the Selling Subsidiaries have all requisite power and authority to execute and deliver each of the Transaction Agreements to which it is a party and to perform its respective obligations thereunder. All acts and other proceedings required to be taken by or with respect to each of Seller and each of the Selling Subsidiaries to authorize the execution,

delivery and performance of the Transaction Agreements to which it is a party and the consummation of the transactions contemplated thereby have been duly and properly taken. Each of the Transaction Agreements, dated the date hereof, to which Seller or any Selling Subsidiary is a party has been duly executed and delivered by Seller or the applicable Selling Subsidiary, as the case may be, and constitutes the legal, valid and binding obligation of Seller or the applicable Selling Subsidiary, as the case may be, enforceable against Seller or applicable Selling Subsidiary, as the case may be, in accordance with its terms, subject to: (i) laws of general application relating to bankruptcy, insolvency and the relief of debtors; and (ii) rules of law governing specific performance, injunctive relief and other equitable remedies (the “**Enforceability Limitations**”). Each of the Transaction Agreements to be entered into after the date hereof to which Seller or any Selling Subsidiary is a party will, on the date such Transaction Agreement is entered into, be duly executed and delivered by Seller or the applicable Selling Subsidiary, as the case may be, and will constitute the legal, valid and binding obligation of Seller or the applicable Selling Subsidiary, as the case may be, enforceable against Seller or the applicable Selling Subsidiary, as the case may be, in accordance with its terms, subject to the Enforceability Limitations.

4.3 No Conflict. The execution and delivery of this Agreement by Seller do not, and the execution and delivery by Seller and each of the Selling Subsidiaries of the other Transaction Agreements to which it is a party and the consummation of the transactions contemplated hereby and thereby and compliance with the terms hereof and thereof will not:

(a) conflict with, or result in a violation or breach of, any of the provisions of the certificate of incorporation or bylaws or comparable organizational documents of Seller or any Selling Subsidiary;

(b) conflict in any material respect with, or result in a violation or breach of, any Governmental Rule applicable to Seller or any of the Selling Subsidiaries, or to the Knowledge of Seller, the Acquired Assets; or

(c) conflict in any material respect with, or result in a material violation or breach of, or constitute a material default under, or give rise to any right of termination, revocation, cancellation or acceleration under, any Acquired Contract or any other material contract, license, franchise, permit or any other agreement or instrument to which Seller or any Selling Subsidiary is a party or by which the Acquired Assets may be affected or bound.

4.4 Governmental Consents. No consent, permit, approval or authorization of, or designation, declaration or filing with, any Governmental Authority on the part of Seller, any Selling Subsidiary, or the Joint Venture is required in connection with the execution and delivery of this Agreement or any of the other Transaction Agreements, or the consummation by Seller and the Selling Subsidiaries of the transactions contemplated hereby or thereby, other than (i) those required to be obtained or made pursuant to the HSR Act; (ii) any consents, approvals and filings under any Other Relevant Antitrust Law; (iii) CFIUS Clearance; and (iv) such other consents, approvals, authorizations, designations, declarations or filings that are set forth on Schedule 4.4.

4.5 Financial Information. Schedule 4.5 sets forth the unaudited schedule of assets and liabilities of the Crimson Business as of December 31, 2017 (excluding any assets or liabilities of the Crimson Business that, if the Closing occurred as of December 31, 2017, would constitute

an Excluded Asset or Excluded Liability) and the unaudited schedule of profit and loss of the Crimson Business for the year ended December 31, 2017 (excluding therefrom any revenue, income, loss, expense or other amount that would otherwise be included thereon if the Closing occurred as of December 31, 2017 but that is attributable to any Excluded Assets or Excluded Liabilities) (collectively, the “**Financial Schedules**”). The Financial Schedules were prepared in accordance with GAAP, except as set forth on Schedule 4.5.

4.6 Title, Condition and Sufficiency.

(a) Seller or one of the Selling Subsidiaries has good and valid title to (or valid leases or licenses in respect of) all Acquired Assets free and clear of all Liens, other than (i) Permitted Liens, and (ii) as set forth on Schedule 4.6.

(b) The buildings, plants, structures, furniture, fixtures, machinery, equipment, vehicles and other items of tangible personal property (excluding inventory, which is covered in Section 4.15) included in Acquired Assets are structurally sound, free from any material defects, have been maintained in accordance with normal industry practice, are in good operating condition and repair (subject to normal wear and tear), and are adequate and suitable for the purposes for which such assets and properties are presently used.

(c) The Acquired Assets include all properties, assets and rights (other than the rights of Purchaser under, and services to be provided to Purchaser pursuant to, this Agreement and any Transaction Agreements) necessary for the conduct of the Crimson Business immediately after the Closing in substantially the same manner as prior to the Closing, except for the assets set forth in the Transition Services Agreement and the Excluded Assets. Except as set forth on Schedule 4.6, no asset is used both in the Crimson Business and in any other business of the Seller or its Affiliates. Except in the Ordinary Course of Business, there has been no change in the composition of the assets used in the operation of the Crimson Business since December 31, 2017.

4.7 Litigation. There are no claims, actions, suits, proceedings or investigations before any Governmental Authority (including any arbitration and administrative proceedings or condemnation actions, collectively, “**Legal Proceedings**”) with respect to which Seller, any Selling Subsidiary or any Joint Venture Entity is named as a party pending and, to the Knowledge of Seller, no Legal Proceedings have been threatened in writing to any Selling Company or any Joint Venture Entity since March 31, 2018, in each case (i) against or directly or indirectly related to the Crimson Business, the Acquired Assets or the Assumed Liabilities, or (ii) challenging or seeking to prevent, enjoin or otherwise delay the transactions contemplated by this Agreement. There is no existing default by Seller or any Selling Subsidiary with respect to any judgment, order, writ, injunction or decree of any Governmental Authority or arbitrator. To the Knowledge of Seller, no event has occurred or circumstances exist that may (i) give rise to, or serve as the basis for, any such Legal Proceeding that would, individually or in the aggregate, have a Seller Material Adverse Effect, or (ii) constitute or result in (with or without notice or laps of time) a violation of any Legal Restraint.

4.8 Contracts.

(a) Schedule 4.8 sets forth a correct and complete list as of the date hereof of Contracts (x) by which any of the Acquired Assets are bound or affected or (y) to which any Selling

Company is party or is bound in connection with the Crimson Business, the Acquired Assets or the Assumed Liabilities and which, in each case, fall within one or more of the categories set forth below (collectively, the “Material Contracts”).

(i) (A) each customer Contract requiring payments to any Selling Company or any of the applicable Affiliates of a Selling Company with respect to the Crimson Business in excess of \$100,000 per annum or (B) each outstanding Contract with vendors requiring payments by any Selling Company or any of the applicable Affiliates of a Selling Company with respect to the Crimson Business in excess of \$50,000 per annum;

(ii) any Contract that limits or purports to limit the ability of any Selling Company or any of the applicable Affiliates of a Selling Company to (A) freely engage in any business or compete in any line of business anywhere in the world or (B) solicit any individuals for employment;

(iii) any Contract requiring or otherwise relating to any future capital expenditures by any Selling Company or any of the applicable Affiliates of a Selling Company in excess of \$50,000;

(iv) any lease or agreement under which any Selling Company or any of the applicable Affiliates of a Selling Company is a (A) lessee of or holds or operates any real or personal property, owned by any other party, except for any lease of personal property under which the aggregate annual rental payments do not exceed \$10,000, or (B) lessor of or permits any third party to hold or operate any property, real or personal, owned or controlled by any Selling Company or any of the applicable Affiliates of a Selling Company;

(v) any Government Contracts or Government Contract Bids issued within the last two years and involving \$25,000 or more of goods or services;

(vi) any Contract that is currently binding on, and materially restricts, the actions of any Selling Company or any of the applicable Affiliates of a Selling Company;

(vii) agreements, other than this Agreement, relating to an acquisition, divestiture or ownership of the Crimson Business or the Acquired Assets;

(viii) any pension, profit sharing, stock option, employee stock purchase or other plan or arrangement providing for deferred or other compensation to employees or any severance or other employee benefit plan, arrangement or practice, whether formal or informal, including without limitation any Seller Benefit Plan;

(ix) any collective bargaining agreement or any other contract with any labor union, or severance agreements, programs, policies or arrangements;

(x) any management agreement or contract for the employment of any officer, individual employee or other person on a full-time, part-time, consulting or other basis (A) providing annual cash or other compensation in excess of \$100,000, (B) providing for the payment of any cash or other compensation or benefits upon the consummation of the transactions

contemplated hereby, or (C) otherwise restricting its ability to terminate the employment of any employee at any time for any lawful reason or for no reason without penalty or Liability;

(xi) any agreement or indenture relating to borrowed money or other indebtedness or the mortgaging, pledging or otherwise placing an Lien on any Acquired Assets or any letter of credit arrangements, or any guarantee therefor;

(xii) any license (including covenants not to sue or enforce), assignment or transfer, royalty or other agreement with respect to any intangible property (including any Intellectual Property Rights) under which a Selling Company is a licensor or licensee, other than to any third party non-customized software that is (A) licensed solely pursuant to a non-exclusive license, or (B) is generally available on standard terms for less than an aggregate amount per application of \$10,000 per annum;

(xiii) any agent, sales representative, sales, service provider, or distribution agreement;

(xiv) any power of attorney or other similar agreement or grant of agency;

(xv) any indemnification agreement or requirements contracts; or

(xvi) any other agreement, not listed above, that is listed on Schedule 4.8(1), otherwise material to the operations of the Crimson Business or involves consideration in excess of \$250,000 annually, whether or not in the Ordinary Course of Business.

(b) Seller has provided in the Data Room copies of each Material Contract that are correct and complete in all material respects. As of the date hereof, each Material Contract is in full force and effect and is a valid and binding agreement of the applicable Selling Company or any of the applicable Affiliates of a Selling Company, enforceable against such Selling Company or any of the applicable Affiliates of a Selling Company in accordance with its terms, except as such enforceability may be limited by the Enforceability Limitations. As of the date hereof, no Selling Company nor any of the applicable Affiliates of a Selling Company nor, to the Knowledge of Seller, any other party to any Material Contract is in material breach of, or material default under, any Material Contract. For the avoidance of doubt, no representations or warranties are made by Seller with respect to any portions of Contracts that are not Acquired Contracts.

4.9 Tax Matters. Seller and the Selling Subsidiaries have timely filed within the time period for filing or any extension granted with respect thereto, all Tax Returns that they are required by Governmental Rule to file. All such Tax Returns are true, correct, and complete in all material respects and were prepared in compliance in all material respects with all Governmental Rules. Seller and the Selling Subsidiaries have timely paid any and all Taxes they are required to pay. There are (and as of immediately following the Closing there will be) no Liens for Taxes on the Acquired Assets (other than Permitted Liens set forth in Schedule 4.9) and, to the Knowledge of Seller, no Governmental Authority is in the process of imposing any Lien for Taxes on any of the Acquired Assets. No Selling Company is a party to any Legal Proceeding relating to Taxes with respect to the Acquired Assets, and there are no pending or, to the Knowledge of Seller, threatened Legal Proceedings relating to Taxes with respect to the Acquired Assets. No claim has ever been made in writing by any Governmental Authority in a jurisdiction where a Selling

Company does not file a particular type of Tax Return or pay a particular type of Tax that it is or may be required to file such type of Tax Return or pay such type of Tax in that jurisdiction. Each Selling Company is a Tax resident in its country of formation, has not engaged in a trade or business, had a permanent establishment (within the meaning of an applicable Tax treaty or convention between its country of formation and any other country), or otherwise been subject to taxation in any country other than the country of its formation. Each Selling Company has withheld or collected and timely paid to the applicable Governmental Authority with respect to Taxes all Taxes required to have been withheld or collected and paid in connection with any amounts paid or owing to any employee, independent contractor, creditor or equity holder or received from any other Person.

4.10 Employee Matters.

(a) The information contained in Schedule 7.1(a) that has been provided by Seller is complete and correct in all material respects as of the date hereof with respect to each individual who is identified as a Covered Employee as of the date hereof. The Covered Employees, together with the (i) other employees of Seller and its Affiliates set forth on Schedule 4.10(a), and (ii) the Maquiladora Employees, are all of the employees of Seller and its Affiliates and American Industries, as applicable, who provide services to the Crimson Business.

(b) Schedule 4.10(b) sets forth a complete and correct list of all Seller Benefit Plans. With respect to each material Seller Benefit Plan set forth on Schedule 4.10(b), the Seller has provided in the Data Room a true, correct and complete copy of the following, to the extent applicable to such Seller Benefit Plan: (i) the material documents pursuant to which the Seller Benefit Plan is maintained, administered and funded (including the formal plan documents, summary plan descriptions, all trust agreements, insurance Contracts, administration Contracts, investment management agreements, subscription and participation agreements and recordkeeping agreements), each as in effect on the date hereof; (ii) the two most recent annual reports, actuarial reports, and accountant's opinions of each Seller Benefit Plan's financial statements; and (iii) the most recent Internal Revenue Service determination letter with respect thereto, or opinion letter (in the case of a prototype, volume submitter or mass submitter plan document with respect to a plan), and all other material and non-routine correspondence with Governmental Authorities received within the last three (3) years. In the case of any material Seller Benefit Plan set forth on Schedule 4.10(b) which is not in written form, the Seller has supplied Purchaser with a true, correct and complete description of such Seller Benefit Plan as in effect on the date hereof.

(c) No Selling Company nor any of the applicable Affiliates of a Selling Company (i) have or maintain, or has ever had or maintained, a "defined benefit pension plan" within the meaning of ERISA and subject to Title IV of ERISA or any Multiemployer Plan, or (ii) has, nor ever had, any ERISA Affiliates other than each other.

(d) No Selling Company nor any Affiliate of a Selling Company with respect to the Crimson Business or the Covered Employees has incurred, or will incur as a result of the transactions contemplated by this Agreement, any Withdrawal Liability or any Liability in connection with the termination or endangered or critical status of any Multiemployer Plan that remains unsatisfied or that will remain unsatisfied on (and after giving effect to the Closing) the

Closing Date. Neither Seller nor any of its Subsidiaries has any Liability (contingent or otherwise) with respect to any Multiemployer Plan, including without limitation, any Withdrawal Liability.

(e) There is no Seller Benefit Plan that is subject to Section 412 or 430 of the Code, Section 302 or 303 of ERISA or Title IV of ERISA or subject to Sections 4063, 4064 or 4069 of ERISA, and no Seller Benefit Plan is a multiple-employer plan (within the meaning of Section 413(c) of the Code).

(f) No Seller Benefit Plan provides post-retirement or post-termination health or welfare benefits to any Covered Employee, officer or other service provider of the Crimson Business or any beneficiary thereof, except as required under Section 4980B of the Code, Part 6 of Subtitle B of Title I of ERISA or any other similar applicable Governmental Rule.

(g) Each Seller Benefit Plan has been established, maintained, funded and operated in all material respects in accordance with its terms and Governmental Rules, including ERISA and the Code.

(h) No Legal Proceeding, audit or investigation has been asserted or instituted, or, to the Knowledge of Seller, has been threatened or is anticipated, against the Seller or any of its Subsidiaries or any of the Seller Benefit Plans (other than non-material routine claims for benefits and appeals of such claims) and no Seller Benefit Plan has within the three (3) years prior to the date hereof been the subject of an examination or audit by a Governmental Authority or the subject of an application or filing under or is a participant in, an amnesty, voluntary compliance, self-correction or similar program sponsored by any Governmental Authority. With respect to each Seller Benefit Plan, all contributions, reimbursements and premium payments that are due in respect of Covered Employees have been made, and all contributions, reimbursements and premium payments in respect of Covered Employees for any period ending on or before the Closing Date that are not yet due have been made or properly accrued.

(i) All Seller Benefit Plans that are subject to Section 409A of the Code comply with Section 409A in form and have been administered in accordance with their terms and Section 409A of the Code in all material respects.

(j) Neither the Seller nor any of its Subsidiaries reasonably expects to incur any material penalties or Liabilities under Section 4980H(a) or Section 4980H(b) of the Code with respect to any Seller Benefit Plan.

(k) All Seller Benefit Plans subject to the laws of any jurisdiction outside of the United States have been maintained in accordance with all applicable Governmental Rules, except in each case as would not be expected to have, individually or in the aggregate, a Seller Material Adverse Effect.

(l) No Seller Benefit Plan is a multiple employer welfare arrangement within the meaning of Section 3(40) of ERISA.

(m) With respect to any Covered Employee, the Crimson Business is in compliance with all Governmental Rules respecting employment and employment practices, terms and conditions of employment, wages, hours of work, classification of employment status and

occupational safety and health, except in each case as would not be expected to have, individually or in the aggregate, a Seller Material Adverse Effect. There are no controversies, claims or employee reports pending, or to the Knowledge of Seller, threatened between any of the Covered Employees, on the one hand, and the Crimson Business, on the other hand, relating to employment practices or any Governmental Rules contemplated by this Section 4.10(m), except in each case as would not be expected to have, individually or in the aggregate, a Seller Material Adverse Effect.

(n) There are no audits or administrative or other employment related matters or Legal Proceedings pending or, to the Knowledge of Seller, threatened before any Governmental Authority, relating to the employment of any Covered Employee or any Person engaged by the Crimson Business as an independent contractor or in any other non-employee, except in each case as would not be expected to have, individually or in the aggregate, a Seller Material Adverse Effect.

(o) Schedule 4.10(o) contains a true and complete list of each independent contractor currently performing services for the Crimson Business under an agreement providing for aggregate annualized compensation in excess of \$40,000. All compensation due and payable to Covered Employees and consultants and independent contractors for services performed for the Crimson Business on or prior to the date hereof has been paid or provided, or otherwise included in the calculation of the Closing Date Net Working Capital. All individuals characterized and treated by each Selling Company and the applicable Affiliates of each Selling Company, as the case may be, as consultants or independent contractors of the Crimson Business are properly treated as independent contractors under all Governmental Rules. Except as set forth on Schedule 4.10(o), the sales personnel included in the Covered Employees are the employees of a Selling Company or their Affiliates that have, on behalf of each Selling Company, the primary relationship with the customers.

(p) Neither the execution of this Agreement nor any of the transactions contemplated by this Agreement will (either alone or upon the occurrence of any additional or subsequent events, and whether by Contract or Governmental Rule): (i) entitle any current or former director, officer, employee, independent contractor or consultant of the Crimson Business to severance pay or any other payment; (ii) accelerate the time of payment, funding or vesting, or increase the amount of compensation due to any such individual; (iii) increase the amount payable under or result in any other material obligation pursuant to any Seller Benefit Plan; or (iv) cause any amounts payable to any Covered Employees to be treated as “excess parachute payments” subject to any excise Tax imposed by Section 4999(a). No Covered Employee is entitled to receive any additional payment from the Seller or any of its Subsidiaries by reason of the excise Tax required by Section 4999(a) of the Code, Section 409A or Section 457A of the Code being imposed on such Person by reason of the transactions contemplated herein or otherwise.

4.11 Intellectual Property.

(a) The Acquired IP is all of the Intellectual Property Rights owned by Seller or any Affiliate of Seller that is used or held for use exclusively in the Crimson Business, and all such Acquired IP that is registered or applied for is listed on Schedule 4.11(a). The Acquired IP, the Licensed IP, the Intellectual Property Rights addressed in the Transition Services Agreement and the Intellectual Property Rights under such of the Acquired Contracts that are effectively assigned to Purchaser at Closing (together with all related consents and fully satisfied conditions to

such assignments), are all of the Intellectual Property Rights used or held for use in the Crimson Business as currently conducted and that are necessary for the conduct of the Crimson Business immediately after the Closing in substantially the same manner as prior to the Closing. Seller or one of the Selling Subsidiaries exclusively owns all Acquired IP and Licensed IP, free and clear of Liens (other than Permitted Liens).

(b) Except as set forth in Schedule 4.11(b), all registered and applied for trademarks, patents, copyrights and Internet domain names are not subject to any fees, responses or actions falling due within thirty (30) days following the Closing.

(c) As of the date of this Agreement, to the Knowledge of Seller, except as would not have a Seller Material Adverse Effect, (i) the operation of the Crimson Business does not infringe, misappropriate or otherwise violate, in any material respect, the valid and enforceable Intellectual Property Rights of any third party and (ii) no written notices of such infringement, misappropriation or other violation of Intellectual Property Rights of any third party have been received by Seller from any such third party. To the Knowledge of Seller, no Person is infringing, violating or misappropriating any Acquired IP. There is no claim pending or, to the Knowledge of Seller, threatened in writing against any Selling Company or any of the applicable Affiliates of any Selling Company that the use or exploitation of the Acquired IP, the Licensed IP or any third party IP by the applicable Selling Company or the applicable Affiliate in connection with the Crimson Business as currently conducted by the Selling Companies and the applicable Affiliates of the Selling Companies infringes upon or otherwise violates the valid and enforceable Intellectual Property Rights of any other Person, in each case, except as would not reasonably be expected to have, individually or in the aggregate, a Seller Material Adverse Effect.

(d) Except as set forth on Schedule 4.11(d), no Selling Company licenses the right to use the Acquired IP to any Person.

4.12 Absence of Changes or Events. From and including December 31, 2017, there has not been any:

- (a) failure to operate and manage the Crimson Business in the Ordinary Course of Business;
- (b) change, event, occurrence or development that has had, or could reasonably be expected to have, individually or in the aggregate, a Seller Material Adverse Effect;
- (c) imposition of any Lien other than a Permitted Lien upon any of the Acquired Assets;
- (d) sale, assignment or transfer of any material portion of the tangible assets of the Crimson Business, except in the Ordinary Course of Business;
- (e) sale, assignment or transfer of any patents, registered trademarks, material trade names, registered copyrights, material Trade Secrets or other material intangible assets of the Crimson Business, except in the Ordinary Course of Business;

(f) any matter, circumstance or event which would, if it occurred after the date hereof and prior to the Closing, result in a breach of the covenant contained in Section 6.1; or

(g) Contract to do any of the foregoing, or any action or omission that would result in any of the foregoing.

4.13 Compliance with Laws; Anti-Corruption.

(a) (i) Each Selling Company and the Shelter Operator has complied, and is in compliance, with all Governmental Rules applicable to the Crimson Business and the ownership and use of the Acquired Assets, and (ii) no Selling Company nor any of the applicable Affiliates of any Selling Company has received any written notice from any Governmental Authority alleging any non-compliance by such Selling Company or, to the Knowledge of Seller, any Joint Venture Entity with respect to any such Governmental Rules applicable to the operation of the Crimson Business or use of the Acquired Assets, except for such notices the matters relating to which have been resolved prior to the date hereof or are no longer pending and except, in the case of each of clauses (i) and (ii), as would not reasonably be expected to have a Seller Material Adverse Effect.

(b) (i) All permits, licenses and registrations required for each Selling Company or each of the applicable Affiliates of each Selling Company to conduct the Crimson Business as currently conducted, or use the Acquired Assets as currently used, have been obtained by such Selling Company or Affiliate and (ii) each Selling Company and each of the applicable Affiliates of each Selling Company is in compliance with all such permits, licenses and registrations, except, in the case of each of clauses (i) and (ii), as would not have a Seller Material Adverse Effect. No Selling Company or any Affiliate of a Selling Company has received any notices alleging the failure to hold any permit with respect to the Crimson Business.

(c) Neither the operation of the Crimson Business nor any of the officers, directors, employees or agents of any Selling Company engaged in the Crimson Business (in their capacities as such), has violated the Foreign Corrupt Practices Act of 1977, as amended, the Corruption of Foreign Public Officials Act, the U.K. Bribery Act 2010, legislation enacted by member states and signatories implementing the OECD Convention Combating Bribery of Foreign Officials, or similar Governmental Rules of any jurisdiction relating to anti-corruption.

(d) Neither Seller nor any of the Selling Companies, nor any of their officers, directors, employees or agents (in their capacities as such), has directly or indirectly offered, paid or promised to pay, or authorized the payment of, any money or other thing of value in connection with the operation of the Crimson Business to any (i) Person who is an official, officer, agent, employee or representative of any Governmental Authority or of any existing or prospective customer (whether or not government-owned), (ii) political party or official thereof, (iii) candidate for political office or political party office, or (iv) other individual or entity, while knowing or having reason to believe that all or any portion of such money or thing of value would be offered, given or promised, directly or indirectly, to any of the foregoing for the purpose of influencing any official act or decision, of inducing any of the foregoing to use his, her or its influence to affect any act or decisions of a foreign Governmental Authority, or to secure any improper advantage to assist the Seller or its Affiliates to obtain or retain any business. Neither Seller or any Selling Company, nor any of their directors, officers, employees or agents (in their capacities as such), has made or

authorized any bribe, rebate, payoff, influence payment, kickback or other unlawful payment of funds or received or retained any funds in connection with the operation of the Crimson Business in violation of any law, rule or regulation. Seller and each Selling Company has maintained systems of internal controls (including, but not limited to, accounting systems, purchasing systems and billing systems) to ensure compliance with the FCPA or any other applicable anti-bribery or anti-corruption law in connection with the operation of the Crimson Business.

(e) (i) Neither Seller nor any Selling Company, nor any of their respective directors, officers or employees (in their capacities as such) in connection with the operation of the Crimson Business is or has been the subject of any inquiry or enforcement proceedings by any Governmental Authority relating to or regarding any offense or alleged offense under any applicable anti-corruption laws, and (ii) to the Knowledge of Seller, (A) no such investigation, inquiry or enforcement proceedings have been threatened or are pending and (B) there are no circumstances reasonably likely to give rise to any such investigation, inquiry or proceedings.

(f) Since January 1, 2013, Seller and each Selling Company has been, and currently is, in compliance in all material respects with all applicable U.S. and non-U.S. laws and regulations related to the exportation or importation of supplies or services by Seller and such Selling Company in connection with the Crimson Business.

4.14 Labor Matters. Set forth in Schedule 4.14 is a list of all collective bargaining, union, employee organizing or similar Contract to which any Selling Company is a party relating to the Crimson Business and there is no organizing activity pending or, to the Knowledge of Seller, threatened against any Selling Company, or any of the applicable Affiliates of a Selling Company. Except as has not had or would not be expected to have, individually or in the aggregate, a Seller Material Adverse Effect, there is no, and in the past five (5) years there has been no, (i) unfair labor practice complaint pending or, to the Knowledge of Seller, threatened before the National Labor Relations Board or other Governmental Authority performing a similar function with respect to the Crimson Business, (ii) labor strike, dispute, slowdown or stoppage pending or, to the Knowledge of Seller, threatened against any Selling Company, or any of the applicable Affiliates of a Selling Company, with respect to the Crimson Business, and (iii) grievance, charge, audit or other labor dispute or Legal Proceeding arising out of or under any collective bargaining agreement pending or, to the Knowledge of Seller, threatened against Seller, any Selling Company or any of the applicable Affiliates of a Selling Company, with respect to the Crimson Business.

4.15 Inventory. All Acquired Inventory consists of a quality and quantity useable and saleable in the Ordinary Course of Business consistent with past practice, except for obsolete, damaged, defective, or slow-moving items that have been written off or written down to the lower of cost or fair market value or for which adequate reserves have been established.

4.16 Affiliate Transactions. Schedule 4.16 contains a true and correct list of all Contracts between any Selling Company, any Affiliate of a Selling Company or the Joint Venture Entities, on the one hand as a supplier or customer, and any Affiliate of any Selling Company, on the other hand as a customer or supplier, with respect to the provision of the Crimson Business' products and services.

4.17 Customers and Suppliers. To the Knowledge of Seller, none of the Selling Companies nor any of their Affiliates has received any notice or has any reason to believe that (a) any customer has ceased, or intends to cease after the Closing, to use the goods or services of the Crimson Business or to otherwise terminate or materially reduce its relationship with the Crimson Business, to the extent such customer was a customer of the Crimson Business prior to the Closing, and based on the rate of consumption by such customer of such goods and services of the Crimson Business prior to the Closing, or (b) any customer will not use the goods and services of the Crimson Business after the Closing, or will otherwise terminate or materially reduce its relationship with the Crimson Business. To the Knowledge of Seller, none of the Selling Companies nor any of their Affiliates have received any notice, and have no reason to believe that any supplier has ceased, or intends to cease after the Closing, to supply goods or services to the Crimson Business or to otherwise terminate or materially reduce its relationship with the Crimson Business.

4.18 Receivables. The accounts receivable arising from the sale of goods and the provision of services by the Crimson Business as reflected on the most recent balance sheet included in the Financial Schedules and such accounts receivable arising after the date thereof, which accounts receivable include the Acquired A/R, (a) have arisen from bona fide transactions entered into by each Seller and the applicable Affiliate of each Seller involving the sale of goods or the rendering of services in the Ordinary Course of Business; (b) constitute only valid, undisputed claims of each Seller or the applicable Affiliate of each Seller and are not subject to claims of set-off or other defenses or counterclaims other than normal cash discounts accrued in the Ordinary Course of Business; and (c) subject to a reserve for bad debts shown on the most recent balance sheet included in the Financial Schedules or, with respect to such accounts receivable, receivables arising after the date of the most recent balance sheet included in the Financial Schedules, shown on the accounting records of the Crimson Business, are, to the Knowledge of Seller, collectible in full within the stated term of the invoice giving rise to the applicable accounts receivable.

4.19 Insurance. Schedule 4.19 contains a list of (a) each insurance policy maintained by each Selling Company and the applicable Affiliates of each Selling Company (i) currently with respect to Acquired Assets or the Crimson Business, (ii) at any time on or after December 31, 2010, and (b) all claims made under an insurance policy by any Selling Company or any applicable Affiliate of any Selling Company, or any of their respective predecessors, with respect to the Acquired Assets or the Crimson Business after December 31, 2010. No Selling Company or applicable Affiliate of each Selling Company has received a notice of cancellation under, or is in material default with respect to its obligations under any insurance policy maintained by it. Except as set forth Schedule 4.19, no Selling Company or applicable Affiliate of each Selling Company has any self-insurance or co-insurance programs.

4.20 Real Property.

(a) Schedule 4.20(a) sets forth all material real property owned by Seller and used in connection with the Business (collectively, the “**Owned Real Property**”). Seller has fee simple title to the Owned Real Property, free and clear of all encumbrances, except (A) Permitted Liens and (B) those encumbrances set forth on Schedule 4.20(a).

(b) Schedule 4.20(b) sets forth all material real property leased by Seller and used in connection with the Crimson Business or accessed by Seller pursuant to the Shelter Agreement (collectively, the “**Leased Real Property**”), and a list, as of the date of this Agreement, of all leases for each Leased Real Property (collectively, the “**Leases**”).

(c) Except as set forth in Schedule 4.20(c), (i) each Selling Company, as applicable, and each of the applicable Affiliates of each Selling Company has a valid interest in all Leases for each Leased Real Property, free and clear of all Liens, except for Permitted Liens, (ii) the Assigned Lease is in full force and effect, enforceable in accordance with its terms against the applicable Selling Company or the applicable Affiliate of such Selling Company, as the case may be, and, to the Knowledge of Seller, the counterparties thereto, subject to the Enforceability Limitations, (iii) no Selling Company nor any of the applicable Affiliates of any Selling Company has received or been provided any written notice of any event or occurrence that has not been resolved and that has resulted or would reasonably be expected to result (with or without the giving of notice, the lapse of time or both) in a material breach or default with respect to any Lease, (iv) no party to any Assigned Lease has exercised any termination rights with respect thereto or (v) no real property improvements, buildings or structures, or portions thereof, will be required to be removed upon termination or expiration of the Assigned Lease.

(d) No Selling Company, nor any of the applicable Affiliates of any Selling Company has received any written notice of (i) material violations of building codes and/or zoning ordinances or other Governmental Rules affecting the any Owned Real Property that will be subject to an Owned Property Lease or the Leased Real Property, (ii) existing, pending or contemplated condemnation proceedings affecting any Owned Real Property that will be that will be subject to an Owned Property Lease or the Leased Real Property, or (iii) existing, pending or contemplated zoning, building code or other moratorium proceedings, or similar matters which could reasonably be expected to materially and adversely affect the ability to operate the Leased Real Property or any Owned Real Property that will be subject to an Owned Property Lease as currently operated. Neither the whole nor any material portion of any Leased Real Property or any Owned Real Property that will be subject to an Owned Property Lease has been damaged or destroyed by fire or other casualty.

4.21 Environmental Matters. Except as set forth on Schedule 4.21:

(a) The Acquired Assets and the Selling Companies’ and their respective applicable Affiliates’ operation of the Crimson Business as currently conducted are in material compliance with all applicable Environmental, Health and Safety Laws;

(b) Each Selling Company, as applicable, and each of the applicable Affiliates of each Selling Company has obtained and is in material compliance with all permits, licenses and registrations required under applicable Environmental, Health and Safety Laws necessary for the operation of the Crimson Business as currently conducted;

(c) During the three (3) years prior to the date hereof, no Selling Company nor any of the applicable Affiliates of any Selling Company has received any written or, to the Knowledge of Seller, oral notice from any Governmental Authority alleging any material noncompliance of Environmental, Health and Safety Law by such Selling Company or such

Affiliate with respect to the Acquired Assets or its operation of the Crimson Business, except for such notices the matters relating to which have been resolved prior to the date hereof or which are no longer pending

(d) There is no Legal Proceeding pending or, to the Knowledge of Seller, threatened in writing against or by any Selling Company or against or by any of the applicable Affiliates of any Selling Company affecting or relating to the Crimson Business or any of the Acquired Assets under Environmental, Health and Safety Laws;

(e) There is no outstanding Legal Restraint applicable to the operation of the Crimson Business under Environmental, Health and Safety Laws;

(f) Seller has provided in the Data Room all written environmental assessment or audit reports in its possession with respect to the Crimson Business and the Acquired Assets; and

(g) With respect to the Crimson Business or the Acquired Assets, no Selling Company nor any of the applicable Affiliates of any Selling Company has treated, stored, disposed of, arranged for or permitted the disposal of, transported, handled or released any Hazardous Substances at any facility owned, occupied or operated by a Selling Company or to the Knowledge of Seller, at any other property so as to give rise to any current material Liabilities (including any Liability for response costs, corrective action costs, personal injury, natural resource damages, property damage or attorneys' fees or any investigative, corrective or remedial obligations) pursuant to any Environmental, Health and Safety Laws.

(h) Except as set forth in Schedule 4.21(h), there is no past, pending, or, to the Knowledge of Seller, threatened, investigation, claim, complaint, notice of Liability, litigation, or order relating to the incorporation in anyway of asbestos or lead in any product marketed, manufactured, offered for sale, sold, assembled, supplied, refurbished, used, distributed, or otherwise provided, by each Selling Company or any of their Affiliates, or any of their predecessors in-interest for which any Selling Company or any of their Affiliates have successor Liability under applicable Governmental Rules. Without limiting the scope of the representations and warranties set forth in Section 4.21(h), with respect to any use of lead or asbestos by any Selling Company or any Affiliate of a Selling Company in connection the Crimson Business, all such use is and has been in compliance with all applicable Environmental, Health and Safety Laws and other applicable Governmental Rules.

4.22 Data Security and Privacy.

(a) Each Selling Company's privacy and data security policies and procedures are materially consistent with the requirements of applicable Governmental Rules on (i) information technology security and (ii) privacy of personal information (as such term would be defined by any applicable Governmental Rules, "**Personal Data**"). At all times since December 31, 2015, each Selling Company has: (A) complied in all material respects with such Selling Company's privacy and data security policies and all applicable Governmental Rules governing the receipt, collection, use, storage, processing, sharing, security, disclosure or transfer of (I) any Personal Data by, or on behalf of any Selling Company or any Affiliate of a Selling Company; or (II) other confidential information that is possessed by or otherwise subject to the control of any Selling Company or any Affiliate of a Selling Company (collectively, "**Information**"); and (B) implemented and maintained

measures sufficient to assure that each Selling Company and any Affiliates of a Selling Company complies with such policies and applicable Governmental Rules.

(b) No Selling Company nor any Affiliate of a Selling Company has received any written notice or claim that it at any time failed to comply with such policies and applicable Governmental Rules. Except for disclosures of Information required by applicable Governmental Rules, authorized by the relevant data subjects or authorized by applicable Governmental Rules, each Selling Company has since December 31, 2015: (i) not sold, leased, licensed or otherwise made available to third parties any Information contrary to any stated privacy or data security policies and procedures; and (ii) taken commercially reasonable measures to ensure that all Information is protected against loss, Damage, and unauthorized access, use, disclosure, modification, or other misuse. To the Knowledge of Seller, since December 31, 2015, there has been no loss, Damage, or unauthorized access, use, disclosure, modification, or other misuse of any Information which would have required reporting to data subjects or any Governmental Authority. To the Knowledge of Seller, no Selling Company or any Affiliate of a Selling Company has experienced any incident in which (A) any Information technology system or data of a Selling Company or any of their Affiliates have been breached by unauthorized intrusion by any Person, except as set forth on Schedule 4.22(b), or (B) any Information was or may have been stolen or subject to any unauthorized access or use.

(c) With respect to any Information Transferred to Purchaser, each Selling Company and any Affiliate of a Selling Company has obtained the valid and enforceable consent by any data subject affected to the transfer of their Information and subsequent use and processing by Purchaser and its Affiliates following such transfer for the same purposes as such Information has previously been used or processed by Selling Company or any Affiliate of a Selling Company (other than the identity of the Person who uses or processes), or such transfer and use or processing of Information is otherwise justified and permitted pursuant to applicable Governmental Rules, whether or not such transfer, use or processing of Information requires a transfer to, or processing in, another jurisdiction than the jurisdiction where such Information is currently being held, used or processed.

(d) With respect to any Contract of any Selling Company and any Affiliate of a Selling Company concerning the processing of Personal Data by one party on behalf of the other, Selling Company and any Affiliate of a Selling Company has also entered into applicable and industry-standard data processing arrangements as well as any additional instruments permitting the cross border Transfer and processing of Personal Data as required by applicable Governmental Rules, which will continue to remain applicable following the consummation of the transactions contemplated by this Agreement and the Transfer of any such Contract and data processing arrangements.

4.23 Brokers. Except for Evercore, whose fees and expenses are the responsibility of Seller, no broker, finder, investment banker, agent or other similar Person is or shall be entitled to any broker's, finder's, financial advisor's or other similar fee or commission in connection with the transactions contemplated by this Agreement based upon arrangements made by or on behalf of any Selling Company or any of the applicable Affiliates of any Selling Company.

4.24 No Undisclosed Liabilities. As of the date hereof, no Selling Company nor any of the applicable Affiliates of any Selling Company has any Liabilities, in each case, with respect to the Crimson Business, required to be reflected on a balance sheet included in the Financial Schedules, except for Liabilities (i) that are reflected or reserved against in the most recent balance sheet included in the Financial Schedules, (ii) that have been incurred in the Ordinary Course of Business since the date of the Financial Schedules, (iii) that are executory obligations for future performance under existing Contracts first arising after the date hereof and not resulting from a breach or default of such Contract or violation of Governmental Rules, (iv) that are not material to the financial condition or operating results of the Crimson Business, or (v) that are set forth in Schedule 4.24.

4.25 No Other Representations or Warranties. Except for the representations and warranties contained in this Agreement (as modified by the Schedules) and in the other Transaction Agreements, neither Seller nor any other Person makes any other express or implied representation or warranty with respect to the Crimson Business, Acquired Assets or the Assumed Liabilities, and Seller disclaims any other representations or warranties, whether made by Seller or any of its Affiliates or Representatives. Except for the representations and warranties contained in Article IV hereof (as modified by the Schedules), Seller hereby disclaims, for itself and each of the Selling Subsidiaries, all Liability and responsibility for any representation, warranty, statement or information made, communicated, or furnished (orally or in writing) to Purchaser or its Affiliates or their respective Representatives (including any opinion, information, projection, or advice that may have been or may be provided to Purchaser by any Representative of Seller, any Selling Subsidiary or any of their respective Affiliates). Seller makes no representations or warranties to Purchaser regarding any projection or forecast regarding future results or activities or the probable success or profitability of the Crimson Business.

ARTICLE V. REPRESENTATIONS AND WARRANTIES OF PURCHASER

Purchaser hereby represents and warrants to Seller as follows:

5.1 Existence. Purchaser is a limited liability company duly formed and validly existing in good standing under the laws of Delaware, with all requisite limited liability company power and authority to own its properties and conduct its business in all material respects as it is currently conducted, and is duly qualified in each jurisdiction in which its ownership of property requires such qualification, except where the failure to so qualify would not, individually or in the aggregate, materially interfere with, hinder or delay the consummation by Purchaser of the transactions contemplated by the Transaction Agreements (a “**Purchaser Material Adverse Effect**”).

5.2 Authority. Purchaser has all requisite corporate power and authority to execute and deliver each of the Transaction Agreements to which it is a party and to perform its respective obligations thereunder. All corporate acts and other proceedings required to be taken by or with respect to Purchaser to authorize the execution, delivery and performance of the Transaction Agreements to which it is a party and the consummation of the transactions contemplated thereby have been duly and properly taken. This Agreement has been duly executed and delivered by Purchaser and constitutes the legal, valid and binding obligation of Purchaser, enforceable against Purchaser in accordance with its terms, subject to: (i) laws of general application relating to

bankruptcy, insolvency and the relief of debtors; and (ii) rules of law governing specific performance, injunctive relief and other equitable remedies. Each of the Transaction Agreements to be entered into after the date hereof to which Purchaser is a party will, on the date such Transaction Agreement is entered into, be duly executed and delivered by Purchaser and will constitute the legal, valid and binding obligation of Purchaser, enforceable against Purchaser in accordance with its terms, subject to: (i) laws of general application relating to bankruptcy, insolvency and the relief of debtors; and (ii) rules of law governing specific performance, injunctive relief and other equitable remedies.

5.3 No Conflict. The execution and delivery of this Agreement by Purchaser does not, and the execution and delivery by Purchaser of the other Transaction Agreements to which it is a party and the consummation of the transactions contemplated hereby and thereby and compliance with the terms hereof and thereof will not:

(a) conflict in any respect with, or result in a violation or breach of, any of the provisions of the certificate of formation or limited liability company agreement or comparable organizational documents of Purchaser;

(b) conflict in any respect with, or result in any violation or breach of, any Governmental Rule applicable to Purchaser or any of its properties or assets, that would, individually or in the aggregate, have a Purchaser Material Adverse Effect; or

(c) conflict in any respect with, or result in a violation or breach of, or constitute a default under, or give rise to any right of termination, revocation, cancellation or acceleration under, any contract, license, franchise, permit or any other agreement or instrument to which Purchaser is a party or by which Purchaser or any of their properties or assets may be affected or bound that would, individually or in the aggregate, have a Purchaser Material Adverse Effect.

5.4 Governmental Consents. No consent, approval or authorization of, or designation, declaration or filing with, any Governmental Authority on the part of Purchaser is required in connection with the execution and delivery of this Agreement or any of the other Transaction Agreements, or the consummation by Purchaser of the transactions contemplated hereby or thereby, other than (i) those required to be obtained or made pursuant to the HSR Act; (ii) any consents, approvals and filings under any Other Relevant Antitrust Law; (iii) CFIUS Clearance; (iv) such other consents, approvals, authorizations, designations, declarations or filings the failure of which to be obtained or made would not, individually or in the aggregate, have a Purchaser Material Adverse Effect.

5.5 No Broker. Neither Purchaser nor any of its Affiliates has engaged any corporation, firm or other Person who is entitled to any fee or commission as a finder or a broker in connection with the negotiation of this Agreement or the other Transaction Agreements or the consummation of the transactions contemplated hereby and thereby, and Purchaser shall be responsible for all Liabilities and claims (including costs and expenses of defending against same) arising in connection with any claim by a finder or broker that it acted on behalf of Purchaser or any of its Subsidiaries or other Affiliates in connection with the transactions contemplated hereby.

5.6 Availability of Funds. Purchaser has or will have at the Closing sufficient funds available to pay the Cash Consideration and any additional amount if and to the extent required to be paid by Purchaser pursuant to Section 2.7. Purchaser acknowledges that its obligations in this Agreement are not contingent or conditioned upon any Person's ability to obtain or have at the Closing sufficient funds for all payments required to be made by Purchaser hereunder, whether under contemplated financing transactions or otherwise.

5.7 Due Diligence. Purchaser has conducted its own independent investigation, review and analysis of, and reached its own independent conclusions regarding, the Crimson Business, the Acquired Assets and the Assumed Liabilities.

5.8 No Reliance on Other Representations and Warranties. In making its decision to execute and deliver this Agreement and to consummate the transactions contemplated by this Agreement, Purchaser has relied solely upon the representations and warranties of Seller set forth in Article IV (and acknowledges that such representations and warranties are the only representations and warranties made by Seller) and has not relied upon any other information provided by, for or on behalf of Seller or its Affiliates to Purchaser in connection with the transactions contemplated by this Agreement. Purchaser has entered into the transactions contemplated by this Agreement with the understanding, acknowledgement and agreement that no representations or warranties, express or implied, are made with respect to any projection or forecast regarding future results or activities or the probable success or profitability of the Crimson Business. Purchaser acknowledges that no current or former Representative of Seller (or any of its Affiliates) has made or is making any representations or warranties whatsoever regarding the subject matter of this Agreement, express or implied. PURCHASER ACKNOWLEDGES THAT, SHOULD THE CLOSING OCCUR, PURCHASER SHALL ACQUIRE THE ACQUIRED ASSETS WITHOUT ANY REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, AT LAW OR IN EQUITY, AS TO MERCHANTABILITY, NONINFRINGEMENT OR FITNESS FOR ANY PARTICULAR PURPOSE, IN AN "AS IS" CONDITION AND ON A "WHERE IS" BASIS, EXCEPT AS OTHERWISE EXPRESSLY REPRESENTED OR WARRANTED IN ARTICLE IV.

ARTICLE VI. AGREEMENTS

6.1 Conduct of Business. Except as otherwise contemplated or permitted by the Transaction Agreements or as set forth in the Schedules, during the period from the date of this Agreement to the Closing Date, Seller shall operate and manage the Crimson Business in the Ordinary Course of Business and use commercially reasonable efforts to maintain and preserve in all material respects the Acquired Assets. Without limiting the generality of the foregoing, from the date of this Agreement to the Closing, except as otherwise contemplated by the Transaction Agreements or set forth in the Schedules, unless Purchaser otherwise consents (such consent not to be unreasonably withheld, conditioned or delayed), Seller shall, and shall cause its Selling Subsidiaries to:

(a) Not sell, lease, pledge, abandon, assign or otherwise dispose of, or enter into any agreement to sell lease, pledge, abandon, assign or otherwise dispose of, the Acquired Assets or its ownership rights in the Licensed IP, except in the Ordinary Course of Business (other than the sale or disposition of obsolete Acquired Assets);

- (b) not change in any material respect the policies or practices regarding accounts receivable or accounts payable, in each case with respect to the Crimson Business;
- (c) except in the Ordinary Course of Business, not (i) accelerate, terminate, cancel, renew, amend, grant a waiver under or otherwise modify any Material Contract in any material respect or (ii) enter into any Contract that would constitute an Acquired Contract if entered into prior to the date hereof;
- (d) not incur, assume or guarantee any indebtedness for borrowed money related to the Crimson Business except (i) unsecured current obligations and Liabilities incurred in the Ordinary Course of Business or (ii) any such guarantee or indebtedness that will be repaid prior to or on the Closing Date or otherwise will not constitute an Assumed Liability;
- (e) except in the Ordinary Course of Business, not grant or suffer to exist any Lien, other than any Permitted Liens, on any of the Acquired Assets;
- (f) not make, or permit American Industries to make, any increase in the compensation paid or payable, or benefits provided to, or in respect of, any Covered Employees or Maquiladora Employees, as applicable, including, without limitation, the payment of any bonus, additional compensation, pension, retirement, termination or severance benefit to any of such officers, employees, consultants or agents, in each case, except (i) in the Ordinary Course of Business, (ii) for changes required by applicable Governmental Rules or the terms of any Seller Benefit Plan or labor agreement as in effect on the date hereof, (iii) as a result of broad-based changes to any Seller Benefit Plan that applies to similarly-situated employees of any Selling Company and any of the applicable Affiliates of a Selling Company set forth in Schedule 7.1(a), or (iv) any increase with respect to any Maquiladora Employee which did not require the Seller's consent under the Shelter Agreement and implemented by American Industries without the Seller's consent;
- (g) not increase or decrease the number of Covered Employees, or permit American Industries to increase or decrease the number of Maquiladora Employees, except in the Ordinary Course of Business;
- (h) maintain the insurance applicable to the Crimson Business at current levels, comply with all material Governmental Rules and maintain the books and records related to the Crimson Business, all in the Ordinary Course of Business;
- (i) promptly inform Purchaser in writing of a Seller Material Adverse Effect, and the events, facts or circumstances giving rise thereto;
- (j) not enter into, modify or terminate any labor or collective bargaining agreement relating to any of the Covered Employees, or permit American Industries to do any of the foregoing relating to Maquiladora Employees;
- (k) not take any affirmative action to waive any claims or rights of substantial value which will be conveyed to Purchaser as contemplated by the Transaction Agreements with respect to the Acquired Assets, except in the Ordinary Course of Business; or

(l) not take, or agree or otherwise commit to take, any of the foregoing actions; or take any actions or engage in any conduct or transactions that would have to be disclosed in response to Section 4.12;

provided, once the required consents and non-actions referred to in **Section 6.4(a)**, have been obtained, the Seller shall provide Purchaser a written report with respect to the financial and market performance of the Crimson Business no later than five (5) days after the end of each month and Seller shall conduct a conference call with Purchaser within five (5) days after Purchaser's receipt of such report to review and discuss such report.

6.2 Consents, Novations and Subcontracted Work.

(a) Notwithstanding anything in this Agreement or any other Transaction Agreement to the contrary, this Agreement and the Transaction Agreements shall not constitute an agreement to Transfer any Acquired Asset (including any Acquired Contract) or any claim, right or benefit arising under or resulting from such Acquired Asset (including Acquired Contract) if and for so long as an attempted Transfer thereof, without the consent of a third party or the approval of a Governmental Authority, would constitute a breach or other contravention of the rights of such third party or a violation or contravention of a Governmental Rule, as applicable, would be ineffective with respect to any party to an agreement concerning such Acquired Asset or Acquired Contract, or would in any way adversely affect the rights of Seller or its Affiliates or, upon Transfer, Purchaser or its Affiliates, with respect to such Acquired Asset or under such Acquired Contract (such assets being collectively referred to herein as "**Restricted Assets**" and such contracts being collectively referred to herein as "**Restricted Contracts**"). Notwithstanding anything in this Agreement or any other Transaction Agreement to the contrary, unless and until any such consent or approval with respect to any Restricted Asset or Restricted Contract, as applicable, is obtained, such Restricted Asset or Restricted Contract shall not constitute an Acquired Asset or Acquired Contract, as applicable, and any Liability with respect to such Restricted Asset or Restricted Contract shall not constitute an Assumed Liability for any purpose under this Agreement or any other Transaction Agreement until such time as any required consent or approval to Transfer shall have been obtained. This Section 6.2(a) does not relate to Shared Contracts, which are addressed in Section 6.2(c).

(b) Purchaser and Seller shall, and Seller shall cause the Selling Subsidiaries to, each use commercially reasonable efforts to obtain, prior to the Closing Date, all requisite consents and approvals to Transfer all of such Restricted Assets and Restricted Contracts, on the Closing Date. Neither Purchaser nor Seller nor any of the Selling Subsidiaries shall be required to grant any guarantee, additional consideration or concessions to any third party or incur additional costs or expenses in order to obtain any such consent or approval; provided, however, that Seller will be expected to incur out-of-pocket costs and expenses associated with its obligations under this Section 6.2 which, in the aggregate, do not exceed \$250,000. In the event that Seller determines to seek novation with respect to any Acquired Contract, Purchaser shall cooperate with Seller and the Selling Subsidiaries (including, where necessary, entering into appropriate instruments of assumption) to cause such novation to be obtained, to the extent achievable through the commercially reasonable efforts of Purchaser, at Seller's expense and without the assumption of

any Liability by Purchaser other than an Assumed Liability for the executory obligations under such Acquired Contract first accruing after the Closing Date, and to have Seller and the Selling Subsidiaries released from all Liabilities, commitments or obligations to the counterparties thereto with respect to such Acquired Contract to the extent the same would constitute Assumed Liabilities; provided, however, that obtaining such release shall not be a condition to, or a primary reason for the failure to obtain such consent. With respect to any Assumed Liabilities for which Seller or any Selling Subsidiary has any secondary Liabilities, commitments or obligations to a contract counterparties, subject to the provisions of Section 7.4(a), Purchaser shall provide Seller and the Selling Subsidiaries reasonable access and information in order for Seller or any Selling Subsidiary to ascertain continuing compliance by Purchaser with all contract terms and conditions applicable thereto. With respect to Acquired Contracts pursuant to which counterparty consent is required for Transfer, Seller or the applicable Selling Subsidiary shall send notice of such Transfer to the relevant counterparty referencing the contract number and providing contact information for questions.

(c) With respect to each Acquired Contract that does not relate exclusively to the Crimson Business and set forth on Schedule 6.2(c) (each, a “**Shared Contract**”), Seller shall, and shall cause the Selling Subsidiaries to, use commercially reasonable efforts to Transfer, or cause a Selling Subsidiary to Transfer, to Purchaser any transferable interest in such contract that relates exclusively to the Crimson Business (a “**Acquired Interest**”). If an attempted Transfer of a Acquired Interest, without the consent of a third party or the approval of a Governmental Authority, would constitute a breach or other contravention of the rights of such third party or a violation or contravention of a Governmental Rule, as applicable, would be ineffective with respect to any party to an agreement concerning the applicable Shared Contract, or would in any way adversely affect the rights of Seller or its Affiliates with respect to the Shared Contract or, upon Transfer, Purchaser or its Affiliates, with respect to such Acquired Interest (a “**Restricted Interest**”), then Purchaser and Seller shall, and shall cause their respective Affiliates to, use commercially reasonable efforts to obtain, prior to the Closing Date, all requisite consents and approvals to Transfer such Restricted Interest on the Closing Date. Subject to Seller’s obligations to incur costs and expenses set forth in Section 6.2(b), neither Purchaser nor Seller nor any of the Selling Subsidiaries, shall be required to grant any guarantee, additional consideration or concessions to any third party or incur additional costs or expenses in order to obtain any such consent or approval.

(d) If any required consent or approval to Transfer a Restricted Asset, Restricted Contract or a Restricted Interest is not obtained on or prior to the Closing Date (including any novation with respect to a contract with a Governmental Authority), the Parties hereby agree to (i) continue to use commercially reasonable efforts to obtain such consent or approval, and (ii) implement such arrangements with respect to the underlying rights and obligations to the extent practicable as shall permit Purchaser to enjoy the benefits of the applicable Restricted Asset, Restricted Contract or Restricted Interest and to perform (and Purchaser shall agree to perform) the obligations of Seller or any applicable Selling Subsidiary thereunder (to the extent they would otherwise constitute Assumed Liabilities), as a subcontractor, supplier or otherwise (for no additional consideration), and Purchaser to obtain the net economic benefit thereof (such arrangements, the “**Alternative Arrangements**”), until the earlier of (i) such time as such consent or approval shall have been obtained and (ii) in the case of a Restricted Contract or Restricted Interest, such time as such contract shall have lapsed, expired or not have been renewed in accordance with its terms. Purchaser agrees to perform and discharge the obligations of Seller and

the Selling Subsidiaries in connection with the Alternative Arrangements, directly or indirectly, as applicable, through Seller or the Selling Subsidiaries; and to the extent that consents or approvals to Transfer with respect to a particular Restricted Asset, Restricted Contract or Restricted Interest are obtained after the Closing Date, the Parties agree that such obligations will no longer be considered to be part of the Alternative Arrangements at such time, but instead will constitute an Acquired Contract for all purposes of this Agreement.

(e) Notwithstanding anything in this Agreement or any other Transaction Agreement to the contrary, the failure to obtain any consent, release or Transfer with respect to any Restricted Asset or Restricted Contract or any Restricted Interest, the failure of such Restricted Asset or Restricted Contract or any Restricted Interest to constitute a Acquired Asset or Acquired Contract, or any circumstances resulting therefrom, shall not, individually or in the aggregate, constitute a Seller Material Adverse Effect or a breach by Seller or any Selling Subsidiary of any representation, warranty, covenant or agreement under any of the Transaction Agreements or a failure of any condition under any of the Transaction Agreements. Seller does not represent or warrant that any required consents are obtainable from any third party, or that any Acquired Contract, Restricted Contract, Restricted Interest, Shared Contract or Acquired Interest will be renewed upon expiration of its term, or that any third party thereto will continue to use the products or services offered by Purchaser utilizing the Acquired Assets after the Closing Date. Seller and its Affiliates shall have no Liability to Purchaser arising out of or relating to the failure to obtain any required consents or because of the default, acceleration or termination of any Restricted Contract or a Restricted Interests as a result thereof.

6.3 Reasonable Best Efforts. Subject to the terms and conditions set forth in this Agreement, including Section 6.2 and Section 12.2, each of Seller and Purchaser shall, and shall cause their respective Subsidiaries to, use their reasonable best efforts to cause the Closing to occur by February 15, 2019 (the “**Target Closing Date**”); provided that if the Closing does not occur on or before the Target Closing Date, the Parties shall use their reasonable best efforts to cause the Closing (subject to Section 3.1) to occur as promptly as practicable thereafter, including using their reasonable best efforts to obtain all consents, permits, authorizations and approvals of, and to make all filings, notifications or registrations with, all Governmental Authorities and other Persons which are necessary for the consummation of the transactions contemplated by the Transaction Agreements.

6.4 Regulatory Matters.

(a) Without limiting the generality of Section 6.3, each of Seller and Purchaser shall, and shall cause their respective Subsidiaries to, (i) as promptly as practicable, make any filing with the FTC and the DOJ required under the HSR Act with respect to the transactions contemplated by the Transaction Agreements, (ii) as promptly as practicable, make or cause its Subsidiaries to make any material filing or notice required under any Other Relevant Antitrust Law or other Governmental Rule applicable to the Transaction Agreements or the transactions contemplated thereby and (iii) as promptly as practicable, provide any supplemental information requested in connection with the HSR Act, Other Relevant Antitrust Law or such other Governmental Rules as promptly as practicable after such request is made. Each of Seller and Purchaser shall, and shall cause their respective Subsidiaries to, furnish to the other such information and assistance as the other may reasonably request in connection with its preparation of any such filing or notice which

is necessary under the HSR Act, Other Relevant Antitrust Law or such other Governmental Rules or which is otherwise requested by the FTC or DOJ or other Governmental Authority in the course of any review of the transactions contemplated by the Transaction Agreements. Seller and Purchaser shall keep each other apprised of the status of any communications with, and inquiries or requests for additional information from, the FTC and DOJ or any other Governmental Authority. Without limiting the generality of Section 6.3, promptly following the execution and delivery by the parties of this Agreement, the Parties shall, to the extent necessary and where practicable and allowed by the applicable Governmental Authority upon consultation with each other, enter into discussions with the Governmental Authorities from whom consents or non-actions are required to be obtained in connection with the consummation of the transactions contemplated by the Transaction Agreements in an effort to obtain all such required consents or non-actions from such Governmental Authorities, in each case with respect to the transactions contemplated by the Transaction Agreements, so as to enable the Closing to occur as soon as reasonably possible. Purchaser shall, at Purchaser's sole cost, use reasonable best efforts to take, or cause to be taken, any and all actions and do, or cause to be done, any and all things necessary, proper or advisable to avoid, eliminate and resolve each and every impediment and obtain such Governmental Authority approvals in connection with the consummation of the transactions contemplated by this Agreement, as promptly as practicable. However, Purchaser shall not, in order to comply with its obligations contained in this Section 6.4, have any obligation to (A) sell or otherwise dispose of, or hold separate and agree to sell or otherwise dispose of specific assets or categories of assets or businesses of the Crimson Business or any of Purchaser's other assets or businesses now owned or presently or hereafter sought to be acquired by Purchaser; (B) terminate any existing relationships and contractual rights and obligations; (C) amend or terminate existing Contracts and to enter into new Contracts; or (D) make any behavioral commitments or otherwise commit to any actions that would limit or modify Purchaser's or its Affiliate's rights of ownership in, or ability to conduct the business of, one or more of its operations, divisions, businesses, product lines, customers or assets, including, after the Closing, the Crimson Business or any of the Acquired Assets; provided that Purchaser shall give good faith consideration to requests for such action. Purchaser, in the event that any permanent or preliminary injunction or other order is entered or becomes reasonably foreseeable to be entered in any proceeding that would make consummation of the acquisition of the Acquired Assets, the Crimson Business or the other transactions contemplated hereby in accordance with the terms of this Agreement unlawful or that would prevent or delay consummation of the acquisition of the Acquired Assets, Crimson Business or the other transactions contemplated by this Agreement, Purchaser shall use its reasonable efforts necessary to vacate, modify or suspend such injunction or order so as to permit such consummation on a schedule as close as possible to that contemplated by this Agreement unless Purchaser decides, in good faith, that litigation is not in its best interests.

(b) Seller and Purchaser shall cooperate to jointly prepare and file with CFIUS, as soon as practicable after execution of this Agreement and in any event within ten (10) Business Days following the date hereof, a draft joint voluntary notice contemplated under 31 C.F.R. § 800.401(f) with respect to the transactions contemplated hereby, and will make an appropriate filing with CFIUS as contemplated under 31 C.F.R. § 800.401(a) as soon as practicable following receipt of feedback from CFIUS with respect to such draft filing. Seller and Purchaser shall furnish any supplemental information requested by CFIUS in connection therewith pursuant to the DPA and the applicable regulations promulgated thereunder. Purchaser and Seller shall, and shall cause their respective Affiliates to: (i) cooperate with each other in connection with any such filing or the

provision of any such information (including, to the extent reasonably possible, providing copies, or portions thereof, of all such documents to the non-filing party prior to filing and considering all reasonable additions, deletions or changes suggested in connection therewith); (ii) to the extent not prohibited by a Governmental Authority, promptly inform the other Party of any communication and supply to the other Party any written communication received by such Party from, or given by such Party to, CFIUS or any other Governmental Authority; (iii) permit the other Party to review any communication given by it to, and consult with each other in advance of any meeting or conference with, CFIUS or any other Governmental Authority, and to the extent permissible, give the other Party the opportunity to participate in such meetings and conferences; and (iv) as soon as practicable after the date of this Agreement, adopt any mitigation measures required by the United States Government as a condition of issuing CFIUS Clearance that are, individually, and in the aggregate, acceptable to Purchaser.

(c) Seller shall use reasonable efforts to cooperate with Purchaser in respect of any action, condition or restriction required by CFIUS in connection with the satisfaction of the CFIUS Clearance.

6.5 Further Action.

(a) From time to time after the Closing, Purchaser and Seller agree to execute and deliver, and to cause their respective Affiliates to execute and deliver, both at no further consideration, such other documents, certificates, agreements, instruments and other writings and to take such other actions as may be necessary or desirable in order to consummate or implement expeditiously the transactions contemplated by the Transaction Agreements. Without limiting the generality of the foregoing, and subject to the other terms and conditions of this Agreement, in the event that Purchaser, Seller or any of their respective Affiliates discovers following the Closing that (i) any Acquired Asset was inadvertently not Transferred and delivered to Purchaser at the Closing, Seller or its applicable Affiliate shall promptly transfer and deliver such Acquired Asset to Purchaser in accordance with the terms of this Agreement or (ii) any Excluded Asset was inadvertently Transferred to Purchaser at the Closing, Purchaser shall, or shall cause its applicable Affiliate to, promptly transfer such Excluded Asset back to Seller or the applicable Affiliate.

(b) After the Closing, each of Purchaser and Seller further agrees to provide to the other Party, and to cause their respective Affiliates to provide to the other Party and its respective Affiliates, reasonable access, during normal business hours and upon reasonable notice, to its Representatives, including employees, books and records and other information reasonably related to the Acquired Assets, the Assumed Liabilities, the Excluded Assets and the Excluded Liabilities, other than (i) proprietary or confidential customer or supplier information, (ii) information the disclosure of which is legally or contractually prohibited and (iii) such portions of documents or information which are subject to attorney-client privilege and the provision of which, as determined by either Party's legal counsel, as applicable, may eliminate the privilege pertaining to such documents; provided that such access and cooperation would not unreasonably disrupt the normal operations of the Selling Companies or their Affiliates or Purchaser and its Affiliates, as applicable; provided further that such request is for a reasonable purpose; and provided further that Purchaser shall have the right to access, and possess, originals of any Acquired Books and Records still in the possession of any Selling Company or their Affiliates to the extent reasonably necessary to conduct the Crimson Business, subject in all cases to reasonable restrictions imposed from time to time upon

advice of counsel in respect of applicable Governmental Rules relating to the confidentiality of information, and subject to the provisions of Section 7.4(c).

6.6 Other Transaction Agreements. Subject to the terms and conditions hereof, each of Seller and Purchaser shall cause its Subsidiaries who are parties to any Transaction Agreements to perform, pay and satisfy all of their respective obligations and Liabilities thereunder as and when due.

6.7 Assumed Liabilities. From and after the Closing Date, or the date of transfer in respect of any Restricted Asset or Restricted Contract or Restricted Interest, Purchaser shall duly and faithfully pay and perform all the Assumed Liabilities on a timely basis and in accordance with their terms, and Purchaser agrees that Seller and the Selling Subsidiaries shall have no Liability for any failure of Purchaser to pay and perform such Assumed Liabilities in the manner provided by this Section 6.7.

6.8 Accounts Receivable and Accounts Payable. The Parties recognize that the proceeds of certain Excluded A/R may be paid to Purchaser or an Affiliate or Subsidiary thereof, the proceeds of certain Acquired A/R may be paid to Seller or a Subsidiary thereof, certain Excluded A/P may be billed to and paid by Purchaser or a Subsidiary thereof and certain Post-Closing Crimson A/P may be billed to and paid by Seller or a Subsidiary thereof. Purchaser and Seller agree to cooperate and to cause their respective Subsidiaries, and in the case of Purchaser, its Affiliates, to cooperate in identifying and reporting to each other each of the foregoing occurrences during the 90-day period following the Closing (and for additional periods thereafter as may be reasonably requested by either Party) and to take such actions as are necessary to ensure that (a) the benefits relating to Excluded A/R are received by Seller or a Subsidiary thereof, (b) the benefits of Acquired A/R are received by Purchaser or a Subsidiary thereof, (c) the Liability represented by any Excluded A/P is borne by the Seller or a Subsidiary thereof and (d) the Liability represented by any Post-Closing Crimson A/P is borne by Purchaser or an Affiliate or Subsidiary thereof. Notwithstanding the foregoing, nothing in the Section shall abrogate a Party's indemnification rights pursuant to Article XI.

6.9 Guarantee.

(a) Guarantor hereby irrevocably and unconditionally guarantees the prompt and full discharge by Purchaser of only the Purchaser's obligation to pay the aggregate amount of the Adjusted Closing Cash Consideration, less the Escrow Amount and the Warranty Escrow, in accordance with Section 3.1(b)(i), and no other obligation of the Purchaser under this Agreement or any of the other Transaction Agreements (the "**Guaranteed Obligation**"). Guarantor acknowledges and agrees that, with respect to the Guaranteed Obligation to pay money, such guaranty shall be a guaranty of payment and performance and not of collection and shall not be conditioned or contingent upon the pursuit of any remedies against Purchaser. If Purchaser shall default in the due and punctual performance of the Guaranteed Obligation, Guarantor will forthwith perform or cause to be performed such Guaranteed Obligation and will forthwith make full payment of the Guaranteed Obligation if and to the extent the Purchaser is obligated to do so hereunder. The liabilities and obligations of Guarantor pursuant to this Agreement are unconditional and absolute and shall not be released, discharged or otherwise affected by any change in the corporate existence, structure or ownership of Purchaser or Guarantor or any insolvency, bankruptcy, reorganization or

other similar proceeding affecting any of them or their assets. Guarantor hereby waives any right, whether legal or equitable, statutory or non-statutory, to require Seller to proceed against or take any action against or pursue any remedy with respect to Purchaser or any other Person or make presentment or demand for performance or give any notice of nonperformance before Seller may enforce its rights hereunder against Guarantor. Guarantor's obligations hereunder shall remain in full force and effect until the Guaranteed Obligation shall have been performed in full. If at any time any performance by any Person of the Guaranteed Obligation is rescinded or must be otherwise restored or returned, whether upon the insolvency, bankruptcy or reorganization of Purchaser or otherwise, Guarantor's obligations hereunder with respect to the Guaranteed Obligation shall be reinstated at such time as though the Guaranteed Obligation had become due and had not been performed. For the avoidance of doubt, and notwithstanding anything else herein to the contrary, Guarantor shall not be liable for any obligations under this Agreement or any other Transaction Agreement other than the Guaranteed Obligation.

(b) Guarantor hereby represents and warrants that (i) it has all requisite corporate power and authority to execute and deliver this Agreement and perform its obligations hereunder, (ii) all corporate acts and other proceedings required to be taken by it to authorize the execution, delivery and performance of this Agreement and the consummation of the transactions contemplated hereby have been duly and properly taken, (iii) this Agreement has been duly executed and delivered by Guarantor and constitutes the legal, valid and binding obligation of Guarantor, enforceable against Guarantor in accordance with its terms, subject to the Enforceability Limitations, (iv) the execution and delivery of this Agreement by Guarantor does not and the consummation of the transactions contemplated hereby and compliance with the terms hereof will not (x) conflict in any respect with, or result in a violation or breach of, any of the provisions of the charter, certificate of incorporation, bylaws, partnership agreement, operating agreement or comparable organizational documents of Guarantor, (y) conflict with, or result in any violation or breach of, any Governmental Rule applicable to Guarantor or any of its properties or assets or (z) conflict in any respect with, or result in a violation or breach of, or constitute a default under, or give rise to any right of termination, revocation, cancellation or acceleration under, any contract, license, franchise, permit or any other agreement or instrument to which Guarantor is a party or by which Guarantor or any of its properties or assets may be affected or bound, other than, in the case of clauses (y) and (z), any breach, violation or default that would not, individually or in the aggregate, have a material adverse effect on Guarantor's ability to perform its obligations hereunder, (v) no consent, approval or authorization of, or designation, declaration or filing with, any Governmental Authority on the part of Guarantor is required in connection with the execution and delivery of this Agreement, or the consummation by Guarantor of the transactions contemplated hereby, other than such consents, approvals, authorizations, designations or filings the failure of which to be obtained or made would not, individually or in the aggregate, have a material adverse effect on Guarantor's ability to perform its obligations hereunder and (vi) Guarantor has the financial capacity to pay and perform its obligations under this Agreement.

6.10 Access to Information. Prior to the Closing, Seller shall, and shall cause each of its applicable Affiliates to, provide Purchaser and its Representatives with reasonable access to (i) all of the Acquired Assets, (ii) senior management of the Crimson Business and (iii) any other information relating solely to the Crimson Business as Purchaser or any of its Representatives may reasonably request, provided that such request is for a reasonable purpose, subject in all cases to reasonable restrictions imposed from time to time upon advice of counsel in respect of applicable

Governmental Rules relating to the confidentiality of information. All access and investigation pursuant to this Section 6.10 shall be (A) conducted during normal business hours upon reasonable advance notice to Seller, (B) conducted in such a manner as not to interfere with the normal operations of the Crimson Business, (C) coordinated through the Seller's General Counsel or a designee thereof and (D) conducted at Purchaser's sole cost and expense, and Seller shall have the right to have one or more of its Representatives present at all times during any visits, examinations, discussions or contacts contemplated by this Section 6.10, provided, however, Seller shall not be required to provide (i) information the disclosure of which is legally or contractually prohibited and (ii) such portions of documents or information which are subject to attorney-client privilege and the provision of which, as determined by Seller's legal counsel may eliminate the privilege pertaining to such documents. Without limiting the foregoing, Seller shall permit Purchaser and its Representatives to conduct health, safety and systems investigations of each Owned Real Property that will be subject to an Owned Property Lease or any Leased Real Property, subject to the terms of any applicable Lease. Purchaser will hold any information obtained pursuant to in confidence in accordance with the Confidentiality Agreement pursuant to Section 7.3(a).

6.11 Non-Disparagement. During the Restricted Period, each of Purchaser and Seller shall not, and shall cause each of its respective Subsidiaries not to, directly or indirectly, make any public or private statement or take any action or engage in any activity or course of conduct with the intent of causing, or through negligence likely to cause, damage to the business or reputation of Seller or Purchaser, as the case may be; provided, however, that this Section 6.11 shall not apply to (a) factual statements made in government proceedings or (b) proceedings in which the Parties are adverse to each other.

6.12 Third-Party Software; ERP System; Other TSA Points. Purchaser is responsible for securing and maintaining licenses and maintenance relating to third-party software licenses and shrink wrap personal computer software and making any payments due thereon, except to the extent such licenses and maintenance are included in the Acquired Assets or are provided to Purchaser pursuant to the terms of the Transition Services Agreement. Prior to the Closing, Purchaser and Seller shall satisfy their respective tasks set forth on Schedule 6.12.

6.13 Insurance. Until Purchaser has completed the removal of the Acquired Assets from Seller's or the applicable Selling Subsidiary's premises, and until Seller has completed the removal of all Excluded Assets from all Owned Real Property or Leased Real Property, as the case may be, each Party shall provide a certificate of insurance evidencing commercial general liability insurance coverage pursuant to the Commercial General Liability Coverage Form (CG 00 01 04 13) issued by the Insurance Services Office or a policy form that is substantially equivalent. The policy limit shall be no less than \$1,000,000 in the aggregate for bodily injury and property damage.

6.14 Representations and Warranties Insurance. Immediately after the execution of this Agreement by the Parties, the Purchaser shall cause the R&W Insurance Policy to be bound. Each Party shall bear 50% of the R&W Insurance Policy Cost.

6.15 No Solicitation of Other Bids.

(a) Seller shall not, and shall not authorize or permit any of its Affiliates or any of their Representatives to, directly or indirectly, (i) encourage, solicit, initiate, facilitate or continue inquiries regarding an Acquisition Proposal; (ii) enter into discussions or negotiations with, or provide any information to, any Person concerning a possible Acquisition Proposal; or (iii) enter into any agreements or other instruments (whether or not binding) regarding an Acquisition Proposal. Seller shall immediately cease and cause to be terminated, and shall cause its Affiliates and all of their Representatives to immediately cease and cause to be terminated, all existing discussions or negotiations with any Persons conducted heretofore with respect to, or that would reasonably be expected to lead to, an Acquisition Proposal.

(b) Seller shall promptly (and in any event within three (3) Business Days after receipt thereof by Seller or its Affiliates or Representatives) advise Purchaser orally and in writing of any Acquisition Proposal, any request for information with respect to any Acquisition Proposal, or any inquiry with respect to or which would reasonably be expected to lead to an Acquisition Proposal, provided, however, Seller shall not be required to comply with this Section 6.15(b) if doing so would violate any confidentiality agreement in effect on the date of this Agreement that remains in effect.

6.16 Environmental Remediation Matters. Prior to Closing, Seller will cause the environmental remediation tasks set forth on Schedule 6.16 to be completed.

6.17 Employee Retention Agreements. Seller shall, and shall cause each Selling Company and its Affiliates, to comply with all terms, conditions and obligations under the employee retention agreements set forth on Schedule 6.1(f).

6.18 Intellectual Property. Seller shall satisfy the covenants set forth on Schedule 6.18 with respect to Acquired IP.

6.19 R&W Policy Extension Requirements. Before the day which is 105 days after the Closing Date, Seller and Purchaser shall each pay to the broker under the R&W Policy 50% of the supplemental premium required to extend the commitment of the insurers under the R&W Policy for such period of time as Seller and Purchaser mutually determine will likely include the Closing Date, but not less than one month. Each of Seller and Purchaser shall from time to time prior to any thereafter occurring expiry dates of such commitment pay to the broker a supplemental premium required to extend such commitment for such period of time as Seller and Purchaser mutually determine will likely include the Closing Date. Before the day which is 165 days after the date of this Agreement, but not before the day which is 150 days after the date of this Agreement, Seller shall submit to Purchaser and each broker, underwriter and insurer arranging or providing coverage under the R&W Policy (a) a statement updating each representation set forth in **Article IV** of this Agreement (including the Schedules relating thereto) as of a date which is within 10 days of such submission (the "**R&W Policy Extension Bring Down**"), and (b) a then -current lien, judgment, and litigation search for each of the Selling Companies in each jurisdiction reasonably relevant to such Person. Notwithstanding anything herein to the contrary, Seller acknowledges and agrees that neither the R&W Policy Extension Bring Down nor the content of any disclosures therein shall be deemed to limit, reduce or otherwise modify the indemnification obligations of Seller set forth in **Article XI** and that Seller's direct indemnification obligations shall be expanded to include any matter which is the subject of an exclusion to the coverage

available to the Purchaser under the R&W Policy that results from any disclosures contained in the R&W Policy Extension Bring Down.

6.20 Certain Foreign Matters. Prior to and after the Closing, each of Seller and Purchaser will use its respective commercially reasonable efforts to cause its respective tasks set forth on Schedule 6.20 with respect to certain foreign matters to be completed.

ARTICLE VII. EMPLOYEE MATTERS

7.1 General Principles.

(a) Schedule 7.1(a) sets forth a list of Covered Employees identified by identification number and each such Covered Employee's (i) number of full years of service with the applicable Selling Company or Affiliate, (ii) job title, (iii) current base salary, wages or annualized fixed or guaranteed remuneration, as applicable, (iv) current target incentive pay information, annual bonus, contingent or deferred compensation, (v) service with the applicable Seller and the applicable Affiliates of such Seller, (vi) active/leave status, and (vii) job location; provided, however, that all such information shall be subject in all respects to, and shall be carried out in accordance with, any Governmental Rules and Data Privacy Obligations. Seller may revise Schedule 7.1(a) in accordance with the applicable guidelines relating to the identification of Covered Employees (the "**Employee Identification Guidelines**") upon notice to Purchaser prior to the Closing Date. No less than five (5) Business Days prior to the Closing Date, Seller shall update such list and include therein such information that will allow Purchaser to determine, with respect to each Covered Employee, such Covered Employee's name (unless prohibited by any Data Privacy Obligations).

(b) (i) Purchaser shall make an offer of employment to each Covered Employee in accordance with the provisions of this Article VII, no later than the earlier of (A) thirty-one (31) days prior to the Closing Date and (B) the date required by applicable Governmental Rules, to be effective as of 11:59 p.m. on the Closing Date. Nothing herein shall be construed as a representation or guarantee by Seller that any Covered Employee will accept such offer of employment from Purchaser or its Subsidiaries or will continue in employment with Purchaser or its Subsidiaries following the Closing Date.

(ii) The offer of employment to each Covered Employee under Section 7.1(b)(i) shall provide, and Purchaser shall maintain during the Specified Period, each Transferred Employee's Comparable Position and Specified Compensation and Benefits.

(iii) Seller shall compensate each Transferred Employee (in such manner as Seller deems appropriate, subject to any applicable Governmental Rules) for any vacation time, variable pay and commissions that have accrued (and, in the case of vacation time, that has accrued in accordance with Seller's vacation policy and has not been used) prior to the Closing Date; provided that, in the event it is not practicable for Seller to pay any such amounts directly to one or more Transferred Employees, the parties shall cooperate in good faith to cause Purchaser to pay such amounts to each applicable Transferred Employee on Seller's behalf, and Seller shall reimburse Purchaser with respect thereto within 20 days of demand therefor by Purchaser.

(iv) The Covered Employees shall be covered under the Seller Benefit Plans that are “employee welfare benefit plans” within the meaning of Section 3(1) of ERISA (each, a “**Seller’s Welfare Plan**”) in effect prior to the Closing Date for all reimbursement claims (such as medical and dental claims) for expenses incurred, and for all non-reimbursement claims (such as life insurance claims) incurred, under such plans prior to 11:59 p.m. on the Closing Date by Transferred Employees and their eligible dependents to the extent provided in the applicable Seller’s Welfare Plan. Seller shall, or shall cause one of its Subsidiaries to, terminate coverage of Transferred Employees and their eligible dependents under Seller’s Welfare Plans effective for reimbursement claims for expenses incurred, and for non-reimbursement claims incurred, from and after 11:59 p.m. on the Closing Date.

(v) The foregoing excludes the EU Employees set forth on Schedule 7.1(g) that are subject to the Transfer Regulations.

(c) Except in the event of any claim for workers compensation benefits, for purposes of this Agreement, a claim shall be deemed to be incurred as follows: (A) life, accidental death and dismemberment, business travel accident and disability insurance benefits, upon the death, cessation of employment or other event giving rise to such benefits, and (B) health, dental or prescription drug benefits (including in respect of any hospital confinement), upon provision of such services, materials or supplies. Workers compensation claims of any Transferred Employee shall be covered under the workers compensation plans of Seller or its Subsidiaries (each, a “**Seller’s Workers Compensation Plan**”) if the Workers Compensation Event occurred prior to 11:59 p.m. on the Closing Date, and shall be covered under the workers compensation plans of Purchaser or one of its Subsidiaries (each, a “**Purchaser’s Workers Compensation Plan**”) if the Workers Compensation Event occurs at or after 11:59 p.m. on the Closing Date. If the Workers Compensation Event occurs over a period both preceding and following 11:59 p.m. on the Closing Date (e.g., a repetitive stress injury or a condition that otherwise develops over a period of time), the claim shall be covered jointly under Seller’s Workers Compensation Plan and Purchaser’s Workers Compensation Plan, and shall be equitably apportioned among them based upon the relative periods of time that the Workers Compensation Event transpired preceding and following 11:59 p.m. on the Closing Date.

(d) If any Transferred Employee requires a visa, work permit, employment pass or other approval for his or her employment with Purchaser or its Affiliates, Purchaser shall use its commercially reasonable efforts to see that any necessary visa, permit, pass or other approval has been obtained on or prior to the Closing Date; provided, however, that the failure to so obtain any such visa, work permit or pass shall not be a condition to consummate the transactions contemplated by this Agreement.

(e) On or prior to the Closing Date, Seller shall pay to each Transferred Employee the amount of compensation accrued and due to each Transferred Employee as of the Closing Date (after giving effect to the Closing) or as may be required by Governmental Rules, including, without limitation, accrued and unused paid time off, severance, sick or vacation time, as applicable to the extent same is not included in the calculation of the Closing Date Net Working Capital.

(f) Purchaser shall take commercially reasonable steps to (A) waive for each Transferred Employee and his or her eligible dependents, any waiting period provision, payment requirement to avoid a waiting period, pre-existing condition limitation, actively-at-work requirement and any other restriction that would prevent immediate or full participation under the welfare plans of Purchaser and its Subsidiaries applicable to such Transferred Employee to the extent such waiting period, pre-existing condition limitation, actively-at-work requirement or other restriction would not have been applicable to the Transferred Employee under the terms of the welfare plans of Seller and its Subsidiaries, and (B) in those Covered Territories in which health benefits are subject to co-payments or deductibles, give full credit under the welfare plans of Purchaser and its Subsidiaries applicable to each Transferred Employee and his or her eligible dependents for all co-payments and deductibles satisfied prior to the Closing Date in the same plan year as the Closing Date, as if there had been a single continuous employer; provided, however, that Seller shall, and shall cause each of the Selling Subsidiaries and each Selling Company's third-party administrators of all applicable Seller Benefit Plans, to provide to Purchaser all data and information reasonably requested by Purchaser to enable Purchaser to comply with its obligations hereunder.

(g) (i) To the extent applicable, Purchaser and Seller acknowledge the application of the Transfer Regulations in respect of the employees set forth on Schedule 7.1(g) (the "**EU Employees**"). Purchaser and Seller will, and will cause their respective Subsidiaries to, comply with the Transfer Regulations to the extent applicable, in particular, by jointly informing the EU Employees, where required under the Transfer Regulations, on their transfer to Purchaser or its Subsidiary by automatic operation of Governmental Rules. Purchaser and Seller will not take any action that would result in the employment of any such employee not so transferring (subject to any right of each such employee to object to such transfer under applicable Governmental Rules). EU Employees who transfer to Purchaser or its Subsidiary pursuant to this Section 7.1(g) will be considered Transferred Employees as of the date of the automatic transfer by operation of Governmental Rules.

(ii) If any Seller or Seller Subsidiary employee, worker or contractor who is not an EU Employee set forth on Schedule 7.1(g) asserts employment rights against the Purchaser or any relevant Subsidiary of Purchaser that is an employer pursuant to the Transfer Regulations, then Seller shall indemnify the Purchaser against all employee claims and Employment Costs arising from such assertion of employment rights as Excluded Liabilities under Section 2.8(b). The Parties shall work to jointly agree to an action plan with regard to the employee(s) asserting employment rights in accordance with applicable Governmental Rules.

(iii) If any employee set forth on Schedule 7.1(g) objects to transfer under the Transfer Regulations, Seller shall indemnify Purchaser and any relevant Affiliate of Purchaser against all employee claims and Employment Costs arising from or relating to termination and litigation costs only in connection with the failure or omission of Seller with respect to their obligations under the Transfer Regulations as Excluded Liabilities under Section 2.8(b).

(iv) If any EU Employee set forth on Schedule 7.1(g) objects to transfer under the Transfer Regulations, Purchaser shall indemnify the Seller and any relevant Subsidiary of Seller against all employee claims and Employment Costs arising from or relating to termination

and litigation costs only in connection with the failure or omission of the Purchaser and/or any Subsidiary of Purchaser with respect to their obligations under the Transfer Regulations.

(v) If and to the extent any retirement and pension Liabilities accrued until the Closing Date for EU Employees set forth on Schedule 7.1(g), who become a Transferred Employee, should transfer to the Purchaser or its applicable Affiliate by operation of Transfer Regulations, such retirement and pension liabilities shall be Excluded Liabilities.

7.2 WARN Act. Purchaser agrees to provide, or cause its Subsidiaries to provide, any required notice under the Worker Adjustment and Retraining Notification Act, as amended (the “**WARN Act**”), and any similar Governmental Rule, and to otherwise comply with the WARN Act and any other similar Governmental Rule, in each case, with respect to any “plant closing” or “mass layoff” (as defined in the WARN Act) or group termination or similar event affecting employees (including as a result of the consummation of the transactions contemplated by this Agreement and the other Transaction Agreements) and occurring after 11:59 p.m. on the Closing Date. Purchaser shall not take any action after the Closing Date that would cause any termination of employment of any Covered Employees by Seller or any of its Subsidiaries that occurs before 11:59 p.m. on the Closing Date to constitute a “plant closing” or “mass layoff” or group termination under the WARN Act or any similar Governmental Rule, or to create any Liability or penalty to Seller or any of its Subsidiaries for any employment terminations under Governmental Rule. On the Closing Date, Seller shall notify Purchaser of any layoffs of any employees in the 90-day period prior to the Closing Date. Seller will be responsible for discharging all obligations in respect of Covered Employees under the WARN Act and similar applicable state or local laws for the notification of any “employment loss” within the meaning of the WARN Act and similar applicable state or local laws which occur on or prior to the Closing.

7.3 Miscellaneous.

(a) Confidentiality. The Parties hereto incorporate by reference the Confidentiality Agreement and agree that such agreement, and any Data Privacy Obligations, shall govern the disclosure of employee information between the Parties under this Agreement. In addition, in connection with the transactions contemplated by this Agreement and the other Transaction Agreements, Purchaser and its Subsidiaries and Affiliates have received confidential information about Seller’s employee benefits and compensation information and other information that relates to Seller’s employees, which information shall also be considered confidential information, subject to the terms of the Confidentiality Agreement.

(b) Non-Solicitation/No-Hire.

(i) Except as expressly required pursuant to this Agreement or with the prior written consent of Seller, during the period beginning as of the date hereof and ending on the date that is two (2) years after the Closing Date, Purchaser shall not, and shall cause each of its Affiliates not to, directly or indirectly, solicit for employment, hire or attempt to hire any person who is at such time, or who at any time in the two (2)-year period prior to such time had been, a Seller No-Hire Employee; provided, however, that, for purposes of this Section 7.3(b), (i), solicitation shall not include general employment advertising or the use of any independent employment agency or search firm not specifically directed to Seller No-Hire Employees, and a

hire or attempt to hire shall not include the hiring, or attempt to hire, of a Seller No-Hire Employee resulting from such a general solicitation or use of an independent employment agency search firm. Notwithstanding the foregoing, Purchaser or its Affiliates may solicit for employment, hire or attempt to hire any Seller No-Hire Employee at any time after the earlier of (A) the six (6)-month anniversary date of such Person's termination of employment for any reason other than by Seller without cause or (B) the date of such Person's termination of employment by Seller without cause.

(ii) If a final and non-appealable judicial determination is made that any provision of Section 7.3(b)(i) constitutes an unreasonable or otherwise unenforceable restriction with respect to any particular jurisdiction, the provisions of Section 7.3(b)(i) will not be rendered void but will be deemed to be modified solely with respect to the applicable jurisdiction to the minimum extent necessary to remain in force and effect for the greatest period and to the greatest extent that such court determines constitutes a reasonable restriction under the circumstances.

(c) No Third-Party Beneficiaries. No provision of this Agreement is intended to confer upon any Person (including any Covered Employee or Maquiladora Employee) other than the Parties hereto and their permitted assigns any rights or remedies hereunder. Without limiting the foregoing, no provision of this Agreement shall create any third-party beneficiary or other rights in any employee or former employee (including any beneficiary or dependent thereof or other Person representing the rights or interests of any such Persons) of Seller or any of its Affiliates in respect of continued employment (or resumed employment) with either Purchaser or any of its Affiliates or with respect to the compensation, benefits or other terms and conditions of employment with Purchaser or Seller or any of their Affiliates. This Agreement is not intended to and shall not be construed to amend, modify or terminate any employee benefit plan (including, without limitation, as such term is defined under Section 3(3) of ERISA), program or arrangement.

7.4 Restrictive Covenants.

(a) Confidentiality. From and after the Closing, Seller shall, and shall cause the Selling Subsidiaries and each of their Affiliates to, hold, and shall use its reasonable best efforts to cause its or their respective Representatives to hold, in confidence any and all information, whether written or oral, concerning the Crimson Business, except to the extent that Seller can show that such information (a) is generally available to and known by the public through no fault of Seller, any of its Affiliates or their respective Representatives, or any other third party breach of a legal obligation to keep same confidential; or (b) is lawfully acquired by Seller, any of its Affiliates or their respective Representatives from and after the Closing from sources which are not prohibited from disclosing such information by a legal, contractual or fiduciary obligation. If Seller, any of the other Selling Companies or any of their respective Affiliates or their respective Representatives are compelled to disclose any information by judicial or administrative process or by other Governmental Rules, Seller shall promptly notify Purchaser in writing and shall disclose only that portion of such information which Seller is advised by its counsel in writing is legally required to be disclosed, *provided that* Seller shall use reasonable best efforts to obtain an appropriate protective order or other reasonable assurance that confidential treatment will be accorded such information.

(b) Non-Competition. During the Restricted Period, without the prior written consent of Purchaser, Seller shall not, and shall not permit any Selling Subsidiary or any of their respective Affiliates to, directly or indirectly, engage in or assist others in engaging in any business that competes with the Crimson Business as conducted by Seller before the Closing Date in any territory in which the Seller conducted the Crimson Business before the Closing Date (the “**Territory**”). Notwithstanding the foregoing, (i) Seller may own, directly or indirectly, solely as an investment, shareholdings acquired or held which do not grant, directly or indirectly, management functions or any material influence in the competing company; and (ii) Seller may purchase, use and resale the “Supplier Goods” acquired pursuant to the Polycold Supply Agreement; provided, such use and resale is restricted to Seller’s life-science business and sold only to life science customers in conjunction with Seller’s other life-science products sold to such customers.

(c) Non-Solicitation of Employees. Other than with the prior written consent of Purchaser, during the Restricted Period, Seller shall not, and shall cause each of its Affiliates and their Representatives not to, directly or indirectly, solicit for employment, hire or attempt to hire any Transferred Employee or Maquiladora Employee, or encourage any Transferred Employee or Maquiladora Employee to leave the employment of Purchaser or its Affiliates, or American Industries, as applicable; provided, however, that, for purposes of this Section 7.4(c), solicitation shall not include general employment advertising or the use of any independent employment agency or search firm not specifically directed to Transferred Employees or Maquiladora Employees. Notwithstanding the foregoing, Seller or its Affiliates may solicit for employment, hire or attempt to hire a Transferred Employee or a Maquiladora Employee at any time after (A) the nine (9)-month anniversary date of such Transferred Employee’s or Maquiladora Employee’s employment was terminated by such Transferred Employee or Maquiladora Employee, as applicable, or (B) the date of such Transferred Employee’s or Maquiladora Employee’s termination of employment by Purchaser or any of its Affiliates, or American Industries, as applicable, without cause.

(d) Equitable Relief. Seller acknowledges that a breach or threatened breach of this Section 7.4 would give rise to irreparable harm to Purchaser, for which monetary damages would not be an adequate remedy, and hereby agrees that in the event of a breach or a threatened breach by Seller of any such obligations, Purchaser shall, in addition to any and all other rights and remedies that may be available to it in respect of such breach, be entitled to equitable relief, including a temporary restraining order, an injunction, specific performance and any other relief that may be available from a court of competent jurisdiction (without any requirement to post bond).

(e) Acknowledgments; Miscellaneous. Seller acknowledges that the restrictions contained in this Section 7.4 are reasonable and necessary to protect the legitimate interests of Purchaser and constitute a material inducement to Purchaser to enter into this Agreement and consummate the transactions contemplated by this Agreement. In the event that any covenant contained in this Section 7.4 should ever be adjudicated to exceed the time, geographic, product or service or other limitations permitted by applicable Governmental Rules in any jurisdiction, then any court is expressly empowered to reform such covenant, and such covenant shall be deemed reformed, in such jurisdiction to the maximum time, geographic, product or service or other limitations permitted by applicable Governmental Rules. The covenants contained in this Section 7.4 and each provision hereof are severable and distinct covenants and provisions. The invalidity or unenforceability of any such covenant or provision as written shall not invalidate or

render unenforceable the remaining covenants or provisions hereof, and any such invalidity or unenforceability in any jurisdiction shall not invalidate or render unenforceable such covenant or provision in any other jurisdiction.

ARTICLE VIII. TAX MATTERS

8.1 Allocation of Purchase Price.

(a) The Cash Consideration (as adjusted pursuant to the adjustments contemplated under this Agreement) and the applicable Assumed Liabilities shall be allocated among the Acquired Assets as of the Closing Date in accordance with a schedule (the “**Asset Allocation Schedule**”) that is prepared in a manner consistent with relevant Tax laws, including, as applicable, Section 1060 of the Internal Revenue Code of 1986, as amended (the “**Code**”), and the regulations promulgated thereunder, and in accordance with the procedures of this Section 8.1. To the extent separate Asset Allocation Schedules are necessary for one or more of the Selling Subsidiaries, the provisions of this Section 8.1 shall apply to such Asset Allocation Schedules.

(b) Seller shall engage Duff & Phelps, LLC, or a similar firm (the “**Valuator**”) to prepare each Asset Allocation Schedule; provided, however, that the fee for such Valuator shall be mutually agreeable to both Parties. Each Party shall cooperate with the other Party and the Valuator, and shall use commercially reasonable efforts to provide in a timely manner any information, data and assistance required or requested by the Valuator to properly perform its valuation. Seller shall instruct the Valuator to deliver drafts of the Asset Allocation Schedules, along with the assumptions and calculations supporting such draft Asset Allocation Schedules, a description of the methodology and a detailed breakdown, to Purchaser and Seller no later than thirty (30) days after the Closing Date. Purchaser shall provide any comments to the draft Asset Allocation Schedules within fifteen (15) days of receipt. Seller shall make such comments as are reasonably requested by Purchaser and issue final Asset Allocation Schedules promptly thereafter. Seller and Purchaser shall file all Tax Returns (including amended returns and claims for refund) and information reports in a manner consistent with such final Asset Allocation Schedules and share equally all costs and expenses incurred in connection with the engagement and performance of the Valuator; the Parties shall arrange to make their respective payments directly to the Valuator.

(c) Thereafter, Seller shall prepare and provide to Purchaser from time to time revised copies of the Asset Allocation Schedules to update the Asset Allocation Schedules for indemnity payments or other adjustments contemplated under this Agreement (including, for the avoidance of doubt, all payments made under Article XI), which shall be prepared in a manner consistent with the final Asset Allocation Schedules determined under Section 8.1(b). Any indemnity payments or other adjustments contemplated by this Agreement shall be treated as an adjustment to Purchase Price unless such payment is required to be treated otherwise by applicable Governmental Rules with respect to Taxes.

(d) The Asset Allocation Schedules as finally determined pursuant to this Section 8.1 (including any applicable adjustments) shall be final and binding upon Purchaser and Seller for all Tax purposes except as required by applicable Governmental Rule or as otherwise mutually agreed to in writing by the Parties. Purchaser and Seller shall act in accordance with the Asset Allocation Schedules for all Tax purposes, including with respect to any forms or reports

(including IRS Form 8594) required to be filed pursuant to Section 1060 of the Code, the regulations promulgated thereunder or any Governmental Rule, and to cooperate in the preparation of any such forms or reports and to timely file such forms or reports in the manner required by applicable law.

8.2 Filing of Returns and Payment of Taxes.

(a) Seller shall prepare, or cause to be prepared, all Tax returns, Tax reports and Tax forms of or relating to the Acquired Assets (collectively, “**Tax Returns**”) for all Pre-Closing Tax Periods (other than a Straddle Period) and shall pay, or cause to be paid, when due all Taxes with respect to such Tax Returns. Subject to Section 8.2(b), Purchaser shall prepare, or cause to be prepared, all other Tax Returns and shall pay, or cause to be paid, when due all Taxes with respect to such other Tax Returns.

(b) Purchaser shall prepare, or cause to be prepared, all Tax Returns for any Straddle Period and pay to the applicable authority all Taxes due with respect to such Tax Returns; provided that (i) Purchaser shall deliver any Tax Return to Seller at least twenty (20) Business Days before such Tax Returns are due, (ii) Seller shall have the right to review and comment upon any such Tax Returns prior to the filing thereof and (iii) such Tax Returns shall not be filed without the prior written consent of Seller (such written consent not to be unreasonably withheld). Within ten (10) Business Days of written demand thereof, but in no event more than ten (10) Business Days prior to the due date thereof, Seller shall pay to Purchaser the amount of Excluded Taxes for the Straddle Period calculated using the principles of Section 8.2(e).

(c) The Party responsible for filing any Tax Return under applicable law shall timely file, or cause to be timely filed, with the appropriate authorities such Tax Return.

(d) If, in order to properly prepare its Tax Returns or in the course of any proceeding with respect to Taxes, it is necessary that a Party be furnished with additional information, documents or records relating to the Acquired Assets, the Selling Companies and Purchaser agree to cooperate and use commercially reasonable efforts to furnish or make available such non-privileged information at the recipient’s request, cost and expense; provided that, except as expressly provided in this Section 8.2(d), no Party shall be entitled to review or examine the Tax Returns of any other Party. Notwithstanding anything in this Agreement to the contrary, a Party shall be required to furnish or make available only such documents or records, including the preparation of financial statements or other financial data, that are maintained in the ordinary course of that Party’s business and exist at the time of the request.

(e) For purposes of this Section 8.2, in the case of any Straddle Period: (i) Excluded Taxes that are real property, personal property, intangible property and similar ad valorem Taxes (“**Property Taxes**”) for the Straddle Period shall be equal to the amount of such Property Taxes for the entire Straddle Period multiplied by a fraction, the numerator of which is the number of days during the Straddle Period that are in the Pre-Closing Tax Period and the denominator of which is the number of days in the Straddle Period; and (ii) Excluded Taxes (other than Property Taxes) for the Straddle Period shall be computed as if the Pre-Closing Tax Period ended as of 11:59 p.m. in the applicable territory set forth on Schedule 8.2 on the Closing Date.

8.3 Refunds and Credits. Any cash refunds or credits of Excluded Taxes (net of any Taxes and expenses arising from the receipt thereof) shall be for the account of the Selling Companies except to the extent such refund has been taken into account in the determination of Net Working Capital. Any refunds or credits received or realized by a Party that are for the account of the other Party pursuant to the preceding sentence shall be promptly paid to such other Party within thirty (30) days from receipt thereof (with a credit being considered received on the earliest date when such credit is actually used to reduce a Tax actually due).

8.4 Transfer Taxes. All Transfer Taxes shall be borne 50% by Purchaser and 50% by Seller. The Party required by law to file a Tax Return with respect to such Transfer Taxes shall do so in the time and manner prescribed by Governmental Rule, and the non-filing Party shall promptly reimburse the filing Party for its share of any Transfer Taxes upon receipt of evidence reasonably satisfactory to the non-filing Party of the amount of such Transfer Taxes; provided that in the event that both Parties are required by Governmental Rule to file a Tax Return with respect to such Transfer Taxes, then the Seller shall file such Tax Returns and Purchaser shall promptly reimburse the Seller for the Purchaser's share of any Transfer Taxes upon receipt of evidence reasonably satisfactory to Purchaser of the amount of such Transfer Taxes. To the extent permitted by Governmental Rules, Purchaser and the Selling Companies shall cooperate with each other to obtain exemptions from any Transfer Taxes; provided that neither Party shall be obligated to seek any exemption that could reasonably be expected to result in any audit by a Governmental Authority of its books and records.

8.5 FIRPTA. At or prior to the Closing Date, Seller shall deliver to Purchaser an affidavit satisfying the requirement of Treasury Regulation Section 1.1445-2(b) dated within seven (7) days of the Closing Date, certifying the non-foreign status of Seller.

ARTICLE IX. CONDITIONS TO PURCHASER'S OBLIGATIONS FOR THE CLOSING

The obligation of Purchaser to consummate the Closing is subject to the satisfaction (or waiver in writing by Purchaser) of each of the conditions set forth below in this Article IX.

9.1 Representations and Warranties; Covenants and Agreements. The representations and warranties of Seller made in Article IV of this Agreement (without regard to any qualifications therein as to materiality or Seller Material Adverse Effect) shall be true and correct as of the date of this Agreement and as of the Closing Date (as supplemented by Permitted Schedule Additions) with the same effect as if made as of the Closing Date, except to the extent such representations and warranties expressly relate to an earlier time, in which case such representations and warranties shall be true and correct as of such earlier time; provided that this condition shall be deemed satisfied unless the failure of any such representations and warranties to be true and correct on any such date would, individually or in the aggregate, have a Seller Material Adverse Effect. Seller shall have performed, and shall have caused the Selling Subsidiaries to have performed, in all material respects all covenants, agreements and conditions contained in the Transaction Agreements required to be performed by Seller or the Selling Subsidiaries, as the case may be, by the time of the Closing; provided, however, that, with respect to agreements, covenants and conditions that are qualified by materiality, Seller shall have performed such agreements, covenants and conditions as so qualified in all respects. Seller shall

have delivered to Purchaser a certificate of an authorized officer of Seller, dated as of the Closing Date, to the effect that the conditions set forth in this Section 9.1 have been satisfied and certifying: (i) that (A) attached thereto are true and complete copies of all resolutions adopted by the board of directors of Seller and each applicable Selling Subsidiary, and with respect to each Selling Subsidiary, shareholder resolutions, authorizing the execution, delivery and performance of this Agreement, and each Transaction Agreements to which such Person is a party, and the consummation of the transactions contemplated hereby, and (B) all such resolutions are in full force and effect and are all the resolutions adopted in connection with the transactions contemplated hereby; and (ii) the names and signatures of the officers of Seller and each applicable Selling Subsidiary authorized to sign this Agreement, the Transaction Agreements and the other documents to be delivered hereunder to which such Person is a party.

9.2 Consents, Approvals, Injunctions, Etc.

(a) All material consents, approvals, orders, licenses, permits and authorizations of, and registrations, declarations and filings with, any Governmental Authority legally required for the consummation of the Closing, including those set forth in Section 4.4 and Section 5.4 shall have been obtained, waived or made, and the respective waiting periods required in connection with the HSR Act and the Other Relevant Antitrust Laws shall have expired or been terminated.

(b) Purchaser shall have received a written notice from CFIUS stating that: (i) CFIUS has concluded that the transactions contemplated by the Transaction Agreements are not a “covered transaction” and not subject to review under the DPA and relevant regulations; (ii) the review of the transactions contemplated by the Transaction Agreements has been concluded, and there are no unresolved national security concerns with respect to the transactions contemplated by the Transaction Agreements; or (iii) CFIUS has sent a report to the President of the United States requesting the President’s decision on the CFIUS notice submitted by Purchaser and Seller and either (1) the period under the DPA during which the President may announce his decision to take action to suspend, prohibit or place any limitation on the transaction shall have expired without any such action being threatened, announced or taken or (2) the President shall have announced a decision not to take any action to suspend, prohibit or place any limitations on the transactions contemplated hereby (“**CFIUS Clearance**”).

(c) No Legal Restraint that has the effect of preventing the consummation of the transactions contemplated by the Transaction Agreements shall be in effect, and no Legal Proceedings seeking such relief shall then be pending.

(d) Purchaser shall have received the material third party consents set forth on Schedule 9.2(d).

(e) Seller shall have obtained releases pursuant to the uniform commercial code, as applicable, or otherwise, of all Liens on the Acquired Assets (other than any Permitted Liens and any Lien that will be released on the Closing Date upon payment by Purchaser, at the direction of Seller, of a portion of the Purchase Price to such lienholder pursuant to a payoff letter provided to Purchaser, in form and substance reasonably satisfactory to Purchaser).

(f) Purchaser shall have received duly executed counterparts to the Transaction Agreements and such other documents and deliveries as set forth in Section 3.1(b) and Section 8.5 from all parties thereto other than Purchaser and its Affiliates, provided, however, for clarity sake, the Assignment of Lease executed by the landlord thereof shall not be required to be delivered to the extent Seller complies with its obligations under Section 6.2 and this Agreement.

(g) The clone of Seller's informational technology systems as described in Schedule 6.12 shall have been accepted by Purchaser in accordance with Attachment 6.12.2 of Schedule 6.12 (for clarity, regardless of whether Seller has satisfied its commercially reasonable effort obligation).

ARTICLE X. CONDITIONS TO SELLER'S OBLIGATIONS FOR THE CLOSING

The obligation of Seller to consummate, or to cause the relevant Selling Subsidiary to consummate, the Closing is subject to the satisfaction (or waiver by Seller) of the conditions set forth below in this Article X.

10.1 Representations and Warranties; Covenants and Agreements. The representations and warranties of Purchaser made in Article V of this Agreement (without regard to any qualifications therein as to materiality or Purchaser Material Adverse Effect) shall be true and correct as of the date of this Agreement and as of the Closing Date with the same effect as if made as of the Closing Date, except to the extent such representations and warranties expressly relate to an earlier time in which case such representations and warranties shall be true and correct as of such earlier time; provided that this condition shall be deemed satisfied unless the failure of any such representations and warranties to be true and correct on any such date would, individually or in the aggregate, have a Purchaser Material Adverse Effect. Purchaser shall have performed in all material respects all covenants and agreements contained in the Transaction Agreements required to be performed by Purchaser by the time of the Closing; provided, however, that, with respect to agreements, covenants and conditions that are qualified by materiality, Purchaser shall have performed such agreements, covenants and conditions as so qualified in all respects. Purchaser shall have delivered to Seller a certificate of an authorized officer of Purchaser, dated as of the Closing Date, to the effect that the conditions set forth in this Section 10.1 have been satisfied and certifying (i) that attached thereto are true and complete copies of all resolutions adopted by the board of directors of Purchaser authorizing the execution, delivery and performance of this Agreement and each Transaction Agreement and the consummation of the transactions contemplated hereby, and that all such resolutions are in full force and effect and are all the resolutions adopted in connection with the transactions contemplated hereby; and (ii) the names and signatures of the officers of Purchaser authorized to sign this Agreement, the Transaction Agreements and the other documents to be delivered hereunder.

10.2 Consents, Approvals, Injunctions, Etc.

(a) All material consents, approvals, orders, licenses, permits and authorizations of, and registrations, declarations and filings with, any Governmental Authority legally required for the consummation of the Closing, including those set forth in Section 4.4 and Section 5.4, shall have been obtained, waived or made, and the respective waiting periods required in connection with the HSR Act and the Other Relevant Antitrust Laws shall have expired or been terminated.

(b) Seller and Purchaser shall have received from CFIUS a written notice of CFIUS Clearance.

(c) No Legal Restraint that has the effect of preventing the consummation of the transactions contemplated by the Transaction Agreements shall be in effect, and no Legal Proceedings seeking such relief shall then be pending.

(d) Seller shall have received duly executed counterparts to the Transaction Agreements and such other documents and deliveries as set forth in Section 3.1(b) from Purchaser and its Affiliates.

ARTICLE XI. SURVIVAL; INDEMNIFICATION

11.1 Survival. Subject to the limitations and other provisions of this Agreement, the representations and warranties contained herein shall survive the Closing and shall remain in full force and effect until the date that is fifteen (15) months from the Closing Date; provided, that the representations and warranties in (i) Section 4.1 (incorporation and ownership), Section 4.2 (authority), Section 4.6 (title; condition; sufficiency), Section 4.9 (Tax matters) and Section 4.10 (to the extent of provisions therein relating to Tax matters), Section 4.11(a) (title to Intellectual Property Rights), Section 4.23 (brokers), Section 5.1 (existence), Section 5.2 (authority) and Section 5.5 (brokers) shall survive for the full period of all applicable statutes of limitations (giving effect to any waiver, mitigation or extension thereof) plus sixty (60) days, and (ii) Section 4.21 (environmental matters) shall survive for a period of six (6) years after the Closing. All covenants and agreements of the Parties which are required to be performed prior to Closing shall survive for a period of 12-months from the date of this Agreement, and all other covenants and agreements of the Parties shall survive indefinitely. Notwithstanding the foregoing, any claims asserted in good faith with reasonable specificity (to the extent known at such time) and in writing by notice from the non-breaching party to the breaching party prior to the expiration date of the applicable survival period shall not thereafter be barred by the expiration of the relevant representation or warranty and such claims shall survive until finally resolved.

11.2 Indemnification by Seller. Subject to the other terms and conditions of this Article XI, Seller shall indemnify Purchaser and its Affiliates and their respective Representatives, successors and assigns (collectively, the "**Purchaser Indemnitees**") from and against any and all Damages incurred by, or imposed upon, the Purchaser Indemnitees based upon, arising out of, with respect to or by reason of:

(a) any inaccuracy in or breach of any representation or warranty of Seller contained in Article IV of this Agreement or the certificate furnished by Seller pursuant to Section 9.1;

(b) any breach of any covenant, agreement or obligation to be performed by Seller pursuant to this Agreement;

(c) any Excluded Liability (to the extent not included as a reduction to the Closing Date Net Working Capital) or any Excluded Asset;

(d) any Taxes owed by any Selling Company or any of their Affiliates with respect to any Pre-Closing Tax Period or the portion of any Straddle Period on or before the Closing;

(e) any infringement claims against Purchaser arising from Purchaser's use of the Parent Mark (as defined in the Transitional Trademark License Agreement) pursuant to and in accordance with the terms and conditions of the Transitional Trademark License Agreement;

(f) any Liability represented by the Warranty Expense incurred by Purchaser during the first 15-months immediately following the Closing Date with respect to products sold by the Crimson Business prior to the Closing Date, in excess of \$2,280,000;

(g) any Liability of the Seller or Shelter Operator arising or resulting from (i) any use of, or failure to comply with, any tax, customs or other obligations required by applicable Governmental Rules in connection with the temporary importation of any assets into Mexico, or (ii) the failure to have all necessary licenses and permits in Mexico to operate the Crimson Business; or

(h) any Liability or other diminution of rights arising or resulting from the existence of a joint owner (other than one or more of the Selling Companies) of any of the Acquired IP when conveyed to Purchaser on the Closing Date.

11.3 Indemnification by Purchaser. Subject to the other terms and conditions of this Article XI, from and after the Closing, Purchaser shall indemnify each Selling Company and each of the Affiliates of each Selling Company and such Selling Companies' and such Affiliate's respective Representatives, successors and assigns (collectively, the "**Seller Indemnitees**") against any and all Damages of the Seller Indemnitees to the extent arising out of:

(a) any inaccuracy in or breach of any representation or warranty of Purchaser contained in Article V of this Agreement or the certificate furnished by Purchaser pursuant Section 10.1;

(b) any breach of any covenant, agreement or obligation to be performed by Purchaser pursuant to this Agreement; or

(c) any Assumed Liability.

11.4 Certain Limitations. The indemnification provided for in Section 11.2 and Section 11.3 shall be subject to the following limitations:

(a) Seller shall not be liable to the Purchaser Indemnitees for indemnification under Section 11.2(a) until the aggregate amount of all Damages in respect of indemnification under Section 11.2(a) exceeds \$2,531,250 (the “**Indemnification Threshold**”), and once the Indemnification Threshold has been exceeded, Seller shall only be required to pay or be liable for all such Damages in excess of the Indemnification Threshold. The aggregate amount of all Damages for which Seller shall be liable pursuant to Section 11.2(a) shall not exceed an amount which is, together with amounts recovered under the R&W Insurance Policy, in excess of \$101,250,000 (the “**Cap**”).

(b) Purchaser shall not be liable to the Seller Indemnitees for indemnification under Section 11.3(a) until the aggregate amount of all Damages in respect of indemnification under Section 11.3(a) exceeds the Indemnification Threshold, and once the Indemnification Threshold has been exceeded, Purchaser shall only be required to pay or be liable for all such Damages in excess of the Indemnification Threshold. The aggregate amount of all Damages for which Purchaser shall be liable pursuant to Section 11.3(a) shall not exceed the Cap.

(c) Notwithstanding the foregoing, the limitations set forth in Section 11.4(a) and Section 11.4(b) shall not apply to Damages based upon, arising out of, with respect to or by reason of any inaccuracy in or breach of any representation or warranty of any Fundamental Representations; provided, however, the aggregate amount of Damages that may be recovered by the Purchaser Indemnitees or the Seller Indemnitees under Section 11.2(a) or under Section 11.3(a) arising from any breach of, or misrepresentation or inaccuracy in, any Fundamental Representations shall not exceed an amount which is, together with amounts recovered under the R&W Insurance Policy, in excess of the Super Cap.

(d) For purposes of this Article XI, any inaccuracy in or breach of any representation or warranty, and the calculation of Damages with respect thereto, shall be determined without regard to any materiality, Seller Material Adverse Effect or Purchaser Material Adverse Effect or other similar qualification contained in or otherwise applicable to such representation or warranty.

(e) The representations, warranties and covenants of the Indemnifying Party, and the Indemnified Party's right to indemnification with respect thereto, shall not be affected or deemed waived by reason of any investigation made by or on behalf of the Indemnified Party (including by any of its Representatives) or by reason of the fact that the Indemnified Party or any of its Representatives knew or should have known that any such representation or warranty is, was or might be inaccurate or by reason of the Indemnified Party's waiver of any condition set forth in Section 9.1.

(f) Except in the case of fraud by the Seller, in no event shall the Purchaser Indemnitees have the right under this Agreement to recover from Seller any amount which is, together with amounts recovered under the R&W Insurance Policy, in excess of the Super Cap.

(g) All Damages for which any Seller Indemnitee or Purchaser Indemnitee would otherwise be entitled to indemnification under this Article XI shall be reduced by recovery under the R&W Insurance Policy and other third-party recoveries actually received by such Seller Indemnitee or Purchaser Indemnitee in respect of any Damages incurred by such Seller Indemnitee

or Purchaser Indemnitee (net of the out-of-pocket costs reasonably incurred of pursuing or obtaining such recovery). In the event any Seller Indemnitee or Purchaser Indemnitee is or may be entitled to any insurance proceeds, indemnity payments or any third-party recoveries in respect of any Damages for which such Seller Indemnitee or Purchaser Indemnitee is entitled to indemnification pursuant to this Article XI, such Seller Indemnitee or Purchaser Indemnitee shall use commercially reasonable efforts to obtain, receive or realize such proceeds, benefits, payments or recoveries; provided, however, that “commercially reasonable efforts” with respect to (i) the R&W Insurance Policy shall not include an obligation to seek “recovery” from Purchaser’s policies or programs of insurance, and (ii) any other Person shall not (x) include the commencement of any Legal Proceeding in respect of such recovery, (y) require any prolonged, continuous or repetitive efforts, and (z) include an obligation to seek recovery from any insurance carrier or program. To the extent permissible under applicable Governmental Rules and Contracts, any unsuccessful claim for recovery notwithstanding commercially reasonable efforts against a third-party that is not a customer or vendor, or a potential customer or vendor of such Seller Indemnitee or Purchaser Indemnitee, as applicable, shall be assigned in subrogation upon collection under this Agreement of the full amount of applicable Damages claimed. In the event that any such insurance proceeds, indemnity payments or other third-party recoveries are realized by a Seller Indemnitee or Purchaser Indemnitee subsequent to receipt by such Seller Indemnitee or Purchaser Indemnitee of any indemnification payment hereunder in respect of the claims to which such insurance proceeds, indemnity payments or other third-party recoveries relate, corresponding refunds shall be made promptly by the relevant Seller Indemnitee or Purchaser Indemnitee of all or the relevant portion of such indemnification payment (net of the out-of-pocket costs reasonably incurred of pursuing or obtaining such insurance proceeds, deductibles and any increased premium amounts attributable to such claim).

(h) The Seller Indemnitees and Purchaser Indemnitees shall not be entitled to recover more than once for the same Damages.

(i) No indemnity may be sought hereunder in respect of any Damages to the extent such Damages (but only to the extent that the amount of such Damages) is included in the calculations of the Net Working Capital, as finally determined, such that the party claiming indemnification received Purchase Price credit for such amount of Damages.

11.5 Order of Recovery. Notwithstanding anything to the contrary in this Agreement, but subject to the other provisions of this Article XI:

(a) any Damages that a Purchaser Indemnitee is entitled to recover pursuant to Section 11.2, shall be satisfied solely and exclusively for a particular Claim (i) first, out of the Escrow Amount until the Escrow Amount has been fully depleted, (ii) second, from the R&W Insurance Policy until the Policy Limit has been exhausted and (iii) third, from the Seller up to the amount of (x) the Super Cap with respect to a Claim under Section 11.2(a) for a breach of, or a misrepresentation or inaccuracy in, a Seller Fundamental Representation, or a Claim under any of Sections 11.2(b) through (e), (y) the Cap with respect to Damages claimed under Section 11.2(a) for a breach of, or a misrepresentation or inaccuracy in, any representation or warranty other than a Seller Fundamental Representation, and (z) the Warranty Escrow with respect to Damages claimed under Section 11.2(f); and

(b) any Damages that a Seller Indemnitee is entitled to recover pursuant to Section 11.3 shall be recovered directly from Purchaser.

11.6 Indemnification Procedures.

(a) All claims for indemnification pursuant to this Article XI shall be made in accordance with the procedures set forth in this Section 11.6. A Person entitled to assert a claim for indemnification (a “**Claim**”) pursuant to this Article XI (an “**Indemnified Party**”) shall give the Indemnifying Party written notice of any such Claim (a “**Claim Notice**”), which notice shall include a description in reasonable detail of (i) the basis for, and nature of, such Claim, including the facts constituting the basis for such Claim and (ii) the estimated amount of the Damages that have been or may be sustained by the Indemnified Party in connection with such Claim (if known and quantifiable). Any Claim Notice shall be given by the Indemnified Party to the Indemnifying Party, (A) in the case of a Claim in connection with any Legal Proceeding made or brought by any Person (other than a Purchaser Indemnitee or a Seller Indemnitee in connection with this Agreement) against such Indemnified Party (a “**Third-Party Claim**”), promptly following receipt of notice of the assertion or commencement of such Legal Proceeding and (B) in the case of a Claim other than a Third-Party Claim (a “**Direct Claim**”), promptly after the Indemnified Party becomes aware of the facts constituting the basis for such Direct Claim; provided, however, that no failure to give such prompt written notice shall relieve the Indemnifying Party of any of its indemnification obligations hereunder except to the extent that the Indemnifying Party is prejudiced by such failure. The Indemnifying Party and Indemnified Party will cooperate in good faith to resolve any Direct Claim for a period of thirty (30) Business Days before commencing any Legal Proceeding in connection with such Direct Claim. For the purposes of this Agreement, “**Indemnifying Party**” means Purchaser (in the case of a Claim by a Seller Indemnitee) or Seller (in the case of a Claim by a Purchaser Indemnitee).

(b) With respect to any Third-Party Claim, the Indemnifying Party shall have the right, by giving written notice to the Indemnified Party within thirty (30) days after delivery of the Claim Notice with respect to such Third-Party Claim, to assume control of the defense of such Third-Party Claim at the Indemnifying Party’s expense with a reputable counsel reasonably acceptable to the Indemnified Party; provided that the Indemnifying Party will not be entitled to assume control of such defense if (i) the claim for indemnification relates to or arises in connection with any criminal proceeding, action, indictment, allegation or investigation; (ii) the Indemnified Party reasonably believes an adverse determination with respect to the Legal Proceeding giving rise to such claim for indemnification would be materially detrimental to or materially injure the Indemnified Party’s reputation or future business prospects; (iii) the claim seeks an injunction or equitable relief against the Indemnified Party; or (iv) the Indemnifying Party failed or is failing to vigorously prosecute or defend such claim. The Indemnified Party shall cooperate in good faith in such defense. The Indemnified Party or Indemnifying Party, as the case may be, that is not controlling such defense shall have the right, at its own cost and expense, to participate in the defense of any Third-Party Claim with counsel selected by it. If the Indemnifying Party agrees in writing not to control the defense of such Third-Party Claim or fails to notify the Indemnified Party in writing of its election to control such defense in accordance with this Section 11.6(b), the Indemnified Party may control the defense of such Third-Party Claim with counsel of its choosing, and the Indemnifying Party shall be liable for the reasonable fees and expenses of such counsel to the Indemnified Party. Purchaser and Seller shall reasonably cooperate with each other in

connection with the defense of any Third-Party Claim, including by retaining and providing to the Party controlling such defense records and information that are reasonably relevant to such Third-Party Claim and making available employees on a mutually convenient basis for providing additional information and explanation of any material provided hereunder. The Indemnified Party or Indemnifying Party, as the case may be, that is controlling such defense shall keep the other Party reasonably advised of the status of such Legal Proceeding and the defense thereof.

(c) Notwithstanding anything in this Agreement to the contrary, (i) an Indemnifying Party shall not agree to any settlement of any Third-Party Claim without the prior written consent of the Indemnified Party unless such settlement would (A) include a complete and unconditional release of each Indemnified Party from all Liabilities or obligations with respect thereto, (B) not impose any Damages or other obligation (including any equitable remedies) on the Indemnified Party and (C) not involve a finding or admission of any wrongdoing on the part of the Indemnified Party, and (ii) an Indemnified Party shall not agree to any settlement of a Third-Party Claim without the prior written consent of the Indemnifying Party, such consent not to be unreasonably withheld, conditioned or delayed.

11.7 Payments; Escrow Amount. Once Damages are agreed to by the Indemnifying Party or finally adjudicated to be payable pursuant to this Article XI, the Indemnifying Party shall satisfy any obligations payable by it (as opposed to amounts payable out of the Escrow Amount or by submission of claims pursuant to the R&W Insurance Policy) within fifteen (15) days of such final, non-appealable adjudication by wire transfer of immediately available funds. The Parties hereto agree that should an Indemnifying Party not make full payment of any such obligations within such fifteen (15) day period, any amount payable shall accrue interest from and including the date of agreement of the Indemnifying Party or final, non-appealable adjudication to and including the date such payment has been made at a rate per annum equal to the prime rate of interest as published in *The Wall Street Journal*. Such interest shall be calculated daily on the basis of a 365 day year and the actual number of days elapsed.

11.8 Exclusive Remedies. Subject to Section 2.6, Section 7.4 and Section 12.5, the parties acknowledge and agree that their sole and exclusive remedy with respect to any and all claims (other than claims arising from fraud on the part of a party hereto in connection with the transactions contemplated by this Agreement) for any breach of any representation, warranty, covenant, agreement or obligation set forth herein or otherwise relating to the subject matter of this Agreement, shall be pursuant to the indemnification provisions set forth in this Article XI. In furtherance of the foregoing, each Party hereby waives, to the fullest extent permitted under Governmental Rules, any and all rights, claims and causes of action for any breach of any representation, warranty, covenant, agreement or obligation set forth herein or otherwise relating to the subject matter of this Agreement it may have against the other Parties hereto and their Affiliates and each of their respective Representatives arising under or based upon any Governmental Rule, except pursuant to the indemnification provisions set forth in this Article XI. Nothing in this Section 11.8 shall limit any Person's right to seek and obtain any equitable relief to which any Person shall be entitled or to seek any remedy on account of any party's fraud.

ARTICLE XII. GENERAL MATTERS

12.1 [Intentionally Omitted].

12.2 Termination.

(a) Notwithstanding anything in this Agreement to the contrary, this Agreement may be terminated and the transactions contemplated hereby abandoned at any time prior to the Closing Date (other than pursuant to Section 12.2(a)(i)), a terminating Party shall give written notice of such termination to the other Parties setting forth a brief description of the basis on which it is terminating this Agreement):

(i) by the mutual written consent of Purchaser and Seller;

(ii) by either Purchaser or Seller, if the Closing has not taken place on or before 5:00 p.m. (Eastern time) on the date that is two (2) months following the Target Closing Date (the “**End Date**”); provided, however, that neither Purchaser nor Seller shall be permitted to terminate this Agreement pursuant to this Section 12.2(a)(ii) if the failure to consummate the Closing by the End Date results from, or is caused by, a material breach by such Party of any of its representations, warranties, covenants or agreements contained herein;

(iii) by Purchaser or Seller if: (i) a court of competent jurisdiction or other Governmental Authority shall have issued a final and nonappealable order, or shall have taken any other action, having the effect of permanently restraining, enjoining or otherwise prohibiting the transactions contemplated by this Agreement or (ii) there shall be any applicable Governmental Rule enacted, promulgated, issued or deemed applicable to the transactions contemplated by this Agreement by any Governmental Authority that would make consummation of such transactions illegal;

(iv) by Purchaser if: (i) any of the representations and warranties of Seller contained in this Agreement shall be inaccurate as of the date of this Agreement, or shall have become inaccurate as of a date subsequent to the date of this Agreement, such that the condition set forth in Section 9.1 would not be satisfied; (ii) any of the covenants of Seller contained in this Agreement shall have been breached such that the condition set forth in Section 9.1 would not be satisfied; provided, however, that if an inaccuracy in any of the representations and warranties of Seller as of a date subsequent to the date of this Agreement or a breach of a covenant by Seller is curable by Seller through the use of reasonable efforts within fifteen (15) days after Purchaser notifies Seller in writing of the existence of such inaccuracy or breach (the “**Seller Cure Period**”), then Purchaser may not terminate this Agreement under this Section 12.2(a)(iv) as a result of such inaccuracy or breach prior to the expiration of the Seller Cure Period, provided that Seller, during the Seller Cure Period, continues to exercise reasonable efforts to cure such inaccuracy or breach (it being understood that Purchaser may not terminate this Agreement pursuant to this Section 12.2(a)(iv) with respect to such inaccuracy or breach if such inaccuracy or breach is cured prior to the expiration of Seller Cure Period);

(v) by Seller if: (i) any of Purchaser’s representations and warranties contained in this Agreement shall be inaccurate as of the date of this Agreement, or shall have become inaccurate as of a date subsequent to the date of this Agreement, such that the condition set forth in Section 10.1 would not be satisfied or (ii) if any of Purchaser’s covenants contained in this Agreement shall have been breached such that the condition set forth in Section 10.1 would

not be satisfied; provided, however, that if an inaccuracy in any of Purchaser's representations and warranties as of a date subsequent to the date of this Agreement or a breach of a covenant by Purchaser is curable by Purchaser through the use of reasonable efforts within fifteen (15) days after Seller notifies Purchaser in writing of the existence of such inaccuracy or breach (the "**Purchaser Cure Period**"), then Seller may not terminate this Agreement under this Section 12.2(a)(v) as a result of such inaccuracy or breach prior to the expiration of the Purchaser Cure Period, provided that Purchaser, during the Purchaser Cure Period, continues to exercise reasonable efforts to cure such inaccuracy or breach (it being understood that Seller may not terminate this Agreement pursuant to this Section 12.2(a)(v) with respect to such inaccuracy or breach if such inaccuracy or breach is cured prior to the expiration of the Purchaser Cure Period);

provided, however, that the party seeking termination pursuant to clause (ii), (iv) or (v) is not then in breach in any material respect of any of its representations, warranties, covenants or agreements contained in the Transaction Agreements.

(b) In the event that this Agreement is terminated pursuant to Section 12.2(a), the transactions contemplated by the Transaction Agreements shall be terminated, without further action by any Party.

(c) Furthermore, in the event that this Agreement is terminated as provided herein:

(i) Purchaser shall return all documents and other material received from Seller or its Subsidiaries or any of their Representatives relating to the Acquired Assets or Assumed Liabilities or the transactions contemplated by the Transaction Agreements, and all copies of such documents and other material, whether obtained before or after the execution of this Agreement, to Seller, provided that Purchaser shall be entitled to retain a confidential copy of same pursuant to the terms of the Confidentiality Agreement; and

(ii) Purchaser agrees that all information received by Purchaser or its Affiliates or their Representatives with respect to the Acquired Assets or Assumed Liabilities or the transactions contemplated by the Transaction Agreements shall be treated in accordance with the Confidentiality Agreement which shall remain in full force and effect notwithstanding the termination of this Agreement.

(d) Upon the termination hereof, this Agreement shall become void and of no further force and effect, except for the provisions of (i) Section 4.23 and Section 5.5 relating to brokers, (ii) Section 12.8 relating to certain costs and expenses, (iii) Section 7.4(a) and Section 12.9 relating to publicity and the obligation of Purchaser to keep confidential certain information and (iv) this Article XII. Nothing in this Section 12.2 shall be deemed to release any Party from any Liability for any fraud or intentional breach of a representation or warranty, covenant, agreement or obligation hereunder. The failure by any Party to consummate the transactions contemplated by the Transaction Agreements when the relevant conditions to Closing set forth in Article IX or Article X, as applicable, have been satisfied and such Party is obligated to effectuate the Closing will, in and of itself, constitute an intentional breach.

12.3 Bulk Sales. Purchaser hereby waives compliance by Seller and the Selling Subsidiaries with the provisions of any applicable bulk sales or similar laws of any jurisdiction in connection with the sale of the Acquired Assets and the other transactions contemplated by the Transaction Agreements; it being understood that any Liabilities arising out of the failure of Seller and the Selling Subsidiaries to comply with the requirements and provisions of any bulk sales, bulk transfers or similar laws of any jurisdiction shall be treated at Excluded Liabilities.

12.4 Notices. All notices and other communications required or permitted to be given under any Transaction Agreement shall be in writing and shall be deemed to have been duly given and shall be effective (a) when delivered by messenger or courier or (b) five days after deposit for mailing by registered or certified mail, postage prepaid, return receipt requested, when also transmitted by telecopy as follows:

(a) if to Seller, to:

Brooks Automation, Inc.
15 Elizabeth Drive
Chelmsford, MA 01824
Attention: Jason W. Joseph, Senior Vice President, General Counsel and Secretary
Facsimile: (978) 262-2511

With a copy (which shall not constitute notice) to:

Mintz Levin Cohn Ferris Glovsky and Popeo PC
One Financial Center
Boston, MA 02111
United States of America
Attention: Michael L. Fantozzi, Esq.
Facsimile: 617-542-2241

(b) if to Purchaser, to:

Edwards Vacuum LLC
Global Technology Centre
Innovation Drive, Burgess Hill
West Sussex
RH15 9TW
United Kingdom

Attention: Mike Percy, Vice President-Business Development
Facsimile: + 44-1444 253 001

with a copy (which shall not constitute notice) to:

Atlas Copco North America LLC
7 Campus Drive, Suite 200
Parsippany, NJ 07054
Attention: Mark Francini, Associate General Counsel
Facsimile: 973-397-3414

or to such Person or address as either of the Parties shall hereafter designate to the other from time to time by similar written notice.

12.5 Enforcement. Each Party hereto hereby acknowledges and agrees:

(a) the other Party would be irreparably harmed and would not have an adequate remedy at law for money damages in the event that any of the covenants or agreements of such Party in this Agreement were not performed in accordance with their terms, and it is therefore agreed that each Party, in addition to and without limiting any other remedy or right it may have, shall be entitled to an injunction or other equitable relief without posting a bond to enforce specifically the terms and provisions of this Agreement;

(b) not to assert that a remedy of specific enforcement is unenforceable, invalid, contrary to applicable Governmental Rule or inequitable for any reason;

(c) that each Party hereby waives any and all defenses it may have to such an injunction or other equitable relief; and

(d) the right of specific enforcement is an integral part of the transactions contemplated by this Agreement, and without that right, neither Party would have entered into this Agreement.

12.6 Assignment; Successors. None of the Transaction Agreements nor any rights or obligations thereunder may be assigned or otherwise Transferred by any Party (including by operation of law) without the prior written consent of the other parties thereto, and any assignment or transfer without such consent shall be null and void and of no effect; provided, however, that Purchaser may freely assign this Agreement and the Transaction Agreements, and its rights hereunder and thereunder, or any portion thereof, without the consent of Seller to an Affiliate of Purchaser so long as Purchaser remains responsible for its obligations hereunder. Subject to the preceding sentence, the Transaction Agreements will be binding upon, inure to the benefit of and be enforceable by, the parties thereto and their respective successors and permitted assigns.

12.7 No Third-Party Beneficiaries. Each Transaction Agreement is for the sole benefit of the parties thereto and their permitted assigns and nothing therein expressed or implied shall give or be construed to give to any Person, other than the parties thereto and such permitted assigns,

any legal or equitable rights thereunder, whether as third-party beneficiaries or otherwise, except as otherwise set forth in the indemnification provisions of the Transaction Agreements to the extent that the indemnitee is not a party to the Transaction Agreements. This Section 12.7 may only be amended or modified by a writing signed by the applicable parties that (a) specifically cites this Section 12.7 and (b) expressly provides that this Section 12.7 is being amended or modified by the operative provision in the applicable Transaction Agreement.

12.8 Costs. Each Party shall be responsible for the costs and expenses incurred by it in the negotiation, execution and delivery of the Transaction Agreements and, except as otherwise provided elsewhere in such agreements, the consummation of the transactions contemplated thereby.

12.9 Public Announcements. The Confidentiality Agreement continues to apply, and the Transaction Agreements and the transactions contemplated thereby are subject to and shall be kept confidential under the Confidentiality Agreement; provided, however, that if any of the Transaction Agreements contain confidentiality provisions, then, to the extent there is inconsistency between the Confidentiality Agreement and such confidentiality provisions, the confidentiality provisions of such Transaction Agreements shall supersede the inconsistent provisions of the Confidentiality Agreement. For six (6) months after the Closing Date, all public announcements relating to the relevant Transaction Agreements or the transactions contemplated thereby shall be made only after consultation between the Parties, except for disclosures by either Party that in the opinion of counsel for such Party are required by law, rule or regulation. Any disclosures to customers or suppliers in connection with commercial relationships shall not reveal the Purchase Price (or any portion of the Purchase Price) or other consideration paid or payable under the Transaction Agreements. Notwithstanding the foregoing, either Party shall have the right, in its sole discretion, to make such disclosures as it may deem necessary or advisable to any Governmental Authority.

12.10 Amendments. No amendment to any Transaction Agreement shall be effective unless it shall be in writing and signed by each party thereto, it shall specifically reference this Section 12.10 and it shall expressly provide that such Transaction Agreement is being amended.

12.11 Modification and Waivers. No modification or waiver of any provision of any of the Transaction Agreements and no consent by either Party to any departure therefrom shall be effective unless in a writing referencing the particular section of such Transaction Agreement to be modified or waived and signed by a duly authorized signatory of each Party, and the same will only then be effective for the period and on the conditions and for the specific instances and purposes specified in such writing. No failure or delay of any party in exercising any right or remedy under any Transaction Agreement shall operate as a waiver thereof, nor shall any single or partial exercise of any such right or power, or any abandonment or discontinuance of steps to enforce such a right or power, preclude any other or further exercise thereof or the exercise of any other right or power. Subject to Article XI, the rights and remedies of the parties under the Transaction Agreements are cumulative and are not exclusive of any rights or remedies which they would otherwise have thereunder or at law or in equity.

12.12 Counterparts. Each Transaction Agreement may be executed in one or more counterparts, all of which, when taken together, shall be considered one and the same agreement,

and shall become effective when one or more such counterparts have been signed by each of the parties and delivered to the other parties. Each party to a Transaction Agreement need not sign the same counterpart. Delivery of an executed counterpart of a signature page to a Transaction Agreement by facsimile transmission shall be effective as delivery of a manually executed counterpart of such Transaction Agreement. Once any Transaction Agreement is signed, any reproduction of such Transaction Agreement made by reliable means (for example, photocopy or facsimile) is considered an original, to the extent permissible under applicable law, and all products and services referred to therein are subject to it.

12.13 Entire Agreement. The Transaction Agreements, including the Schedules, Exhibits, annexes and attachments thereto, together with the Confidentiality Agreement, contain the entire agreement and understanding between the parties thereto with respect to the subject matter thereof and supersede all prior agreements and understandings relating to such subject matter.

12.14 Severability. If any provision of any Transaction Agreement or the application of any such provision to any Person or circumstance shall be held invalid, illegal or unenforceable in any respect by a court of competent jurisdiction, to the extent permitted by applicable law, such invalidity, illegality or unenforceability shall not affect any other provision thereof. Upon such determination that any term or other provision of a Transaction Agreement is invalid, illegal or unenforceable, the parties to such Transaction Agreement shall negotiate in good faith to modify such Transaction Agreement so as to effect the original intent of the parties as closely as possible in an acceptable manner to the end that transactions contemplated thereby are fulfilled to the extent possible.

12.15 Consent to Jurisdiction. Each Transaction Agreement has been delivered at and shall be deemed to have been made in the county of New York, in the State of New York, United States of America, and all matters arising from or relating in any manner to the subject matter of any Transaction Agreement shall be interpreted, and the rights and liabilities of the parties to a Transaction Agreement determined, in accordance with the laws of the State of New York applicable to agreements executed, delivered and performed within such State, without regard to the principles of conflicts of laws thereof. As part of the consideration for value received, each of the parties to a Transaction Agreement hereby consents to the exclusive jurisdiction of any state or federal court located within the county of New York in the State of New York with respect to all matters arising from or relating in any manner to the subject matter of a Transaction Agreement. Unless otherwise provided in the applicable Transaction Agreement, each party to a Transaction Agreement further agrees that service of any process, summons, notice or document by U.S. registered mail to such Person's respective address set forth in the applicable Transaction Agreement shall be effective service of process for any action, suit or proceeding in New York with respect to any matters to which it has submitted to jurisdiction as set forth in the immediately preceding sentence. Each party to a Transaction Agreement (x) irrevocably and unconditionally waives (and agrees not to plead or claim) any objection (i) to the laying of venue of any action, suit or proceeding arising out of the Transaction Agreements or the transactions contemplated thereby in any state or Federal court located within the county of New York in the State of New York or (ii) that any such action, suit or proceeding brought in any such court has been brought in an inconvenient forum; and (y) consents to the granting of such legal or equitable relief as is

deemed appropriate by any aforementioned court in connection with such action, suit or proceeding.

12.16 GOVERNING LAW. UNLESS OTHERWISE SPECIFIED THEREIN, EACH TRANSACTION AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE INTERNAL LAWS OF THE STATE OF NEW YORK, UNITED STATES OF AMERICA, APPLICABLE TO AGREEMENTS MADE AND TO BE PERFORMED ENTIRELY WITHIN SUCH STATE.

12.17 Waiver of Jury Trial. EACH PARTY TO A TRANSACTION AGREEMENT HEREBY WAIVES TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LITIGATION DIRECTLY OR INDIRECTLY ARISING OUT OF, UNDER OR IN CONNECTION WITH ANY OF THE TRANSACTION AGREEMENTS. EACH PARTY TO A TRANSACTION AGREEMENT (I) CERTIFIES THAT NO REPRESENTATIVE OF ANY OTHER PARTY HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THE FOREGOING WAIVER AND (II) ACKNOWLEDGES THAT IT AND THE OTHER PARTIES THERETO HAVE BEEN INDUCED TO ENTER INTO THE TRANSACTION AGREEMENTS BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION 12.17.

12.18 Dispute Resolution. Except for (i) a dispute related to claims subject to an indemnification claim pursuant to the applicable Transaction Agreement, or (ii) as otherwise provided in this Section 12.18, neither Party shall resort to legal remedies or commence any formal proceedings to resolve a dispute under a Transaction Agreement until the Parties have attempted to resolve the dispute through the escalation process described in this Section 12.18. The Party raising a dispute shall submit to the other Party a written notice and supporting material describing all issues and circumstances related to the dispute (a “**Dispute Notice**”). The designated primary representative of each Party (as specified in such Transaction Agreement) shall together attempt to resolve the dispute. If the Parties’ primary representatives fail to resolve the dispute within thirty (30) days from receipt of a Dispute Notice, a Corporate Vice President (or higher-level officer) of each Party shall attempt to resolve it. If the Corporate Vice Presidents (or higher-level officers) of the Parties are unable to resolve the dispute within sixty (60) days from receipt of the Dispute Notice, either Party may commence formal Legal Proceedings to resolve the dispute. This Section 12.18 shall not be construed to prevent a Party from instituting formal proceedings earlier than indicated in this Section 12.18 to: (A) avoid the expiration of any applicable statute of limitations period, (B) preserve a superior creditor position, or (C) seek injunctive relief to prevent an irreparable harm.

12.19 Mutual Responsibilities. The Parties agree that with respect to each Transaction Agreement, except as otherwise specified therein:

(a) the relationship created by any Transaction Agreement is not a partnership (and accordingly, for example, no party thereto is responsible for debts incurred by the other as a partner), and, except as set forth in any Transaction Agreement, no party thereto is an employee or franchisee of the other, nor does any Transaction Agreement create a joint venture or any fiduciary

relationships or responsibilities between any such parties, and all such parties are independent contractors;

(b) each party thereto will comply with all applicable Governmental Rules (such as those governing consumer transactions and exports);

(c) no party thereto will assume or create any obligations on behalf of any other party thereto or make any representations or warranties about any other party thereto;

(d) each party thereto will allow a breaching party a reasonable opportunity to remedy any breach under any such Transaction Agreement before pursuing any available remedy; and

(e) no party thereto will bring a legal action against any other party for claims under any Transaction Agreement more than two (2) years after the later of the date the cause of action arose or the party first knew or should have known of the facts giving rise to the cause of action, unless otherwise provided by applicable Governmental Rules without the possibility of contractual waiver.

* * *

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized signatories as of the date and year first above written.

BROOKS AUTOMATION, INC.

By: /s/ Stephen S. Schwartz

Name: Stephen S. Schwartz

Title: President & CEO

EDWARDS VACUUM LLC

By: /s/ Scott Balaguer
Scott Balaguer, Vice President and General Manager,
Semiconductor Division North America

ATLAS COPCO AB

(only with respect to Section 6.9),

By: /s/ Håkan Osvald
Håkan Osvald, Senior Vice President, General Counsel

By: /s/ Hans Ola Meyer
Hans Ola Meyer, Senior Vice President
Controlling & Finance and Chief Financial Officer

**BROOKS AUTOMATION, INC.
SUBSIDIARIES OF THE REGISTRANT**

| Legal Entity | <u>Jurisdiction</u> |
|---|----------------------------|
| 4titude Ltd | UK |
| Brooks Automation (France) SAS | France |
| Brooks Automation (Germany) GmbH | Germany |
| Brooks Automation (Singapore) PTE Ltd | Singapore |
| Brooks Automation Taiwan Company Ltd | Taiwan |
| Brooks Automation (UK) Ltd | UK |
| Brooks Automation Asia Ltd | Korea |
| Brooks Automation Israel Ltd | Israel |
| Brooks Automation Korea Inc. | Korea |
| Brooks Automation Luxembourg SARL | Luxembourg |
| Brooks Technology (Shanghai) Limited | China |
| Biostorage Technologies Inc. | USA |
| Biostorage Technologies GmbH | Germany |
| Biostorage Technologies Asia Pacific Pte Ltd | Singapore |
| Biostorage Technologies (Beijing) Consulting Co Ltd | China |
| Brooks Japan KK | Japan |
| Brooks Automation AG | Switzerland |
| Ulvac Cryogenics Korea Inc. | Korea |
| Ulvac Cryogenics Ningbo Inc. | China |
| Ulvac Cryogenics Inc. (50% JV in Japan) | Japan |
| Cool Lab LLC | USA |
| DMS Shanghai Trading Co. Ltd | China |
| FluidX Ltd | UK |
| Cedrex | Denmark |
| UK Biofex | UK |
| Brooks CCS Japan KK | Japan |
| Brooks RS Holding AG | Switzerland |
| Tec-Sem AG | Switzerland |
| Tec-Sem Singapore PTE Ltd | Singapore |
| Tec-Sem Korea | Korea |
| BioSpeciMan Corporation | Canada |
| BioSpeciMan LLC | USA |

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-212703) and Form S-8 (Nos. 333-202005, 333-142873, 333-123242, 333-216312, and 333-221826) of Brooks Automation, Inc. of our report dated November 29, 2018, relating to the consolidated financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
November 29, 2018

CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in the Registration Statement on Form S-3 (No. 333-212703) and Form S-8 (Nos. 333-202005, 333-142873, 333-123242, 333-216312, and 333-221826) of Brooks Automation, Inc. of our report dated November 16, 2018 relating to the financial statements of ULVAC CRYOGENICS INCORPORATED, which appears in this Form 10-K of Brooks Automation Inc.

/s/PricewaterhouseCoopers Aarata LLC
Tokyo, Japan
November 28, 2018

CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Stephen S. Schwartz, certify that:

1. I have reviewed this annual report on Form 10-K of Brooks Automation, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ STEPHEN S. SCHWARTZ

Stephen S. Schwartz
Chief Executive Officer

Date: November 29, 2018

CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Lindon G. Robertson, certify that:

1. I have reviewed this annual report on Form 10-K of Brooks Automation, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ LINDON G. ROBERTSON

Lindon G. Robertson
Executive Vice President and Chief Financial Officer

Date: November 29, 2018

CERTIFICATION

**PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002 (SUBSECTIONS (A)
AND (B) OF SECTION 1350, CHAPTER 63 OF TITLE 18, UNITED STATES CODE)**

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code), the undersigned officer of Brooks Automation, Inc., a Delaware corporation (the "Company"), does hereby certify that:

(1) The Annual Report on Form 10-K for the year ended September 30, 2018 of the Company fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Annual Form 10-K fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ STEPHEN S. SCHWARTZ

Stephen S. Schwartz

Director and Chief Executive Officer
(Principal Executive Officer)

Dated: November 29, 2018

/s/ LINDON G. ROBERTSON

Lindon G. Robertson

Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

Dated: November 29, 2018

A signed original of this written statement required by Section 906 has been provided to Brooks Automation, Inc. and will be retained by Brooks Automation, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

Report of Independent Auditors

To the Board of Directors of ULVAC CRYOGENICS INCORPORATED

We have audited the accompanying consolidated financial statements of ULVAC CRYOGENICS INCORPORATED and its subsidiaries, which comprise the consolidated statement of financial position as of June 30, 2018 and 2017, and the related consolidated statements of income, comprehensive income, changes in equity and cash flows for the years then ended.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on the consolidated financial statements based on our audit. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the Company's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of ULVAC CRYOGENICS INCORPORATED and its subsidiaries as of June 30, 2018 and 2017, and the results of their operations and their cash flows for the years then ended in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

/s/ PricewaterhouseCoopers Aarata LLC
Tokyo, Japan
November 16, 2018

ULVAC CRYOGENICS INCORPORATED AND SUBSIDIARIES

Consolidated Statements of Financial Position

June 30, 2018 and 2017

| Assets | Note | Yen (millions) | |
|--|------|-----------------|-----------------|
| | | June 30, 2018 | June 30, 2017 |
| Assets | | | |
| Current assets: | | | |
| Cash and cash equivalents | 5 | ¥ 1,234 | ¥ 2,505 |
| Trade and other receivables | 6 | 4,074 | 3,222 |
| Inventories | 9 | 2,412 | 2,563 |
| Other current financial assets | 8 | 16 | 13 |
| Other current assets | 7 | 88 | 111 |
| Total current assets | | 7,824 | 8,414 |
| Non-current assets: | | | |
| Financial assets | 8 | 278 | 272 |
| Property, plant and equipment | 10 | 1,519 | 1,019 |
| Intangible assets | 11 | 125 | 125 |
| Deferred tax assets | 22 | 243 | 288 |
| Other non-current assets | 7 | 244 | 193 |
| Total non-current assets | | 2,409 | 1,897 |
| Total assets | | ¥ 10,233 | ¥ 10,311 |
| Liabilities and Equity | | | |
| Current liabilities: | | | |
| Trade and other payables | 12 | ¥ 2,069 | ¥ 2,215 |
| Financial liabilities (current) | 13 | 497 | 202 |
| Accrued expenses | | 86 | 81 |
| Income taxes payable | 22 | 81 | 576 |
| Provisions | 14 | 34 | 66 |
| Other current liabilities | 15 | 169 | 199 |
| Total current liabilities | | 2,936 | 3,301 |
| Non-current liabilities: | | | |
| Financial liabilities (non-current) | 13 | 0 | 2 |
| Retirement benefit liability | 16 | 764 | 743 |
| Provisions | 14 | 31 | - |
| Deferred tax liabilities | 22 | 134 | 120 |
| Other non-current liabilities | | 19 | 21 |
| Total non-current liabilities | | 948 | 924 |
| Total liabilities | | 3,884 | 4,225 |
| Equity: | | | |
| Common stock | | 50 | 50 |
| Legal Reserves | | 69 | 55 |
| Retained earnings | | 6,319 | 6,059 |
| Accumulated Other Comprehensive Income | 17 | (89) | (78) |
| Total equity | | 6,349 | 6,086 |
| Total liabilities and equity | | ¥ 10,233 | ¥ 10,311 |

ULVAC CRYOGENICS INCORPORATED AND SUBSIDIARIES

Consolidated Statements of Income
Years ended June 30, 2018, 2017 and 2016

| | Note | Yen (millions) | | |
|---|------|-----------------------------|----------|---------|
| | | For the year ended June 30, | | |
| | | 2018 | 2017 | 2016 |
| Sales revenue | 18 | ¥ 10,455 | ¥ 11,639 | ¥ 7,603 |
| Cost of sales | | 6,591 | 7,053 | 4,968 |
| Gross Profit | | 3,864 | 4,586 | 2,635 |
| Selling, general and administrative expenses | 19 | 1,489 | 1,374 | 1,226 |
| Research and development expenses | 20 | 363 | 312 | 234 |
| Other income | | 37 | 43 | 27 |
| Other expenses | | 16 | 14 | 21 |
| Operating profit | | 2,033 | 2,929 | 1,181 |
| Finance income and finance costs: | | | | |
| Interest income | 21 | 10 | 9 | 12 |
| Interest expense | 21 | 13 | 3 | 4 |
| Other finance income net of other finance expenses | 21 | 41 | 26 | (48) |
| Net finance income (expenses) | | 38 | 32 | (40) |
| Profit before income taxes | | 2,071 | 2,961 | 1,141 |
| Income tax expense | 22 | 597 | 798 | 304 |
| Profit for the year | | ¥ 1,474 | ¥ 2,163 | ¥ 837 |
| Profit for the year attributable to: | | | | |
| Shareholders of the Company | | ¥ 1,474 | ¥ 2,163 | ¥ 837 |
| Non-controlling interests | | ¥ - | ¥ - | ¥ - |
| Basic and diluted earnings per share (units: 1 JPY) | 23 | ¥ 14,745 | ¥ 21,635 | ¥ 8,376 |

ULVAC CRYOGENICS INCORPORATED AND SUBSIDIARIES

Consolidated Statements of Comprehensive Income

Years ended June 30, 2018, 2017 and 2016

| | Note | Yen (millions) | | |
|---|------|-----------------------------|----------------|--------------|
| | | For the year ended June 30, | | |
| | | 2018 | 2017 | 2016 |
| Profit for the year | | ¥ 1,474 | ¥ 2,163 | ¥ 837 |
| Other comprehensive income, net of tax: | | | | |
| Items that will not be reclassified to profit or loss | | | | |
| Remeasurements of defined benefit plans | 17 | (9) | (4) | (28) |
| Items that may be reclassified subsequently to profit or loss | | | | |
| Exchange differences on translating foreign operations | 17 | (2) | 204 | (467) |
| Total other comprehensive income, net of tax | | <u>(11)</u> | <u>200</u> | <u>(495)</u> |
| Comprehensive income for the year | | <u>¥ 1,463</u> | <u>¥ 2,363</u> | <u>¥ 342</u> |
| Comprehensive income for the year attributable to: | | | | |
| Shareholders of the Company | | ¥ 1,463 | ¥ 2,363 | ¥ 342 |
| Non-controlling interests | | ¥ - | ¥ - | ¥ - |

Consolidated Statements of Changes in Equity

Years ended June 30, 2018, 2017 and 2016

| | Equity | | | | |
|---|--------------|----------------|-------------------|--|--------------|
| | Common stock | Legal Reserves | Retained Earnings | Accumulated Other Comprehensive Income | Total Equity |
| Balance as of July 1, 2015 (Unaudited) | ¥ 50 | ¥ 41 | ¥ 3,523 | ¥ 217 | ¥ 3,831 |
| Comprehensive income for the year | | | | | |
| Profit for the year | | | 837 | | 837 |
| Other comprehensive income, net of tax | | | - | (495) | (495) |
| Total comprehensive income for the year | | | 837 | (495) | 342 |
| Transfers to legal reserves | | 6 | (6) | | - |
| Dividends paid | | | (150) | | (150) |
| Balance as of June 30, 2016 | ¥ 50 | ¥ 47 | ¥ 4,204 | ¥ (278) | ¥ 4,023 |
| Comprehensive income for the year | | | | | |
| Profit for the year | | | 2,163 | | 2,163 |
| Other comprehensive income, net of tax | | | - | 200 | 200 |
| Total comprehensive income for the year | | | 2,163 | 200 | 2,363 |
| Transfers to legal reserves | | 8 | (8) | | - |
| Dividends paid | | | (300) | | (300) |
| Balance as of June 30, 2017 | ¥ 50 | ¥ 55 | ¥ 6,059 | ¥ (78) | ¥ 6,086 |
| Comprehensive income for the year | | | | | |
| Profit for the year | | | 1,474 | | 1,474 |
| Other comprehensive income, net of tax | | | - | (11) | (11) |
| Total comprehensive income for the year | | | 1,474 | (11) | 1,463 |
| Transfers to legal reserves | | 14 | (14) | | - |
| Dividends paid | | | (1,200) | | (1,200) |
| Balance as of June 30, 2018 | ¥ 50 | ¥ 69 | ¥ 6,319 | ¥ (89) | ¥ 6,349 |

Consolidated Statements of Cash Flows
Years ended June 30, 2018, 2017 and 2016

| | Note | Yen (millions) | | |
|---|------|-----------------------------|--------------|--------------|
| | | For the year ended June 30, | | |
| | | 2018 | 2017 | 2016 |
| Cash flows from operating activities: | | | | |
| Profit before income taxes | | ¥ 2,071 | ¥ 2,961 | ¥ 1,141 |
| Depreciation and amortization | | 177 | 133 | 122 |
| Finance income and finance costs, net | | 107 | (196) | (15) |
| Changes in Trade and other receivables | | (797) | (637) | (802) |
| Changes in Inventories | | 172 | (522) | (498) |
| Changes in Trade and other payables | | (146) | 566 | 709 |
| Changes in Provisions and retirement benefit liabilities | | (37) | 64 | 134 |
| Changes in Other assets and liabilities | | (27) | (34) | 74 |
| Other, net | | 4 | 3 | 19 |
| Interest received | | 10 | 10 | 12 |
| Interest paid | | (12) | (3) | (4) |
| Income tax refunds received | | - | - | 20 |
| Income taxes paid | | (1,181) | (387) | (84) |
| Net cash provided by operating activities | | 341 | 1,959 | 828 |
| Cash flows from investing activities: | | | | |
| Payments for additions to property, plant and equipment | 10 | (674) | (400) | (185) |
| Proceeds from sales of property, plant and equipment | | - | - | 6 |
| Payments for additions to intangible assets | | (10) | (14) | (6) |
| Payments for insurance contract assets | | (51) | (38) | (28) |
| Proceeds from cancellation of insurance contracts | | 22 | 36 | 14 |
| Payments for acquisitions of other financial assets | | (18) | (25) | (29) |
| Proceeds from sales and redemptions of other financial assets | | 13 | 145 | 24 |
| Other, net | | - | - | 0 |
| Net cash used in investing activities | | (718) | (296) | (204) |
| Cash flows from financing activities: | | | | |
| Proceeds from short-term financial liabilities | 13 | 1,253 | 350 | 100 |
| Repayments of short-term financial liabilities | 13 | (951) | (250) | (303) |
| Repayments of long-term financial liabilities | | - | - | (200) |
| Payment for lease obligation | | (2) | (2) | (3) |
| Dividends paid | | (1,200) | (300) | (150) |
| Net cash used in financing activities | | (900) | (202) | (556) |
| Effect of exchange rate changes on cash and cash equivalents | | 6 | 114 | (65) |
| Net change in cash and cash equivalents | | (1,271) | 1,575 | 3 |
| Cash and cash equivalents at beginning of year | | 2,505 | 930 | 927 |
| Cash and cash equivalents at end of year | 5 | ¥ 1,234 | ¥ 2,505 | ¥ 930 |

Notes to Consolidated Financial Statements

1. Reporting Entity

ULVAC CRYOGENICS INCORPORATED (the “Company”) is a private company domiciled in Japan. The Company is owned equally by ULVAC, Inc. in Japan and Brooks Automation, Inc. in the United States of America. The Company designs, manufactures and sells cryopumps as well as providing maintenance services. These financial statements are consolidated financial statements for the group consisting of the Company and its subsidiaries (collectively, the “Group”).

2. Basis of Preparation

(a) Compliance with International Financial Reporting Standards

The Company’s consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (“IFRSs”), as issued by the International Accounting Standards Board (“IASB”). The term “IFRSs” also includes International Accounting Standards (IASs) and the related interpretations of the interpretations committees.

The accompanying consolidated financial statements of the Group have been prepared in accordance with IFRSs. Pursuant to a guidance (section 6400) of U.S. Securities and Exchange Commission (“SEC”), we are required to disclose reconciliation of IFRSs to generally accepted accounting principles in the United States (“US GAAP”).

(b) Basis of Measurement

The consolidated financial statements have been prepared on the historical cost basis, except for certain assets and liabilities separately stated in note 3.

(c) Functional Currency and Presentation Currency

The consolidated financial statements are presented in Japanese yen, which is the functional currency of the Company. All financial information presented in Japanese yen has been rounded to the nearest million Japanese yen, except when otherwise indicated.

(d) Early Adoption of New Accounting Standards and Interpretations

The Group does not apply new accounting standards until they are required for adoption under international financial accounting standards.

(e) New Accounting Standards and Interpretations Not Yet Adopted

New or amended standards and interpretations that have been issued as of the date of approval of the consolidated financial statements but are not effective and have not yet been adopted by the Group as of June 30, 2018 are as follows.

The Company is currently evaluating the impact of adoption of these standards and interpretations on the Company’s consolidated financial statements.

| Standards and interpretations | | Mandatory adoption (from fiscal years beginning on or after) | Reporting periods in which the Group is scheduled to adopt the standards | Overview of new or amended standards and interpretations |
|-------------------------------|--|--|---|--|
| IFRS 9 | Financial Instruments (issued in 2014) | January 1, 2018 | Fiscal year ending June 30, 2019 | Amendment regarding the requirements for classifying and measuring financial assets and liabilities, accounting for impairment of financial assets in which an entity always accounts for expected credit losses and changes in those expected credit losses, and hedge accounting in which revision of qualifying criteria of hedging instruments and hedging items, and hedge effectiveness requirement. |

| Standards and interpretations | | Mandatory adoption (from fiscal years beginning on or after) | Reporting periods in which the Group is scheduled to adopt the standards | Overview of new or amended standards and interpretations |
|-------------------------------|---|--|---|--|
| IFRS 15 | Revenue from Contracts with Customers | January 1, 2018 | Fiscal year ending June 30, 2019 | IFRS 15 establishes a five-step model framework for recognizing revenue that apply to all contracts with customers, and will supersede IAS 18, Revenue, IAS 11, Construction Contracts, and a number of revenue-related interpretations. The core principle in this standard is that a company should recognize revenue to depict the transfer of promised goods or services to the customer in an amount that reflects the consideration to which the company expects to be entitled in exchange for those goods or services. |
| | | | | a |
| IFRS 16 | Leases | January 1, 2019 | Fiscal year ending June 30, 2020 | New standard applied in accounting and disclosure for recognition of leases, which supersedes current standards of recognition of leases such as IAS17, Leases and IFRIC 4, Determination Whether an Arrangement Contains a Lease. The core principle in this standard is that a lessee is required to recognize a right-of-use asset representing its right to use the underlying leased asset and a lease liability representing its obligation to make lease payments. |

a. IFRS9 “Financial Instruments”

The Company will adopt IFRS9 “Financial Instruments” from the fiscal year ending June 30, 2019. In accordance with the transitional provisions of IFRS 9, the Company will apply this standard retrospectively to financial instruments held as of the date of initial application (July 1, 2018) and recognize the cumulative effect of applying the standard as an adjustment to the opening retained earnings at the date of initial application. Accordingly, comparative information for the fiscal year ended June 30, 2018 will not be restated. Instead, the Company will disclose the effect of applying IFRS 9 as a comparison between the reported results under the new standard and those that would have been reported under the current standard in the fiscal year ending June 30, 2019.

The adoption of IFRS 9 has no impact on the Group’s results of operations or financial positions since the Group has no applicable financial instruments affected according to the adoption of IFRS 9 as of June 30, 2018.

b. IFRS 15 “Revenue from Contract with Customers”

The Company will adopt IFRS15 “Revenue from Contract with Customers” from the fiscal year ending June 30, 2019. In accordance with the transitional provisions of IFRS 15, the Company will apply this standard retrospectively to contracts that are not completed as of the date of initial application (July 1, 2018) and recognize the cumulative effect of applying the standard as an adjustment to the opening retained earnings at the date of initial application. Accordingly, comparative information for the fiscal year ended June 30, 2018 will not be restated. Instead, the Company will disclose the effect of applying IFRS 15 as a comparison between the reported results under the new standard and those that would have been reported under the current standard in the fiscal year ending June 30, 2019.

As result of applying IFRS 15, the Company recognizes revenue as the Company satisfies a performance obligation by transferring a promised service to a customer, which has been assessed as immaterial to total revenue of the Company and its revenue is recognized at a point of completion of rendering service.

b. IFRS 16 “Leases”

The Company will adopt IFRS 16 “Leases” from the fiscal year ending June 30, 2020. The Company is currently evaluating the potential impacts to the Group’s results of operations or financial positions.

(f) Use of Estimates and Judgments

The preparation of the consolidated financial statements in accordance with IFRSs requires management to make judgments, estimates and assumptions that affect the application of accounting policies, the reported amount of assets, liabilities, revenues and expenses, and the disclosure of contingent assets and liabilities. Actual results could differ from these estimates.

These estimates and underlying assumptions are reviewed on a continuous basis. Changes in these accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

Information about judgments that have been made in the process of applying accounting policies and that have significant effects on the amounts reported in the consolidated financial statements is as follows:

- Scope of subsidiaries (notes 3(a))
- Accounting for contracts including lease (note 3(g))

Information about accounting estimates and assumptions that have significant effects on the amounts reported in the consolidated financial statements is as follows:

- Measurement of net defined benefit liabilities (assets) (note 15)
- Financial instruments (note 8 and 13)

3. Significant Accounting Policies

(a) Basis of Consolidation

The consolidated financial statements include the accounts of the Company, its subsidiaries which are directly or indirectly controlled by the Company. All significant intercompany balances and transactions have been eliminated in consolidation.

The Company controls an entity when the Company is exposed or has rights to variable returns from involvement with the entity, and has the ability to affect those returns by using its power, which is the current ability to direct the relevant activities, over the entity. To determine whether or not the Company controls an entity, status of voting rights or similar rights, contractual agreements and other specific factors are taken into consideration.

The financial statements of subsidiaries are included in the consolidated financial statements from the date when the control is obtained until the date when the control is lost. The financial statements of subsidiaries have been adjusted in order to ensure consistency with the accounting policies adopted by the Company as necessary.

(b) Foreign Currency Translations

1) Foreign currency transactions

Foreign currency transactions are translated into the respective functional currencies at the exchange rates prevailing when such transactions occur. All foreign currency receivables and payables are translated into the respective functional currencies at the applicable exchange rates at the end of the reporting period. Gains or losses on exchange differences arising on settlement of foreign currency receivables and payables or on their translations at the end of the reporting date are recognized in profit or loss and they are included in finance income and finance costs-other, net in the consolidated statements of income, unless any gains or losses are recognized in other comprehensive income.

2) Foreign operations

All assets and liabilities of foreign subsidiaries (collectively “foreign operation”), which use a functional currency other than Japanese yen, are translated into Japanese yen at the exchange rates at the end of the reporting period. All revenues and expenses of foreign operation are translated into Japanese yen at the average exchange rate for the period. Exchange differences arising from translation are recognized in other comprehensive income and accumulated in other components of equity in the consolidated statements of financial position.

(c) Financial Instruments

A financial instrument is a contract that gives rise to a financial asset of one entity and a financial liability or equity security of another entity. When the Group becomes a party to the contractual provision of a financial instrument, the financial instrument is

recognized either as a financial asset or as a financial liability. When the Group purchases or sells a financial asset, the financial asset is recognized or derecognized at the trade date.

1) Financial assets measured at amortized cost

The Group classifies financial assets other than derivatives as “financial assets measured at amortized cost”. The Group determines the classification of financial assets upon initial recognition. Financial assets measured at amortized cost are initially measured at their fair value, and are subsequently measured at amortized cost using the effective interest method.

(Receivables)

Trade receivables are classified as financial assets measured at amortized cost.

Allowance for doubtful accounts is a reserve for the impairment of trade receivables on the Consolidated Statements of Financial Position. Several factors are relied upon in developing the estimate for the allowance for doubtful accounts, including:

- Historical information, such as general collection history;
- Current customer information and events, such as extended delinquency, requests for restructuring and filings for bankruptcy;
- Results of analyzing historical and current data; and
- The overall macroeconomic environment.

The allowance includes two components: (1) specifically identified receivables that are reviewed for impairment objectively when, based on current information, the Group does not expect to collect the full amount due from the customer; and (2) an allowance for losses inherent in the remaining receivable portfolio based on historical activity and adjusting observable data for a group of financial assets to reflect current circumstances and adjusting observable data for a group of financial assets to reflect current circumstances.

(Loans)

Financial assets measured at amortized cost are initially measured at their fair value, and are subsequently measured at amortized cost using the effective interest method. Loans are classified as current and non-current based on the underlying maturity date or expected recovery date. Loans are classified as current when they become due or expected to be collected within one year or less.

Long-term loan receivables are due from employees and the Group and outstanding amounts of long-term loan receivables shall be offset by lump-sum payment in their retirement, therefore risk of bad debt allowance was estimated at extremely low.

Financial assets are derecognized when the contractual rights to cash flows from the financial assets expire, or when the contractual rights to receive the cash flows from the financial assets are transferred and all risks and rewards of ownership of the financial assets are substantially transferred.

(Cash and cash equivalents)

Cash and cash equivalents consist of cash on hand, demand deposits, and short-term highly liquid investments that are readily convertible to known amounts of cash and are subject to insignificant risk of changes in value. The Group includes all highly liquid debt instruments with original maturities of three months or less in cash equivalents.

2) Non-derivative financial liabilities

Financial liabilities other than derivatives are initially measured at their fair value, and are subsequently measured at amortized cost using the effective interest method.

Financial liabilities are derecognized, when the obligations specified in the contract are discharged, canceled or expire.

(d) Inventories

Inventories are measured at the lower of cost and net realizable value. The cost of inventories includes purchase costs and conversion costs, and it is determined principally by using the average cost method calculated using the actual capacity utilization. Conversion cost includes an appropriate share of production overheads on the normal operation capacity. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale.

(e) Property, Plant and Equipment

Property, plant and equipment is measured based on the cost model and carried at its cost less accumulated depreciation and impairment losses.

Property, plant and equipment is initially measured at its cost. Subsequent expenditures on an item of property, plant and equipment acquired, are recognized in the carrying amount of the item, only when it is probable that the expenditure will generate a future economic benefit.

Depreciation of property, plant and equipment, except for land that is not subject to depreciation, is calculated on the straight-line method over the estimated useful life. The depreciable amount is the cost of the asset less the respective estimated residual values.

The estimated useful lives used in calculating depreciation of property, plant and equipment are mainly as follows:

- Buildings and structures: 20 to 31 years
- Machinery and equipment: 3 to 17 years
- Fixture and furniture: 2 to 20 years

The depreciation method, useful lives and residual values of property, plant and equipment are reviewed annually at each fiscal year end, and adjusted prospectively, if appropriate.

(f) Intangible Assets

Intangible assets are measured based on the cost model and carried at their cost less accumulated amortization and impairment losses. Intangible assets are amortized using the straight-line method over their estimated useful lives. Intangible assets are mainly comprised of software for internal use and patent whose estimated useful lives ranges are 5 years. The amortization method and useful lives of intangible assets are reviewed annually at each fiscal year end, and adjusted prospectively, if appropriate.

(Goodwill)

Goodwill arises as the result of business combinations where the fair value of the consideration transferred for an acquisition exceeds the fair value of the acquired assets and liabilities of the acquired entity. Goodwill is allocated to a cash generating unit that represents the lowest level at which the goodwill is monitored for internal management purposes, and that is not larger than an operating segment. The Company does not amortize goodwill in accordance with international accounting standards but a cash-generating unit to which goodwill has been allocated is tested for impairment annually, and whenever there is an indication that the unit may be impaired, by comparing the carrying amount of the unit, including the goodwill, with the recoverable amount of the unit. If the carrying amount of the unit exceeds the recoverable amount of the unit, the Company recognizes the impairment loss, first, by reducing the carrying amount of goodwill, and then other assets of the unit on the basis of the relative carrying amount of each asset in the unit. That reduction is an impairment loss.

(g) Leases

An arrangement that is or contains a lease is determined based on the substance of the arrangement by assessment of whether the fulfillment of that arrangement depends on use of a specific asset or group of assets, and whether a right to use the asset is transferred under the arrangement.

When an arrangement is or contains a lease, the lease is classified as a finance lease if it transfers substantially all the risks and rewards incidental to the ownership, based on the substance of the arrangement. Leases other than finance lease are classified as operating lease.

(Lease as a lessee)

A leased asset and liability for the future lease payment under a finance lease are initially recognized at the lower of fair value of the leased asset or the present value of the minimum lease payments, each determined at inception of the lease. After the initial recognition, the leased asset is accounted for according to the accounting policies applied to the asset. Lease payments under a finance lease are apportioned between the finance cost and the reduction in the carrying amount of the liability. Lease payments under an operating lease are recognized as an expense on a straight-line basis over the lease term.

(h) Impairment

At the end of the reporting period, the carrying amount of non-financial assets other than inventories and deferred tax assets (which are comprised mainly of equipment on operating leases, property, plant and equipment, and intangible assets) are assessed to determine whether or not there is any indication of impairment. If there is such an indication, the recoverable amount of such asset is estimated and compared with the carrying amount of the asset, as test of impairment.

The recoverable amount of an individual asset or cash-generating units is the higher of fair value less costs to sell and value in use. Value in use is determined as the present value of future cash flows expected to be derived from an asset or a cash-generating unit. A cash-generating unit is determined as the smallest identifiable group of assets that generate cash inflows which are largely independent of cash inflows from other assets or a group of assets. When it is not possible to estimate the recoverable amount of the individual asset, the recoverable amount of the cash-generating unit to which the asset belongs is estimated.

When the carrying amount of an asset or a cash-generating unit exceeds the recoverable amount, the carrying amount is reduced to the recoverable amount and an impairment loss is recognized in profit or loss. An impairment loss for a cash-generating unit is allocated to the assets on the basis of the relative carrying amount of each asset in the unit.

An impairment loss recognized for an asset or a cash-generating unit in prior period is reversed, if there is any indication that the impairment loss may have decreased or may no longer exist, and when the recoverable amount of the asset exceeds the carrying amount. If this is the case, the carrying amount of the asset is increased to its recoverable amount, but the increased carrying amount does not exceed the carrying amount (net of depreciation or amortization) calculated on the basis that no impairment loss had occurred in the prior period.

(i) Provisions

Provisions are recognized when the Group has present legal or constructive obligation as a result of past events, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation.

Provisions are measured based on the best estimate of expenditure required to settle the present obligation at the end of the reporting period. Where the effect of the time value of money is material, a provision is measured at the present value of the expenditures required to settle the obligation. In calculating the present value, a pre-tax rate that reflects current market assessment of the time value of money and the risks specific to the liability is used as the discount rate.

(j) Employee Benefits

1) Short-term employee benefits

For short-term employee benefits including salaries, bonuses and paid annual leave, when the employees render related services, the amounts expected to be paid in exchange for those services are recognized as expenses.

2) Post-employment benefits

The Company and its subsidiaries have defined benefit plans.

(Defined benefit plans)

For defined benefit plans, the present value of defined benefit obligations less the fair value of plan assets is recognized as either liability or asset in the consolidated statements of financial position.

The present value of defined benefit obligations and service cost are principally determined for each plan using the projected unit credit method. The discount rate is determined by reference to market yields at the end of the reporting period on high quality corporate bonds that is consistent with the currency and estimated term of the post-employment benefit obligation. Net interest on the net defined benefit liability (asset) for the reporting period is determined by multiplying the net defined benefit liability (asset) by the discount rate.

Past service cost defined as the change in the present value of the defined benefit obligation resulting from a plan amendment or curtailment is recognized in profit or loss upon occurrence of the plan amendment or curtailment.

The Group recognizes the difference arising from remeasurement of present value of the defined benefit obligation and the fair value of the plan asset in other comprehensive income when it is incurred.

(k) Equity

(Common shares)

Common share issued by the Company is classified as equity, and the proceeds from issuance of common share are included in common stock.

(l) Revenue Recognition

Revenue is measured at the fair value of the consideration received or receivable. Amounts disclosed as revenue are net of returns, trade allowances, rebates and amounts collected on behalf of third parties.

The group recognizes revenue when the amount of revenue can be reliably measured, it is probable that future economic benefits will flow to the entity and specific criteria have been met for each of the group's activities as described below. The group bases its estimates on historical results, taking into consideration the type of customer, the type of transaction and the specifics of each arrangement.

(Sale of products)

Revenue from the sale of products is recognized at the date of completion of customers receiving products when the Group has transferred to the customers the significant risks and rewards of ownership of the products and the Group retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the products sold and the amount of revenue can be measured reliably by sales agreements and/or invoices issued after completion of sales of products.

(Sale of services)

Revenue from rendering of services is recognized by reference to the stage of completion of service transactions as the services have been rendered and the amount of revenue can be measured reliably by service agreements and/or invoices issued after completion of rendering services.

(m) Income Taxes

Income tax expenses are presented as the aggregate amount of current taxes and deferred taxes. Current taxes and deferred taxes are recognized in profit or loss, except for the tax arising from a transaction which is recognized either in other comprehensive income or directly in equity.

Current taxes are measured at the amount expected to be paid to (or recovered from) the taxation authorities in respect of the taxable profit (or tax loss) for the reporting period, using the tax rates and tax laws enacted or substantively enacted at the end of the reporting period.

Deferred tax assets and liabilities are recognized for future tax consequences attributable to temporary differences between the carrying amount of assets or liabilities in the consolidated statements of financial position and the tax base of the assets or liabilities and carry-forward of unused tax losses and tax credits. Deferred tax assets are recognized to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, unused tax losses, and unused tax credits can be utilized.

Deferred tax liabilities for taxable temporary differences related to investments in subsidiaries are not recognized to the extent that the Company is able to control the timing of the reversal of the temporary differences and it is probable that they will not reverse in the foreseeable future. Deferred tax assets for deductible temporary differences arising from investments in subsidiaries and affiliates, and interest in joint ventures are recognized to the extent that it is probable that the temporary differences will reverse in the foreseeable future and taxable profit will be available against which they can be utilized.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period when the assets are realized or the liabilities are settled, based on the tax rates and tax laws enacted or substantively enacted at the end of the reporting period. The measurement of deferred tax assets and liabilities reflects the tax consequences that would follow from the manner in which the Group expects, at the end of reporting period, to recover or settle the carrying amount of its assets and liabilities.

The Group reviews the carrying amount of deferred tax assets at the end of each reporting period, and reduces the carrying amount of deferred tax assets to the extent that it is no longer probable that sufficient taxable profit will be available to allow the benefit of part or all of that deferred tax assets to be utilized.

Deferred tax assets and deferred tax liabilities are offset, only when there is a legally enforceable right to set off current tax assets against current tax liabilities, and the same taxation authority levies income taxes either on the same taxable entity or on different taxable entity which intends either to settle current tax liabilities and assets on a net basis or to realize the assets and settle the liabilities simultaneously.

The Group recognizes the impact of tax positions in the consolidated financial statements, if any, based on the Group's assessment of various factors including interpretations of tax law and prior experiences, when it is probable that the positions will be sustained upon examination by the taxation authorities. We believe that there is no impact of tax positions as of the year ended June 30, 2018 and 2017

(n) Earnings per Share

Basic earnings per share is calculated by dividing profit for the year attributable to shareholders of the Company by the weighted average number of common shares outstanding during the period. Diluted earnings per share information is the same as earning per share information as the Company has not issued any potentially dilutive shares.

4. Segment Information

The Group has one reportable segment based on the Group's organizational structure and characteristics of products and services which is cryogenic vacuum pumps. Since the Company is not listed on any stock exchange markets, segment information is not required to disclose and description thereof is omitted.

5. Cash and Cash Equivalents

Cash and cash equivalents as of June 30, 2018 and 2017 consist of the following:

| | Yen (millions) | | | |
|-------------------|----------------|-------|---------------|-------|
| | June 30, 2018 | | June 30, 2017 | |
| Cash and deposits | ¥ | 1,234 | ¥ | 2,505 |
| Total | ¥ | 1,234 | ¥ | 2,505 |

*1 Fair value of cash and cash equivalent was estimated as approximately the value of their carrying amount and thus description of fair value of cash and cash equivalent was omitted.

6. Trade and Other Receivables

Trade and other receivables as of June 30, 2018 and 2017 consist of the following:

| | Yen (millions) | | | |
|--|----------------|-------|---------------|-------|
| | June 30, 2018 | | June 30, 2017 | |
| Trade accounts and notes receivable | | | | |
| Notes receivable | ¥ | 182 | ¥ | 231 |
| Accounts receivable | | 2,240 | | 1,883 |
| Electronically recorded monetary claims-receivables *1 | | 1,671 | | 1,168 |
| Allowance for doubtful accounts | | (19) | | (60) |
| Total | ¥ | 4,074 | ¥ | 3,222 |

Fair value of trade and other receivables was estimated as approximately the value of their carrying amount and thus description of fair value of trade and other receivables was omitted.

*1 Electronically recorded monetary claims-receivables are a new means of settlement that have been created for the purpose of facilitating business operations' financing activities by resolving the issues facing bills/notes receivable and nominative claims. The description of the rights to claims is determined by entering an electronic record in the registry managed by an electronic monetary claim recording institution.

The changes in the allowance for doubtful trade receivables for the years ended June 30, 2018, 2017 and 2016 are as follows:

| | Yen (millions) | | |
|--|-----------------------------|--------|--------|
| | For the year ended June 30, | | |
| | 2018 | 2017 | 2016 |
| Balance at beginning of year | ¥ (60) | ¥ (45) | ¥ (36) |
| Provision | 41 | (13) | (11) |
| Charge-offs | - | - | - |
| Exchange differences on translating foreign operations | (0) | (2) | 2 |
| Balance at end of year | ¥ (19) | ¥ (60) | ¥ (45) |

7. Other current and non-current Assets

Other current and non-current assets as of June 30, 2018 and 2017 consisted of the following:

| | Yen (millions) | |
|---------------------------|-----------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| | Advance payment | ¥ 59 |
| Prepaid expense | 51 | 20 |
| Insurance contract assets | 222 | 193 |
| Total | ¥ 332 | ¥ 304 |
| Current assets | ¥ 88 | ¥ 111 |
| Non-current assets | 244 | 193 |
| Total | ¥ 332 | ¥ 304 |

8. Other current financial assets and financial assets

Other current financial assets and financial assets as of June 30, 2018 and 2017 consist of the following:

| | Yen (millions) | |
|----------------------------|--------------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| | Guarantee deposits | ¥ 205 |
| Long-term loan receivables | 73 | 69 |
| Others | 16 | 13 |
| Total | ¥ 294 | ¥ 285 |
| Current assets | ¥ 16 | ¥ 13 |
| Non-current assets | 278 | 272 |
| Total | ¥ 294 | ¥ 285 |

Guarantee deposits are initially measured at fair value and are subsequently measured at amortized cost using the effective interest method. These fair values were estimated close to their carrying amounts as approximate value. Other financial assets are measured at amortized cost.

Long-term loan receivables are due from employees and outstanding amounts of long-term loan receivables shall be offset by lump-sum payment in their retirement, therefore risk of bad debt allowance was estimated to be extremely low.

Fair value of financial assets

Material differences between carrying amount and fair value are identified only for the following assets:

| | Yen (millions) | |
|---------------------------|--------------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| | Guarantee deposits | |
| Carrying amount | ¥ 205 | ¥ 203 |
| Fair value | ¥ 201 | ¥ 199 |
| Long-term loan receivable | | |
| Carrying amount | ¥ 73 | ¥ 69 |
| Fair value | ¥ 74 | ¥ 74 |

Fair value of financial assets was classified to level 3 of fair value hierarchy. Fair value was measured by discounting future cash flow from a contract of each financial asset. The discount rate was calculated by adopting capital asset pricing model which measured interest rates of profit before tax reflecting inherent risks specific for each financial asset and current market value as time value of money.

9. Inventories

Inventories as of June 30, 2018 and 2017 consist of the following:

| | Yen (millions) | |
|-----------------|----------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| Finished goods | ¥ 515 | ¥ 564 |
| Work in process | 510 | 549 |
| Raw materials | 1,387 | 1,450 |
| Total | ¥ 2,412 | ¥ 2,563 |

Amounts reclassified to cost of goods sold from acquisition costs of inventories were ¥4,925 million, ¥6,035 million and ¥3,878 million for the years ended June 30, 2018, 2017 and 2016 respectively. In addition, the amount of write-down of inventories recognized as an expense for the years ended June 30, 2018, 2017 and 2016 were ¥24 million, ¥25 million and ¥25 million respectively.

10. Property, Plant and Equipment

The changes in cost, accumulated depreciation and impairment losses, and the carrying amounts of property, plant and equipment for the years ended June 30, 2018, 2017 and 2016 are as follows:

(Cost)

| | Yen (millions) | | | | |
|--|--------------------------|------------------------|-----------------------|--------------------------|---------|
| | Buildings and structures | Machinery and vehicles | Fixture and furniture | Construction in progress | Total |
| Balance as of July 1, 2015 (Unaudited) | ¥ 619 | ¥ 1,271 | ¥ 504 | ¥ 6 | ¥ 2,400 |
| Additions *1 | 51 | 69 | 49 | 59 | 228 |
| Reclassification | - | 49 | 2 | (51) | - |
| Sales or disposal | (1) | (51) | (22) | - | (74) |
| Exchange differences on translating foreign operations | (73) | (138) | (40) | (2) | (253) |
| Balance as of June 30, 2016 | ¥ 596 | ¥ 1,200 | ¥ 493 | ¥ 12 | ¥ 2,301 |
| Additions *1 | 43 | 204 | 70 | 82 | 399 |
| Reclassification | - | 12 | 1 | (12) | 1 |
| Sales or disposal | (22) | (21) | (54) | - | (97) |
| Exchange differences on translating foreign operations | 31 | 46 | 17 | 2 | 96 |
| Balance as of June 30, 2017 | ¥ 648 | ¥ 1,441 | ¥ 527 | ¥ 84 | ¥ 2,700 |
| Additions *1 | 458 | 158 | 63 | 1 | 679 |
| Reclassification | - | 86 | - | (86) | - |
| Sales or disposal | (64) | (30) | (20) | - | (114) |
| Exchange differences on translating foreign operations | (3) | 10 | 3 | 2 | 12 |
| Balance as of June 30, 2018 | ¥ 1,039 | ¥ 1,665 | ¥ 572 | ¥ 1 | ¥ 3,277 |

*1 Addition of property, plant and equipment included increase of other accounts payable related to facilities for the year ended June 30, 2018, 2017 and 2016.

| | Yen (millions) | | |
|--|-----------------------------|------|------|
| | For the year ended June 30, | | |
| | 2018 | 2017 | 2016 |
| Increase of other accounts payable related to facilities | ¥ 5 | ¥ - | ¥ 43 |
| Total | ¥ 5 | ¥ - | ¥ 43 |

(Accumulated depreciation and impairment losses)

| | Yen (millions) | | | | |
|--|--------------------------|------------------------|-----------------------|--------------------------|-----------|
| | Buildings and structures | Machinery and vehicles | Fixture and furniture | Construction in progress | Total |
| Balance as of July 1, 2015 (Unaudited) | ¥ (304) | ¥ (942) | ¥ (429) | ¥ - | ¥ (1,675) |
| Depreciation *2 | (20) | (61) | (35) | - | (116) |
| Sales or disposal | 0 | 32 | 18 | - | 50 |
| Impairment losses | - | - | - | - | - |
| Exchange differences on translating foreign operations | 25 | 106 | 35 | - | 166 |
| Balance as of June 30, 2016 | ¥ (299) | ¥ (865) | ¥ (411) | ¥ - | ¥ (1,575) |
| Depreciation *2 | (21) | (71) | (37) | - | (129) |
| Sales or disposal | 20 | 8 | 53 | - | 81 |
| Impairment losses | - | - | - | - | - |
| Exchange differences on translating foreign operations | (10) | (33) | (13) | - | (56) |
| Other | - | (2) | - | - | (2) |
| Balance as of June 30, 2017 | ¥ (310) | ¥ (963) | ¥ (408) | ¥ - | ¥ (1,681) |
| Depreciation *2 | (26) | (104) | (43) | - | (173) |
| Sales or disposal | 64 | 27 | 20 | - | 111 |
| Impairment losses | - | - | - | - | - |
| Exchange differences on translating foreign operations | (4) | (3) | (4) | - | (11) |
| Other | (1) | (3) | (0) | - | (4) |
| Balance as of June 30, 2018 | ¥ (278) | ¥ (1,045) | ¥ (435) | ¥ - | ¥ (1,758) |

*2 Depreciation expenses were accounted for as cost of sales which was ¥122 million, ¥91 million and ¥83 million, as selling, general and administrative expenses which were ¥36 million, ¥28 million and ¥22 million, and as research and development expenses which were ¥15 million, ¥10 million and ¥11 million for the year ended June 30, 2018, 2017 and 2016, respectively.

(Carrying amount)

| | Yen (millions) | | | | |
|-----------------------------|--------------------------|------------------------|-----------------------|--------------------------|---------|
| | Buildings and structures | Machinery and vehicles | Fixture and furniture | Construction in progress | Total |
| Balance as of June 30, 2016 | ¥ 297 | ¥ 335 | ¥ 82 | ¥ 12 | ¥ 726 |
| Balance as of June 30, 2017 | ¥ 338 | ¥ 478 | ¥ 119 | ¥ 84 | ¥ 1,019 |
| Balance as of June 30, 2018 | ¥ 761 | ¥ 620 | ¥ 137 | ¥ 1 | ¥ 1,519 |

11. Intangible Assets

(1) Increase and decrease of intangible assets

The changes in cost, accumulated amortization and impairment losses, and carrying amounts of intangible assets for the years ended June 30, 2018, 2017 and 2016 are as follows:

(Cost)

| | Yen (millions) | | | | |
|--|----------------|----------|---------|-------|-------|
| | Goodwill | Software | Patents | Other | Total |
| Balance as of July 1, 2015 (Unaudited) | ¥ 74 | ¥ 37 | ¥ 15 | ¥ 33 | ¥ 159 |
| Additions | - | 5 | - | - | 5 |
| Exchange differences on translating foreign operations | - | - | - | (6) | (6) |
| Other | - | - | - | - | - |
| Balance as of June 30, 2016 | ¥ 74 | ¥ 42 | ¥ 15 | ¥ 27 | ¥ 158 |
| Additions | - | 7 | 7 | - | 14 |
| Exchange differences on translating foreign operations | - | - | - | (3) | (3) |
| Other | - | - | - | 6 | 6 |
| Balance as of June 30, 2017 | ¥ 74 | ¥ 49 | ¥ 22 | ¥ 30 | ¥ 175 |
| Additions | - | 8 | - | 2 | 10 |
| Sales or disposal | - | (1) | - | - | (1) |
| Exchange differences on translating foreign operations | - | 2 | - | (2) | 0 |
| Other | - | - | - | - | - |
| Balance as of June 30, 2018 | ¥ 74 | ¥ 58 | ¥ 22 | ¥ 30 | ¥ 184 |

(Accumulated amortization and impairment losses)

| | Yen (millions) | | | | |
|--|----------------|----------|---------|-------|--------|
| | Goodwill | Software | Patents | Other | Total |
| Balance as of July 1, 2015 (Unaudited) | ¥ - | ¥ (32) | ¥ (4) | ¥ 0 | ¥ (36) |
| Amortization *1 | - | (2) | (4) | - | (6) |
| Other | - | - | - | - | - |
| Balance as of June 30, 2016 | ¥ - | ¥ (34) | ¥ (8) | ¥ 0 | ¥ (42) |
| Amortization *1 | - | (2) | (4) | (2) | (8) |
| Exchange differences on translating foreign operations | - | 0 | - | - | 0 |
| Balance as of June 30, 2017 | ¥ - | ¥ (36) | ¥ (12) | ¥ (2) | ¥ (50) |
| Amortization *1 | - | (4) | (4) | (3) | (11) |
| Sales or disposal | - | 1 | - | - | 1 |
| Exchange differences on translating foreign operations | - | (1) | - | 2 | 1 |
| Balance as of June 30, 2018 | ¥ - | ¥ (40) | ¥ (16) | ¥ (3) | ¥ (59) |

*1 Amortization expenses were accounted for as cost of sales which was ¥11 million and ¥8 million and ¥6 million for the year ended June 30, 2018, 2017 and 2016, respectively.

(Carrying amount)

| | Yen (millions) | | | | |
|-----------------------------|----------------|----------|---------|-------|-------|
| | Goodwill | Software | Patents | Other | Total |
| Balance as of June 30, 2016 | ¥ 74 | ¥ 8 | ¥ 7 | ¥ 27 | ¥ 116 |
| Balance as of June 30, 2017 | ¥ 74 | ¥ 13 | ¥ 10 | ¥ 28 | ¥ 125 |
| Balance as of June 30, 2018 | ¥ 74 | ¥ 18 | ¥ 6 | ¥ 27 | ¥ 125 |

(2) Impairment test for goodwill

Goodwill was recognized when the Company purchased low temperature machinery business. Carrying amount of the goodwill was JPY74 million as of June 30, 2018 and 2017 and no impairment loss was recognized as a result of impairment test performed as of June 30, 2018, 2017 and 2016 respectively. The Company and its subsidiaries have only one business segment which is cryopumps business and three cash generating units are recognized for each group entities in line with the cryopumps business. A cash-generating unit to which goodwill has been allocated is tested for impairment annually, and whenever there is an indication that the unit may be impaired, by comparing the carrying amount of the unit, including the goodwill, with the recoverable amount of the unit. If the carrying amount of the unit exceeds the recoverable amount of the unit, the Company recognizes the impairment loss, first, by reducing the carrying amount of goodwill, and then other assets of the unit on the basis of the relative carrying amount of each asset in the unit. The recoverable amount was estimated by using value in use of the Company which was valued based on 5-year future business plan approved by management reflecting historical experience and other information gathered from outside environments. As a result of the impairment test, the estimated recoverable amount was substantially excess over the carrying amount of the unit, therefore, management believed that there was no case where the value in use became less than the carrying amount of the unit.

12. Trade and Other Payables

Trade and other payables are classified as financial liabilities measured at amortized cost.

Trade and other payables as of June 30, 2018 and 2017 consist of the following:

| | Yen (millions) | |
|-----------------|----------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| Notes payable | ¥ 1,262 | ¥ 1,258 |
| Account payable | 462 | 591 |
| Other | 345 | 366 |
| Total | ¥ 2,069 | ¥ 2,215 |

13. Financial Liabilities

(1) Financial liabilities as of June 30, 2018 and 2017 consist of the following:

| | Yen (millions) | |
|---|----------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| Current: | | |
| Short-term loans payable *1 | ¥ 495 | ¥ 200 |
| Lease obligation | - | - |
| Subtotal | 495 | 200 |
| Reclassification from non-current liabilities (Current portion) | 2 | 2 |
| Total | ¥ 497 | ¥ 202 |

*1 Short-term loans payable was held by the Company and its subsidiary. The Company and its subsidiary borrowed it from ULVAC Inc. for the purpose of working capital without any guarantee or collateral.

| | Yen (millions) | |
|---|----------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| Non-Current: | | |
| Lease obligation | ¥ 2 | ¥ 4 |
| Subtotal | 2 | 4 |
| Reclassification to current liabilities (Current portion) | 2 | 2 |
| Total | ¥ 0 | ¥ 2 |

Repayment schedule of short-term payable is as follows:

| | Yen (millions) | | Date for repayment |
|--------------------------|----------------|---------------|---|
| | June 30, 2018 | June 30, 2017 | |
| Short-term loans payable | ¥ 495 | ¥ 200 | Within 1 year after the end of each fiscal year |

The weighted average of interest rates for financial liabilities presented in current liabilities as of June 30, 2018 and 2017 are as follows:

| | June 30, 2018 | June 30, 2017 |
|--|---------------|---------------|
| The Company | | |
| Short-term loans payable from ULVAC Inc. | 2.09 % | 0.75 % |

The interest rate range and payment due date for financial liabilities presented in non-current liabilities (including reclassification to current liabilities) as of June 30, 2018 and 2017 are as follows:

| | June 30, 2018 | June 30, 2017 |
|------------------|--|--|
| Lease obligation | Interest rate: 8.00% Due: 2018 – 2020 | Interest rate: 8.00% Due: 2017 – 2020 |

Sensitivity analysis is omitted because both short-term loans and lease obligation are fixed interest liabilities.

(2) Fair value of financial liabilities

Financial liabilities are classified as financial liabilities measured at amortized cost.

| | Yen (millions) | |
|--------------------------------|----------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| Short-term loans payable | | |
| Carrying amount | ¥ 495 | ¥ 200 |
| Fair value | ¥ 491 | ¥ 199 |
| Lease obligation (current) | | |
| Carrying amount | ¥ 2 | ¥ 2 |
| Fair value | ¥ 2 | ¥ 2 |
| | | |
| | Yen (millions) | |
| | June 30, 2018 | June 30, 2017 |
| Lease obligation (non-current) | | |
| Carrying amount | ¥ 0 | ¥ 2 |
| Fair value | ¥ 0 | ¥ 2 |

Fair value of short-term loans payable and lease obligation was classified to level 3 of fair value hierarchy. Fair value was measured by discounting future cash flow from a contract of each financial liability. The discount rate was calculated by adopting capital asset pricing model which measured interest rates of profit before tax reflecting inherent risks specific for each financial liability and current market value as time value of money.

(3) Changes in liabilities arising from financial activities

The components of increase and decrease in short-term loans payables are as follows:

| | Yen (millions) | | |
|--|-----------------------------|-------|-------|
| | For the year ended June 30, | | |
| | 2018 | 2017 | 2016 |
| Balance at beginning of year | 200 | 100 | 309 |
| Proceeds from borrowing | 1,253 | 350 | 100 |
| Repayment of short-term loan payable | (951) | (250) | (303) |
| Exchange difference of foreign operation | (7) | - | (6) |
| Balance at end of year | 495 | 200 | 100 |

There are no outstanding balances of long-term loans payable or no material balances of lease obligations and long-term obligation to be disclosed, therefore a table of components of increase and decrease in such obligations is omitted.

14. Provisions

The components of and changes in provisions for the year ended June 30, 2018, 2017 and 2016 are as follows:

| | Yen (millions) | |
|--|--------------------|-------|
| | Warranty liability | Total |
| Balance as of July 1, 2015 (Unaudited) | ¥ 58 | ¥ 58 |
| Provision | 35 | 35 |
| Amounts used | (35) | (35) |
| Exchange differences on translating foreign operations | (2) | (2) |
| Balance as of June 30, 2016 | ¥ 56 | ¥ 56 |
| Provision | 59 | 59 |
| Amounts used | (50) | (50) |
| Exchange differences on translating foreign operations | 1 | 1 |
| Balance as of June 30, 2017 | ¥ 66 | ¥ 66 |
| Provision | 49 | 49 |
| Amounts used | (55) | (55) |
| Exchange differences on translating foreign operations | 5 | 5 |
| Balance as of June 30, 2018 | ¥ 65 | ¥ 65 |
| Current liabilities | 34 | 34 |
| Non-current liabilities | 31 | 31 |
| Total | ¥ 65 | ¥ 65 |

The Company and its subsidiaries recognize provisions for product warranties to cover future product warranty expenses. Provisions for product warranty are recognized by estimating future expenditures based principally on historical experience of warranty claims.

15. Other current liabilities

Other current liabilities as of June 30, 2018 and 2017 consisted of the following:

| | Yen (millions) | |
|-------------------------|----------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| Consumption tax payable | ¥ 35 | ¥ 51 |
| Deposit received | 108 | 131 |
| Others | 26 | 17 |
| Total | ¥ 169 | ¥ 199 |

16. Employee Benefits

(1) Employee Benefits

1) Short-term employee benefits

For short-term employee benefits including salaries, bonuses, when the employees render related services, the amounts expected to be paid in exchange for those services are recognized as expenses.

2) Post-employment benefits

The Group has various post-employment benefit plans including defined benefit plans.

(Defined benefit plans)

For defined benefit plans, the present value of defined benefit obligations less the fair value of plan assets is recognized as either liability or asset in the consolidated statements of financial position.

The present value of defined benefit obligations and service cost are principally determined for each plan using the projected unit credit method. The discount rate is determined by reference to market yields at the end of the reporting period on high quality corporate bonds that is ranked at least AA. Net interest on the net defined benefit liability (asset) for the reporting period is determined by multiplying the net defined benefit liability (asset) by the discount rate.

Past service cost defined as the change in the present value of the defined benefit obligation resulting from a plan amendment or curtailment is recognized in profit or loss upon occurrence of the plan amendment or curtailment.

The Company revised its defined benefit plans during the fiscal year ended June 30, 2015 and calculation method of retirement lump sum payment was revised. Before the revision, retirement lump sum payment was calculated based on salaries in employee's retirement by multiplying a fixed factor under the policy. The revised retirement lump sum payments are calculated based on accumulation of points acquired every year for rendering services from employees. Under this point system of retirement benefit, the point for each employee is determined by considering factors such as length of service, functional classification, labor grade and position of the employee. Employees earn their points during their services and they receive retirement lump sum payment which is calculated based on their total points by multiplying unit payment per point.

(Contribution of plan assets)

Basic policy of contribution of plan assets adopted by the Company and its subsidiary is that the contributed plan assets can cover future employee benefits for services rendered by employees as well as employee benefit for services rendered in the past. Under the policy, the Company in Japan contributes plan assets within the extent of deductible amounts for tax purpose.

The Group expects to contribute approximately ¥39 million to its defined benefit plans for the years ending June 30, 2019.

(a) Post-employment Benefits

The Group has various pension plans covering substantially all of their employees in Japan and certain employees in foreign countries. The Company and its subsidiaries provide defined benefit pension plans. The Company and some of its subsidiaries have retirement benefit plans as well as lump-sum retirement benefit plans, in which the amount of benefits is basically determined based on the level of salary, service years, and other factors.

1) Defined benefit obligations

The changes in present value of defined benefit obligations and fair value of plan assets of the Group and certain of its consolidated subsidiaries for the years ended June 30, 2018, 2017 and 2016 are as follows:

| | Yen (millions) | | | | | |
|---|-----------------------------|---------------|----------------|---------------|----------------|---------------|
| | For the year ended June 30, | | | | | |
| | 2018 | | 2017 | | 2016 | |
| | Japanese plans | Foreign plans | Japanese plans | Foreign plans | Japanese plans | Foreign plans |
| Present value of defined benefit obligations: | | | | | | |
| Balance at beginning of year | ¥ 857 | ¥ 177 | ¥ 796 | ¥ 131 | ¥ 641 | ¥ 112 |
| Current service cost *3 | 241 | 86 | 262 | 68 | 244 | 24 |
| Past service cost *2 | - | - | - | - | 57 | - |
| Interest cost | 3 | 4 | 1 | 3 | 4 | 3 |
| Remeasurements *1 | 11 | 0 | 3 | 0 | 26 | 22 |
| Benefits paid | (221) | (78) | (205) | (38) | (176) | (6) |
| Exchange differences on translating foreign operations | - | 1 | - | 13 | - | (24) |
| Balance at end of year | ¥ 891 | ¥ 190 | ¥ 857 | ¥ 177 | ¥ 796 | ¥ 131 |
| Fair value of plan assets: | | | | | | |
| Balance at beginning of year | ¥ 159 | ¥ 132 | ¥ 142 | ¥ 88 | ¥ 122 | ¥ 81 |
| Interest income | - | 4 | - | 2 | 1 | 2 |
| Actual return on plan assets, excluding interest income | - | (2) | - | - | - | 0 |
| Employer contributions *3 | 20 | 35 | 20 | 30 | 19 | 28 |
| Benefits paid | (0) | (28) | (3) | 0 | - | (6) |
| Exchange differences on translating foreign operations | - | (3) | - | 12 | - | (17) |
| Balance at end of year | ¥ 179 | ¥ 138 | ¥ 159 | ¥ 132 | ¥ 142 | ¥ 88 |
| Net defined benefit liabilities | ¥ 712 | ¥ 52 | ¥ 698 | ¥ 45 | ¥ 654 | ¥ 43 |

*1 Remeasurements arise primarily from changes in financial assumptions.

*2 The Company revised its retirement benefit plan in August 2015. As a result, defined benefit obligations increased by ¥57 million.

*3 Retirement benefits were accounted for as cost of sales which was ¥51 million, ¥42 million and ¥65 million for the year ended June 30, 2018, 2017 and 2016, respectively.

2) Fair value of plan assets

The fair value of the Japanese and foreign pension plan assets by asset category as of June 30, 2018 and 2017 are as follows:

| | June 30, 2018 | | June 30, 2017 | |
|---|---------------|---------|---------------|---------|
| | Japan | Foreign | Japan | Foreign |
| Active market with a quoted market price: | | | | |
| Cash and cash equivalents | ¥ - | ¥ 0 | ¥ - | ¥ 0 |
| Bonds | - | 102 | - | 76 |
| Equity securities | - | 36 | - | 56 |
| Others | - | - | - | - |
| Total | ¥ - | ¥ 138 | ¥ - | ¥ 132 |
| Non-active market: | | | | |
| Cash and cash equivalents | ¥ - | ¥ - | ¥ - | ¥ - |
| Bonds | - | - | - | - |
| Equity securities | - | - | - | - |
| Others *1,2 | 179 | - | 159 | - |
| Total | ¥ 179 | ¥ - | ¥ 159 | ¥ - |
| Total plan assets: | | | | |
| Cash and cash equivalents | ¥ - | ¥ 0 | ¥ - | ¥ 0 |
| Bonds | - | 102 | - | 76 |
| Equity securities | - | 36 | - | 56 |
| Others | 179 | - | 159 | - |
| Total | ¥ 179 | ¥ 138 | ¥ 159 | ¥ 132 |

*1 Fair value of plan assets belonging to the Company in Japan was included in other which was contributed to a financial institution named as Smaller Enterprise Retirement Allowance Mutual Aid.

*2 Other pension assets held by foreign subsidiaries are financial assets which are managed by financial institutions as loan receivables.

3) Actuarial assumptions

The significant actuarial assumptions used to determine the present value of defined benefit obligations as of June 30, 2018 and 2017 are as follows:

| | June 30, 2018 | | June 30, 2017 | |
|-------------------------|----------------|---------------|----------------|---------------|
| | Japanese plans | Foreign plans | Japanese plans | Foreign plans |
| Discount rate | 0.49% | 3.09% | 0.53% | 2.78% |
| Rate of salary increase | 3.20% | 5.00% | 3.20% | 5.00% |

4) Sensitivity analysis

The effects on defined benefit obligations of 0.25% increase or decrease in the discount rate as of June 30, 2018 and 2017 are as follows:

| | June 30, 2018 | | June 30, 2017 | |
|----------------|---------------|------------|---------------|------------|
| | Japan | Foreign | Japan | Foreign |
| 0.25% decrease | 12 increase | 5 increase | 12 increase | 4 increase |
| 0.25% increase | 12 decrease | 4 decrease | 11 decrease | 3 decrease |

The effects on defined benefit obligations of 0.25% increase or decrease in rate of salary increase as of June 30, 2018 and 2017 are as follows:

| | June 30, 2018 | | June 30, 2017 | |
|----------------|---------------|------------|---------------|------------|
| | Japan | Foreign | Japan | Foreign |
| 0.25% decrease | 6 decrease | 4 decrease | 6 decrease | 3 decrease |
| 0.25% increase | 6 increase | 5 increase | 6 increase | 4 increase |

This sensitivity analysis shows changes in defined benefit obligations as of June 30, 2018 and 2017, as a result of changes in actuarial assumptions that the Group can reasonably assume. This analysis is based on provisional calculations, and thus actual results may differ from the analysis.

5) Cash flow

The weighted average duration of defined benefit obligations as of June 30, 2018 and 2017 are as follows:

| | June 30, 2018 | | June 30, 2017 | |
|--|----------------|---------------|----------------|---------------|
| | Japanese plans | Foreign plans | Japanese plans | Foreign plans |
| Weighted average duration of defined benefit obligations | 9.3 years | 9.6 years | 9.8 years | 9.5 years |

The Group expects to contribute approximately ¥39 million to its defined benefit plans for the years ending June 30, 2019.

(2) Personnel Expenses

Personnel expenses included in the consolidated statements of income for the years ended June 30, 2017, 2016 and 2015 are as follows:

| | Yen (millions) | | |
|--------------------|-----------------------------|---------|---------|
| | For the year ended June 30, | | |
| | 2018 | 2017 | 2016 |
| Personnel expenses | ¥ 1,746 | ¥ 1,634 | ¥ 1,470 |

Personnel expenses include salaries, bonuses, social security expenses and expenses related to post-employment benefits. Those expenses were accounted for as cost of sales, as selling, general and administrative expenses and as research and development expenses.

17. Equity

(a) Management of Capital

The Company's policy is to maintain a strong capital base so as to maintain investor, creditor and market confidence, and to sustain future development of the business. In order to achieve this, the Company finances its operations through equity financing from ULVAC, Inc. and Brooks Automation, Inc. and debt financing from ULVAC, Inc.

Financial liabilities and equity of the Group as of June 30, 2018 and 2017 are as follows:

| | Yen (millions) | |
|---------------------------------|----------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| Debt financing from ULVAC, Inc. | ¥ 495 | ¥ 200 |
| Equity | ¥ 6,349 | ¥ 6,086 |

(b) Common Stock

The Company's total number of shares authorized as of June 30, 2018 and 2017 are as follows:

| | Shares | |
|-----------------------------------|---------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| Total number of authorized shares | | |
| Balance at end of year | 400,000 | 400,000 |
| Common shares, no par value | 400,000 | 400,000 |

All of the issued shares as of June 30, 2018 and 2017 have been paid in full.

The Company's total number of shares issued for the years ended June 30, 2018, 2017 and 2016 are as follows:

| | Shares | | |
|-------------------------------|-----------------------------|---------|---------|
| | For the year ended June 30, | | |
| | 2018 | 2017 | 2016 |
| Total number of issued shares | | | |
| Balance at beginning of year | 100,000 | 100,000 | 100,000 |
| Changes during the year | - | - | - |
| Balance at end of year | 100,000 | 100,000 | 100,000 |

(c) Retained Earnings and Legal Reserves

Retained earnings and legal reserves consist of accumulated earnings. The Companies Act of Japan provides that earnings in an amount equal to 10% of cash dividends from retained earnings shall be appropriated as a capital reserve or a legal reserve on the date of distribution of retained earnings until an aggregated amount of capital reserve and legal reserve equals 25% of common stock. Legal reserves may be used upon approval of the General Meeting of Shareholders. Certain foreign consolidated subsidiaries are also required to appropriate their earnings under the laws of respective countries.

(d) Accumulated Other Comprehensive Income

The changes in Accumulated Other Comprehensive Income for the years ended June 30, 2018, 2017 and 2016 are as follows:

| | Yen (millions) | | |
|--|---|--|---------|
| | Remeasurements of defined benefit plans | Exchange differences on translating foreign operations | Total |
| Balance as of July 1, 2015 (Unaudited) | ¥ (15) | ¥ 232 | ¥ 217 |
| Adjustment during the year | (28) | (467) | (495) |
| Balance as of June 30, 2016 | ¥ (43) | ¥ (235) | ¥ (278) |
| Adjustment during the year | (3) | 203 | 200 |
| Balance as of June 30, 2017 | ¥ (46) | ¥ (32) | ¥ (78) |
| Adjustment during the year | (9) | (2) | (11) |
| Balance as of June 30, 2018 | ¥ (55) | ¥ (34) | ¥ (89) |

(e) Other Comprehensive Income

Each component of other comprehensive income and related tax effect including non-controlling interests for the years ended June 30, 2018 and 2017 are as follows:

For the year ended June 30, 2018

| | Yen (millions) | | |
|--|----------------|---------------------------|------------|
| | Before tax | Tax benefit (expenses) | Net of tax |
| Items that will not be reclassified to profit or loss: | | | |
| Remeasurements of defined benefit plans | ¥ (13) | ¥ 4 | ¥ (9) |
| Items that may be reclassified subsequently to profit or loss: | | | |
| Exchange differences on translating foreign operations | (2) | - | (2) |
| Total other comprehensive income | ¥ (15) | ¥ 4 | ¥ (11) |

For the year ended June 30, 2017

| | Yen (millions) | | |
|--|----------------|---------------------------|------------|
| | Before tax | Tax benefit (expenses) | Net of tax |
| Items that will not be reclassified to profit or loss: | | | |
| Remeasurements of defined benefit plans | ¥ (4) | ¥ 1 | ¥ (3) |
| Items that may be reclassified subsequently to profit or loss: | | | |
| Exchange differences on translating foreign operations | 203 | - | 203 |
| Total other comprehensive income | ¥ 199 | ¥ 1 | ¥ 200 |

For the year ended June 30, 2016

| | Yen (millions) | | |
|--|----------------|---------------------------|------------|
| | Before tax | Tax benefit (expenses) | Net of tax |
| Items that will not be reclassified to profit or loss: | | | |
| Remeasurements of defined benefit plans | ¥ (37) | ¥ 9 | ¥ (28) |
| Items that may be reclassified subsequently to profit or loss: | | | |
| Exchange differences on translating foreign operations | (467) | - | (467) |
| Total other comprehensive income | ¥ (504) | ¥ 9 | ¥ (495) |

(f) Dividends from Retained Earnings

The Company distributes retained earnings within the available amount calculated in accordance with the Companies Act of Japan. The amount of retained earnings available for distribution is calculated based on the amount of retained earnings recorded in the Company's non-consolidated accounting records prepared in accordance with accounting principles generally accepted in Japan.

1) Dividend payout

The amounts recognized as dividends of retained earnings for the years ended June 30, 2018, 2017 and 2016 are as follows:

For the year ended June 30, 2018

| | |
|---------------------------|--------------------|
| Type of shares | Common shares |
| Total amount of dividends | 1,200,000,000 yen |
| Dividend per share | 12,000 yen |
| Record date | June 30, 2017 |
| Declaration date | September 14, 2017 |

| | |
|---------------------------|--------------------|
| Type of shares | Common shares |
| Total amount of dividends | 300,000,000 yen |
| Dividend per share | 3,000 yen |
| Record date | June 30, 2016 |
| Declaration date | September 14, 2016 |

For the year ended June 30, 2016

| | |
|---------------------------|-------------------|
| Type of shares | Common shares |
| Total amount of dividends | 150,000,000 yen |
| Dividend per share | 1,500 yen |
| Record date | June 30, 2015 |
| Declaration date | September 9, 2015 |

2) Dividends payable of which record date was in the year ended June 30, 2018, effective after the period

| | |
|---------------------------|--------------------|
| Type of shares | Common shares |
| Total amount of dividends | 823,000,000 yen |
| Dividend per share | 8,230 yen |
| Record date | June 30, 2018 |
| Declaration date | September 19, 2018 |

Subsequent to June 30, 2018, dividends payable for the record date June 30, 2018 passed a resolution at the Company's shareholder meeting on September 19, 2018. These dividends will be recorded in the fiscal year ending June 30, 2019.

18. Sales Revenue

Sales revenue for the years ended June 30, 2018, 2017 and 2016 consists of the following:

| | Yen (millions) | | |
|--|-----------------------------|----------|---------|
| | For the year ended June 30, | | |
| | 2018 | 2017 | 2016 |
| Sales of products | ¥ 9,883 | ¥ 10,994 | ¥ 6,950 |
| Maintenance and other related services | 572 | 645 | 653 |
| Total | ¥ 10,455 | ¥ 11,639 | ¥ 7,603 |

19. Selling, general and administrative expenses

Breakdown of selling, general and administrative expenses for the year ended June 30, 2018, 2017 and 2016 respectively were following:

| | Yen (millions) | | |
|-------------------------------------|-----------------------------|---------|---------|
| | For the year ended June 30, | | |
| | 2018 | 2017 | 2016 |
| Salaries and bonuses | ¥ 605 | ¥ 537 | ¥ 518 |
| Service charges | 377 | 367 | 250 |
| Executive salaries and bonuses | 99 | 85 | 104 |
| Travel expenses | 66 | 59 | 44 |
| Retirement benefits | 48 | 55 | 72 |
| Rent | 46 | 42 | 42 |
| Advertising | 58 | 33 | 31 |
| Meals and entertainment | 47 | 29 | 25 |
| Depreciation and amortization | 36 | 28 | 22 |
| Communication and shipping expenses | 31 | 25 | 14 |
| Office supplies | 27 | 17 | 25 |
| Utilities | 20 | 17 | 16 |
| Repairs and maintenance | 8 | 14 | 5 |
| Insurance | 16 | 13 | 11 |
| Local taxes | 12 | 12 | 10 |
| Other expenses | (7) | 41 | 37 |
| Total | ¥ 1,489 | ¥ 1,374 | ¥ 1,226 |

20. Research and development expenses

Breakdown of Research and development expenses for the year ended June 30, 2018, 2017 and 2016 respectively were following:

| | Yen (millions) | | |
|-------------------------------|-----------------------------|-------|-------|
| | For the year ended June 30, | | |
| | 2018 | 2017 | 2016 |
| Salaries and bonuses | ¥ 161 | ¥ 147 | ¥ 134 |
| Retirement benefits | 9 | 9 | 6 |
| Rent | 16 | 15 | 20 |
| Office supplies | 9 | 8 | 15 |
| Depreciation and amortization | 15 | 10 | 11 |
| Other expenses | 153 | 123 | 48 |
| Total | ¥ 363 | ¥ 312 | ¥ 234 |

21. Finance Income and Finance Costs

Finance income and finance costs for the years ended June 30, 2018, 2017 and 2016 consist of the following:

| | Yen (millions) | | |
|--|-----------------------------|------|--------|
| | For the year ended June 30, | | |
| | 2018 | 2017 | 2016 |
| Interest income: | | | |
| Financial assets not at fair value through profit or loss | ¥ 10 | ¥ 9 | ¥ 12 |
| Interest expense: | | | |
| Financial liabilities not at fair value through profit or loss | 13 | 3 | 4 |
| Other, net: | | | |
| Gains (losses) on foreign exchange | 41 | 26 | (48) |
| Total | ¥ 38 | ¥ 32 | ¥ (40) |

22. Income Taxes

(a) Income Tax Expense

Profit before income taxes and income tax expense for the years ended June 30, 2018 consists of the following:

| | For the year ended June 30, 2018 | | |
|-----------------------------------|----------------------------------|---------|---------|
| | Japan | Foreign | Total |
| Profit (loss) before income taxes | ¥ 682 | ¥ 1,389 | ¥ 2,071 |
| Income tax expense (benefit): | | | |
| Current taxes | 307 | 224 | 531 |
| Deferred taxes | 64 | 2 | 66 |
| Total | ¥ 371 | ¥ 226 | ¥ 597 |

Profit before income taxes and income tax expense for the years ended June 30, 2017 consists of the following:

| | For the year ended June 30, 2017 | | |
|-----------------------------------|----------------------------------|---------|---------|
| | Japan | Foreign | Total |
| Profit (loss) before income taxes | ¥ 801 | ¥ 2,160 | ¥ 2,961 |
| Income tax expense (benefit): | | | |
| Current taxes | 428 | 333 | 761 |
| Deferred taxes | 7 | 30 | 37 |
| Total | ¥ 435 | ¥ 363 | ¥ 798 |

Profit before income taxes and income tax expense for the years ended June 30, 2016 consists of the following:

| | For the year ended June 30, 2016 | | |
|-----------------------------------|----------------------------------|---------|---------|
| | Japan | Foreign | Total |
| Profit (loss) before income taxes | ¥ 183 | ¥ 958 | ¥ 1,141 |
| Income tax expense (benefit): | | | |
| Current taxes | 226 | 104 | 330 |
| Deferred taxes | (29) | 3 | (26) |
| Total | ¥ 197 | ¥ 107 | ¥ 304 |

The statutory income tax rate in Japan for the years ended June 30 2018, 2017 and 2016 was 34.1% and 34.3% and 34.8%, respectively. The foreign subsidiaries are subject to taxes based on income at rates ranging from 16.4% to 25.2%.

The Japanese statutory income tax rate for the years ended June 30, 2018, 2017 and 2016 differs from the average effective tax rate for the following reasons:

| | For the year ended June 30, | | |
|--|-----------------------------|--------|--------|
| | 2018 | 2017 | 2016 |
| Statutory income tax rate | 34.1 % | 34.3 % | 34.8 % |
| Effects of income and expense not taxable and deductible for tax purpose | (0.6) | (3.8) | (4.5) |
| Differences in applicable tax rates of subsidiaries | (5.5) | (7.0) | (5.8) |
| Adjustments for the changes in income tax laws | - | - | 0.3 |
| Changes in tax effects of undistributed profit of overseas subsidiaries | 0.6 | 2.1 | 2.2 |
| Other | 0.1 | 1.4 | (0.4) |
| Average effective tax rate | 28.7 % | 27.0 % | 26.6 % |

(b) Deferred Tax Assets and Deferred Tax Liabilities

The components by major factor in deferred tax assets and deferred tax liabilities as of June 30, 2018 and 2017 are as follows:

| Description | For the year ended June 30, 2018 | | |
|--|-----------------------------------|-----------------------|---------------|
| | Deferred tax assets (liabilities) | | |
| | June 30, 2017 | Increase/ Decrease | June 30, 2018 |
| Deferred income tax assets due to temporary differences: | | | |
| Inventories | ¥ 23 | ¥ (2) | ¥ 21 |
| Accrued expenses | 40 | (23) | 17 |
| Provisions | 58 | 11 | 69 |
| Property, plant and equipment | 2 | 0 | 2 |
| Retirement benefit liabilities | 201 | (8) | 193 |
| Others | 10 | (9) | 1 |
| Total | ¥ 334 | ¥ (31) | ¥ 303 |
| Deferred income tax liabilities due to temporary differences: | | | |
| Property, plant and equipment | ¥ (35) | ¥ (9) | ¥ (44) |
| Intangible assets | (16) | (5) | (21) |
| Fair value of plan assets | (1) | 1 | - |
| Subsidiary retained earnings | (116) | (13) | (129) |
| Total | (168) | (26) | (194) |
| Net deferred tax assets (liabilities) | ¥ 166 | ¥ (57) | ¥ 109 |

| Description | For the year ended June 30, 2017 | | |
|--|-----------------------------------|-----------------------|---------------|
| | Deferred tax assets (liabilities) | | |
| | June 30, 2016 | Increase/ Decrease | June 30, 2017 |
| Deferred income tax assets due to temporary differences: | | | |
| Inventories | ¥ 10 | ¥ 13 | ¥ 23 |
| Accrued expenses | 26 | 14 | 40 |
| Provisions | 50 | 8 | 58 |
| Property, plant and equipment | 2 | 0 | 2 |
| Retirement benefit liabilities | 192 | 9 | 201 |
| Others | 5 | 3 | 10 |
| Total | ¥ 285 | ¥ 49 | ¥ 334 |
| Deferred income tax liabilities due to temporary differences: | | | |
| Property, plant and equipment | ¥ (52) | ¥ 17 | ¥ (35) |
| Intangible assets | (11) | (5) | (16) |
| Fair value of plan assets | - | (1) | (1) |
| Subsidiary retained earnings | (55) | (61) | (116) |
| Total | (118) | (50) | (168) |
| Net deferred tax assets (liabilities) | ¥ 167 | ¥ (1) | ¥ 166 |

The Group considers the probability that a portion of, or all the deductible temporary differences can be utilized against future taxable profits in the recognition of deferred tax assets. In assessing recoverability of deferred tax assets, management considers the scheduled reversal of deferred tax liabilities, projected future taxable profit and tax planning strategies. Based upon the level of historical taxable profit and projections for future taxable profit over the periods for which the deferred tax assets are deductible, management believes it is probable that the Group will utilize the benefits of these deferred tax assets as of June 30, 2018 and 2017. Uncertainty of estimates of future taxable profit could increase due to changes in the economic environment surrounding the Group, effects by market conditions, effects of currency fluctuations or other factors.

23. Earnings Per Share

Earnings per share attributable to shareholders of the Company for the years ended June 30, 2018, 2017 and 2016 are calculated based on the following information. There were no potentially dilutive common shares outstanding for the years ended June 30, 2018, 2017 and 2016.

| | For the year ended June 30, | | |
|---|-----------------------------|----------|---------|
| | 2018 | 2017 | 2016 |
| Profit for the year attributable to shareholders of the Company (millions of yen) | ¥ 1,474 | ¥ 2,163 | ¥ 837 |
| Weighted average number of common shares outstanding, basic (shares) | 100,000 | 100,000 | 100,000 |
| Basic earnings per share attributable to shareholders of the Company (yen) | ¥ 14,745 | ¥ 21,635 | ¥ 8,376 |

24. Financial Risk Management

(a) Risk Management

The Company and its subsidiaries have manufacturing operations in Japan, Korea and China and sells products and components to these locations. In the course of these activities, the Company and its subsidiaries hold trade receivables arising from business activities, trade payables and financial liabilities, and are thus exposed to credit risk and liquidity risk associated with the holding of such financial instruments. The Group has no derivatives for hedging any risks.

These risks are evaluated by the Group through periodic monitoring.

(b) Market Risk

The Group is exposed to the risk that the fair value or future cash flows of a financial instrument fluctuates because of changes in foreign currency exchange rates.

The Group has manufacturing operations throughout Asia and exports products and components to various countries. The Group purchases materials and components and sells its products and components in foreign currencies. Therefore, currency fluctuations may affect the Group's profit and the value of the financial instruments it holds.

(Foreign currency sensitivity analysis)

For financial assets held by the Group and its subsidiaries as of June 30, 2018 and 2017 impact to profit before income taxes of consolidated statements of income were following if foreign currencies other than functional currency value higher by 10% against functional currencies. Impact from translation of functional currencies denominated financial instruments, and assets, liabilities and income, expenses of foreign operations were not included. In addition, it was assumed that foreign currencies other than currencies used in this estimation were not changed.

| | Yen (millions) | |
|----------------------------|----------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| Profit before income taxes | ¥ (47) | ¥ (23) |

(c) Credit Risk

The Company and its subsidiaries are exposed to the risk that one party to a financial instrument causes a financial loss for the other party by failing to discharge an obligation. The Company reduces the risk of financial assets in accordance with credit administration rules such as obtaining valuation reports of counter-parties from outside research institutions and historical collection records.

(Maximum exposure to credit risk)

The maximum value of the exposure to credit risk at the balance sheet date of the reporting period is the carrying value of the financial assets of the Company and its consolidated subsidiaries.

(Concentration of credit risk)

20.6% and 19.6% of trade and other receivables were for a specific major customer as of June 30, 2018 and 2017 respectively.

(d) Liquidity Risk

One of subsidiaries raises funds by bank loans. The subsidiary is exposed to the liquidity risk that the subsidiary would not be able to repay liabilities on the due date due to the deterioration of the financing environment.

Exposure to liquidity risk is managed by maintaining sufficient capital resources, a sufficient level of liquidity and a sound balance sheet. The subsidiary meets its working capital targets primarily through cash generated by business operations and bank loans.

(Maturity analysis of financial liabilities)

Non-derivative financial liabilities by maturity as of June 30, 2018 and 2017 are as follows:

| As of June 30, 2018 | Yen (millions) | | | | |
|-----------------------|-----------------|---------------|-----------------------|--------------------|------------------------------|
| | Carrying amount | Within 1 year | Between 1 and 5 years | Later than 5 years | Total contractual cash flows |
| Trade payables | ¥ 2,069 | ¥ 2,069 | ¥ - | ¥ - | ¥ 2,069 |
| Financial liabilities | 497 | 508 | 0 | - | 508 |
| Accrued expenses | 86 | 86 | - | - | 86 |
| Total | ¥ 2,652 | ¥ 2,663 | ¥ 0 | ¥ - | ¥ 2,663 |

| As of June 30, 2017 | Yen (millions) | | | | |
|-----------------------|-----------------|---------------|-----------------------|--------------------|------------------------------|
| | Carrying amount | Within 1 year | Between 1 and 5 years | Later than 5 years | Total contractual cash flows |
| Trade payables | ¥ 2,215 | ¥ 2,215 | ¥ - | ¥ - | ¥ 2,215 |
| Financial liabilities | 204 | 204 | 2 | - | 206 |
| Accrued expenses | 81 | 81 | - | - | 81 |
| Total | ¥ 2,500 | ¥ 2,500 | ¥ 2 | ¥ - | ¥ 2,502 |

Fair Value

(a) Definition of Fair Value Hierarchy

The Group uses a three-level hierarchy when measuring fair value. The following is a description of the three hierarchy levels:

- Level 1 Quoted prices (unadjusted) in active markets for identical assets or liabilities that the Group has the ability to access as of the measurement date
- Level 2 Inputs other than quoted prices included within Level 1 that are observable for the assets or liabilities, either directly or indirectly
- Level 3 Unobservable inputs for the assets or liabilities

The level in the fair value hierarchy within which a fair value measurement in its entirety falls is based on the lowest input that is significant to the fair value measurement in its entirety. The Company and its subsidiaries recognize the transfers between the levels of the fair value hierarchy at the end of the reporting period during which the change has occurred. There was no transfer occurred as of June 30, 2018 or 2017.

(b) Method of Fair Value Measurement

The fair values of assets and liabilities are determined based on relevant market information and through the use of an appropriate valuation method.

The measurement methods and assumptions used in the measurement of assets and liabilities are as follows:

(Cash and cash equivalents)

The fair values approximate their carrying amounts due to their short-term maturities.

(Trade and other receivables and trade and other payables)

The fair values approximate their carrying amounts due to their short-term maturities.

(Financial assets and liabilities)

Fair value of financial assets was described in Note8 and fair value of financial liabilities was described in Note13.

25. Commitments and Contingent Liabilities

(Non-cancellable lease commitments)

The Group is the lessee under several operating leases, primarily for factories and other facilities, and certain office equipment.

Future minimum lease payments under non-cancelable operating leases that have initial or remaining lease terms in excess of one year as of June 30, 2018 and 2017 are as follows:

| | Yen (millions) | | | |
|-----------------------|----------------|-----|---------------|-----|
| | June 30, 2018 | | June 30, 2017 | |
| Within 1 year | ¥ | 118 | ¥ | 138 |
| Between 1 and 5 years | | 140 | | 241 |
| Later than 5 years | | - | | - |
| Total | ¥ | 258 | ¥ | 379 |

Lease payments under operating leases recognized as expenses for the years ended June 30, 2018, 2017 and 2016 are as follows:

| | Yen (millions) | | | | | |
|--|-----------------------------|-----|------|-----|------|-----|
| | For the year ended June 30, | | | | | |
| | 2018 | | 2017 | | 2016 | |
| Lease payments under operating leases recognized as expenses | ¥ | 145 | ¥ | 137 | ¥ | 126 |

26. Related Parties

(a) Related Party Transactions

The Company and its subsidiaries mainly purchase materials, supplies and services from entities with joint control of the Company and other related parties, and sells finished goods, parts used in its products, and equipment to them in the ordinary course of business. Related party transactions are structured with similar terms and conditions for similar transactions made with other third parties in our normal course of business.

The balances of financial assets and liabilities as of June 30, 2018 are as follows:

| | Yen (millions) | | | | |
|-----------------------------------|-----------------------------|--------------------|--------------------------|--------------------------|---------------------------------|
| | Trade and other receivables | Guarantee deposits | Trade and other payables | Short-term loans payable | allowance for doubtful accounts |
| ULVAC group: | | | | | |
| ULVAC, Inc. | ¥ 18 | ¥ 150 | ¥ 439 | ¥ 100 | ¥ 0 |
| ULVAC (SHANGHAI) TRADING CO., LTD | 225 | - | 0 | - | - |
| ULVAC (SUZHOU) CO.,LTD. | 76 | - | - | - | - |
| ULVAC KOREA CO., LTD. | 836 | - | 19 | - | 2 |
| UF TECH CO., LTD. | - | - | 37 | - | - |
| Others | 4 | - | 2 | - | - |
| Sub-total | 1,159 | 150 | 497 | 100 | 2 |
| Brooks Automation, Inc. | 28 | - | 30 | - | 0 |
| Total | ¥ 1,187 | ¥ 150 | ¥ 527 | ¥ 100 | ¥ 2 |

The amounts of the transactions with related parties for the years ended June 30, 2018 are as follows:

| | Yen (millions) | | | | | |
|-----------------------------------|----------------|----------|-------------------|---------|--|---------------------|
| | Sales revenue | Purchase | Commission fee *1 | Rent *2 | Provision of allowance for doubtful accounts | Interest expense *3 |
| ULVAC group: | | | | | | |
| ULVAC, Inc. | ¥ 892 | ¥ 31 | ¥ 67 | ¥ 34 | ¥ (8) | ¥ 5 |
| ULVAC (SHANGHAI) TRADING CO., LTD | 750 | - | - | - | - | - |
| ULVAC (SUZHOU) CO.,LTD. | 178 | - | - | - | - | - |
| ULVAC KOREA CO., LTD. | 2,740 | 45 | - | - | (9) | - |
| UF TECH CO., LTD. | - | 132 | - | - | - | - |
| Others | 15 | 11 | - | - | - | - |
| Sub-total | 4,575 | 219 | 67 | 34 | (17) | 5 |
| Brooks Automation, Inc. | 73 | 5 | 122 | - | (0) | - |
| Total | ¥ 4,648 | ¥ 224 | ¥ 189 | ¥ 34 | ¥ (17) | ¥ 5 |

*1 Commission fee is paid in accordance with contracts entered into among related parties and calculated based on sales volume of each fiscal year.

*2 Rent is paid in accordance with an office rent agreement between the Company and ULVAC, Inc.

*3 Interest expense occurs in accordance with loan agreements entered into between the Company and ULVAC, Inc. and details are described in Note13 Financial Liabilities.

The balances of financial assets and liabilities as of June 30, 2017 are as follows:

| | Yen (millions) | | | | |
|-----------------------------------|-----------------------------|--------------------|--------------------------|--------------------------|---------------------------------|
| | Trade and other receivables | Guarantee deposits | Trade and other payables | Short-term loans payable | allowance for doubtful accounts |
| ULVAC group: | | | | | |
| ULVAC, Inc. | ¥ 651 | ¥ 150 | ¥ 31 | ¥ 200 | ¥ 8 |
| ULVAC (SHANGHAI) TRADING CO., LTD | 88 | - | 6 | - | - |
| ULVAC (SUZHOU) CO.,LTD. | 52 | - | - | - | - |
| ULVAC ORIENT (CHENGDU) CO.,LTD. | 48 | - | - | - | - |
| ULVAC KOREA CO., LTD. | 644 | - | 19 | - | - |
| UF TECH CO., LTD. | - | - | 22 | - | 12 |
| Others | 1 | - | 2 | - | - |
| Sub-total | 1,484 | 150 | 80 | 200 | 20 |
| Brooks Automation, Inc. | 12 | - | 24 | - | 0 |
| Total | ¥ 1,496 | ¥ 150 | ¥ 104 | ¥ 200 | ¥ 20 |

The amounts of the transactions with related parties for the years ended June 30, 2017 are as follows:

| | Yen (millions) | | | | | |
|-----------------------------------|----------------|----------|-------------------|---------|--|---------------------|
| | Sales revenue | Purchase | Commission fee *1 | Rent *2 | Provision of allowance for doubtful accounts | Interest expense *3 |
| ULVAC group: | | | | | | |
| ULVAC, Inc. | ¥ 1,323 | ¥ 15 | ¥ 93 | ¥ 33 | ¥ 7 | ¥ 2 |
| ULVAC (SHANGHAI) TRADING CO., LTD | 332 | 3 | - | - | - | - |
| ULVAC (SUZHOU) CO.,LTD. | 78 | - | - | - | - | - |
| ULVAC ORIENT (CHENGDU) CO.,LTD. | 40 | - | - | - | - | - |
| ULVAC KOREA CO., LTD. | 5,184 | 3 | 27 | - | (5) | - |
| UF TECH CO., LTD. | - | 190 | - | - | - | - |
| Others | 12 | 7 | - | - | - | - |
| Sub-total | 6,969 | 218 | 120 | 33 | 1 | 2 |
| Brooks Automation, Inc. | 30 | 4 | 118 | - | 0 | - |
| Total | ¥ 6,999 | ¥ 222 | ¥ 238 | ¥ 33 | ¥ 1 | ¥ 2 |

*1 Commission fee is paid in accordance with contracts entered into among related parties and calculated based on sales volume of each fiscal year.

*2 Rent is paid in accordance with an office rent agreement between the Company and ULVAC, Inc.

*3 Interest expense occurs in accordance with loan agreements entered into between the Company and ULVAC, Inc. and details are described in Note13 Financial Liabilities.

The amounts of the transactions with related parties for the years ended June 30, 2016 are as follows:

| | Yen (millions) | | | | | |
|---|----------------|----------|-------------------|---------|--|---------------------|
| | Sales revenue | Purchase | Commission fee *1 | Rent *2 | Provision of allowance for doubtful accounts | Interest expense *3 |
| ULVAC group: | | | | | | |
| ULVAC, Inc. | ¥ 260 | ¥ 9 | ¥ 67 | ¥ 33 | ¥ (0) | ¥ 3 |
| ULVAC(SHANGHAI) TRADING CO., LTD | 195 | 0 | 2 | - | (1) | - |
| ULVAC (SUZHOU)CO.,LTD. | 36 | - | - | - | 0 | - |
| Ulvac Opto-electronics Thinfilm Technology (Shenzhen) Co., Ltd. | 21 | - | - | - | 0 | - |
| ULVAC KOREA CO., LTD. | 3,113 | 29 | 2 | - | 12 | - |
| UF TECH CO., LTD. | - | 119 | - | - | - | - |
| Others | 3 | 3 | - | - | (0) | - |
| Sub-total | 3,628 | 160 | 71 | 33 | 11 | 3 |
| Brooks Automation, Inc. | 31 | 3 | 89 | - | (0) | - |
| Total | ¥ 3,659 | ¥ 163 | ¥ 160 | ¥ 33 | ¥ 11 | ¥ 3 |

*1 Commission fee is paid in accordance with contracts entered into among related parties and calculated based on sales volume of each fiscal year.

*2 Rent is paid in accordance with an office rent agreement between the Company and ULVAC, Inc.

*3 Interest expense occurs in accordance with loan agreements entered into between the Company and ULVAC, Inc. and details are described in Note13. Financial Liabilities.

(b) Compensation to Key Management

Compensation paid and accrued to the directors and corporate auditors of the Company for the years ended June 30, 2018, 2017 and 2016 are as follows:

| | Yen (millions) | | |
|---------------------------|-----------------------------|------|-------|
| | For the year ended June 30, | | |
| | 2018 | 2017 | 2016 |
| Amounts paid: | | | |
| Remuneration | ¥ 64 | ¥ 63 | ¥ 74 |
| Bonus | 23 | 30 | 30 |
| Total | ¥ 87 | ¥ 93 | ¥ 104 |
| Amounts accrued expenses: | | | |
| Bonus | 34 | 23 | 30 |
| Retirement benefit | 14 | 25 | 10 |
| Total | ¥ 48 | ¥ 47 | ¥ 40 |

Corporate auditors refer to an organization hired to audit the execution of duties by directors of the Company as prescribed by the Japanese Companies Act.

Outstanding balances of unsettled compensation to the directors and corporate auditors of the Company as of June 30, 2018 and 2017 are as follows:

| | Yen (millions) | |
|---|----------------|---------------|
| | June 30, 2018 | June 30, 2017 |
| Accrual for directors and corporate auditors' bonuses | ¥ 34 | ¥ 23 |
| Accrual for directors and corporate auditors' retirement benefits | 78 | 113 |
| Total | ¥ 112 | ¥ 136 |

(c) Consolidated Subsidiaries

Consolidated subsidiaries as of June 30, 2018 and 2017 are as follows:

| Company | Country of Incorporation | Function | Percentage Ownership and Voting Interest |
|--|--------------------------|---|--|
| Ulvac Cryogenics Korea Incorporated | Korea | Manufactures, sales, and maintenance of cryopumps | 100.0 |
| Ulvac Cryogenics (Ningbo) Incorporated | China | Manufactures, sales, and maintenance of cryopumps | 100.0 |

27. Reconciliation of IFRS to US GAAP

As a result of our assessment to reconciliation of IFRS to US GAAP, there is no material difference between IFRS and US GAAP.

28. Approval of Release of Consolidated Financial Statements

The release of the consolidated financial statements was approved by, President, Chief Executive Officer and Representative Director and Director and Chief Operating Officer for Business Management Operations on November 16, 2018.