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

(Mark One)

☑ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For fiscal year ended September 30, 2021

or

☐ **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	**04-3040660**
(State or Other Jurisdiction of Incorporation or Organization)	*(I.R.S. Employer Identification No.)*
15 Elizabeth Drive Chelmsford, Massachusetts	**01824**
(Address of Principal Executive Offices)	*(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	Trading Symbols	Name of Each Exchange on Which Registered
Common Stock, $0.01 par value	**BRKS**	**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 ☑ 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 ☑

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 ☑ 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 ☑ No ☐

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.

Large accelerated filer	☑	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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☑

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

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, 2021, was approximately $4,368,656,224 based on the closing price per share of $81.65 on March 31, 2021 on the Nasdaq Stock Market. As of March 31, 2021, 74,293,797 shares of the registrant's Common Stock, $0.01 par value, were outstanding. As of November 8, 2021, 74,347,053 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.

BROOKS AUTOMATION, INC.

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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, margins, costs, earnings, profitability, 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, 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 current and future operations and business focus, including before and after our planned sale of our semiconductor automation business, the impact of the COVID-19 pandemic, the certainty or timing of completion of the pending sale of our semiconductor automation business to Thomas H. Lee Partners, L.P., the anticipated growth prospects of our life sciences business, the expected benefits and other statements relating to our divestures and acquisitions, including before and after our planned sale of our semiconductor automation, our adoption of newly issued accounting guidance, 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 1A, "Risk Factors" and elsewhere in this Form 10-K 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 revisions to these forward-looking statements, 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 a leading global provider of life science sample exploration and management solutions for the life sciences market. We support our customers from research to clinical development with our sample management, automated storage, and genomic services expertise to help our customers bring impactful therapies to market faster. We understand the importance of sample integrity and offer a broad portfolio of products and services spanning across the life cycle of samples from procurement and sourcing, automated storage platforms, genomic services and a broad range of consumables, informatics and data software, and sample management solutions. Our expertise and leadership positions enable us to be a trusted partner to pharmaceutical, biotechnology, and life sciences research institutions globally. In total, our life sciences business employs approximately 2,900 full-time employees, part-time employees and contingent workers worldwide and have sales in more than 80 countries. We are headquartered in Chelmsford, Massachusetts and have operations in North America, Asia, and Europe.

Since our founding in 1978, we have been a leading automation provider and partner to the global semiconductor manufacturing industry. In the fourth quarter of fiscal year 2021, we entered into a definitive agreement to sell our semiconductor automation business, to Thomas H. Lee Partners, L.P., or THL, for approximately $3.0 billion in cash subject to customary adjustments. The semiconductor automation results are classified as discontinued operations, and, unless otherwise noted, the description of our business in this report relates solely to our continuing operations. We anticipate the closing of the transaction in the first half of the calendar year 2022 upon satisfaction of customary closing conditions and regulatory approvals.

In the fourth quarter of fiscal year 2021, we announced that our remaining business, which consists of our reportable segments, Life Sciences Products and Life Sciences Services will be rebranded under a single, unified brand, Azenta Life Sciences, or Azenta, during the first half of fiscal year 2022.

Our life sciences portfolio includes products and services that we acquired over time to bring together a comprehensive capability to serve our customers' needs. We continue to develop our products and services offerings through the expertise of our research and development resources. We believe our acquisition, investment, and integration approach has allowed us to accelerate our internal development and significantly accelerate our time to market.

For further information on our acquisitions, please refer to Note 4, "Acquisitions" to our Consolidated Financial Statements included under Item 8, "Financial Statements and Supplementary Data" of this Form 10-K.

Life Sciences Market

Our life sciences businesses serve a broad range of end markets within the life sciences industry to address a confluence of life sciences 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 to provide comprehensive sample management and genomic solutions.

Since the successful mapping of the full human genome at the turn of this century, the market for genomic services has grown in support of research in biologic drug development, personalized medicine and cell/gene therapy. Top pharmaceutical and biotechnology companies can use their in-house laboratory resources to sequence the millions of genes needed as part of their research workflow. Still, many companies look to outsource their gene sequencing to independent laboratories that provide expedited results and expert consultative services. Other companies and institutions have fewer or no in-house options and make use of outsourced capabilities as their primary solution. We participate in this market as a value-added laboratory services provider, offering high quality genetic testing services with fast turnaround time.

We have more than 8,700 customers globally and we address only a fraction of the industry. We serve top customers in the pharmaceutical and biotechnology industry, the most advanced research hospitals performing clinical research and therapy development, as well as some of the newest and leading-edge start-ups in the biotech space. We also serve academic and government institutions. We believe that the sample-based services and products business will continue to demonstrate a growth trajectory and we do not observe cyclical characteristics in demand for these offerings.
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Segments

Our business is comprised of two reportable segments, our Life Sciences Products segment and our Life Sciences Services segment. For further information on our reportable and 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.

Life Sciences Products

Our Life Sciences Products business is a leading provider of automated ultra-cold storage solutions for biological and chemical compound samples. Our storage systems provide reliable automation and sample inventory management at temperatures down to -190°C and can store anywhere from one to millions of samples. Our sample management solutions include consumable vials and tubes, polymerase chain reaction (PCR) plates, instruments for supporting workflow, and informatics, all of which focus on providing customers with the highest level of sample quality, security, availability, intelligence and integrity throughout the lifecycle of samples providing customers with complete end-to-end “cold-chain of custody” capabilities.

Life Sciences Products Offerings

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

Automated ultra-cold storage systems – provides stand-alone systems that store up to 20 million samples in temperature ranges from ambient temperatures to -80°C and cryogenic storage with temperatures at -190°. Our systems provide high throughput capability and optimized storage of multi-format tubes and plates while maintaining consistent temperature profiles across stored samples. We also provide a portfolio of service products designed to optimize productivity of our storage systems offerings.

Consumables and Instruments - includes a complete range of consumables, including multiple formats of racks, tubes, caps, plates and foils, which are used for storage and handling of samples in ambient and ultra-cold storage environments. 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 offerings include a range of products aimed at the genomic sample preparation and services market for PCR and sequencing, imaging, plate sealing, liquid handling, and sample processing.

Life Sciences Services

Our Life Sciences Services business is a leading provider of solutions addressing the many needs of customers in the area of genomic analysis and the management and care of biological samples used in pharmaceutical, biotech, healthcare, clinical, and academic research and development markets. We process millions of samples every year, each containing valuable information that must be preserved with the sample. Through our genomic services we provide a broad capability to customers for sequencing and synthesis of genes. Our sample management services include off-site storage services, transport services, laboratory services, and interactive informatics solutions. We also provide expert-level consultation services to our clients throughout their experimental design and implementation. Our services also include short- and long-term sample storage and management of the “cold chain of custody” from collection, to storage, to retrieving the sample which ultimately may go back into the customer’s research workflow.

Life Sciences Services Offerings

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

Genomic Services - provides gene sequencing and gene synthesis services, enabling the fast-expanding research of gene-based healthcare discoveries and therapies. These service offerings include Next Generation sequencing, or NGS, Sanger sequencing, gene synthesis, bioinformatics, and good laboratory practices, or GLP, regulatory services. The sequencing services are available with both standard and custom services for extraction, library preparation, sequencing, and bioinformatics, supported by Ph.D.-level project managers providing consultations, updates, and post-delivery assistance. The gene synthesis offerings provide production of a wide range of sequence lengths and structural complexity, DNA cloning, gene fragment synthesis, and oligo synthesis.

Sample Repository Solutions - 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, biospecimen procurement services, as well as project management and consulting.

Informatics - provides sample intelligence software solutions. Our informatics suite supports laboratory workflow scheduling for life science tools and instrument work cells, sample inventory and logistics, environmental and temperature monitoring, clinical trial and consent management, and planning, data management, virtualization, and visualization of sample collections. We offer enhanced on-site and off-site management of biological sample inventories and integration solutions to our customers for their increasingly distributed workflow.

We believe the combination of our broad sample-based offerings, including genomic analysis, sample management solutions, automated storage systems, informatic solutions and sample sourcing and procurement services has enabled us to better serve our customers with an integrated and comprehensive portfolio.

Sales, Marketing and Customer Support

Most of our sales are completed through our direct sales force, particularly our store systems, storage services, and genomic services. We supplement the sale of consumables and instruments with 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. Our larger automated store systems sales process may take months to complete and may involve a team from sales, marketing, and engineering. Sales of genomic services are generally generated with on-line orders from the customer lab and delivered via a courier service, with the simplest of sequencing requests completed in less than 24 hours and more complex synthesis tasks within weeks. We utilize a worldwide partner network of clinical sites and biobanks for the collection capability of our biospecimen procurement business.

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, seminars, participation in industry forums, creation and 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 our customers' support and communication.

Competition

Given the breadth of the sample management solutions and genomic services offered by our Life Sciences Products and Life Sciences Services segments, we believe we have a unique portfolio of products and services that we provide to our customers. Each of the business lines within the two segments, however, has unique competitors in their area of offerings. In the Life Sciences Products segment, our main competitors include Hamilton Company and Liconic AG for automation systems and Thermo Fisher Scientific for consumables and services, In the Life Sciences Services segment, our main competitors include Laboratory Corporation of America Holdings and Thermo Fisher Scientific Inc. for storage services, and BGI Genomics Co., Ltd.,, Eurofins, Scientific S.E., Genscript Biotech Corporation, Integrated DNA Technologies, Inc., Novogene Co., Ltd. and Twist Bioscience Corporation 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 and service offerings. Our engineering, marketing, operations and management personnel leverage their close collaborative relationships with their counterparts in customer organizations to proactively identify market demands that help us refocus our research and development investment to match our customers' demands.

Within our Life Sciences Products segment, we have developed and continue to develop automated biological sample storage solutions for operating in ultra-low temperature environments. We have a complete line up of automated stores from ambient temperatures to -190°C. Our BioStore's ™ unique design allows controlled temperature storage down to -80°C with the industry's highest throughput of sample retrieval. Our BioStore portfolio offers improved data management and sample security for vaccines and biologics stored at -80°C. Within our Life Sciences Services segment, our genomics services business advances research and development activities in gene sequencing, synthesis, editing, and related services to meet market demands. We invest in R&D services to develop protocols and efficiencies in our own laboratories and to provide proprietary offerings to our customers. As an example, in our genomic services business we launched a portfolio of new services, targeting analysis of adeno-associated virus, a common vector used in cell and gene therapy. We will continue to focus on developing processes and technologies that can streamline sample to data workflow.

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 in Manchester, United Kingdom and Chelmsford, Massachusetts. Our manufacturing operations are designed to provide high quality, optimal 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.

We have service and support locations near our customers to provide rapid response to their service needs. Our principal product service and support locations include Chelmsford, Massachusetts, and Manchester, United Kingdom.

We provide sample management storage and transportation services in Indianapolis, Indiana; Griesheim, Germany; Montreal, Canada; Singapore; Beijing, China and various locations throughout the United States. We have a network of 14 laboratories that provide genomic services, including eight in the United States, three in China, and one each in Japan, Germany, and the United Kingdom.

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 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, 2021, we owned approximately 60 issued U.S. patents, with various corresponding patents issued in foreign jurisdictions. We also had approximately 30 pending U.S. patent applications, with foreign counterparts of some of these applications having been filed or which may be filed at the appropriate time. Our patents will expire at various dates through 2038.

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 in compliance in all material respects with 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.

Human Capital

As of September 30, 2021, we employed approximately 2,800 people which includes full-time and part-time employees, in addition, we utilized the services of 80 contingent associates, primarily in the United States. None of our employees are covered by collective bargaining agreements. We understand that our success depends on our highly talented associates, and our human capital management practices focus on attracting and retaining a diverse and engaged workforce.

Diversity, Equity and Inclusion. We are committed to attracting, developing and retaining diverse talent that is inclusive of every age, gender, gender identity, race, sexual orientation, physical capability, neurological difference, ethnicity, belief and perspective. Our goal is to develop cultural competency by seeking knowledge, increasing awareness, developing sensitivity, modeling respect and promoting inclusion and unity. Approximately 48% of our employees are gender diverse, and 41% of our U.S.-based employees identify as being racially diverse. Additional detail on our gender and racial diversity can be found on our website in our ESG governance reports.

Employee Engagement. We are committed to fostering a culture and environment where every employee feels valued. Our success depends in large part on our hiring and retaining top talent across the entire organization, with primary emphasis on our management team and our employees who interface directly with our customers. We compete for talent with other companies both smaller and larger, and both in our market and in other industries.

Compensation and Benefits. In order to attract and retain top talent, we focus on having a diverse, inclusive, and safe workplace, while offering competitive compensation, benefits, and health and wellness programs. A majority of employees also have incentive compensation opportunities, which are primarily focused on meeting financial, sales, operational, and/or customer focused metrics. In addition, our long-term equity compensation is intended to align management interests with those of our stockholders and to encourage the creation of long-term value.

Training and Development. We provide training and learning opportunities, rotational assignment opportunities, and continuous performance feedback to further our employee development. Our learning culture is built on: formal curriculums, communities of practice, peer-to-peer learning, experiential development, support tools and ongoing assessment. We listen to our employees to better understand their training and development needs, and ensure our offerings cater to both technical learning and leadership development. We offer a generous tuition reimbursement program that encourages employees to pursue undergraduate and graduate degrees in fields associated with their current or aspirational positions. In 2021, 21 employees were enrolled in this benefit with 48% being female.

Employee Health and Safety. Compliance with environmental, health and safety ("EH&S") laws and regulations underlies the basis of the EH&S programs we have in place. As we continue to monitor the impact of the COVID-19 pandemic, we have implemented and will continue to implement measures to ensure the safety of our employees. We formed a COVID-19 leadership team, which is continuously evaluating the guidance from federal and local authorities and has created strict policies and guidelines that put our employee's health and safety first.

Purpose and Core Values. Our Company Purpose is to advance science and technology to enable a healthier and more connected world for everyone, everywhere. We are committed to making sure that every team member understands our core values of Customer Focus, Achievement, Accountability, Teamwork, Employee Value, and Integrity. These core values are the foundation from which we act and base our decisions and are embodied in our Standards of Conduct, which outline our commitment to our customers, our investors, our communities, and to one another. Our Standards of Conduct also outline what is expected of our employees and ensure we continue to foster a culture of high integrity. We adhere to the governance requirements established by federal and state law, the Securities and Exchange Commission ("SEC"), and the Nasdaq Global Select Market, and we strive to establish appropriate risk management methods and control procedures to adequately manage, monitor, and control the major risks we may face day to day.

Semiconductor Automation Business

As noted above, in the fourth quarter of fiscal year 2021, we entered into a definitive agreement to sell our semiconductor automation business to THL. We anticipate the sale closing in the first half of fiscal year 2022 upon satisfaction of customary closing conditions and regulatory approvals. Our semiconductor automation business is a leading automation provider and partner to the global semiconductor manufacturing industry. We provide advanced, high precision, high throughput robots, vacuum automation systems, contamination control systems, and reticle storage solutions to the global semiconductor capital equipment industry. We sell our semiconductor products and services both to OEMs and directly to global semiconductor chip manufacturers. In the third quarter of fiscal year 2021, we acquired collaborative robots and automation subsystems developer Precise Automation, Inc., a leading developer of collaborative robots and automation subsystems headquartered in Fremont, California. At the completion of the sale, we will no longer serve the semiconductor market.

Available Information

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the internet at the SEC's website at http://www.sec.gov. We also maintain a website at www.brooks.com, through which you can access our SEC filings. 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 Form 10-K before deciding to invest in shares of our common stock. These are the risks and uncertainties applicable to our businesses, including our semiconductor automation business, that 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 occur, 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 the COVID-19 Pandemic

Our financial condition and results of operations could be adversely affected by the COVID-1 pandemic.

In December 2019, a novel strain of coronavirus, causing a disease referred to as COVID-19, was first identified in Wuhan, Hubei Province, China, resulting in shutdowns of manufacturing and commerce in the months that followed. Since then, COVID-19 has spread worldwide, including in the United States, and has resulted in authorities implementing numerous measures to try to contain the disease, such as travel bans and restrictions, quarantines, shelter-in-place orders and shutdowns. We have followed the guidelines from the U.S. Center for Disease Control, or CDC, and implemented the recommended safety protocols, and the spread of COVID-19 has also caused us to modify our business practices (including curtailing employee travel, implementing vaccination and testing policies and extending work-from-home policies where necessary), and we may take further actions as required by government authorities or that we determine are in the best interests of our employees, customers, partners and suppliers. There is no certainty that such measures will be sufficient to mitigate the risks posed by the disease, and our ability to perform critical functions could be harmed.

As a result of the COVID-19 pandemic and the measures designed to contain its spread, our suppliers may not have the materials, capacity, or capability to supply our components according to our schedule and specifications. Further, there may be logistics issues, including our ability and our supply chain's ability to maintain production, as well as transportation demands that may cause further delays. If our suppliers' operations are curtailed, we may need to seek alternate sources of supply, which may be more expensive. Alternate sources may not be available or may result in delays in shipments to us from our suppliers and subsequently to our customers. In addition, the COVID-19 pandemic and the measures designed to stop the spread of the virus may have similar effects on our customers. The current pandemic may also give rise to force majeure contractual protections being asserted by customers and/or suppliers that we maintain contracts with, potentially relieving contractual obligations these parties have to us. In any case, any disruption of our suppliers' or customers' businesses would likely negatively impact our sales and operating results.

While the disruptions and restrictions on the ability to travel, quarantines and other measures taken as a result of the COVID-19 pandemic are expected to be temporary, the duration of any of these measures, and related financial impact, cannot be estimated at this time. Should these measures continue for an extended period of time or be re-implemented after, the impact on our supply chain and customers could have a material adverse effect on our results of operations and cash flows. Further, while the potential impact and duration of the COVID-19 pandemic on the global economy and our business in particular may be difficult to assess or predict, the COVID-19 pandemic has resulted in, and may continue to result in, significant disruption of global financial markets and an economic downturn that may affect demand for our products and services, reduce our ability to access capital or our customers' ability to pay us for past or future purchases, impact our operating results, and have a negative impact on our liquidity and stock price. In addition, an extended recession or an additional financial market correction resulting from the spread of COVID-19 could, adversely affect demand for our products and services, our business and the value of our common stock. The global pandemic of COVID-19 continues to rapidly evolve, and we will continue to monitor the COVID-19 situation closely. Although the magnitude of the impact of the pandemic on our business and operations remains uncertain, the continued spread of COVID-19 and actions taken to mitigate such spread as well as the prolonged nature of the pandemic or the occurrence of other outbreaks of contagious diseases could adversely impact our business, financial condition, operating results and cash flows.

Risks Relating to the Sale of our Semiconductor Automation Business

The announcement and pendency of the sale of our semiconductor automation business to Thomas H. Lee Partners, L.P. 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 automation business to Thomas H. Lee Partners, L.P., or THL, pursuant to the equity interest purchase agreement we entered into on September 20, 2021 could disrupt our business in the following ways, among others:

- customers may determine to delay or defer purchase decisions with regard to our semiconductor products and services 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 semiconductor automation business, which was $680.1 million in fiscal year 2021, will negatively impact our growth potential and future financial results; 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 automation business may delay or prevent completion of the pending sale.

The completion of the sale of our semiconductor automation business to THL is conditioned upon obtaining certain regulatory approvals. We intend to pursue all required approvals in accordance with the terms of the equity interest 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 equity interest purchase agreement.

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

The completion of the sale of our semiconductor automation business to THL is subject to a number of conditions, including, among others, receipt of certain regulatory approvals, 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 equity interest purchase agreement may also be terminated by us and/or THL in certain specified circumstances, including in certain circumstances if the sale has not been consummated by June 30, 2022. 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 have incurred and expect to continue to incur substantial transaction costs in connection with the pending sale whether or not it is completed;
- under the equity interest 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;
- the negative perception of investors and customers of our semiconductor automation 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
- the failure to receive the purchase price from the sale and our inability to use these funds as expected to expand our life sciences businesses; and

- the risks inherent and specific to the semiconductor automation business, including the historical cyclicality in demand for semiconductor capital equipment, the critical importance of supply chain stability, and potential international trade restrictions and other geopolitical risks.

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

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 and year-to-year depending upon a variety of factors, including:

- changes in the timing and terms of product orders and service contracts 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 and services 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 and services 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 and services to market depends on our ability to:

- identify and define new market opportunities, products and services in an accurate manner;

- obtain market acceptance of our products and services;
- innovate, develop, acquire 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, 2021, 2020 and 2019, approximately 38%, 34% and 32% 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 for the foreseeable future, and that in particular, the proportion of our sales to customers in China will continue to increase, due in large part to our significant genomic services operation in China. Additionally, we intend to invest additional resources in facilities in China, which will increase our 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;
- a diverse workforce with different experience levels, languages, cultures, customs, business practices and worker expectations, and differing employment practices and labor issues;
- 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 possibility of these risks impacting our business will likely expand after the expected completion of the sale our semiconductor automation businesses.

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 and genomic services markets. 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 on favorable terms or at all when needed. We cannot guarantee that we will be successful in leveraging our capabilities into the life sciences sample management and genomic services markets 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 each of the Life Sciences Product and Life Sciences Services segments, our inability to successfully expand within the markets serviced by these segments 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, scientific 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 scientific personnel and we were unable to replace them.

Global climate change and related legal and regulatory developments could negatively affect our business, financial condition and results of operations.

Climate change presents immediate and long-term risks to us and to our customers, with the risks expected to increase over time. Our products and services are subject to and affected by environmental regulation by federal, state, and local authorities in the United States and regulatory authorities with jurisdiction over our international operations. Future regulations or voluntary actions on our part in response to climate change could result in costly changes to our facilities to reduce carbon emissions and could increase energy costs as a result of switching to less carbon-intensive, but more expensive, sources of energy to operate our facilities and to transport and ship products and samples. There can be no assurance that climate change or environmental regulation and response will not have a negative competitive impact on our ability to provide sample management, automated storage, and genomic services or that economic returns will match the investment that we are making in the development of new products and services. We will likely face increasing complexity related to product design, the use of regulated materials, energy consumption and efficiency, and the reuse, recycling, or disposal of products and their components at end-of-use or useful life. There continues to be a lack of consistent climate legislation, which creates economic and regulatory uncertainty regarding future incentives for energy-efficiency and costs of compliance, which may impact the demand for our products and services, and our results of operations and financial condition. In addition, the potential physical impacts of climate change on our operations are highly uncertain and would be particular to the geographic circumstances in areas in which we operate. These may include changes in global weather patterns, which could include local changes in rainfall and storm patterns and intensities, water shortages, changing sea levels, and changing temperature averages or extremes. These impacts may also adversely affect our properties, our business, financial condition and results of operations.

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 Life Sciences Services 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 tornadoes and other severe weather events.

If our facilities 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 laboratories for our service offerings. 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, or provide services, 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 capabilities to meet increased demand or expedited shipment schedules.

Moreover, if actual demand for our products or services is different than expected, we may purchase more/fewer component parts or other supplies than necessary or incur costs for canceling, postponing or expediting delivery of such parts or supplies. 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 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, 2021, we had $469.4 million of goodwill and $453.2 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 following: 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. Changes in applicable tax laws could significantly impact the estimates of our tax assets and liabilities, as well as expectations of future effective tax rates. Recently proposed U.S. corporate income tax reform could drive negative impacts to our tax position depending upon final enacted legislation. Based on the nature of the uncertainties around specific legislation to be agreed-upon by congress, we have not quantified the impact of this risk. In addition, we are subject to regular examination by the U.S. 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.

International trade disputes could result in additional or increased tariffs, export controls or other trade restrictions that may have a material impact on our business.

We sell a significant number of products outside the United States, including in China, Taiwan, Japan and South Korea. Based on the complex relationships among these countries and the United States, there is inherent risk that political, diplomatic and national security influences might lead to trade disputes, impacts and/or disruptions, in particular, with respect to those affecting the semiconductor industry. The United States and other countries have imposed and may continue to impose trade restrictions and have also levied tariffs and taxes on certain goods. Increases in tariffs, additional taxes or other trade restrictions and retaliatory measures may increasingly impact customer demand and customer investment in manufacturing equipment, increase our manufacturing costs, decrease margins, reduce the competitiveness of our products, or inhibit our ability to sell products or purchase necessary equipment and supplies, which could have a material adverse effect on our business, results of operations, or financial condition.

We are subject to numerous governmental regulations.

We are subject to federal, state, local and foreign regulations, including environmental regulations, regulations relating to the design and operation of our products and control systems and regulations relating to certain of our service offerings. 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, change our service offerings, 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 or services 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, cost of 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 customers, which could result in lower net sales by us to such customers. Alternatively, if we do not adjust the prices for our products and services 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 or these services are provided 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.

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 pursuant to the terms of a credit agreement with the lenders. At September 30, 2021, the outstanding term loan principal balance was $49.7 million, excluding unamortized deferred financing costs of $0.3 million. The term loan matures and becomes fully payable on October 4, 2024. We are required to redeem the term loan at the principal amount then outstanding upon occurrence of certain events, as described in the credit 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, including the term loan, 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 our loans and reduce our profitability and cash flows. The terms of our debt covenants in the credit agreement for the term loan 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 credit agreement for the term loan. 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 the restrictive covenants under the term loan and our other indebtedness could also result in an event of default under the term loan which, if not cured or waived, could result in the acceleration of all or a portion of our indebtedness, including under the term loan. Accordingly, a default under the term loan 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.

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 life sciences 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. 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 2038 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 industries in which we do business. 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 and services 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 or services 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, services or processes to avoid infringing the rights of others may be costly or impractical and could detract from the value of our products and services. 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 or offering certain of our services. 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.

Risks Related to Reliance on Third Parties

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, a portion of our supply is sourced from Asia, including China and we do not always have a previous history of dealing with 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 in 2011 and Thailand in 2004, 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.

Our outsource providers may fail to perform as we expect.

Outsource providers have played and will continue to play a key role in many of our transactional and administrative functions, such as information technology and facilities management. Many of these outsourced service providers, including certain hosted software applications that we use for confidential data storage, employ cloud computing technology for such storage. These providers' cloud computing systems may be susceptible to "cyber incidents," such as intentional cyber-attacks aimed at theft of sensitive data or inadvertent cyber-security compromises, which are outside of our control. 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 or adequately protect our data from cyber-related security breaches as we expect and any such failure could have an adverse impact on our business.

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 19%, 19% and 21%, respectively, of our total revenue in the fiscal years ended September 30, 2021, 2020 and 2019. 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.

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 and services, 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.

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 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 or perform genomics services at our facilities. In any case, inaccurate or faulty testing services or damage to our customers’ materials attributed to a failure of our products or services could lead to claims for damages made by our customers and could also harm our relationship with our customers and damage our reputation, 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 2020 through the end of fiscal year 2021, our stock price fluctuated between a high of $109.17 per share and a low of $46.70 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 and year-to-year;
- 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, life sciences sample management and genomic services and other industries into which we sell products and services;
- global economic conditions;
- political changes, hostilities, the COVID-19 pandemic or similar events, or natural disasters such as hurricanes and floods;
- low trading volume of our common stock;
- the change in stockholders expected upon the completion of the sale of our semiconductor automation business; 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.

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, as discussed below, 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.

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

Our restated 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, 2021:

Location	Functions	Square Footage (Approx.)	Ownership Status/Lease Expiration
Chelmsford, Massachusetts	Corporate headquarters, training, manufacturing, R&D and sales & support	298,000	Owned
Indianapolis, Indiana	Sample storage, sales & support	116,700	September 2038
Suzhou, China	Laboratory & office	116,800	June 2022
South Plainfield, New Jersey	Laboratory & office	73,300	January 2030

Our Chelmsford, Massachusetts facility will be included as part of the sale of our semiconductor automation business and at the completion of the sale, we will lease space in this facility as we transition to a new corporate headquarters location.

In addition to the principal facilities listed above, we maintain additional laboratories, biorepositories, and sales and support offices in Canada, Europe, Asia, and throughout the United States.

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, or Nasdaq under the symbol "BRKS." As of December 1, 2021, our common stock will trade on the Nasdaq under the symbol "AZTA".

Number of Holders

As of November 8, 2021, there were 494 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 16, 2021 at our investor day conference, we disclosed that we intend to discontinue paying a quarterly dividend upon the completion of the sale of our semiconductor automation business.

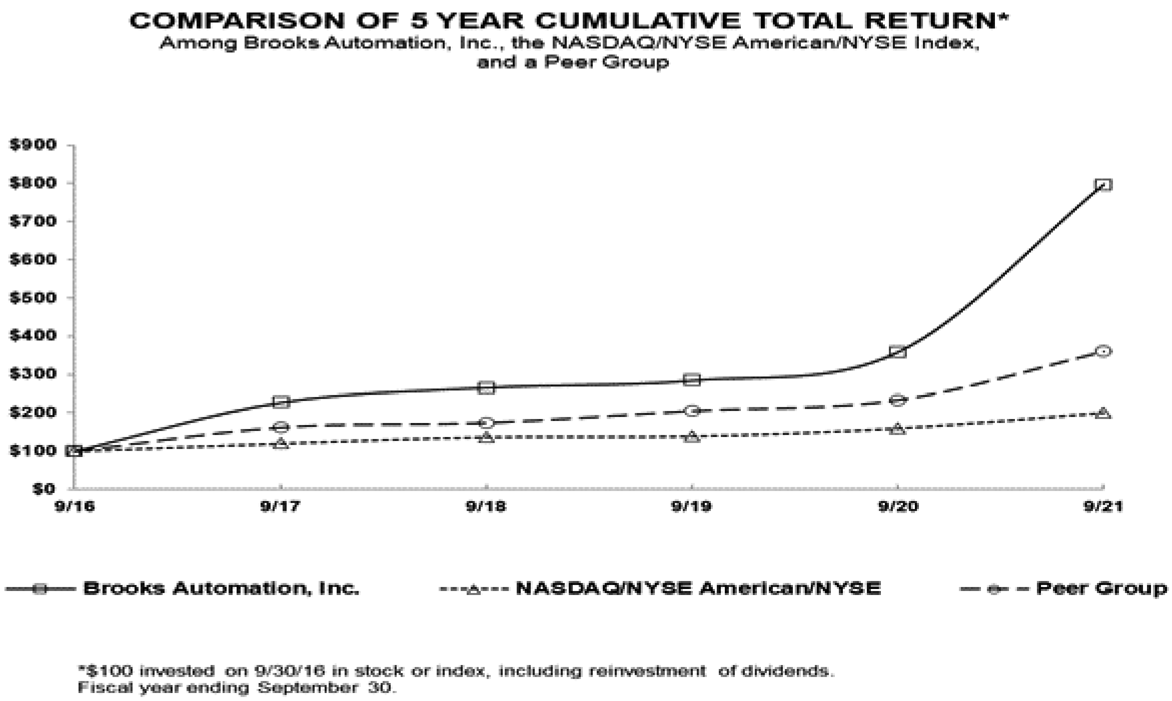
On November 2, 2021, our Board of Directors approved a cash dividend of $0.10 per share payable on December 23, 2021 to common stockholders of record on December 3, 2021.

Comparative Stock Performance

The following graph compares the cumulative total shareholder return (assuming reinvestment of dividends) from investing $100 on September 30, 2016, and plotted at the last trading day of each of the fiscal years ended September 30, 2017, 2018, 2019, 2020 and 2021, in each of (i) our Common Stock; (ii) the Nasdaq/NYSE American/NYSE Index of companies; and (iii) a peer group for the fiscal year ended September 30, 2021 ("Peer Group").

The Peer Group for the year ended September 30, 2021 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., Novanta Inc., Onto Innovation Inc., Ultra Clean Holdings, Inc., Varex Imaging Corp. and Veeco Instruments Inc.

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



	9/30/2016	9/30/2017	9/30/2018	9/30/2019	9/30/2020	9/30/2021
Brooks Automation, Inc.	$ 100.00	$ 227.15	$ 265.67	$ 284.25	$ 358.55	$ 797.18
Nasdaq/NYSE American/NYSE	100.00	120.08	136.91	139.19	159.63	199.90
Peer Group	100.00	162.43	174.41	205.33	233.59	359.77

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 Securities Exchange Act of 1934, as amended, or 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 under 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 the fiscal year ended September 30, 2021.

Item 6. *[Reserved]*

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 included elsewhere in this Form 10-K. 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, 2021, 2020 and 2019.

- *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, 2021 compared to the fiscal year ended September 30, 2020 and for the fiscal year ended September 20, 2020 compared to the fiscal year ended September 20, 2019.

- *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" and Item 1A, "Risk Factors" included above in this Form 10-K 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 life science sample exploration and management solutions for the life sciences market. We support our customers from research to clinical development with our sample management, automated storage, and genomic services expertise to help our customers bring impactful therapies to market faster. We understand the importance of sample integrity and offer a broad portfolio of products and services spanning across the life cycle of samples from procurement and sourcing, automated storage platforms, genomic services and a broad range of consumables, informatics and data software, and sample management solutions. Our expertise and leadership positions enable us to be a trusted partner to pharmaceutical, biotechnology, and life sciences research institutions globally.

In the life sciences sample management market, we utilize our core technology 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, genomic services 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.

Our life sciences portfolio includes products and services that we acquired to bring together a comprehensive capability to service our customers' needs in the sample-based services arena. We continue to develop the acquired products and services offerings through the combined expertise of the newly acquired teams and our existing research and development resources. We believe our approach of acquisition, investment, and integration has allowed us to accelerate our internal development and that of the acquired entity, significantly decreasing our time to market.

We have also strengthened and broadened our product portfolio and market reach by investing in internal product development. We expect to continue investing in research and development and making strategic acquisitions with the objective of expanding our offerings in the life sciences market.

Within our Life Sciences Products segment, we have developed and continue to develop automated biological sample storage solutions for operating in ultra-low temperature environments. We have a complete line up of automated stores from ambient temperatures to -190°. Our BioStore's ™ unique design allows controlled temperature storage down to -80°C with the industry's highest throughput of sample retrieval. Our BioStore portfolio offers improved data management and sample security for vaccines and biologics stored at -80°C.

Within our Life Sciences Services segment, our genomics services business advances research and development activities in gene sequencing, synthesis editing and related services to meet market demands. Recently, enabled by newly developed proprietary technologies, we launched a portfolio of new services, targeting analysis of adeno-associated virus, a common vector used in cell and gene therapy. We will continue to focus on developing processes and technologies that can streamline sample to data workflow.

Sale of the Semiconductor Automation Business

In the fourth quarter of fiscal year 2021, we entered into a definitive agreement to sell our semiconductor automation business, which consists of our Brooks Semiconductor Solutions Group reportable segment, to Thomas H. Lee, Partners, L.P., or THL, for $3.0 billion in cash subject to customary adjustments. Since our founding in 1978, we have been a leading automation provider and partner to the global semiconductor manufacturing industry. At the completion of the sale of the semiconductor automation business, we will no longer serve this market. We anticipate closing of the transaction in the first half of calendar year 2022 upon satisfaction of customary closing conditions and regulatory approvals. The semiconductor automation business has been classified as discontinued operations and, unless otherwise noted, this MD&A relates solely to our continuing operations and does not include the operations of our semiconductor automation business.

Sale of the Semiconductor Cryogenics Business

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 semiconductor cryogenics business has been classified as discontinued operations and, unless otherwise noted, this MD&A relates solely to our continuing operations and does not include the operations of our semiconductor cryogenics business.

On July 1, 2019, we completed the sale of the semiconductor cryogenics business for $659.8 million. Net proceeds from the sale were $551.7 million, net of taxes and closing costs paid and remaining taxes payable. During the first quarter of fiscal year 2021, the final net working capital was determined, resulting in a negative adjustment in the amount of $1.8 million payable to Edwards. As part of this sale, we transferred our intellectual property, for our cryogenics pump products, but not our intellectual property related to our semiconductor automation or life sciences businesses.

On July 1, 2019, in connection with the completion of the sale of our semiconductor cryogenics business, we used $495.3 million of the cash proceeds to extinguish debt. As a result of the debt extinguishment we recorded a loss on extinguishment of debt of $5.2 million in the fourth quarter of fiscal year 2019. Refer to "Liquidity and Capital Resources" for further discussion of the debt extinguishment.

Segments

Our business is comprised of two reportable segments, our Life Sciences Products segment and our Life Sciences Services segment. For further information on our reportable and operating segments, please refer to Note 19, "Segment and Geographic Information" to our Consolidated Financial Statements included under Item 8, "Financial Statements and Supplementary Data" of this Form 10-K.

Our Life Sciences Products business is a leading provider of automated ultra-cold storage solutions for biological and chemical compound samples. Our storage systems provide reliable automation and sample inventory management at temperatures down to -196°C and can store anywhere from one to millions of samples. Our sample management solutions include consumable vials and tubes, PCR plates, instruments for supporting workflow, and informatics, all of which focus on providing customers with the highest level of sample quality, security, availability, intelligence and integrity throughout the lifecycle of samples providing customers with complete end-to-end "cold-chain of custody" capabilities.

Our Life Sciences Services business is a leading provider of solutions addressing the many needs of customers in the area of genomic analysis and the management and care of biological samples used in pharmaceutical, biotech, healthcare, clinical, and academic research and development markets. Millions of samples are processed every year, each containing valuable information that must be preserved with the sample. Through our genomic services we provide a broad capability to customers for sequencing and synthesis of genes. Our sample management services include off-site storage services, transport services, laboratory services, and interactive informatics solutions. We also provide expert-level consultation services to our clients throughout their experimental design and implementation. Our services also include short- and long-term sample storage and management of the "cold chain of custody" from collection, to storage, to retrieving the sample which ultimately may go back into the customer's research workflow.

Business and Financial Performance

Results of Operations –

Fiscal Year Ended September 30, 2021 Compared to Fiscal Year Ended September 30, 2020

We reported revenue of $513.7 million for fiscal year 2021 compared to $388.5 million for fiscal year 2020, an increase of $125.2 million, or 32%. Gross margin was 47.5% for fiscal year 2021 compared to 44.3% for fiscal year 2020, an increase in gross profit of $71.7 million. Operating expenses were $274.9 million for fiscal year 2021 compared to $208.7 million for fiscal year 2020, an increase of $66.2 million. We reported an operating loss of $31.1 million for fiscal year 2021 compared to an operating loss of $36.6 million for fiscal year 2020, a decrease in operating loss of $5.5 million, which was primarily attributable to the revenue growth and gross margin improvement, partially offset by higher operating expenses. Other expenses, net includes $16 million of expense due to the release of a tax indemnification asset which is offset within our income tax benefit from the release of a related liability. Overall, we generated a net loss from continuing operations of $28.9 million during fiscal year 2021 as compared to $26.4 million in fiscal year 2020. Please refer to the "Results of Operations" section below for a detailed discussion of our financial results for the fiscal year 2021 compared to fiscal year 2020.

Fiscal Year Ended September 30, 2020 Compared to Fiscal Year Ended September 30, 2019

We reported revenue of $388.5 million for fiscal year 2020 compared to $334.2 million for fiscal year 2019, an increase of $54.3 million, or 16%. Gross margin was 44.3% for fiscal year 2020 compared to 40.3% for fiscal year 2019, an increase in gross profit of $37.5 million. Operating expenses were $208.7 million for fiscal year 2020 compared to $182.0 million for fiscal year 2019, an increase of $26.7 million. We reported an operating loss of $36.6 million for fiscal year 2020 compared to an operating loss of $47.4 million for fiscal year 2019, a decrease in operating loss of $10.8 million, which was primarily attributable to the revenue growth and gross margin improvement, partially offset by higher operating expenses. We generated a net loss from continuing operations of $26.4 million during fiscal year 2020 as compared to $61.1 million in fiscal year 2019. The decrease in operating loss was primarily attributable to our increase in operating income in the current year as well as a loss on extinguishment of debt of $14.3 million and higher interest expense of $19.3 million in fiscal year 2019. Please refer to the "Results of Operations" section below for a detailed discussion of our financial results for the fiscal year 2020 compared to fiscal year 2019.

Cash Flows and Liquidity -

Our cash and cash equivalents, restricted cash and marketable securities were $244.0 million as of September 30, 2021 and $260.7 million as of September 30, 2020. Both fiscal year 2021 and 2020 each exclude $45.0 million of cash classified as assets held for sale related to the semiconductor automation business.

Cash and cash equivalents and restricted cash as presented on our Consolidated Statements of Cash Flows is on a total company basis and were $285.3 million as of September 30, 2021 compared to $302.5 million as of September 30, 2020. The decrease of $17.2 million included cash outflows for investing activities of $146.3 million and financing activities of $25.9 million, partially offset by cash inflows from operating activities of $149.9 million. The effects of foreign exchange positively impacted the annual change in balances by $5.2 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 2021 compared to fiscal year 2020.

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 life science industry, 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 performance obligations or non-standard terms and conditions. For customer contracts that contain more than one performance obligation, we allocate the total transaction consideration to each performance obligation based on the relative stand-alone selling price of each performance obligation within the contract. We rely on either observable standalone sales or an expected cost-plus margin approach to determine the standalone selling price of offerings, depending on the nature of the performance obligation. Performance obligations whose standalone selling price is estimated using an expected cost-plus margin approach relate to the sale of customized automated cold sample management systems and service-type warranties within the Life Sciences Products segment.

Revenue from the sales of certain products that involve significant customization, which primarily include automated cold sample management systems is recognized over time as the asset created by our performance does not have alternative use to us and an enforceable right to payment for performance completed to date is present. We recognize 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 selection of the method to measure progress towards completion requires judgment. We have concluded that using the percentage of labor hours incurred to estimated labor hours needed to complete the project most appropriately depicts our efforts towards satisfaction of the performance obligation. We 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 in the project. These estimates are based on a number of factors, including the degree of required product customization and the work required to be able to install the product in the customer’s existing environment, 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 the estimate 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, liabilities assumed and contingent consideration, as well as intangibles and their estimated useful lives. Fair value and useful life determinations may be based on, among other factors, estimates of future expected cash flows, royalty cost savings and appropriate discount rates used in computing present values. For all the current year acquisitions, management applied significant judgment in estimating the fair value of the acquired intangible assets, which involved significant estimates and assumptions with respect to forecast revenue growth rates and the discount rates. 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.

During the third quarter of fiscal 2021, the Company recorded $9.4 million level 3 liability which represents contingent consideration for an acquisition within the Life Sciences Products segment. The amount is contingent based on the acquired business' performance for the twelve-month period ending December 31, 2021. Please refer to Note 4, "Acquisitions" for further detail. Changes in the fair value of 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 two reportable segments consisting of Life Sciences Products and Life Sciences Services. As of the date of our goodwill impairment test, we had six reporting units which three reporting units are within semiconductor automation discontinued operations. The three reporting units within the continuing operations include one reporting unit within Life Sciences Products operating segment and two reporting units within the Life Sciences Services operating segment. As a result of a change in our management reporting structure and immediately post to the annual goodwill impairment test, the Company combined two components within the Life Sciences Services operating segment, Sample Repository Solutions and Genomic Services components, into the Life Sciences Services reporting unit. The Company evaluated the aggregation criteria under ASC 350 for the two components and concluded that they exhibit similar economic characteristics and meet the aggregation criteria.

We perform our annual goodwill impairment assessment on April 1st of each fiscal year. 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. 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 also concluded that the fair value of the aggregated reporting units significantly exceeded the book value thus no adjustment to goodwill was necessary.

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. In addition to determining the fair value of our reporting units based on the DCF method, we also compare the 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 assess the reasonableness of the reporting unit fair values determined in accordance with the DCF Method. The key inputs used in the DCF Method include revenue growth rates, gross margin percentage, selling, general and administrative expense percentage and 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 reporting units and our internally developed projections of future cash flows.

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 revenue growth rates, gross margin percentage, selling, general and administrative expense percentage and the discount rate used in the DCF model could result in different estimates of the reporting unit's fair value as of each testing date.

We completed our annual goodwill impairment test as of April 1, 2021 for the three reporting units within our continuing operations, including Life Sciences Products as the only reporting unit within our Life Sciences Products segment, and Sample Repository Solutions and Genomic Services within our Life Sciences Services segment. Based on the test results, we determined that no adjustment to goodwill was necessary. We conducted a qualitative assessment for the Life Science Products reporting unit and determined that it was more likely than not that its fair value was greater than its carrying value. As a result of the analysis, we did not perform the quantitative assessment for this reporting unit, and therefore, did not recognize any impairment losses. We performed the quantitative goodwill impairment test for the two reporting units within the Life Sciences Services segment. We determined that no adjustment to goodwill was necessary for these two reporting units. Both reporting units' fair values significantly exceeded their respective book values.

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.

During the fourth quarter of fiscal year 2021, we announced that the life sciences businesses will be rebranded under a single, unified life sciences brand, Azenta Life Sciences, or Azenta, during the first half of fiscal year 2022. We concluded that the abandoned tradenames for these businesses were fully impaired in the fiscal fourth quarter of 2021 and recorded a $13.4 million charge for the tradename impairment loss. The impairment loss is included in the Selling, general and administrative expense in our Consolidated Statements of Operations. We did not test our long-lived assets for impairment during fiscal years 2020 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 excess or obsolete 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 to reduce the carrying value to its net realizable value. 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 excess or obsolete 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 to be realized. We consider recent historical income, estimated future taxable income, carry-forward periods of tax attributes, and ongoing tax planning strategies in assessing the need for the valuation allowance. 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 we reduced our valuation allowance against certain foreign net deferred tax assets resulting in a tax benefit of $2.0 million in fiscal year 2021. We continue to hold a U.S. valuation allowance related to the realizability of certain state tax credits and net operating loss carry-forwards. We also maintain valuation allowances against net deferred tax assets in certain foreign tax-paying components as of the end of fiscal year 2021.

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 the Nasdaq Global Select Market 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 Notes to the Consolidated Financial Statements included in Item 8, “Financial Statements and Supplementary Data” of this Form 10-K.

RESULTS OF OPERATIONS

Fiscal Year Ended September 30, 2021 Compared to Fiscal Year Ended September 30, 2020

Revenue

We reported revenue of $513.7 million for fiscal year 2021 compared to $388.5 million for fiscal year 2020, an increase of $125.2 million, or 32%. The COVID-19 pandemic has had varying impacts on our business for the fiscal year ended September 30, 2021. Further discussion of the impacts by each segment are discussed below.

Our Life Sciences Products segment reported revenue of $199.6 million for fiscal year 2021 compared to $129.8 million for fiscal year 2020, an increase of $69.8 million or 54%. The increase in revenue was driven by all major product lines. Consumables and instruments were the most significant driver of the increase, primarily due to COVID-19 related demand.

Our Life Sciences Services segment reported revenue of $314.1 million for fiscal year 2021 compared to $258.8 million for fiscal year 2020, an increase of $55.3 million or 21%. We reported an increase of $56.2 million from our genomics services business driven by Next Generation sequencing, gene synthesis services and Sanger sequencing. We reported a decrease in sample repository solutions revenue of $1.0 million primarily due to reduction of outsourced genomic services which were provided through an alliance with Infinity BiologiX LLC, formerly RUCDR, that was terminated in the fourth quarter of fiscal year 2020. Offsetting the decrease in revenue from the alliance was an increase in storage, informatics, and revenue from the acquisition of Trans-Hit Bio. Revenue increased 30% excluding the impact of the RUCDR alliance.

We estimate that the impact of the COVID-19 pandemic on our revenue for the fiscal year ended September 30, 2021 was a net increase of approximately $53 million in the aggregate primarily attributable to the increased demand for in our consumables and instruments products.

We anticipate continued growth in revenue from our life sciences products and services businesses through our internally developed products and services and through our acquired businesses and potential future acquisitions.

Revenue generated outside the United States amounted to $192.9 million, or 38% of total revenue, for fiscal year 2021 compared to $135.0 million, or 35% of total revenue, for fiscal year 2020.

Operating Income (Loss)

We reported an operating loss of $31.1 million for fiscal year 2021 compared to an operating loss of $36.6 million for fiscal year 2020. The decrease in operating loss of 15% was driven by higher revenue and gross profit, partially offset by an increase in both research and development expenses and selling, general and administrative expenses compared to the prior fiscal year.

Within operating expenses, selling, general, and administrative expenses increased $61.8 million, and research and development expenses increased $4.6 million. Restructuring expenses decreased $0.3 million. Selling, general and administrative expenses for fiscal year 2021 included $13.4 million of impairment charges related to abandoned tradenames due to the rebranding of our life sciences business announced during the fourth quarter of fiscal year 2021. Cost of sales in fiscal year 2021 also included $5.5 million of cost of sales accrued for tariff liabilities related to intercompany import activity that occurred during the fiscal years of 2016 through 2020. The costs resulted from an internal review of the transaction value used to calculate tariffs on intercompany imports of samples shipped from our genomics services business.

Operating income for our Life Sciences Products segment was $22.0 million for fiscal year 2021 compared to an operating loss of $4.2 million for fiscal year 2020. Cost of sales for our Life Sciences Products segment includes charges for amortization related to completed technology of $1.1 million for fiscal year 2021 and $1.2 million for the fiscal year 2020. Adjusted operating income for our Life Sciences Products segment, which excludes the charges mentioned above, was $23.1 million for fiscal year 2021 and adjusted operating loss in fiscal year 2020 was $3.0 million after excluding these charges. Please refer to Note 19, “Segment and Geographic Information”.

Operating income for our Life Sciences Services segment was $10.3 million for fiscal year 2021 compared to an operating loss of $4.4 million for fiscal year 2020. Cost of sales for our Life Sciences Services segment includes charges for amortization related to completed technology of $7.0 million for fiscal year 2021 and $6.9 million for 2020. Fiscal year 2021 cost of sales includes $5.5 million of cost accrued for tariff liabilities as discussed above. Fiscal year 2020 includes $0.3 million of restructuring related charges. Adjusted operating income for our Life Sciences Services segment, which excludes the charges mentioned above, was $22.7 million for fiscal year 2021 and adjusted operating loss in fiscal year 2020 was $2.9 million after excluding these charges. Please refer to Note 19, "Segment and Geographic Information".

Gross Margin

We reported gross margins of 47.5% for fiscal year 2021 compared to 44.3% for fiscal year 2020, an increase of 3.2 points. Gross margin increased 3.4 percentage points in the Life Sciences Products segment and 3.1 percentage points in the Life Sciences Services segment. Cost of revenue for both fiscal years 2021 and 2020 included $8.1 million of charges for amortization related to completed technology. Cost of revenue for fiscal year 2021 included $5.5 million of cost accrued for tariff liabilities as discussed above. Cost of revenue for fiscal year 2020 included $0.3 million of restructuring related charges. Excluding these charges, margins expanded 3.6 percentage points in fiscal year 2021, as compared to fiscal year 2020.

Our Life Sciences Products segment reported gross margins of 46.4% for fiscal year 2021 compared to 42.9% for fiscal year 2020. The improvement of 3.4 percentage points was primarily driven by volume leverage related to increased sales across all product lines. Cost of revenue in fiscal year 2021 and 2020 included $1.1 million and $1.2 million, respectively, of amortization related to completed technology. Excluding these charges, margins expanded 3.1 percentage points in fiscal year 2021, compared to fiscal year 2020.

Our Life Sciences Services segment reported gross margins of 48.1% for fiscal year 2021 compared to 45.0% for fiscal year 2020. The improvement of 3.1 points was driven by volume leverage and revenue mix, partially offset by the impact of the $5.5 million of cost accrued for the tariff liabilities as discussed above. The revenue mix benefit included 2.9 percentage points from the reduction in outsourced genomic services due to the exit of the alliance with RUCDR. Cost of revenue during fiscal year 2021 included $7.0 million of amortization related to completed technology as compared to $6.9 million incurred during fiscal year 2020. Cost of revenue for fiscal year 2020 included $0.3 million of restructuring related charges. Excluding the impact of the amortization related to completed technology, tariff charges and restructuring related charges, as described above, margins expanded 4.3 percentage points in fiscal year 2021, as compared to fiscal year 2020.

Research and Development Expenses

Research and development expenses were $22.4 million in fiscal year 2021 compared to $17.8 million in fiscal year 2020, which represented 4.4% and 4.6% of revenue for fiscal years 2021 and 2020, respectively.

Research and development expenses in our Life Sciences Products segment were $10.9 million in fiscal 2021 compared to $8.7 million in fiscal year 2020, which represented 5.4% and 6.7% of Life Sciences Products revenue in fiscal years 2021 and 2020, respectively. The increase in research and development expenses were primarily attributable to investments in our cryogenic product line and outside services costs.

Research and development expenses in our Life Sciences Services segment were $11.5 million in fiscal 2021 compared to $9.1 million in fiscal year 2020 which represented 3.7% and 3.5% of Life Sciences Services revenue for fiscal years 2021 and 2020, respectively. The increase in research and development expenses was primarily driven by higher payroll related costs and project costs.

Selling, General and Administrative Expenses

Selling, general and administrative expenses were $252.1 million in fiscal year 2021 as compared to $190.3 million in fiscal year 2020. The increase of $61.8 million was driven by $26.2 million from segment selling, general and administrative expenses and $35.6 million from corporate expenses not allocated to our segments. The segment selling, general and administrative expenses are discussed in further detail below. The increase in unallocated corporate expenses was primarily driven by mergers and acquisition related expenses, which were $20.7 million for fiscal year 2021, compared to $0.5 million in fiscal year 2020. Merger and acquisition expenses for fiscal year 2021 included $18.6 million of costs related to separation activities resulting in the sale of the semiconductor automation business. Unallocated corporate expenses also include the amortization of intangible assets primarily related to customer relationships, which were $8.1 million for both fiscal years 2021 and 2020. Fiscal year 2021 also includes $13.4 million of impairment charges to intangible assets related to tradenames. The charges were driven by the abandonment of tradenames which resulted from the rebranding of our life sciences products and life sciences services business during the fourth quarter of fiscal year 2021 and $0.8 million of costs related to rebranding and transformation efforts.

Selling, general and administrative expenses at the segment level, which are discussed below, include corporate allocations from shared corporate function which include finance, information technology, human resources, legal, executive, governance, logistics and compliance, and variable compensation. During fiscal year 2021 corporate allocated expenses increased $10.0 million compared to fiscal year 2020, primarily due to higher variable compensation accruals and information technology infrastructure costs.

Selling, general and administrative expenses in our Life Sciences Products segment were $59.7 million in fiscal year 2021 as compared to $51.2 million in fiscal year 2020. The increase of $8.5 million was due to higher sales commission expenses, variable compensation expense and corporate allocated costs, which were driven by the factors discussed above.

Selling, general and administrative expenses in our Life Sciences Services segment were $129.4 million in fiscal year 2021 as compared to $111.7 million in fiscal year 2020. The increase of $17.6 million is primarily related to variable compensation expense and costs to support growth, partially offset by lower travel expenses, and lower bad debt expense

Non-Operating Income (Expenses)

Interest income – During fiscal years 2021 and 2020, we recorded interest income of $0.6 million and $0.8 million respectively, which primarily represented interest earned on our marketable securities.

Interest expense – During fiscal years 2021 and 2020, we recorded interest expense of $2.0 million and $2.9 million, respectively. Interest expense is primarily related to our term loan.

Other expenses, net – During fiscal years 2021 and 2020 we recorded other expenses, net of $16.5 million and $1.6 million, respectively. Other expense, net for fiscal year 2021 includes a $16.0 million charge related to the release of a tax indemnification asset which is offset in the Income tax benefit line item in our Consolidated Statements of Operations.

Income Tax Benefit

We recorded an income tax benefit on continuing operations of $20.1 million in fiscal year 2021 compared to an income tax benefit of $13.9 million in fiscal year 2020. The income tax benefit for fiscal year 2021 was primarily driven by uncertain tax position reversals totaling $18.2 million, which includes $16.0 million of uncertain tax positions that were indemnified. The tax reserve reversal is offset by a $3.4 million tax charge related to the write off a future tax deduction that would have been recognized if the uncertain tax position was settled in an audit. The benefit also included $2.0 million of benefits related to the reversal of valuation allowances against deferred tax assets, losses in the U.S. jurisdiction and stock compensation deductions in excess of book expenses. The overall benefit for fiscal year 2021 was partially offset by $4.1 million of withholding tax costs related to repatriation of foreign earnings in connection with the planned sale of the semiconductor automation business and the tax provision on earnings in our foreign jurisdictions during the year.

The income tax benefit during fiscal year 2020 was driven primarily by benefits in the U.S. jurisdiction related to continuing operations losses and stock compensation deductions in excess of book expenses. The overall benefit for fiscal year 2020 was partially offset by the tax provisions on earnings in our foreign jurisdictions during the year.

Discontinued Operations

Discontinued operations include our semiconductor automation business and our semiconductor cryogenics business. In the fourth quarter of fiscal year 2021, we entered into a definitive agreement to sell our semiconductor automation business to THL for $3 billion in cash, subject to customary adjustments. The sale is expected to close in the first half of 2022. On July 1, 2019, we completed the sale of the semiconductor cryogenics business for $659.8 million in cash.

Revenue from discontinued operations was $680.1 million and $508.7 million, respectively, for fiscal years 2021 and 2020 and relates to the semiconductor automation business. Net income from discontinued operations was $139.6 million and $91.2 million for fiscal years 2021 and 2020, respectively, and is comprised primarily of the results of operations of our semiconductor automation business. 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 our company on an ongoing basis. Indirect expenses which supported the semiconductor automation business and semiconductor cryogenics business, and which remained as part of the continuing operations, are not reflected in income from discontinued operations.

Fiscal Year Ended September 30, 2020 Compared to Fiscal Year Ended September 30, 2019

Revenue

We reported revenue of $388.5 million for fiscal year 2020 compared to $334.2 million for fiscal year 2019, an increase of $54.3 million, or 16%. The COVID-19 pandemic had varying impacts on our business for the fiscal year ended September 30, 2020. The impacts by segment are discussed below.

Our Life Sciences Products segment reported revenue of $129.8 million for fiscal year 2020 compared to $119.0 million for fiscal year 2019, an increase of $10.7 million or 9%. The increase in revenue was driven by consumables and instruments, which delivered record revenue levels driven by COVID-19 related demand, and an increase in revenue for our BioStore III Cryo systems, partially offset by decreases in revenue from automated cold sample management systems and infrastructure services revenue which were both impacted by customer site restrictions and schedule delays due to COVID-19.

Our Life Sciences Services segment reported revenue of $258.8 million for fiscal year 2020 compared to $215.2 million for fiscal year 2019, an increase of $43.6 million or 20%. We reported an increase of $40.2 million from genomic services, which was composed of $20.0 million from the additional time of ownership for fiscal year 2020, compared to the prior fiscal year and $20.2 million from organic growth. Our genomic services business, which is comprised of the acquisition of GENEWIZ Group, or GENEWIZ, was acquired in November 2018. We reported an increase in Sample Repository Solutions revenue of $3.4 million primarily driven by informatics services and storage services, partially offset by declines in outsourced genomic services and transportation services, which were negatively impacted by COVID-19. Informatics revenue was primarily driven by the acquisition of RURO in February 2020.

We estimate that the impact of the COVID-19 pandemic on our revenue for the fiscal year ended September 30, 2020 was a net reduction of approximately $11 million in the aggregate primarily attributable to a slow-down in the marketplace, reflecting the absence of a portion of the workforces within our customers. This slowdown was first present in the China market in the early part of the second quarter ended March 31, 2020 and began surfacing in the rest of the world in the latter part of March 2020. Partially offsetting these declines, we experienced an increase in demand for gene synthesis services and consumables and instruments, in support of numerous activities including research and development in the areas of virus detection and vaccines. During the fourth quarter of fiscal year 2020, demand and shipments for certain products and services in our life sciences businesses which were impacted by COVID-19 recovered to levels we experienced prior to the pandemic.

Revenue generated outside the United States amounted to $135.0 million, or 35% of total revenue, for fiscal year 2020 compared to $81.7 million, or 24% of total revenue, for fiscal year 2019.

Operating Income (Loss)

We reported an operating loss of $36.6 million for fiscal year 2020 compared to $47.4 million for fiscal year 2019. The decrease in operating loss of $10.8 million was driven by higher revenue and gross profit, partially offset by an increase in both selling, general and administrative expenses and research and development expenses compared to the prior fiscal year. Drivers of the increases to research and development and selling, general and administrative expenses are described below.

Operating loss for our Life Sciences Products segment was $4.2 million for fiscal year 2020 compared to an operating loss of $22.1 million for fiscal year 2019. Operating income for our Life Sciences Products segment includes charges for amortization related to completed technology of $1.2 million in each of the fiscal years 2020 and 2019. Adjusted operating loss for our Life Sciences Products segment, which excludes the charges mentioned above, was $3.0 million for fiscal year 2020 compared to an adjusted operating loss of $20.9 million in fiscal year 2019. Please refer to Note 19, "Segment and Geographic Information".

Operating loss for our Life Sciences Services segment was $4.4 million for fiscal year 2020 compared to operating income of $3.1 million for fiscal year 2019. Operating loss for our Life Sciences Services segment includes charges for amortization related to completed technology of $6.9 million and $5.6 million for fiscal years 2020 and 2019, respectively, and restructuring related charges of $0.3 million in each of the fiscal years 2020 and 2019. Adjusted operating income for our Life Sciences Services segment, which excludes the charges mentioned above, was $2.9 million for fiscal year 2020 compared to $9.0 million in fiscal year 2019. Please refer to Note 19, "Segment and Geographic Information".

Gross Margin

We reported gross margins of 44.3% for fiscal year 2020 compared to 40.3% for fiscal year 2019, an increase of 4.0 points. Gross margin increased 6.2 percentage points in the Life Sciences Products segment and 2.7 percentage points in the Life Sciences Services segment. Cost of revenue for fiscal year 2020 included $8.1 million of charges for amortization related to completed technology as compared to $6.8 million in fiscal year 2019. Cost of revenue for both fiscal year 2020 and 2019 included $0.3 million of restructuring related charges. Excluding these charges, margins expanded 1.7 percentage points in fiscal year 2020, as compared to fiscal year 2019.

Our Life Sciences Products segment reported gross margins of 42.9% for fiscal year 2020 compared to 36.6% for fiscal year 2019. The improvement of 6.3 percentage points was driven by material and labor cost reductions related to large stores and BIII Cryo systems, efficiencies realized installing large stores and performing infrastructure services, and volume leverage. Cost of revenue in each of the fiscal years 2020 and 2019 included $1.2 million of amortization related to completed technology. Excluding these charges, margins expanded 6.2 percentage points in fiscal year 2020, as compared to fiscal year 2019.

Our Life Sciences Services segment reported gross margins of 45.0% for fiscal year 2020 compared to 42.3% for fiscal year 2019. The improvement of 2.7 percentage points is due to volume leverage, cost performance, and favorable service mix. Cost of revenue during fiscal year 2020 included $6.9 million of amortization related to completed technology as compared to $5.6 million incurred during fiscal year 2019. Cost of revenue for both fiscal year 2020 and 2019 included $0.3 million of restructuring related charges. Excluding these charges, margins expanded 2.8 percentage points in fiscal year 2020, as compared to fiscal year 2019.

Research and Development Expenses

Research and development expenses were $17.8 million in fiscal year 2020 compared to $17.3 million in fiscal year 2019, which represented 4.6% and 5.2% of revenue, for fiscal years 2020 and 2019, respectively.

Research and development expenses in our Life Sciences Products segment were $8.7 million in fiscal 2020 compared to $10.8 million in fiscal year 2019, which represented 6.7% and 9.1% of Life Sciences Products revenue for fiscal years 2020 and 2019, respectively. The decline in research and development expenses were primarily attributable to lower outside service costs and lower temporary employee costs supporting product development initiatives.

Research and development expenses in our Life Sciences Services segment were $9.1 million in fiscal 2020 compared to $6.5 million in fiscal year 2019, which represented 3.5% and 3.0% of Life Sciences Services revenue for fiscal years 2020 and 2019, respectively. The increase in research and development expenses was primarily driven by acquisitions. The timing of the GENEWIZ acquisition added an additional $1.1 million of expense in fiscal year 2020 and the acquisition of RURO, Inc. in February 2020 added $0.6 million of additional expense. Investments in employee related costs and outside services to support development initiatives in our service offerings drove the remainder of the increase.

Selling, General and Administrative Expenses

Selling, general and administrative expenses were $190.3 million in fiscal year 2020 as compared to $163.3 million in fiscal year 2019. The increase of $26.9 million was driven by $26.6 million from segment selling, general and administrative expenses and $0.3 million from corporate expenses not allocated to our segments.

Selling, general and administrative expenses at the segment level, which are discussed below, include corporate allocations from shared corporate functions which include finance, information technology, human resources, legal, executive, governance, logistics and compliance, and variable compensation. During fiscal year 2020 corporate allocated expenses increased $33.8 million compared to fiscal year 2019, primarily due to the integration of the shared corporate functions from our acquisitions.

Selling, general and administrative expenses in our Life Sciences Products segment were $51.2 million in fiscal year 2020 as compared to $54.9 million in fiscal year 2019. The decrease of $3.7 million is primarily due to decreases in employee related costs from restructuring actions taken in 2019 and 2020 and decreases in expenses related to employee travel, trade shows, and conferences, partially offset by higher corporate allocated costs and higher sales commissions.

Selling, general and administrative expenses in our Life Sciences Services segment were $111.7 million in fiscal year 2020 as compared to $81.4 million in fiscal year 2019. The increase of $30.4 million is primarily related to acquisitions, corporate allocations, and bad debt expense, partially offset by lower employee travel expense. The timing of the GENEWIZ acquisition added an additional $5.1 million of expense and the RURO acquisition added $1.2 million of additional expense in fiscal year 2020.

Non-Operating Income (Expenses)

Interest income – During fiscal years 2020 and 2019, we recorded interest income of $0.8 million and $1.4 million respectively, which primarily represented interest earned on our marketable securities.

Interest expense – During fiscal years 2020 and 2019, we recorded interest expense of $2.9 million and $22.2 million, respectively. The decrease in interest expense in the fiscal year 2020 compared to the prior fiscal year is due to carrying less debt. We extinguished $495.3 million of debt during the fourth quarter of fiscal year 2019.

Loss on extinguishment of debt - During fiscal year 2019, we recorded losses on extinguishment of debt of $14.3 million of which $9.1 million was in connection with the syndication of the incremental term loan secured during the first quarter of fiscal 2019. The syndication to a new group of lenders during the second quarter of fiscal 2019 met the criteria of a debt extinguishment and therefore the amortization of the deferred financing costs associated with the origination of the incremental term loan was accelerated and recorded as a loss on extinguishment of debt in our Consolidated Statement of Operations. In addition, as a result of the $495.3 million extinguishment of debt during the fourth quarter of fiscal year 2019, we recorded an additional $5.2 million loss on extinguishment of debt.

Other expenses, net – During fiscal years 2020 and 2019 we recorded other expenses, net of $1.6 million and $1.4 million, respectively.

Income Tax Benefit

We recorded an income tax benefit on continuing operations of $13.9 million in fiscal year 2020 compared to an income tax benefit of $22.8 million in fiscal year 2019. The income tax benefit during fiscal year 2020 was driven primarily by benefits in the U.S. jurisdiction related to continuing operations losses and stock compensation deductions in excess of book expenses. The overall benefit for fiscal year 2020 was partially offset by the tax provisions on earnings in our foreign jurisdictions during the year.

The income tax benefit during fiscal year 2019 was driven primarily by benefits in the U.S. jurisdiction related to continuing operations losses, research tax credits, and stock compensation deductions in excess of book expenses. We also recorded a $1.4 million benefit due to a state tax change that resulted from the acquisition of GENEWIZ. We also recorded a tax provision of $3.0 million during the year related to changes in the toll charge based on a change in tax legislation and the completion of all accounting of the charge under SAB 118. The overall benefit for fiscal year 2019 was partially offset by the tax provisions on earnings in our foreign jurisdictions during the year.

Discontinued Operations

As discussed above, discontinued operations include the results of the semiconductor automation business and the results of the semiconductor cryogenics business, which was sold on July 1, 2019. The sale of the semiconductor automation business is expected to be completed during the first half of the calendar year 2022.

Revenue from discontinued operations was $508.7 million and $556.2 million, respectively, for fiscal years 2020 and 2019, respectively. Revenue from discontinued operations for fiscal year 2020 relates to the semiconductor automation business. Revenue from discontinued operations for fiscal year 2019 includes $446.7 million related to the semiconductor automation business and $109.5 million related to the semiconductor cryogenics business. Net income from discontinued operations was $91.2 million for fiscal year 2020 and is comprised primarily of our semiconductor automation business. Net income for fiscal 2019 was $498.5 million and includes the net gain on sale of the semiconductor cryogenics business of $408.6 million. The net income for fiscal year 2019 is also inclusive of income from the ULVAC Cryogenics, Inc. joint venture. 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 semiconductor automation business and cryogenics business, and which remained as part of the continuing operations, are not reflected in income from discontinued operations.

LIQUIDITY AND CAPITAL RESOURCES

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 current global economic environment, including the uncertainty related to the short and long-term impacts of the COVID-19 pandemic, 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 any adjustments to remove discontinued operations, unless otherwise noted, and is stated on a total company consolidated basis.

Overview of Cash Flows and Liquidity

Our cash and cash equivalents, restricted cash and marketable securities as of September 30, 2021 and 2020 consist of the following (in thousands):

	Year Ended September 30, 2021	2020
Cash and cash equivalents	$ 227,427	$ 250,649
Restricted cash	12,906	6,877
Short-term marketable securities	81	51
Long-term marketable securities	3,598	3,101
	$ 244,012	$ 260,678
Cash, cash equivalents and restricted cash	240,333	257,526
Cash and cash equivalents included in assets held for sale	45,000	45,000
	$ 285,333	$ 302,526

Our cash and cash equivalents, restricted cash and marketable securities were $244.0 million as of September 30, 2021 and exclude $45 million of cash included within assets held for sale related to the semiconductor automation business. As of September 30, 2021, we had cash, cash equivalents and restricted cash including cash in assets held for sale of $285.3 million, of which $169.6 million was held outside of the United States. If these funds are needed for the United States 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 likely not result in U.S. federal income tax. During the quarter ended September 30, 2021 we repatriated foreign cash to the U.S. in planning for the sale of the discontinued operation and recognized all related tax costs. We have provided immaterial deferred income taxes for the impact of these future repatriations. Aside from these actions, our intent is to reinvest the remaining foreign cash. Aside from these actions, our intent is to reinvest the remaining foreign cash outside of the United States and our current operating plans do not demonstrate a need to repatriate these funds for our U.S. operations. We had marketable securities of $3.7 million and $3.2 million as of September 30, 2021 and 2020, respectively. Our marketable securities are generally readily convertible to cash without an adverse impact.

Fiscal Year Ended September 30, 2021 Compared to Fiscal Year Ended September 30, 2020

Overview

Cash Flows and Liquidity - Cash and cash equivalents and restricted cash as presented on our Consolidated Statements of Cash Flows is on a total company basis and were $285.3 million as of September 30, 2021 compared to $302.5 million as of September 30, 2020. The decrease of $17.2 million included cash outflows for investing activities of $146.3 million and financing activities of $25.9 million, partially offset by cash inflows from operating activities of $149.9 million. The effects of foreign exchange positively impacted the annual change in balances by $5.2 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 from operating activities of $149.9 million for the fiscal year ended September 30, 2021, resulted from net income $110.7 million, adjusted to exclude the effect of non-cash operating charges of $90.3 million, partially offset by an increase in net operating assets of $51.2 million. Cash outflows from the increase in net operating assets were primarily driven by increases in accounts receivable, inventory, and prepaids and other assets partially offset by increases in accounts payable, accrued expenses, and other liabilities and accrued compensation and tax withholdings.

Cash flows from operating activities of $37.9 million for the fiscal year ended September 30, 2020, resulted from net income of $64.9 million, adjusted to exclude the effect of non-cash operating charges of $77.2 million, partially offset by an increase in net operating assets of $12.7 million. Additionally, the company paid $91.5 million in cash taxes related to the sale of the semiconductor cryogenics business. Cash outflows related to the increase in net operating assets were primarily driven by increases in accounts receivable, inventory, and decreases in accrued expenses and other liabilities, partially offset by increased accrued compensation and tax withholdings.

Discontinued operations contributed $139.6 million of net income to fiscal year 2021 and $91.2 million of net income to fiscal year 2020 referenced above. The pending sale of the semiconductor automation business may have a negative impact on cash flows from operations in future periods after the sale is completed.

Investing Activities

Cash used in investing activities was $146.3 million during fiscal year 2021 and consisted of $95.5 million for acquisitions and $52.8 million for capital expenditures, partially offset by $2.0 million of proceeds from the collection of loans receivable. Capital expenditures were made primarily to increase capacity, support new product development, and enhance information technology infrastructure. Capital expenditures for the fiscal year 2021 included $35.6 million for construction in process of a building site in Suzhou, China. The site is intended to consolidate operations of three leased sites in the same region, while expanding operational capacity.

Cash used in investing activities was $22.7 million during fiscal year 2020 and consisted of $39.9 million for capital expenditures and $15.7 million for acquisitions, partially offset by $33.9 million of net proceeds from the net purchases, sales, and maturities of marketable securities.

Financing Activities

Cash used for financing activities was $25.9 million during fiscal year 2021 and included net cash outflows for cash dividends paid of $29.7 million, $1.2 million in payment of finance leases and $0.8 million of debt principal payments. Partially offsetting these cash outflows was $5.8 million related to the proceeds from issuance of common stock.

Cash used for financing activities was $27.0 million during fiscal year 2020 and included net cash outflows for cash dividends paid of $29.5 million, $1.3 million in payment of finance leases and $0.8 million of debt principal payments. Partially offsetting these cash outflows was $4.6 million related to the proceeds from issuance of common stock.

China Facility

In April 2019, we committed to construct a facility in Suzhou China, to consolidate the Suzhou operations of our genomic services business and provide infrastructure to support future growth. The facility is being constructed in two phases. We have incurred $35.6 million of capital expenditures to date related to the construction of the facility, which includes $26.0 million and $8.3 million, respectively, for fiscal years 2021 and 2020, respectively.

Capital Resources

Term Loans

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 pursuant to the terms of a credit agreement 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 loan principal amount may be increased by an aggregate amount equal to $75.0 million plus any voluntary repayments of the term loan plus any additional amount such that our secured leverage ratio is less than 3.00 to 1.00.

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. Subject to certain conditions stated in the credit 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 credit agreement. We are required to redeem the term loan at the principal amount then outstanding upon the occurrence of certain events, as set forth in the credit agreement.

On November 15, 2018, we entered into an incremental amendment to the credit agreement under which we obtained an incremental term loan in an aggregate principal amount of $350.0 million, issued at $340.5 million. The proceeds of the incremental term loan were used to pay a portion of the purchase price for our acquisition of GENEWIZ. On February 15, 2019, we entered into the second amendment to the credit agreement and syndicated the incremental term loan to a group of new lenders. The syndicated incremental term loan was issued at $345.2 million. Except as provided for in the amendments, the incremental term loan was subject to the same terms and conditions of the initial term loan.

On July 1, 2019, in connection with the completion of the sale of our semiconductor cryogenics business, we used $348.3 million of the cash proceeds from the transaction to extinguish the outstanding balance at July 1, 2019 of the incremental term loan and $147.0 million of the cash proceeds from the transaction to extinguish a portion of the outstanding balance at July 1, 2019 of the term loan. The total amount of debt extinguished on July 1, 2019 was $495.3 million.

The credit agreement, as amended, for contains certain customary representations and warranties, covenants and events of default. As of September 30, 2021, we were in compliance with all covenants and conditions under the credit agreement, as amended.

In connection with our acquisition of GENEWIZ in November 2018, we assumed three five-year term loans and two one-year term loans. The two one-year short term loans matured and were repaid in full as of September 30, 2020. The three five-year term loans matured and were repaid in full during fiscal year 2021.

At September 30, 2021, the aggregate outstanding principal balance of all outstanding term loans was $49.7 million, excluding unamortized deferred financing costs of $0.3 million. Borrowings under the term loans bear variable interest rates. 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 loans. If rates increase, we may be subject to higher costs of servicing the loans which could reduce our profitability and cash flows. During the year ended September 30, 2021, the weighted average stated interest rate on the term loans was 2.8%. During the year ended September 30, 2021, we incurred aggregate interest expense of $1.7 million on the term loans, including $0.2 million of deferred financing costs amortization. Our debt service requirements are expected to be funded through our existing sources of liquidity and operating cash flows.

Line of Credit Facility

We maintain a revolving line of credit under a credit agreement with Wells Fargo Bank, N.A. and JPMorgan Chase Bank, N.A that provides for a revolving credit facility 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, 2021, we had approximately $57.7 million available for borrowing under the line of credit. There were no amounts outstanding pursuant to the line of credit as of September 30, 2021. The amount of funds available for borrowing under the credit agreement may fluctuate each period based on our borrowing base availability. The credit agreement 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 credit agreement as of September 30, 2021. 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 for strategic investments and acquisitions.

Dividends

Our Board of Directors declared the following dividends during the fiscal years 2021 and 2020(in thousands, except per share data):

Declaration Date	Dividend per Share	Record Date	Payment Date	Total
Fiscal Year Ended September 30, 2021				
November 5, 2020	$ 0.10	December 4, 2020	December 17, 2020	$ 7,421
January 25, 2021	0.10	March 5, 2021	March 26, 2021	7,429
April 27, 2021	0.10	June 4, 2021	June 25, 2021	7,430
August 3, 2021	0.10	September 3, 2021	September 24, 2021	7,435
Fiscal Year Ended September 30, 2020				
November 1, 2019	$ 0.10	December 6, 2019	December 20, 2019	$ 7,362
January 24, 2020	0.10	March 6, 2020	March 27, 2020	7,375
April 29, 2020	0.10	June 5, 2020	June 26, 2020	7,376
July 29, 2020	0.10	September 4, 2020	September 25, 2020	7,383

On November 2, 2021, our Board of Directors approved a cash dividend of $0.10 per share of our common stock. The total dividend of approximately $7.5 million will be paid on December 23, 2021 to shareholders of record at the close of business on December 3, 2021. Dividends are declared at the discretion of our Board of Directors and depend on actual cash flow from operations, our financial condition, debt service and capital requirements and any other factors our Board of Directors may consider relevant. On November 16, 2021 at our investor day conference, we disclosed that we intend to discontinue paying a quarterly dividend upon the completion of the sale of our semiconductor automation business.

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 2021.

Contractual Obligations and Requirements

At September 30, 2021, we had non-cancelable commitments of $65.9 million, including purchase orders for inventory of $44.0 million, information technology related commitments of $15.9 million and China facility commitments of $6.0 million related to the construction of our facility in China discussed above.

At September 30, 2021, the Company had $1.3 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 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 2021, and we currently do not anticipate any of these obligations to be called in the near future.

As of September 30, 2021, the total amount of net unrecognized tax benefits for uncertain tax positions and the accrual for the related interest was $2.0 million, all of which represents a potential future cash outlay, in comparison to September 30, 2020 where the balance was $18.5 million. The decrease in the balance over the year was primarily driven by many of our accruals on our preexisting unrecognized tax benefits for uncertain tax positions reaching their statute of limitations. We are unable to make a reasonably reliable estimate of the timing of the cash settlement for these liabilities since the timing of future tax examinations by various tax jurisdictions and the related resolution is uncertain.

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, restricted cash and short-term and long-term investments and fluctuations in foreign currency exchange rates.

Interest Rate Exposure

Our 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, 2021, the weighted average stated interest rate on our debt was 2.8%. At September 30, 2021, the outstanding term loan principal balance was $49.7 million, excluding unamortized deferred financing costs of $0.3 million. During fiscal year 2021, we incurred aggregate interest expense of $1.7 million on all of our term loans. A hypothetical 100 basis point change in interest rates would result in a $0.5 million change in interest expense incurred during fiscal year 2021.

Our cash and cash equivalents and restricted cash consist principally of money market securities which are short-term in nature. At September 30, 2021 and 2020, our aggregate short-term and long-term investments were $3.7 million and $3.2 million, respectively, and consisted mostly of highly rated corporate debt securities and municipal securities. At September 30, 2021 and 2020, the unrealized loss position on marketable securities was insignificant, which is included in "Accumulated other comprehensive income" in the Consolidated Balance Sheets. A hypothetical 100 basis point change in interest rates would result in an insignificant annual change in interest income earned in fiscal year 2021.

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 37% and 33%, respectively, of our total sales for fiscal years ended September 30, 2021 and 2020. 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 $119.4 million and $142.9 million, respectively, at September 30, 2021 and 2020, 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 $1.8 million and $3.4 million, respectively, in fiscal years 2021 and 2020, 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 $3.7 million and $1.4 million, respectively, in our net income during fiscal years 2021 and 2020.

Item 8. ***Financial Statements and Supplementary Data***

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 (the "Company") as of September 30, 2021 and 2020, and the related consolidated statements of operations, of comprehensive income, of changes in stockholders' equity and of cash flows for each of the three years in the period ended September 30, 2021, 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, 2021, 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, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended September 30, 2021 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, 2021, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases effective October 1, 2019.

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.

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.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Acquisition of Precise Automation Inc. – Valuation of Completed Technology

As described in Note 3 to the consolidated financial statements, on April 29, 2021, the Company acquired Precise Automation Inc. for a total cash purchase price of $69.8 million. As part of the preliminary purchase price allocation, management recorded $38.7 million for the completed technology intangible asset which was valued using the excess earnings method under the income approach. As disclosed by management, management applied significant judgment in estimating the fair value of the completed technology, which involved significant estimates and assumptions with respect to forecast revenue growth rates and the discount rate.

The principal considerations for our determination that performing procedures relating to the acquisition of Precise Automation Inc. – valuation of completed technology is a critical audit matter are the significant judgment by management when determining the fair value of the completed technology, which in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's assumptions related to forecast revenue growth rates and the discount rate. In addition, the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the acquisition accounting, including controls over management's valuation of the completed technology and assumptions related to forecast revenue growth rates and the discount rate. These procedures also included, among others, (i) testing management's process for determining the fair value of the completed technology, (ii) evaluating the appropriateness of the excess earnings method, (iii) testing the completeness and accuracy of the underlying data used in the method, and

(iv) evaluating the reasonableness of significant assumptions used by management related to forecast revenue growth rates and the discount rate. Evaluating management’s assumptions related to forecast revenue growth rates involved evaluating whether the assumptions used were reasonable considering the past performance of the acquired business, performance year to date, available backlog, and industry data. Professionals with specialized skill and knowledge were used to assist in evaluating the appropriateness of the excess earnings method and the reasonableness of the discount rate.

/s/ PricewaterhouseCoopers LLP
Boston, Massachusetts
November 24, 2021

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

BROOKS AUTOMATION, INC.
CONSOLIDATED BALANCE SHEETS

	September 30, 2021	September 30, 2020
	(In thousands, except share and per share data)	
Assets		
Current assets		
Cash and cash equivalents	$ 227,427	$ 250,649
Marketable securities	81	51
Accounts receivable, net	119,877	94,791
Inventories	60,398	37,125
Prepaid expenses and other current assets	58,198	43,974
Current assets held for sale	311,385	222,863
Total current assets	777,366	649,453
Property, plant and equipment, net	130,719	88,735
Long-term marketable securities	3,598	3,101
Long-term deferred tax assets	10,043	3,976
Goodwill	469,356	453,177
Intangible assets, net	186,534	212,323
Other assets	58,068	49,782
Non-current assets held for sale	183,828	98,718
Total assets	$ 1,819,512	$ 1,559,265
Liabilities and Stockholders' Equity		
Current liabilities		
Current portion of long-term debt	$ —	$ 827
Accounts payable	42,360	25,689
Deferred revenue	25,724	25,776
Accrued warranty and retrofit costs	2,330	2,211
Accrued compensation and benefits	33,183	28,669
Accrued restructuring costs	304	122
Accrued income taxes payable	8,711	1,975
Accrued expenses and other current liabilities	103,537	43,017
Current liabilities held for sale	128,939	82,832
Total current liabilities	345,088	211,118
Long-term debt	49,677	49,588
Long-term tax reserves	1,973	18,471
Long-term deferred tax liabilities	13,030	17,797
Long-term pension liabilities	705	895
Long-term operating lease liabilities	45,088	18,905
Other long-term liabilities	6,173	1,302
Non-current liabilities held for sale	32,444	27,575
Total liabilities	494,178	345,651
Commitments and contingencies (Note 21)		
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, 87,808,922 shares issued and 74,347,053 shares outstanding at September 30, 2021, 87,293,710 shares issued and 73,831,841 shares outstanding at September 30, 2020	878	873
Additional paid-in capital	1,976,112	1,942,850
Accumulated other comprehensive income	19,351	21,919
Treasury stock, at cost - 13,461,869 shares	(200,956)	(200,956)
Accumulated deficit	(470,051)	(551,072)
Total stockholders' equity	1,325,334	1,213,614
Total liabilities and stockholders' equity	$ 1,819,512	$ 1,559,265

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

BROOKS AUTOMATION, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended September 30,		
	2021	2020	2019
	(In thousands, except per share data)		
Revenue			
Products	$ 181,036	$ 110,567	$ 100,444
Services	332,667	277,970	233,735
Total revenue	513,703	388,537	334,179
Cost of revenue			
Products	96,678	62,715	63,936
Services	173,216	153,674	135,639
Total cost of revenue	269,894	216,389	199,575
Gross profit	243,809	172,148	134,604
Operating expenses			
Research and development	22,412	17,818	17,316
Selling, general and administrative	252,101	190,256	163,331
Restructuring charges	385	674	1,388
Total operating expenses	274,898	208,748	182,035
Operating loss	(31,089)	(36,600)	(47,431)
Interest income	632	849	1,449
Interest expense	(2,037)	(2,944)	(22,250)
Loss on extinguishment of debt	—	—	(14,339)
Other expenses, net	(16,475)	(1,597)	(1,386)
Loss before income taxes	(48,969)	(40,292)	(83,957)
Income tax benefit	(20,100)	(13,930)	(22,830)
Loss from continuing operations	(28,869)	(26,362)	(61,127)
Income from discontinued operations, net of tax	139,616	91,215	498,543
Net income	$ 110,747	$ 64,853	$ 437,416
Basic net income per share:			
Loss from continuing operations	$ (0.39)	$ (0.36)	$ (0.85)
Income from discontinued operations, net of tax	1.88	1.24	6.92
Basic net income per share	$ 1.49	$ 0.88	$ 6.08
Diluted net income per share:			
Loss from continuing operations	$ (0.39)	$ (0.36)	$ (0.84)
Income from discontinued operations, net of tax	1.88	1.24	6.89
Diluted net income per share	$ 1.49	$ 0.88	$ 6.04
Weighted average shares used in computing net income per share:			
Basic	74,229	73,557	71,992
Diluted	74,455	73,850	72,386

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

BROOKS AUTOMATION, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended September 30,		
	2021	2020	2019
		(In thousands)	
Net income	$ 110,747	$ 64,853	$ 437,416
Other comprehensive income, net of tax:			
Foreign currency translation adjustments	(2,922)	18,877	(9,333)
Unrealized gains on marketable securities, net of tax effects of $0, $0 and ($1) for fiscal years 2021, 2020 and 2019	—	7	104
Actuarial gains (losses), net of tax effects of ($77), $27 and $13 for fiscal years 2021, 2020 and 2019	354	(476)	(847)
Total other comprehensive (loss) income, net of tax	(2,568)	18,408	(10,076)
Comprehensive income	$ 108,179	$ 83,261	$ 427,340

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

BROOKS AUTOMATION, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended September 30,		
	2021	2020	2019
	(In thousands)		
Cash flows from operating activities			
Net income	$ 110,747	$ 64,853	$ 437,416
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	65,333	65,496	54,454
Impairment of intangible assets	13,364	—	285
Stock-based compensation	27,456	16,317	20,113
Amortization of premium on marketable securities and deferred financing costs	225	233	1,121
Earnings of equity method investments	—	—	(6,188)
Deferred income taxes	(17,265)	(5,407)	(15,161)
Loss on extinguishment of debt	—	—	14,339
Other losses on disposals of assets	260	226	209
Gain on divestiture, net of tax	—	—	(408,575)
Adjustment to the gain on divestiture, net of tax	948	319	—
Contingent transaction fees paid stemming from divestiture	—	—	(13,388)
Taxes paid stemming from divestiture	—	(91,500)	—
Changes in operating assets and liabilities, net of acquisitions and divestiture:			
Accounts receivable	(69,643)	(18,755)	(11,445)
Inventories	(50,443)	(13,144)	(2,933)
Prepaid expenses and other assets	(15,968)	25,642	(16,009)
Accounts payable	30,967	792	4,695
Deferred revenue	(3,939)	(139)	4,213
Accrued warranty and retrofit costs	54	760	1,109
Accrued compensation and tax withholdings	7,298	11,097	(6,453)
Accrued restructuring costs	124	(865)	399
Proceeds from recovery on insurance claim	—	—	1,082
Accrued expenses and other liabilities	50,339	(18,059)	31,615
Net cash provided by operating activities	149,857	37,866	90,898
Cash flows from investing activities			
Purchases of property, plant and equipment	(52,805)	(39,924)	(23,861)
Purchases of marketable securities	(151)	(10,894)	(35,225)
Sales of marketable securities	25	2,492	48,903
Maturities of marketable securities	96	42,328	2,557
Proceeds from divestiture	—	—	661,642
Adjustment to proceeds from divestiture	(1,802)	—	—
Acquisitions, net of cash acquired	(93,712)	(15,744)	(442,704)
Settlement (issuance) of note receivables	2,000	(1,000)	—
Net cash (used in) provided by investing activities	(146,349)	(22,742)	211,312
Cash flows from financing activities			
Proceeds from term loans, net of discount	—	—	686,386
Proceeds from issuance of common stock	5,812	4,595	3,422
Payments of financing costs	—	—	(687)
Principal payments on debt	(828)	(828)	(850,190)
Payments of finance leases	(1,164)	(1,277)	(1,197)
Common stock dividends paid	(29,726)	(29,513)	(28,895)
Net cash used in financing activities	(25,906)	(27,023)	(191,161)
Effects of exchange rate changes on cash and cash equivalents	5,205	9,254	(3,586)
Net (decrease) increase in cash, cash equivalents and restricted cash	(17,193)	(2,645)	107,463
Cash, cash equivalents and restricted cash, beginning of period	302,526	305,171	197,708
Cash, cash equivalents and restricted cash, end of period	$ 285,333	$ 302,526	$ 305,171
Supplemental disclosures:			
Cash paid for interest	$ 1,435	$ 2,159	$ 20,799
Cash paid for income taxes, net	38,020	102,010	16,990
Reconciliation of cash, cash equivalents, and restricted cash to the consolidated balance sheets			
Cash and cash equivalents of continuing operations	$ 227,427	$ 250,649	$ 256,642
Cash and cash equivalents included in assets held for sale	45,000	45,000	45,000
Short-term restricted cash included in prepaid expenses and other current assets	7,145	3,567	3,529
Long-term restricted cash included in other assets	5,761	3,310	—
Total cash, cash equivalents and restricted cash shown in the consolidated statements of cash flows	$ 285,333	$ 302,526	$ 305,171

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

BROOKS AUTOMATION, INC.
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY

	Common Stock Shares	Common Stock at Par Value	Additional Paid-In Capital	Accumulated Other Comprehensive Income	Accumulated Deficit	Treasury Stock	Total Stockholders' Equity
				(In thousands, except share data)			
Balance September 30, 2018	84,164,130	$ 841	$ 1,898,434	$ 13,587	$ (994,074)	$ (200,956)	$ 717,832
Shares issued under restricted stock and purchase plans, net	1,595,570	16	3,407				3,423
Stock-based compensation			20,113				20,113
Common stock dividends declared, at $0.40 per share					(28,895)		(28,895)
Net income					437,416		437,416
Foreign currency translation adjustments				(9,333)			(9,333)
Changes in unrealized losses on marketable securities, net of tax effects of ($1)				104			104
Actuarial loss arising in the year, net of tax effects of $13				(847)			(847)
Cumulative effect of adoption of ASC 606				—	(859)		(859)
Balance September 30, 2019	85,759,700	857	1,921,954	3,511	(586,412)	(200,956)	1,138,954
Shares issued under restricted stock and purchase plans, net	1,534,010	16	4,579				4,595
Stock-based compensation			16,317				16,317
Common stock dividends declared, at $0.40 per share					(29,513)		(29,513)
Net income					64,853		64,853
Foreign currency translation adjustments				18,877			18,877
Changes in unrealized losses on marketable securities, net of tax effects of $0				7			7
Actuarial loss arising in the year, net of tax effects of $27				(476)			(476)
Balance September 30, 2020	87,293,710	873	1,942,850	21,919	(551,072)	(200,956)	1,213,614
Shares issued under restricted stock and purchase plans, net	515,212	5	5,806				5,811
Stock-based compensation			27,456				27,456
Common stock dividends declared, at $0.40 per share					(29,726)		(29,726)
Net income					110,747		110,747
Foreign currency translation adjustments				(2,922)			(2,922)
Changes in unrealized losses on marketable securities, net of tax effects of $0				—			—
Actuarial loss arising in the year, net of tax effects of ($77)				354			354
Balance September 30, 2021	87,808,922	$ 878	$ 1,976,112	$ 19,351	$ (470,051)	$ (200,956)	$ 1,325,334

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 life science sample exploration and management solutions for the life sciences market. The Company supports its customers from research to clinical development with its sample management, automated storage, and genomic services expertise to help bring impactful therapies to market faster.

Discontinued Operations

In the fourth quarter of fiscal year 2021, the Company entered into a definitive agreement to sell its semiconductor automation business to Thomas H. Lee Partners, L.P. ("THL"). The Company determined that the semiconductor automation 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, 2021.

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) ("Edwards"). The Company determined that the semiconductor cryogenics business met the "held for sale" criteria and the "discontinued operations" criteria in accordance with FASB ASC 205, *Presentation of Financial Statements*, as of September 30, 2018.

Please refer to Note 3, "Discontinued Operations" for further information about the discontinued businesses. 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 semiconductor automation business and the semiconductor 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.

Risks and Uncertainties

The Company is subject to risks common to companies in the markets it serves, including, but not limited to, global economic and financial market conditions, fluctuations in customer demand, acceptance of new products, development by its competitors of new technological innovations, risk of disruption in its supply chain, the implementation of tariffs and export controls, dependence on key personnel, protection of proprietary technology, and compliance with domestic and foreign regulatory authorities and agencies.

During the COVID-19 pandemic, the Company's facilities have remained operational with only required personnel on site, and the balance of employees working from home. The Company's business falls within the classification of an "Essential Critical Infrastructure Sector" as defined by the U.S. Department of Homeland Security and the Company has continued operations during the COVID-19 pandemic. The Company has followed government guidance in each region and has implemented Centers for Disease Control social distancing guidelines and other best practices to protect the health and safety of the Company's employees. The COVID-19 pandemic has not had a substantial impact on the Company's financial results and a portion of this impact has been mitigated by the Company's realignment of resources to satisfy incremental orders related to virus research and vaccine development and commercialization. As states safely reopen the economy, get people back to work, and ease social restrictions while minimizing the health impacts of COVID-19, future impacts on the Company's financial results will depend on future variants of the virus and vaccine effectiveness against the variants, which are not fully determinable, as well as new or prolonged government responses to the pandemic, as the full impact of the pandemic on the economy and markets which the Company serves is as yet unknown. The Company's financial results will also depend on variables including reduced demand from its customers, the degree that the supply chain may be constrained which could impact its delivery of product and the potential impact to its operations if there is a significant outbreak among the Company's employees, as well as the amount of incremental demand caused by research and treatments in the areas of COVID-19 or related threats.

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 the equity method of accounting to investments that provide it with the 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 certain 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 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.

The full extent to which the COVID-19 pandemic will directly or indirectly impact the Company's business - including results of operations and financial condition, sales, expenses, reserves and allowances, manufacturing and employee-related amounts - will depend on future developments that are highly uncertain. This includes results from new information that may emerge concerning COVID-19 and any actions taken to contain or treat COVID-19, as well as the economic impact on local, regional, national and international customers and markets. The Company has made estimates of the impact of COVID-19 within its financial statements and there may be changes to those estimates in future periods.

Business Combinations

The Company accounts 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 and contingent consideration, as well as intangibles and their estimated useful lives. Fair value and useful life determinations may be based on, among other factors, estimates of future expected cash flows 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 contingent consideration resulting from a change in the underlying inputs are recognized in results of operations until the arrangement is settled.

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 expenses, net" in the Company's Consolidated

Statements of Operations. Net foreign currency transaction and remeasurement losses totaled $1.8 million, $3.4 million and $1.8 million for the fiscal years ended September 30, 2021, 2020 and 2019, 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 in the Company's Consolidated Statements of Comprehensive Income.

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 to 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.

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 and cash equivalents, restricted cash, 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 19%, 19% and 21% of its consolidated revenue for the fiscal years ended September 30, 2021, 2020 and 2019, respectively. No customers accounted for more than 10% of the Company’s consolidated revenue for fiscal years 2021, 2020 and 2019. No customers accounted for more than 10% of the Company’s total receivables during the fiscal year ended September 30, 2021 and 2020.

Fair Value of Financial Instruments

The Company’s financial instruments consist of cash and cash equivalents, restricted cash, marketable securities, derivative instruments, the term loan, accounts receivable, and accounts payable. Marketable securities and derivative instruments 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 and cash equivalents, restricted cash, accounts receivable and accounts payable approximate their fair value due to their short-term nature.

Cash and Cash Equivalents, and Restricted Cash

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, 2021 and 2020, cash equivalents were less than $0.1 million and $0.1 million, respectively. Cash equivalents are reported at fair value.

The Company classifies short-term restricted cash balances within prepaid expenses and other current assets and long-term restricted cash balances within other assets on the accompanying Consolidated Balance Sheets based upon the term of the remaining restrictions.

Accounts Receivable, Allowance for Expected Credit Losses and Sales Returns

Trade accounts receivable do not bear interest and are recorded at the invoiced amount. The Company maintains an allowance for expected credit losses representing its best estimate of expected credit losses related to its existing accounts receivable and their net realizable value. The Company determines the allowance based on several factors, including an evaluation of customer credit worthiness, the age of the outstanding receivables, economic trends, historical experience, and other information over the payment periods. The Company reviews and adjusts the allowance for expected credit losses on a quarterly basis. Accounts receivable balances are written off against the allowance for expected credit losses when the Company determines that the balances are not recoverable. Provisions for expected credit losses 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 expected 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 net realizable value 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, 2021, and 2020, the Company had cumulative capitalized direct costs of $22.7 million and $18.2 million, respectively, associated with the development of software for its internal use. As of September 30, 2021, this balance included $5.8 million associated with software still in the development stage which are included within "Property, plant and equipment, net" in the accompanying Consolidated Balance Sheets. During fiscal year 2021, the Company capitalized direct costs of $4.4 million associated with the 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:

Trademarks	3 - 13 years
Patents	7 years
Completed technology	7 - 20 years
Customer relationships	6 - 14 years

Leases

The Company adopted Topic 842 effective October 1, 2019 using the modified retrospective approach. The Company applied Topic 842 to all its leases as of October 1, 2019.

The Company has operating leases for real estate and non-real estate and finance leases for non-real estate. The classification of a lease as operating or finance and the determination of the right-of-use asset ("ROU asset") and lease liability are determined at lease inception. The ROU asset represents the Company's right to use an underlying asset for the lease term and the lease liability represents the Company's obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. As most of the Company's leases do not provide an implicit rate, an incremental borrowing rate is used based on the estimated rate of interest for collateralized borrowing over a similar term of the lease payments at commencement date. Lease terms may include options to extend or terminate the lease when it is reasonably certain that the option will be exercised. Lease expense is recognized on a straight-line basis over the lease term.

The Company's lease agreements may contain lease and non-lease components. Non-lease components primarily include payments for maintenance and utilities. Fixed payments for non-lease components are combined with lease payments and accounted for as a single lease component which increases the amount of the ROU asset and liability.

The ROU asset for operating leases is included within Other assets and the ROU asset for finance leases is included within Property, plant, and equipment, net on the Consolidated Balance Sheets. The short-term lease liabilities for both operating leases and finance leases are included within Accrued expenses and other current liabilities on the Consolidated Balance Sheets. The long-term lease liabilities for operating leases and finance leases are included within Long-term operating lease liabilities, and Other long-term liabilities, respectively, on the Consolidated Balance Sheets.

Goodwill

Goodwill represents the excess of 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 (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. In addition, to determining the fair value of the Company's reporting units based on the DCF method, the Company also compares the 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 assess 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 as a reduction of Long-term debt on the Consolidated Balance Sheets. Deferred financing costs were \$0.4 million and \$0.7 million at September 30, 2021 and 2020, respectively. 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 related to deferred financing costs was \$0.3 million and \$0.2 million for fiscal years ended September 30, 2021 and 2020, respectively, 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.

Revenue Recognition

The Company generates revenue from the following sources:

- Products, including sales of automated cold sample management systems, consumables, instruments, spare parts, and software.
- Services, including repairs, upgrades, diagnostic support, installation, as well as biological sample services such as DNA sequencing, gene synthesis, molecular biology, bioinformatics, biological sample storage, sample acquisition and other support services.

The Company recognizes revenue for the transfer of such promised products or services to customers in an amount that reflects the consideration to which the Company expects to be entitled to in exchange for those products or services. Under ASC 606, *Revenue from Contracts with Customers* ("ASC 606"), revenue is recognized when or as the transfer of control of the underlying performance obligation occurs. To determine the amount of consideration the Company expects to be entitled to and whether transfer of control has occurred, the Company applies the following five-step model:

- *Identify the contract with a customer.* Contracts are accounted for when approval and commitment has been received from both parties, the rights of each party are identified, payment terms are identified, the contract has commercial substance and collectability of the consideration to which the Company is entitled is probable. Contracts are generally evidenced through receipt of an approved purchase order or execution of a binding arrangement and can be both short and long-term. Long-term contracts within the segments relate to the sale of products with attached service-type warranty contracts that generally have a stated contract term that is greater than one year. Contracts may contain acceptance provisions where the Company is required to obtain technical acceptance from the customer upon completion of installation services and evidence of the systems functional performance within the customer's operating environment. The Company has concluded that acceptance criteria within its contracts can be objectively evaluated and will not impact the Company's transfer of control assessment under ASC 606.

- *Identify the performance obligations in the contract.* Performance obligations include the sale of products and services. Certain customer arrangements related to the sale of automated cold sample management systems generally include more than one performance obligation and may include a combination of goods and or services, such as products with installation services or service-type warranty obligations. These contracts include multiple promises and as a result, the Company is required to evaluate each promise and determine whether the promise qualifies as a performance obligation within the contract. Contracts may contain the option to acquire additional products or services at defined prices. The Company reviews the pricing of these options to determine whether the option would exist independently of the current contract. If the pricing of contract options provides a material right to the customer that it would not receive without entering into the current contract, the Company accounts for the option as a separate performance obligation.

- *Determine the transaction price.* The transaction price of the Company's contracts with its customer is generally fixed, based on the amounts to be contractually billed to the customer. Although uncommon, certain contracts may contain variable consideration in the form of customer allowances and rebates that consist primarily of retrospective volume-based discounts and other incentive programs. Variable consideration is estimated at contract inception and included in the transaction price if it is probable that a subsequent change in the estimate would not result in a significant revenue reversal. The period between transfer of control of the performance obligations within a customer contract and timing of payment is generally within one year. As a result, the Company's contracts typically do not include significant financing components.

- *Allocate the transaction price to the performance obligations in the contract.* For customer contracts that contain more than one performance obligation, the Company allocates the total transaction consideration to each performance obligation based on the relative stand-alone selling price of each performance obligation within the contract. The Company relies on either observable standalone sales or an expected cost-plus margin approach to determine the standalone selling price of offerings, depending on the nature of the performance obligation. Performance obligations whose standalone selling price is estimated using an expected cost-plus margin approach relate to the sale of customized automated cold sample management systems, services, and service-type warranties.

- *Recognize revenue when or as the Company satisfies a performance obligation*. The Company satisfies its performance obligations by transferring a product or service either at a point in time or over time, when the transfer of control of the underlying performance obligation has occurred. Control is evidenced by the customer's ability to direct the use of and obtain substantially all the remaining benefits from the performance obligation. 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. The Company excludes from the transaction price all sales taxes assessed by governmental authorities and as a result, revenue is presented net of tax.

As a result of applying this five-step model under ASC 606, the Company recognizes revenues from its sale of products and services as follows:

- *Products:* Revenue from the sale of standard products is recognized upon their transfer of control to the customer, which is considered complete at either the time of shipment or arrival at destination, based on the agreed upon terms within the contract. The Company's payment terms for the sale of standard products are typically 30 to 60 days.

  Revenue from the sales of certain products that involve significant customization, which include primarily automated cold sample management systems is recognized over time as the asset created by the Company's performance does not have alternative use to the Company and an enforceable right to payment for performance completed to date is present. 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 selection of the method to measure progress towards completion requires judgment. The Company has concluded that using the percentage of labor hours incurred to estimated labor hours needed to complete the project most appropriately depicts the Company's efforts towards satisfaction of the performance obligation. 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 in the project. These estimates are based on a number of factors, including the degree of required product customization and the work required to be able to install the product in the customer's existing environment, 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 the estimate based on changes in circumstances. Revenue for certain arrangements that involve significant product customization but do not provide the Company with an enforceable right to payment for performance completed to date are recognized at a point in time, upon completion or substantial completion of the project, provided transfer of control has occurred. The project is considered substantially complete when the Company receives acceptance from the customer 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 and presented as contract liabilities within "Deferred revenue" on the Company's Consolidated Balance Sheet. Additionally, due to certain billing constraints within contracts, the customer may retain a portion of the contract price until completion of the contract. In these contracts, an unbilled receivable is recorded when revenue recognized may exceed billings, which the Company presents as a contract asset on the balance sheet, which is included within the "Prepaid expenses and other current assets" on the Company's Consolidated Balance Sheet.

- *Services:* Service revenue is generally recognized ratably over time or on an output method, as the customer simultaneously receives and consumes the benefit of these services as they are performed. Payments related to service-type warranties may be made up front or proportionally over the contract term. Payment due or received from the customers prior to rendering the associated services are recorded as a contract liability.

- *Genomic Services:* The Company's Genomic Services are professional services which includes Sanger Sequencing, Next Generation Sequencing, Gene Synthesis and Gene Editing-CRISPR based gene editing. In each case, the customer realizes and consumes the benefit of these services as they are performed. Revenue from Genomic Services is recognized over time and is based upon the fact that transfer of control takes place over time as determined using the input method of costs incurred.

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 the Nasdaq Global Select Market on the date of grant.

For awards that vest based on service conditions, the Company recognizes stock-based compensation expense on a straight-line basis over the requisite service period. For awards that vest subject to performance conditions, the Company recognizes stock-based compensation expense ratably over the performance period if it is probable that performance condition will be met and adjusted for the probability percentage of achieving the performance goals. The Company makes estimates of stock award forfeitures and the number of awards expected to vest. The Company considers many factors in developing forfeiture estimates, including award types, employee classes and historical experience. Each quarter, the Company assesses the probability of achieving the performance 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, 2021, 2020 and 2019 (in thousands):

	Year Ended September 30,		
	2021	2020	2019
Restricted stock units	$ 18,923	$ 9,907	$ 12,621
Employee stock purchase plan	1,128	744	429
Total stock-based compensation expense	$ 20,051	$ 10,651	$ 13,050

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, 2021, 2020 and 2019:

	Year Ended September 30,		
	2021	2020	2019
Risk-free interest rate	0.3 %	0.9 %	2.3 %
Volatility	53 %	58 %	52 %
Expected life	6 months	6 months	6 months
Dividend yield	0.6 %	1.1 %	1.2 %

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.

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 income 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 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 must 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 or loss per share is determined by dividing net income by the weighted average common shares outstanding during the period. Diluted income per share is determined by dividing net income 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 October 2020, the FASB issued Accounting Standards Update ("ASU") 2020-10, *Codification Improvements*. The amendments in this ASU represent changes to clarify certain ASCs, correct unintended application of guidance, or make minor improvements certain ASCs that are not expected to have a significant effect on current accounting practice or create a significant administrative cost to most entities. ASU 2020-10 is effective for annual periods beginning after December 15, 2020 and interim periods within those annual periods. Early adoption was permitted. The amendments in this ASU should be applied retrospectively. This ASU will not affect the Company's consolidated financial statements. The Company will adopt the provisions of this ASU in the first quarter of fiscal 2022 and does not expect to have a material impact on the disclosures to the consolidated financial statement.

In March 2020, the FASB issued ASU 2020-04, *Facilitation of the Effects of Reference Rate Reform on Financial Reporting*. In January 2021, the FASB issued ASU 2021-01, *Reference Rate Reform (Topic 848): Scope.* The ASUs provide temporary optional expedients and exceptions to the GAAP guidance on contract modifications and hedge accounting to ease the financial reporting burdens related to the expected market transition from the London Interbank Offered Rate (LIBOR) and other interbank offered rates to alternative reference rates. The provisions of the ASUs are only available until December 31, 2022, when the reference rate replacement activity is expected to be completed. The Company is currently evaluating the impact this guidance may have on its consolidated financial statements and related disclosures.

In December 2019, the FASB issued ASU 2019-12, *Simplifying the Accounting for Income Taxes (Topic 740)*, which removes certain exceptions to the general principles in ASC Topic 740, *Income Taxes* ("ASC Topic 740"), and improves consistent application of and simplifies GAAP for other areas of Topic 740 clarifying and amending existing guidance. This ASU is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2020. Early adoption was permitted. The Company will adopt the provisions of this ASU in the first quarter of fiscal 2022 and does not expect that the impact will be material to its consolidated financial statements and related disclosures.

In August 2018, the FASB issued ASU 2018-14, *Disclosure Framework — Changes to the Disclosure Requirements for Defined Benefit Plans*, which amends ASC 715, *Compensation – Retirement Benefits,* to add, remove, and clarify disclosure requirements related to defined benefit pension and other postretirement plans. The ASU requires 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 ASU removes disclosure requirements 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 was permitted. The ASU does not amend the interim disclosure requirements of ASC 715-20. The Company will adopt the provisions of this ASU in the first quarter of fiscal 2022 and does not expect that the impact will be material to its consolidated financial statements and related disclosures.

Recently Adopted Accounting Pronouncements

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, *Fair Value Measurement*, to add and remove disclosure requirements related to fair value measurement. The ASU included new disclosure requirements for changes in unrealized gains or losses included in other comprehensive income 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 ASU 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 ASU modified certain disclosure requirements 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. The Company adopted the guidance during the first quarter of fiscal year 2021. There was no significant accounting impact on the Company's consolidated financial statements and related disclosures as a result of the adoption of this ASU.

In August 2018, the FASB issued ASU 2018-15, *Intangibles – Goodwill and Other – Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*. The ASU aligned the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal-use software license). The accounting for the service element of a hosting arrangement that is a service contract was not affected by the ASU. The provisions may be adopted prospectively or retrospectively. This ASU is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2019. The Company adopted the guidance during the first quarter of fiscal year 2021 on a prospective basis. There was no significant accounting impact on the Company's consolidated financial statements and related disclosures as a result of the adoption of this ASU.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses: Measurement of Credit Losses on Financial Instruments*. The FASB subsequently issued ASU 2019-04, *Codification Improvements to Topic 326, Financial Instruments - Credit Losses, Topic 815, Derivatives and Hedging, and Topic 825, Financial Instruments*, ASU 2019-05 *"Financial Instruments-Credit Losses"*, ASU 2019-11, *Codification Improvements to Topic 326, Financial Instruments - Credit Losses,* and ASU 2020-02*, Financial Instruments-Credit Losses (Topic 326) and Leases (Topic 842)* to clarify and address certain items related to the amendments in ASU 2016-13. Topic 326 provides guidance for recognizing credit losses on financial instruments based on an estimate of current expected credit losses model. The ASUs are effective for fiscal years, and interim periods within those years, beginning after December 15, 2019. The Company adopted the guidance during the first quarter of fiscal year 2021. There was no significant accounting impact on the Company's consolidated financial statements and related disclosures as a result of the adoption of these ASUs.

3. Discontinued Operations

Planned Disposition of Semiconductor Automation Business

On September 20, 2021, the Company entered into a definitive agreement to sell its semiconductor automation business (the "automation business") to THL for $3 billion in cash, subject to adjustments. The Company anticipates closing of the transaction in the first half of calendar year 2022 upon satisfaction of customary closing conditions and regulatory approvals.

The semiconductor automation business is comprised of the Brooks Semiconductor Solution Group segment. At the completion of the sale, the Company will no longer serve the semiconductor market.

During the fourth quarter of fiscal 2021, the Company determined that its automation business met the criteria to be classified as a discontinued operation and, as a result, its historical financial results are reflected in the Company's financial statements as a discontinued operation, and assets and liabilities were classified as assets and liabilities held for sale.

The following table presents the financial results of automation business discontinued operations with respect to the automation business (in thousands):

	Year Ended September 30,		
	2021	2020	2019
Revenue			
Products	$ 624,358	$ 463,309	$ 403,634
Services	55,698	45,427	43,035
Total revenue	680,056	508,736	$ 446,669
Cost of revenue			
Products	354,786	274,727	238,301
Services	29,750	26,134	26,712
Total cost of revenue	384,536	300,861	265,013
Gross profit	295,520	207,875	181,656
Operating expenses			
Research and development	48,647	41,245	39,045
Selling, general and administrative	70,634	50,881	48,635
Restructuring charges	230	692	506
Total operating expenses	119,511	92,818	88,186
Operating income	176,009	115,057	93,470
Other income (loss), net	133	207	(69)
Income before income taxes	176,142	115,264	93,401
Income tax provision	35,357	23,867	22,719
Net income from discontinued operations	$ 140,785	$ 91,397	$ 70,682

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

	Year Ended September 30,		
	2021	2020	2019
Depreciation and amortization	$ 8,472	$ 11,374	$ 13,153
Capital expenditures	6,414	4,815	2,341
Stock-based compensation	7,405	5,501	6,412

The carrying value of the assets and liabilities of the discontinued operations with respect to the semiconductor automation business on the Consolidated Balance Sheets as of September 30, 2021 and 2020 was as follows (in thousands):

	September 30,	
	2021	2020
Assets		
Cash and cash equivalents	$ 45,000	$ 45,000
Accounts receivable, net	142,256	93,498
Inventories	110,735	77,708
Other current assets	13,394	6,657
Total current assets of discontinued operation	$ 311,385	$ 222,863
Property, plant and equipment, net	$ 32,058	$ 28,931
Long-term deferred tax assets	3,167	1,143
Goodwill	81,477	48,359
Intangibles, net	44,468	6,002
Other assets	22,658	14,283
Total long-term assets of discontinued operation	$ 183,828	$ 98,718
Liabilities		
Accounts payable	$ 68,074	$ 36,070
Deferred revenue	7,141	5,580
Accrued warranty and retrofit costs	6,081	5,990
Accrued compensation and benefits	18,144	14,598
Accrued Income Taxes	11,702	8,118
Accrued expenses and other current liabilities	18,014	12,476
Total current liabilities of discontinued operation	$ 129,156	$ 82,832
Long-term tax reserves	2,356	697
Long-term deferred tax liabilities	6,548	141
Long-term pension liabilities	5,490	5,511
Long-term operating lease liabilities	15,425	12,950
Other long-term liabilities	2,625	8,276
Total long-term liabilities of discontinued operation	$ 32,444	$ 27,575

Acquisition within the Automation Business

On April 29, 2021, the Company acquired Precise Automation Inc., a leading developer of collaborative robots and automation subsystems headquartered in Fremont, California. The total cash purchase price for the acquisition was approximately $69.8 million. Precise provides the automation business with a product offering and technology portfolio to take advantage of the opportunities in the collaborative robot market.

The allocation of the consideration included $38.7 million of technology, $2.5 million of customer relationships, $33.1 million of goodwill, $6.2 million of deferred tax liabilities, and several other assets and liabilities. 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 Company applied variations of the income approach to estimate the fair values of the intangible assets acquired. The completed technology was valued using excess earnings method and the customer relationships was valued using distributor margin method, both of which have a useful life of 11 years. The intangible assets acquired are amortized over the total weighted average period of 11 years using methods that approximate the pattern in which the economic benefits are expected to be realized.

The Company has included the financial results of the acquired operations within income from discontinued operations on its Consolidated Statements of Operations. The goodwill and intangible assets are not tax deductible

The Company did not present a pro forma information summary for its consolidated results of operations for the fiscal years ended September 30, 2021 and 2020 because such results were immaterial.

Disposition of the Semiconductor Cryogenics Business

On August 27, 2018, the Company entered into a definitive agreement to sell its semiconductor cryogenics business to Edwards for $675.0 million in cash, subject to adjustments. On July 1, 2019, the Company completed the sale of the semiconductor cryogenics business for $661.5 million, which excludes $6.3 million retained by Edwards at closing based on an estimate of net working capital adjustments, which are currently pending finalization. Net proceeds from the sale were approximately $553.1 million, net of taxes and closing costs paid and remaining estimated taxes payable. As part of this sale, we transferred our intellectual property, or IP, for our cryogenics pump products, but not our IP related to our semiconductor automation or life sciences businesses. Net income from discontinued operations for fiscal year 2019 is inclusive of the net gain on sale of $408.6 million. In the third quarter of fiscal year 2020, Edwards asserted claims for indemnification under the definitive agreement relating to alleged breaches of representations and warranties relating to customer warranty claims and inventory. The Company cannot determine the probability of any losses or outcome of these claims including the amount of any indemnifiable losses, if any, resulting from these claims at this time, however, the Company believes that none of these claims will have a material adverse effect on its consolidated financial position or results of operations. If the resolution of these claims results in indemnifiable losses in excess of the applicable indemnification deductibles and indemnification escrow established under the definitive agreement, Edwards would be required to seek recovery under the representation and warranty insurance Edwards obtained in connection with the closing of the transaction. The Company believes that any indemnifiable losses in excess of the applicable deductibles and indemnification escrow established in the definitive agreement would be covered by such insurance. If Edwards is unable to obtain recovery under its insurance, however, it could seek recovery of such indemnifiable losses, if any, directly from the Company's continuing operation.

The semiconductor cryogenics business consisted of the CTI pump business, Polycold chiller business, the related services business and a 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. The operating results of the semiconductor cryogenics business had been included in the Brooks Semiconductor Solutions Group segment before the plan of disposition.

In connection with the closing of the Disposition on July 1, 2019, the Company and Edwards entered into a transition service agreement, a supply agreement, and lease agreements. The transition service agreement outlined the information technology, people, and facility support the parties provided to each other for the period ending 9 months after transaction closing date. The supply agreement allowed the Company to purchase CTI and Polycold goods at cost from Edwards up to an aggregate amount equal to $1.0 million until one-year anniversary of closing the Disposition. The lease agreements provide facility space in Chelmsford, Massachusetts to Edwards free of charge for three years after the transaction closing date. Edwards has 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 businesses with further acquisitions and strengthening its semiconductor automation business with opportunistic acquisitions.

The semiconductor cryogenics business disposition met the "held for sale" criteria and the "discontinued operation" criteria in accordance with 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 with respect to the semiconductor cryogenics business (in thousands):

	Year Ended September 30,		
	2021	2020	2019
Revenue			
Products	$ -	$ -	$ 76,227
Services	-	-	33,291
Total revenue	-	-	109,518
Cost of revenue			
Products	-	-	47,148
Services	-	-	19,016
Total cost of revenue	-	-	66,164
Gross profit	-	-	43,354
Operating expenses			
Research and development	-	-	6,605
Selling, general and administrative	279	(171)	20,889
Restructuring charges	-		24
Total operating expenses	279	(171)	27,518
Operating (loss) income	(279)	171	15,836
Interest income			
Interest expense			
Other loss, net	(1,256)	(410)	539,948
Loss on discontinued operations before income taxes	$ (1,535)	$ (239)	$ 555,784
Income tax benefit	(366)	(57)	134,110
Income (loss) before equity in earnings of equity method investment	(1,169)	(182)	421,674
Equity in earnings of equity method investment	-	-	6,188
Net loss from discontinued operations	$ (1,169)	$ (182)	$ 427,862

The Company did not record income or loss related to our semiconductor cryogenics business for the fiscal year ended September 30, 2020 and 2021. The table above reflects revenue for the year ended September 30, 2019 in accordance with ASC 606.

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

	Year Ended September 30,
	2019
Statements of Operations:	
Total revenue	$ 88,357
Gross profit	35,127
Operating Income	17,791
Net income	12,483

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

	Year Ended September 30,		
	2021	2020	2019
Depreciation and amortization	$ -	$ -	$ 4
Capital expenditures	-	-	666
Stock-based compensation	-	-	635
Earnings of equity method investment	-	-	(6,188)

4. Acquisitions

The Company recorded the assets acquired and liabilities assumed related to the below acquisitions at their fair values as of the acquisition date, from a market participant's perspective. While the Company uses its best estimates and assumptions as part of the purchase price allocation process to value the assets acquired and liabilities assumed on the acquisition date, its estimates and assumptions are subject to refinement. Fair value estimates are based on a complex series of judgments about future events and uncertainties and rely heavily on estimates and assumptions. The judgments used to determine the estimated fair value assigned to each class of assets acquired and liabilities assumed, as well as asset lives, can materially impact the Company's results of operations. The finalization of the assignment of fair values will be completed within one year after the respective acquisition date.

The Company did not present a pro forma information summary for its consolidated results of operations for the acquisitions completed in fiscal year 2021 and 2020 because such results were immaterial.

Acquisitions Completed in Fiscal Year 2021

On April 2, 2021, the Company acquired Abeyatech LLC. The Company has included the financial results of the acquired operations within the Life Sciences Products segment. The total net of cash purchase price was approximately $19.3 million, net of cash acquired. The purchase price includes $9.4 million in contingent consideration based on the acquired business' performance for the twelve-month period ending December 31, 2021, subject to customary working capital adjustments and other adjustments. The acquisition enhances the breadth and depth of the Company's offerings and expands its expertise in the Life Sciences Products segment. The allocation of the consideration included $11.9 million of technology, $4.4 million of goodwill, and several other assets and liabilities for $3.0 million. The weighted useful life of all the intangible assets acquired is 12 years. 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 and intangibles are tax deductible.

On December 3, 2020, the Company acquired Trans-Hit Biomarkers Inc. ("THB"), a worldwide biospecimen procurement service provider based in Montreal, Canada. THB has an extensive collection capability for biospecimens and clinical samples through a worldwide partner network of clinical sites and biobanks. The total cash purchase price of the acquisition was approximately $15.1 million, net of cash acquired. The acquisition enhances the breadth and depth of the Company's offerings and expands its expertise in the Life Sciences Services segment. The allocation of the consideration included $7.8 million of customer relationships, $9.3 million of goodwill, $2.4 million of deferred tax liabilities, and several other assets and liabilities. The weighted useful life of all intangibles acquired is 11 years. 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 Company has included the financial results of the acquired operations in the Life Sciences Services segment. The goodwill and intangibles are not tax deductible.

Acquisitions Completed in Fiscal Year 2020

On February 11, 2020, the Company acquired RURO, Inc. ("RURO"), an informatics software company based in Frederick, Maryland. RURO provides cloud-based software solutions to manage laboratory workflow and bio-sample data for a broad range of customers in the biotech, healthcare, and pharmaceutical sectors. The addition of RURO's capabilities and offerings will enable the Company to offer enhanced on-site and off-site management of biological sample inventories as well as integration solutions to its customers for their increasingly distributed workflow. The total cash purchase price of the acquisition net of cash acquired was $15.2 million. The allocation of the consideration primarily included $0.6 million of accounts receivable, $2.9 million of customer relationships, $2.9 million of technology assets, $11.0 million of goodwill, and $2.7 million of liabilities. The goodwill from this acquisition is reported within the Life Sciences Services segment and is not tax deductible.

Acquisitions Completed in Fiscal Year 2019

On November 15, 2018, the Company acquired all the outstanding capital stock of GENEWIZ Group ("GENEWIZ"), a leading global genomics service provider headquartered in South Plainfield, New Jersey. GENEWIZ provides genomics services that enable research scientists to advance their discoveries within the pharmaceutical, academic, biotechnology, agriculture and other markets. It provides gene sequencing and synthesis services for more than 4,000 institutional customers worldwide supported by their global network of laboratories spanning the United States, China, Japan, Germany and the United Kingdom. This transaction has added a new and innovative platform which further enhances the Company's core capabilities and the opportunity to add even more value to samples that are under the Company's care.

The total cash purchase price for the acquisition was $442.7 million, net of cash acquired, which included a working capital settlement of $0.4 million. The Company used the proceeds of the incremental term loan described in Note 11, "Debt" to pay a portion of the purchase price.

On the acquisition date, the Company paid $32.3 million to escrow accounts related to the satisfaction of the seller's indemnification obligations with respect to their representations and warranties and other indemnities. The Company also retained an amount equal to $1.5 million as collateral for any adjustment shortfall based on the final merger consideration calculation. During the fiscal year 2019, the final merger consideration was calculated to be $4.0 million less than the merger consideration paid at closing. To satisfy the shortfall, the Company reversed the $1.5 million liability associated with the holdback, received approval from the former shareholders to retain $0.7 million of funds the Company received on their behalf, and collected $1.8 million from the escrow accounts.

The Company recorded the assets acquired and liabilities assumed related to GENEWIZ at their fair values as of the acquisition date, from a market participant's perspective. Fair value estimates are based on a complex series of judgments about future events and uncertainties and rely heavily on estimates and assumptions. The judgments used to determine the estimated fair value assigned to each class of assets acquired and liabilities assumed, as well as asset lives, can materially impact the Company's results of operations. The following table presents the net purchase price and the fair values of the assets and liabilities of GENEWIZ (in thousands):

	Fair Value of Assets and Liabilities
Accounts receivable	$ 28,566
Inventories	4,370
Prepaid expenses and other current assets	11,635
Property, plant and equipment	36,379
Goodwill	235,160
Intangible assets	189,129
Other assets	15,998
Current portion of long-term debt	(3,170)
Accounts payable	(6,522)
Deferred revenue	(67)
Accrued compensation and benefits	(5,145)
Other current liabilities	(10,073)
Long-term debt	(2,482)
Long-term tax reserves	(13,400)
Long-term deferred tax liabilities	(34,993)
Other long-term liabilities	(2,681)
Total purchase price, net of cash acquired	$ 442,704

The Company applied variations of the income approach to estimate the fair values of the intangible assets acquired. The identifiable intangible assets include customer relationships (excess earnings method) of $125.5 million with a useful life of 14 years, completed technology (relief from royalty method) of $44.5 million with useful lives from 10 to 15 years and trademarks (relief from royalty method) of $19.1 million with a useful life of 13 years. The intangible assets acquired are amortized over the total weighted average period of 13.3 years using methods that approximate the pattern in which the economic benefits are expected to be realized.

Goodwill of $235.2 million largely reflects the potential synergies and expansion of the Company’s core technologies and offerings in the life sciences businesses. The goodwill from this acquisition is reported within the Life Sciences Services segment and is not tax deductible.

The revenues and net loss from GENEWIZ recognized in the Company’s consolidated results of operations were $220.7 million and $9.7 million, respectively, during the year ended September 30, 2021. The revenues and net income from GENEWIZ recognized in the Company’s consolidated results of operations were $166.4 million and $7.2 million, respectively, during the year ended September 30, 2020. During the year ended September 30, 2021 and 2020, net income included $23.0 million and $20.3 million, respectively, related to amortization expense of acquired intangible assets. The Company incurred $0.2 million, $0.1 million and $6.5 million, respectively, in transaction costs with respect to the GENEWIZ acquisition during the years ended September 30, 2021, 2020 and 2019. Transaction costs were recorded in "Selling, general and administrative" expenses within the accompanying unaudited Consolidated Statements of Operations.

The following unaudited pro forma information reflects the Company’s consolidated results of operations as if the acquisition had taken place on October 1, 2017. The unaudited pro forma information is not necessarily indicative of the results of operations that the Company would have reported had the transaction actually occurred at the beginning of these periods nor is it necessarily indicative of future results. The unaudited pro forma financial information does not reflect the impact of future events that may occur after the acquisition, including, but not limited to, anticipated costs savings from synergies or other operational improvements (in thousands).

		Year Ended September 30, 2019 (pro forma)
Revenue	$	350,832
Net loss from continuing operations		(60,331)

The unaudited pro forma financial information presented in the table above includes adjustments for the application of the Company’s accounting policies, elimination of related party transactions, depreciation and amortization related to fair value adjustments to property, plant and equipment and intangible assets, and interest expense on acquisition related debt.

To present the Company’s consolidated results of operations as if the acquisition had taken place on October 1, 2017, the unaudited pro forma earnings for the years ended September 30, 2019 have been adjusted to include $1.6 million of depreciation and amortization related to the fair value step up of property, plant, and equipment and leases, recording of intangible assets and $2.0 million of interest expense related to financing activities.

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 2021, there were insignificant sales of marketable securities. During fiscal year 2020, the Company sold marketable securities with a fair value and amortized cost of $2.5 million and recognized a net gain of less than $0.1 million. As a result, during this period, the Company collected cash proceeds of $2.5 million from the sale of marketable securities and reclassified unrealized net holding gains of less than $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.

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, 2021 and 2020 (in thousands):

	Amortized Cost	Gross Unrealized Losses	Gross Unrealized Gains	Fair Value
September 30, 2021:				
Bank certificates of deposits	$ 30	$ —	$ —	$ 30
Corporate securities	3,624	—	—	3,624
Municipal securities	25	—	—	25
	$ 3,679	$ —	$ —	$ 3,679
September 30, 2020:				
Bank certificates of deposits	$ 51	$ —	$ —	$ 51
Corporate securities	3,101	—	—	3,101
Other debt securities	16	—	—	16
	$ 3,168	$ —	$ —	$ 3,168

The fair values of the marketable securities by contractual maturities at September 30, 2021 are presented below (in thousands).

	Fair Value
Due in one year or less	$ 81
Due after one year through five years	—
Due after five years through ten years	—
Due after ten years	3,598
Total marketable securities	$ 3,679

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 or loss. There was an insignificant amount of securities in an unrealized loss position as of September 30, 2021. There were no securities in an unrealized loss position as of September 30, 2020.

6. Property, Plant and Equipment

Property, plant and equipment were as follows as of September 30, 2021 and 2020 (in thousands):

	September 30, 2021	September 30, 2020
Buildings, land, and land use right	$ 7,669	$ 11,282
Computer equipment and software	71,067	67,418
Machinery and equipment	93,140	74,690
Furniture and fixtures	5,003	4,978
Leasehold improvements	31,108	29,899
Capital projects in progress	52,435	17,989
Right-of-use Asset	2,252	2,540
	262,674	208,796
Less: accumulated depreciation and amortization	(131,955)	(120,061)
Property, plant and equipment, net	$ 130,719	$ 88,735

Depreciation expense was $19.5 million, $18.7 million and $14.0 million, respectively, for the fiscal years ended September 30, 2021, 2020 and 2019. The Company recorded $19.6 million of additions to property, plant and equipment for which cash payments had not yet been made as of September 30, 2021.

7. Leases

The Company has operating leases for real estate and non-real estate and finance leases for non-real estate in North America, Europe, and Asia. Non-real estate leases are primarily related to vehicles and office equipment. Lease expiration dates range between 2021 and 2041.

The components of operating lease expense were as follows (in thousands):

	Year Ended September 30, 2021	Year Ended September 30, 2020
Operating lease costs	$ 7,630	$ 6,123
Finance lease costs:		
Amortization of assets	859	1,246
Interest on lease liabilities	39	107
Total finance lease costs	898	1,353
Variable lease costs	1,833	1,628
Short-term lease costs	199	225
Total lease costs	$ 10,560	$ 9,329

Supplemental balance sheet information related to leases is as follows (in thousands, except lease term and discount rate):

	September 30, 2021	September 30, 2020
Operating Leases:		
Operating lease right-of-use assets	$ 49,650	$ 23,324
Accrued expenses and other current liabilities	$ 5,254	$ 3,972
Long-term operating lease liabilities	45,088	18,905
Total operating lease liabilities	$ 50,342	$ 22,877
Finance Leases:		
Property, plant and equipment, at cost	$ 2,252	$ 2,540
Accumulated amortization	(2,105)	(1,246)
Property, plant and equipment, net	$ 147	$ 1,294
Accrued expenses and other current liabilities	$ 360	$ 1,135
Other long-term liabilities	(10)	348
Total finance lease liabilities	$ 350	$ 1,483
Weighted average remaining lease term (in years):		
Operating leases	11.33	9.51
Finance leases	0.53	0.62
Weighted average discount rate:		
Operating leases	3.90 %	4.38 %
Finance leases	4.87 %	4.73 %

Supplemental cash flow information related to leases was as follows (in thousands, unaudited):

	Year Ended September 30,	
	2021	2020
Cash paid for amounts included in measurement of liabilities:		
Operating cash flows from operating leases	$ 6,213	$ 5,334
Operating cash flows from finance leases	41	96
Financing cash flows from finance leases	1,130	1,181
ROU assets obtained in exchange for lease liabilities:		
Operating leases	$ 31,944	$ 8,480

Future lease payments for operating and finance leases as of September 30, 2021 were as follows for the subsequent five fiscal years and thereafter (in thousands):

	Operating Leases	Finance Leases
Fiscal year ended September 30,		
2022	$ 7,030	$ 358
2023	6,433	-
2024	5,761	-
2025	5,604	-
2026	5,528	-
Thereafter	33,005	-
Total future lease payments	63,361	358
Less imputed interest	(13,019)	(8)
Total lease liability balance	$ 50,342	$ 350

As of September 30, 2021, the Company has not entered into any significant leases that have not commenced yet.

8. 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 exceeds its carrying value.

The Company completed its annual goodwill impairment test as of April 1, 2021 for its six reporting units which three reporting units are within semiconductor automation discontinued operations. The three reporting units within the continuing operations include Life Sciences Products as the only reporting unit within the Life Sciences Products segment, and Sample Repository Solutions and Genomic Services within the Life Sciences Services segment. Based on the test results, the Company determined that no adjustment to goodwill was necessary. The Company conducted a qualitative assessment for the Life Science Products reporting unit and determined that it was more likely than not that its fair value was greater than its carrying value. As a result of the analysis, the Company did not perform the quantitative assessment for this reporting unit, and therefore, did not recognize any impairment losses. The Company performed the quantitative goodwill impairment test for the two reporting units within the Life Sciences Services segment. The Company determined that no adjustment to goodwill was necessary for these two reporting units. Both reporting units' fair values significantly exceeded their respective book values.

Immediately post to the annual goodwill impairment test, the Company combined two components within the Life Sciences Services operating segment, Sample Repository Solutions and Genomic Services components, into the Life Sciences Services reporting unit. The Company evaluated the aggregation criteria under ASC 350 for the two components and concluded that they exhibit similar economic characteristics and meet the aggregation criteria. Post to this aggregation, the Company has two reporting units which includes the Life Sciences Products and the Life Sciences Services reporting units.

The following table sets forth the changes in the carrying amount of goodwill by reportable segment since September 30, 2019 (in thousands):

	Brooks Life Sciences Products	Brooks Life Sciences Services	Total
Balance, at September 30, 2019	$ 101,957	$ 338,798	$ 440,755
Acquisitions and adjustments	1,321	11,101	12,422
Balance, at September 30, 2020	103,278	349,899	453,177
Acquisitions and adjustments	6,860	9,319	16,179
Balance, at September 30, 2021	$ 110,138	$ 359,218	$ 469,356

During fiscal year 2021, the Company recorded a goodwill increase of $16.2 million primarily related to the acquisitions in fiscal year 2021 and the impact of foreign currency translation adjustments.

The components of the Company's identifiable intangible assets as of September 30, 2021 and 2020 are as follows (in thousands):

	September 30, 2021			September 30, 2020		
	Cost	Accumulated Amortization	Net Book Value	Cost	Accumulated Amortization	Net Book Value
Patents	$ 1,242	$ 1,002	$ 240	$ 1,235	$ 798	$ 437
Completed technology	75,527	32,383	43,144	62,646	24,082	38,564
Trademarks and trade names	424	33	391	25,569	9,122	16,447
Non-competition agreements	681	249	432	—	—	—
Customer relationships	253,486	111,159	142,327	241,630	84,758	156,872
Other intangibles	246	246	—	245	242	3
	$ 331,606	$ 145,072	$ 186,534	$ 331,325	$ 119,002	$ 212,323

Amortization expense for intangible assets was $37.4 million, $35.4 million and $27.3 million, respectively, for the fiscal years ended September 30, 2021, 2020 and 2019.

During the fourth quarter of fiscal year 2021, the Company announced that its life sciences business comprised of the Life Sciences Services and Life Sciences Products segments will be rebranded under a single, unified life sciences brand, Azenta Life Sciences, or Azenta, during the first half of fiscal year 2022. The Company has concluded that the abandoned tradenames for these businesses as a result of the rebranding are fully impaired in the fiscal fourth quarter of 2021 and has recorded a $13.4 million charge for the tradename impairment loss. The impairment loss is included in the "Selling, general and administrative expense" in the Consolidated Statements of Operations.

Estimated future amortization expense for the intangible assets as of September 30, 2021 is as follows (in thousands):

Fiscal year ended September 30,	
2022	$ 32,118
2023	30,845
2024	27,334
2025	22,573
2026	19,435
Thereafter	54,229
	$ 186,534

9. Supplementary Balance Sheet Information

The following is a summary of accounts receivable at September 30, 2021 and 2020 (in thousands):

	September 30, 2021	September 30, 2020
Accounts receivable	$ 124,195	$ 101,937
Less allowance for expected credit losses	(4,318)	(7,146)
Accounts receivable, net	$ 119,877	$ 94,791

The allowance for expected credit losses for the fiscal years ended September 30, 2021, 2020 and 2019 is as follows (in thousands):

Description	Balance at Beginning of Period	Provisions	Reversals of Bad Debt Expense	Balance at End of Period
2021 Allowance for expected credit losses	$ 7,146	$ 3,445	$ (6,273)	$ 4,318
2020 Allowance for expected credit losses	3,548	4,600	(1,002)	7,146
2019 Allowance for expected credit losses	463	3,327	(242)	3,548

The following is a summary of inventories at September 30, 2021 and 2020 (in thousands):

	September 30, 2021	September 30, 2020
Inventories		
Raw materials and purchased parts	$ 27,644	$ 17,991
Work-in-process	4,787	3,315
Finished goods	27,967	15,819
Total inventories	$ 60,398	$ 37,125

The activity for excess and obsolete inventory reserves is as follows for the fiscal years ended September 30, 2021, 2020 and 2019 (in thousands):

Description	Balance at Beginning of Period	Provisions	Inventory Disposals and Adjustments	Balance at End of Period
2021 Reserves for excess and obsolete inventory	$ 3,136	$ 1,522	$ (977)	$ 3,681
2020 Reserves for excess and obsolete inventory	3,157	1,515	(1,536)	3,136
2019 Reserves for excess and obsolete inventory	3,421	1,815	(2,079)	3,157

The activity for valuation allowance for deferred tax assets is as follows for the fiscal years ended September 30, 2021, 2020 and 2019 (in thousands):

Description	Balance at Beginning of Period	Charged to Income Tax Benefit	Charged to Other Accounts	Balance at End of Period
2021 Valuation allowance for deferred tax assets	$ 10,623	$ (3,247)	$ 1,216	$ 8,592
2020 Valuation allowance for deferred tax assets	12,843	(2,514)	294	10,623
2019 Valuation allowance for deferred tax assets	14,613	(1,834)	64	12,843

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 for the fiscal years ended September 30, 2021, 2020 and 2019 (in thousands):

	Amount
Balance at September 30, 2018	$ 2,561
Accruals for warranties during the year	2,014
Costs incurred during the year	(2,261)
Balance at September 30, 2019	2,314
Accruals for warranties during the year	2,779
Costs incurred during the year	(2,882)
Balance at September 30, 2020	2,211
Accruals for warranties during the year	2,300
Costs incurred during the year	(2,181)
Balance at September 30, 2021	$ 2,330

10. Line of Credit

The Company maintains a revolving line of credit under a credit agreement with Wells Fargo Bank, N.A. and JPMorgan Chase Bank, N.A. that provides for a revolving credit facility 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 and expires no less than 90 days prior to the term loan expiration discussed below. The proceeds from the line of credit are available for permitted acquisitions and general corporate purposes.

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 credit agreement for the term loan discussed in Note 11, "Debt" below, the Company amended certain terms and conditions of the credit agreement. Based on the amended terms of the credit agreement, the line of credit continues to provide for a revolving credit facility of up to $75.0 million, subject to borrowing base availability. Borrowing base availability under the amended credit agreement 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 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 Brooks Life Sciences, Inc. (fka BioStorage Technologies, Inc.), the Company's 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. Please refer to Note 11, "Debt", for further information on the term loan transaction.

There were no amounts outstanding under the line of credit as of September 30, 2021 and September 30, 2020. The Company records commitment fees and other costs directly associated with obtaining the line of credit facility as deferred financing costs, which are amortized over the term of the related financing arrangement. Deferred financing costs were $0.1 million and $0.2 million, respectively, at September 30, 2021 and September 30, 2020. 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, 2021 and September 30, 2020.

11. Debt

Term Loans

On October 4, 2017, the Company entered into a $200.0 million term loan with the lenders pursuant to the terms of a credit agreement. 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.

On November 15, 2018, the Company entered into an incremental amendment (the “First Amendment”) to the existing credit agreement. Under the First Amendment, the Company obtained an incremental term loan in an aggregate principal amount of $350.0 million. The proceeds of the incremental term loan were used to finance a portion of the purchase price for the Company’s acquisition of GENEWIZ. The incremental term loan was issued at $340.5 million, or 97.3% of its par value, resulting in a discount of $9.5 million, or 2.7%, which represented financing cost of the incremental term loan. Except as provided in the First Amendment, the incremental term loan was subject to the same terms and conditions as set forth in the existing credit agreement.

On February 15, 2019, the Company entered into the second amendment to the credit agreement (the “Second Amendment”) and syndicated the incremental term loan to a group of new lenders which met the criteria of a debt extinguishment. The Company wrote off the carrying value of the incremental term loan of $340.1 million as of February 15, 2019 and recorded the syndicated incremental term loan at its present value for $349.1 million and a loss on debt extinguishment for $9.1 million. The syndicated incremental term loan was issued at $345.2 million, or 98.9% of its par value resulting in a discount of $4.0 million which represented financing costs which are presented as a reduction of the incremental term loan principal balance and was accreted over the life of the incremental term loan. Except as provided in the Second Amendment with respect to an increase of the applicable interest rates, the syndicated incremental term loan was subject to the same terms and conditions as the initial incremental term loan.

On July 1, 2019, the Company completed the sale of its semiconductor cryogenics business and used $348.3 million of the proceeds from the Disposition to extinguish the outstanding balance of the incremental term loan. In addition, the Company used $147.0 million of the proceeds from the Disposition to extinguish a portion of the outstanding balance of the term loan. The Company recorded a loss on debt extinguishment of $5.2 million for the two term loans.

The Company’s obligations under the term loan are also guaranteed by Brooks Life Sciences, Inc. (fka BioStorage Technologies, Inc.) as the guarantor, subject to the terms and conditions of the credit 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 loan principal amount under the credit agreement 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.

Subject to certain conditions stated in the credit 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 credit agreement. The Company is 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 the guarantor’ 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 was required to make principal payments equal to the excess cash flow amount, as defined in the credit 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 deferred financing costs are accreted over the term of the loan using the effective interest rate method and are included in “Interest expense” in the accompanying Consolidated Statements of Operations. At September 30, 2021, deferred financing costs were $0.3 million.

The credit 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 credit agreement will bear an annual interest rate at 2.00% above the rate otherwise applicable under the terms and conditions of such agreement. The credit agreement does not contain financial maintenance covenants. As of September 30, 2021, the Company was in compliance with all covenants and conditions under the credit agreement.

In connection with the GENEWIZ acquisition, the Company assumed three five-year term loans for a total of $3.3 million and two one-year short term loans for a total of $3.2 million. The three five-year term loans were initiated during

2016 and matured in 2021. The principal payments are payable in eight installments equal to 12.5% of the initial principal amount of the term loans on December 14th and June 14th of each year. The three five-year term loans were secured by GENEWIZ to fund equipment procurement and new building related payments and the interest rates were equal to the LIBOR plus 3.1%. The two one-year term loans were secured by GENEWIZ to fund operations. Both of the one-year term loans were initiated in 2018 and matured in 2019. The interest rates of these two loans were 4.56% and 4.35%. There are no deferred financing costs related to either the five-year term loans or the one-year term loans. Both of the two one-year short term loans matured and were repaid in full during fiscal year 2019. The three five-year term loans matured and were repaid in full during fiscal year 2021.

During the year ended September 30, 2021, the weighted average stated interest rate paid on all outstanding debt was 2.8%. During the year ended September 30, 2021, the Company incurred aggregate interest expense of $1.7 million in connection with the borrowings, including $0.2 million of deferred financing costs amortization. As of September 30, 2021, 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.

The following are the future minimum principal payment obligations under all of the Company's outstanding debt as of September 30, 2021 (in thousands):

	Amount
Fiscal year ended September 30,	
2022	$ —
2023	—
2024	—
2025	50,000
Total outstanding principal balance	50,000
Unamortized deferred financing costs	(323)
	49,677
Current portion of long-term debt	—
Non-current portion of long-term debt	$ 49,677

12. Income Taxes

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

	Year Ended September 30,		
	2021	2020	2019
Current income tax provision (benefit):			
Federal	$ (14,247)	$ 661	$ 543
State	(867)	375	360
Foreign	15,484	3,721	3,045
Total current income tax provision	370	4,757	3,948
Deferred income tax provision (benefit):			
Federal	(11,469)	(11,833)	(16,071)
State	(2,283)	(1,976)	(5,503)
Foreign	(6,718)	(4,878)	(5,204)
Total deferred income tax benefit	(20,470)	(18,687)	(26,778)
Income tax benefit	$ (20,100)	$ (13,930)	$ (22,830)

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

	Year Ended September 30,		
	2021	2020	2019
Domestic	$ (88,763)	$ (48,932)	$ (85,639)
Foreign	39,794	8,640	1,682
Income before income taxes	$ (48,969)	$ (40,292)	$ (83,957)

The differences between the income tax provision (benefit) on income (loss) from continuing operations and income taxes computed using the applicable U.S. statutory federal tax rates for the fiscal years ended September 30, 2021, 2020 and 2019 are as follows (in thousands):

	Year Ended September 30,		
	2021	2020	2019
Income tax benefit computed at federal statutory rate	$ (10,284)	$ (8,461)	$ (17,631)
State income taxes, net of federal benefit	(1,005)	(1,557)	(3,856)
Foreign income taxed at different rates	(2,594)	(1,786)	(1,408)
Impact of investments in subsidiaries	7,128	289	(536)
Change in deferred tax asset valuation allowance	(3,247)	(2,514)	(1,834)
Impact of change in uncertain tax positions	(10,607)	1,144	720
Global intangible low taxed income, net of foreign tax credits	4,051	2,815	393
Impact of tax rate changes	165	(185)	(1,440)
Compensation	462	(2,302)	(165)
Tax credits	(4,050)	(676)	(689)
Merger costs	20	37	593
Other taxes	468	398	432
Transition tax and other true-ups	—	(520)	2,909
Research and development expense deduction	(730)	(547)	(447)
Other	123	(65)	129
Income tax provision (benefit)	$ (20,100)	$ (13,930)	$ (22,830)

The Company provided immaterial deferred income taxes, which includes all related income taxes and foreign withholding taxes on the outside basis differences of its held for sale foreign subsidiaries. The Company repatriated foreign cash during the fourth quarter from the subsidiaries included in the assets held for sale and incurred $4.1 million of tax expense, net of foreign tax credits. Any future repatriations are not expected to have a material impact to the Company. The deferred income taxes on the outside basis differences are not material because the path to disposal of these legal entities will primarily be treated as sales of assets.

The Company has not provided deferred income taxes on the outside basis differences of its foreign subsidiaries which are not held for sale and part of the continuing operations business. For continuing operations the Company maintains its general assertion of indefinite reinvestment as of September 30, 2021. The foreign earnings are expected to be reinvested in foreign operations and acquisitions. Unremitted foreign earnings total approximately $229 million. The Company did not calculate estimated deferred tax liabilities related to these earnings because such calculations would not be practicable due to the complexity of its hypothetical calculation. The taxes on these earnings would primarily consist of foreign withholding taxes and minimal U.S. state income taxes.

The significant components of the net deferred tax assets and liabilities as of September 30, 2021 and 2020 are as follows (in thousands):

	September 30, 2021	September 30, 2020
Accruals and reserves not currently deductible	$ 17,272	$ 15,761
Federal, state and foreign tax credits	4,350	5,627
Other assets	502	1,175
Equity compensation	5,872	4,115
Net operating loss carryforwards	9,693	12,583
Lease liabilities	12,958	6,508
Mergers	7,239	140
Deferred revenue	3,258	3,359
Inventory reserves and valuation	6,946	6,442
Deferred tax assets	68,090	55,710
Depreciation and intangible amortization	(50,181)	(53,474)
Right-of-use assets	(12,683)	(6,522)
Other liabilities	(1,883)	(464)
Deferred tax liabilities	(64,747)	(60,460)
Valuation allowance	(8,592)	(10,623)
Net deferred tax asset (liability)	$ (5,249)	$ (15,373)

Not included in the net deferred tax asset (liability) shown above are long-term assets held for sale of $3.2 million and long-term liabilities held for sale of $6.5 million as of September 30, 2021. Not included in the net deferred tax asset (liability) shown above are long-term assets held for sale of $1.1 million and long-term liabilities held for sale of $0.1 million as of September 30, 2020. The deferred tax assets on the balance sheets for September 30, 2021 and 2020 also include $2.3 million and $1.6 million deferred tax charge related to the company’s intercompany profit elimination, respectively.

ASC Topic 740 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.

After evaluating all the relevant positive and negative evidence, the Company reduced its valuation allowance against certain foreign net deferred tax assets resulting in a tax benefit of $2.0 million in fiscal year 2021. The Company continued to hold a U.S. valuation allowance related to the realizability of certain state tax credits and net operating loss carry-forwards. The Company also maintains valuation allowances against net deferred tax assets in certain foreign tax-paying components as of the end of fiscal year 2021.

As of September 30, 2021, the Company has federal, state and foreign net operating loss carry-forwards of approximately $2.3 million, $133.4 million and $19.6 million, respectively. The federal net operating loss carry-forwards expire at various dates through 2030.

As of September 30, 2021, the Company had federal research and development tax credit carry-forwards of $0.3 million. These credit carry-forwards will expire in 2041. The Company has federal foreign tax credit carry-forwards of $0.7 million. These credit carry-forwards will expire at various dates beginning in 2027 through 2031. The Company also has $5.5 million of state credits which begin to expire in 2034, 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 United States, making significant tax law changes affecting the Company.

In accordance with international tax reform regulations, the Company recorded a toll charge in the United States. 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. The Company completed final calculations in accordance with Staff Accounting Bulletin No.118 during the first quarter of fiscal year 2019 and recorded a reduction in the toll charge of $1.1 million. During the third quarter of fiscal year 2019, the U.S. government issued final regulations that clarified certain rules related to the toll charge that impacted fiscal year taxpayers. As a result of this clarification, the Company recorded an increase to the toll charge of $4.1 million. After all adjustments had been recorded, the Company realized a toll charge of $11.0 million, net of foreign tax credits.

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. Limitations on current year use of net operating loss carryovers have also been recorded in the tax provision.

The Company maintains liabilities for unrecognized tax benefits. These liabilities involve judgment and estimation, and they 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, 2021, 2020 and 2019 is as follows (in thousands):

	Total
Balance at September 30, 2018	$ 2,655
Additions for tax positions in current year	873
Additions for tax positions in prior year	13,400
Reductions from lapses in statutes of limitations	(68)
Balance at September 30, 2019	16,860
Additions for tax positions in current year	448
Reductions from lapses in statutes of limitations	(586)
Balance at September 30, 2020	16,722
Reductions from lapses in statutes of limitations	(14,716)
Balance at September 30, 2021	$ 2,006

All of the unrecognized tax benefits for the fiscal year ended September 30, 2021 would impact the effective tax rate if recognized. Not included in the September 30, 2021 balance shown above is a liability of $2.3 million which is presented as a long-term liability held for sale on the Company's consolidated balance sheets. The Company recognizes interest related to unrecognized benefits as a component of the income tax provision (benefit), of which $1.1 million, $1.1 million and $1.1 million, respectively, was recognized for the fiscal years ended September 30, 2021, 2020 and 2019. In fiscal year 2019, the Company recorded $13.4 million of unrecognized tax benefits with the acquisition of GENEWIZ. All unrecognized tax benefits recorded with the acquisition of GENEWIZ were part of an indemnification agreement with the sellers. This unrecognized tax position was reversed in fiscal year 2021 due to the expiration of its statute of limitations. The corresponding indemnification asset was also written off during the year as a component of other expenses.

The Company is subject to U.S. federal, state, local and foreign 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 2013. 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 and accrued interest on those benefits will be reduced by $0.4 million in the next 12 months due to statute of limitations expirations.

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 expenses, net" in the accompanying Consolidated Statements of Operations and are as follows for the fiscal years ended September 30, 2021, 2020 and 2019 (in thousands):

	Fiscal Year Ended September 30,		
	2021	2020	2019
Realized (losses) gains on derivatives not designated as hedging instruments	$ (7,781)	$ (2,671)	$ 3,656

The fair value of derivative instruments are as follows at September 30, 2021 and 2020 (in thousands):

	Fair Value of Assets		Fair Value of Liabilities	
As of September 30,	**2021**	**2020**	**2021**	**2020**
Derivatives not designated as hedging instruments				
Foreign exchange contracts	$ 153	$ 370	$ (165)	$ (238)
Total	$ 153	$ 370	$ (165)	$ (238)

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. Stockholders' Equity

Preferred Stock

Total number of shares of preferred stock authorized for issuance was 1,000,000 shares at September 30, 2021 and 2020, 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, 2021 or 2020, respectively.

Accumulated Other Comprehensive Income

The following is a summary of the components of accumulated other comprehensive income, net of tax, at September 30, 2021, 2020 and 2019 (in thousands):

	Currency Translation Adjustments	Unrealized Gains (Losses) on Available-for-Sale Securities	Pension Liability Adjustments	Total
Balance at September 30, 2018	$ 13,517	$ (112)	$ 182	$ 13,587
Other comprehensive income (loss) before reclassifications	(9,333)	244	(882)	(9,971)
Amounts reclassified from accumulated other comprehensive income	—	(140)	35	(105)
Balance at September 30, 2019	4,184	(8)	(665)	3,511
Other comprehensive income (loss) before reclassifications	18,877	5	(503)	18,379
Amounts reclassified from accumulated other comprehensive income	—	2	27	29
Balance at September 30, 2020	23,061	(1)	(1,141)	21,919
Other comprehensive income (loss) before reclassifications	(2,922)	—	333	(2,589)
Amounts reclassified from accumulated other comprehensive income	—	—	21	21
Balance at September 30, 2021	$ 20,139	$ (1)	$ (787)	$ 19,351

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. Defined benefit pension plan curtailments are recognized as reclassifications from accumulated other comprehensive income and corresponding reductions in pension liabilities and net pension cost.

15. 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, 2021, a total of 2,454,331 shares were reserved and available for future grant under the equity incentive plans.

2020 Equity Incentive Plan

In accordance with the 2020 Equity Incentive Plan (the "2020 Plan"), 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 2020 Plan. The 2020 Plan provides for the issuance of an aggregate of 2,800,000 shares of common stock, including 2,500,000 shares reserved for issuance pursuant to the 2020 Plan, and up to 300,000 additional shares which may be issued pursuant to the 2020 Plan if outstanding awards granted under the 2000 Plan or the 2015 Plan are forfeited, expire or are cancelled.

Restricted Stock Unit Activity

The following table summarizes restricted stock unit activity for the fiscal year ended September 30, 2021:

	Shares	Weighted Average Grant-Date Fair Value
Outstanding at September 30, 2020	1,183,009	$ 36.10
Granted	349,930	71.97
Vested	(408,696)	35.98
Forfeited	(35,591)	45.82
Outstanding at September 30, 2021	1,088,652	47.35

The weighted average grant date fair value of restricted stock units granted during fiscal years 2021, 2020 and 2019 was $71.97, $46.52 and $30.47 per share, respectively. The fair value of restricted stock units vested during fiscal years 2021, 2020 and 2019 was $28.4 million, $41.7 million and $34.8 million, respectively. During fiscal years 2021, 2020 and 2019, the Company remitted $9.8 million, $24.1 million and $15.3 million, respectively, collected from employees to satisfy their tax obligations as a result of share issuances.

As of September 30, 2021, the future unrecognized stock-based compensation expense related to restricted stock units expected to vest is $28.5 million and is expected to be recognized over an estimated weighted average amortization period of 1.6 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 performance goals. The following table reflects restricted stock units and stock awards granted during fiscal years ended September 30, 2021, 2020 and 2019:

	Total Units	Time-Based Units	Stock Grants	Performance-Based Units
Year ended September 30, 2021	349,930	166,570	14,713	168,647
Year ended September 30, 2020	412,036	163,390	27,076	221,570
Year ended September 30, 2019	792,315	330,006	38,920	423,389

Among the total restricted stock units granted, 98,783, 119,978, and 196,935 shares, respectively, were granted to the employees who belong to the discontinued operations in the year ended September 30, 2021, 2020 and 2019. As of September 30, 2021, 285,570 shares granted to these employees were not vested and expected to be vested upon the closing of the sale.

Time-Based Restricted Stock Unit 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-Based Awards – Board of Directors

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

Stock awards granted during fiscal years 2021, 2020 and 2019 were vested upon issuance.

Certain members of the Board of Directors have elected to defer receiving their annual stock awards and related quarterly dividends until they attain a certain age or cease to provide services as a member of the Board of Directors. Annual deferred restricted stock units granted during fiscal years 2021, 2020 and 2019 vested upon issuance.

Performance-Based Restricted Stock Unit 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 2021, 2020 and 2019 allow participants to earn 100% of restricted stock units if the Company's performance meets or exceeds 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 forfeiture. Performance goals will be measured over a three-year period for each year's awards 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 year's awards' 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"). 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, 2021, 752,171 shares of common stock remain available for purchase under the 2017 Plan. During the fiscal year ended September 30, 2021 and 2020, the Company issued 106,516 shares and 133,597 shares, respectively, under the 2017 Plan.

16. 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, 2021, 2020 and 2019 (in thousands, except per share data):

	Year Ended September 30,		
	2021	2020	2019
Loss from continuing operations	$ (28,869)	$ (26,362)	$ (61,127)
Income from discontinued operations, net of tax	139,616	91,215	498,543
Net income	110,747	64,853	437,416
Weighted average common shares outstanding used in computing basic earnings per share	74,229	73,557	71,992
Dilutive restricted stock units	226	293	394
Weighted average common shares outstanding used in computing diluted earnings per share	74,455	73,850	72,386
Basic net income per share:			
Loss from continuing operations	$ (0.39)	$ (0.36)	$ (0.85)
Income from discontinued operations, net of tax	1.88	1.24	6.92
Basic net income per share	$ 1.49	$ 0.88	$ 6.08
Diluted net income per share:			
Loss from continuing operations	$ (0.39)	$ (0.36)	$ (0.84)
Income from discontinued operations, net of tax	1.88	1.24	6.89
Diluted net income per share	$ 1.49	$ 0.88	$ 6.04
Dividend declared per share	$ 0.40	$ 0.40	$ 0.40

Restricted stock units of 24,012, 16,695 and 9,439, respectively, during fiscal year 2021, 2020 and 2019 were excluded from the computation of diluted earnings per share as their effect would be anti-dilutive based on the treasury stock method.

17. Revenue from Contracts with Customers

Disaggregated Revenue

The Company disaggregates revenue from contracts with customers in a manner that depicts how the nature, amount, timing, and uncertainty of revenue and cash flows are affected by economic factors. The following is revenue by significant business line for the fiscal years ended September 30, 2021, 2020 and 2019 (in thousands):

	Year ended September 30,		
	2021	2020	2019
Significant Business Line			
Brooks Life Sciences Products	$ 199,606	$ 129,759	$ 119,020
Sample Repository Solutions	93,429	92,332	88,896
Genomic Services	220,668	166,446	126,263
Total	$ 513,703	$ 388,537	$ 334,179

Contract Balances

Accounts Receivable, Net. Accounts receivable represent rights to consideration in exchange for products or services that have been transferred by the Company, when payment is unconditional and only the passage of time is required before payment is due. Accounts receivable do not bear interest and are recorded at the invoiced amount. The Company maintains an allowance for expected credit losses representing its best estimate of probable credit losses related to its existing accounts receivable and their net realizable value. The Company determines the allowance for expected credit losses based on a number of factors, including an evaluation of customer credit worthiness, the age of the outstanding receivables, economic trends and historical experience. Accounts receivable, net were $119.9 million and $94.8 million at September 30, 2021 and September 30, 2020, respectively.

Contract Assets. Contract assets represent rights to consideration in exchange for products or services that have been transferred by the Company, when payment is conditional on something other than the passage of time. These amounts typically relate to contracts where the right to invoice is not present until completion of the contract or the achievement of specified milestones and the value of the products or services transferred exceed this constraint. Contract assets are classified as current. Contract asset balances which are included within "Prepaid expenses and other current assets" on the Company's Consolidated Balance Sheet, were $15.3 million and $14.8 million at September 30, 2021 and September 30, 2020, respectively.

Contract Liabilities. Contract liabilities represent the Company's obligation to transfer products or services to a customer for which consideration has been received, or for which an amount of consideration is due from the customer. Contract assets and liabilities are reported on a net basis at the contract level, depending on the contracts position at the end of each reporting period. Contract liabilities are included within "Deferred revenue" on the Company's Consolidated Balance Sheet. Contract liabilities were $25.7 million and $25.8 million at September 30, 2021 and September 30, 2020, respectively. Revenue recognized from the contract liability balance at September 30, 2020 was $24.6 million for the year ended September 30, 2021.

Remaining Performance Obligations. Remaining performance obligations represent the transaction price of unsatisfied or partially satisfied performance obligations within contracts with an original expected contract term that is greater than one year and for which fulfillment of the contract has started as of the end of the reporting period. The aggregate amount of transaction consideration allocated to remaining performance obligations as of September 30, 2021 was $50.5 million. The following table summarizes when the Company expects to recognize the remaining performance obligations as revenue, the Company will recognize revenue associated with these performance obligations as transfer of control occurs (in thousands):

	As of September 30, 2021		
	Less than 1 Year	**Greater than 1 Year**	**Total**
Remaining Performance Obligations	$ 33,552	$ 16,915	$ 50,467

Cost to Obtain and Fulfill a Contract

The Company capitalizes sales commissions when incurred if they are (i) incremental costs of obtaining a contract, (ii) expected to be recovered and (iii) have an expected amortization period that is greater than one year. Incremental costs associated with obtaining a contract were capitalized and have been classified as deferred commissions within the Company's Consolidated Balance Sheet. These amounts are being amortized over a 60-month period, which represents the average period of contract performance. The Company did not capitalize any sales commissions during the fiscal year ended September 30, 2021 as the amount of sales commissions that qualified for capitalization during the reporting period was insignificant. Sales commissions incurred during the reporting period have been expensed as incurred. These costs are recorded within "Selling, general, and administration expenses" in the Consolidated Statements of Operations. The Company has concluded that none of its costs incurred in fulfillment of customer contracts meet the capitalization criteria. The Company will account for shipping and handling activities as fulfillment activities and recognize the associated expense when transfer of control of the product has transferred to the customer.

18. Significant Customers

No customers accounted for more than 10% of the Company's consolidated continuing operations revenue during the fiscal years ended September 30, 2021, 2020 and 2019. No customers accounted for more than 10% of the Company's total receivables during the fiscal year ended September 30, 2021 and 2020.

19. 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 operates in two reportable segments: the Life Sciences Products segment and the Life Sciences Services segment. These reportable segments also represent the Company's operating segments. The Company previously operated in three reportable segments: the Brooks Semiconductor Solutions Group segment, the Life Sciences Products segment, and the Life Sciences Services segment. As discussed in Note 3, "Discontinued Operations", our Brooks Semiconductor Solutions Group reportable segment has been classified as a discontinued operation. Historical information has been adjusted to reflect the new reportable segments.

The Life Sciences Products segment provides automated cold sample management systems for compound and biological sample storage, equipment for sample preparation and handling, consumables, and instruments, that help customers manage samples throughout their research discovery and development workflows. The segment's product offerings include automated cold storage systems, cryogenic storage systems, consumables and instruments and the associated services business for these products.

The Life Sciences Services segment provides comprehensive sample management programs, integrated cold chain solutions, informatics, as well as sample-based laboratory services to advance scientific research and support drug development. The segment's service offerings include sample storage, genomic sequencing, gene synthesis, laboratory processing services, laboratory analysis, biospecimen procurement services and other support services which are provided to a wide range of life science customers, including pharmaceutical companies, biotechnology companies, biorepositories and research institutes.

The Company considers adjusted operating income, which excludes charges related to amortization of completed technology, the acquisition accounting impact on inventory contracts acquired and restructuring related charges as the primary performance metric when evaluating the business.

The following is the summary of the financial information for the Company's reportable segments for the fiscal years ended September 30, 2021, 2020 and 2019 (in thousands):

	Year Ended September 30, 2021	2020	2019
Revenue:			
Brooks Life Sciences Products	$ 199,606	$ 129,759	$ 119,020
Brooks Life Sciences Services	314,097	258,778	215,159
Total revenue	$ 513,703	$ 388,537	$ 334,179
Operating income:			
Brooks Life Sciences Products	$ 23,094	$ (3,041)	$ (20,876)
Brooks Life Sciences Services	22,659	2,859	8,976
Reportable segment adjusted operating income	45,753	(182)	(11,900)
Amortization of completed technology	8,073	8,099	6,824
Restructuring related charges	13,364	301	285
Amortization of acquired intangible assets	29,299	27,276	20,445
Restructuring charges	385	674	1,388
Other unallocated corporate expenses	25,721	68	6,589
Total operating income	(31,089)	(36,600)	(47,431)
Interest income	632	849	1,449
Interest expense	(2,037)	(2,944)	(22,250)
Loss on extinguishment of debt	—	—	(14,339)
Other expenses, net	(16,475)	(1,597)	(1,386)
Loss before income taxes	$ (48,969)	$ (40,292)	$ (83,957)

Assets:	Brooks Life Sciences Products	Brooks Life Sciences Services	Total
September 30, 2021	$ 278,769	$ 780,238	$ 1,059,007
September 30, 2020	215,375	741,326	956,701

The following is a reconciliation of the Company's reportable segments' segment assets to the amounts presented in the accompanying Consolidated Balance Sheets as of September 30, 2021 and 2020 (in thousands):

	September 30, 2021	September 30, 2020
Segment assets	$ 1,059,007	$ 956,701
Cash and cash equivalents, restricted cash, and marketable securities	244,012	260,678
Deferred tax assets	10,043	3,976
Other assets	11,237	16,329
Assets held for sale	495,213	321,581
Total assets	$ 1,819,512	$ 1,559,265

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, 2021, 2020 and 2019 are as follows (in thousands):

	Year Ended September 30,		
	2021	2020	2019
Geographic Location:			
Asia / Pacific/ Other	$ 80,916	$ 58,208	$ 47,803
North America	323,982	256,174	226,395
Europe	108,805	74,155	59,981
Total	$ 513,703	$ 388,537	$ 334,179

The majority of the Company's net revenue in North America is generated in the United States which amounted to $320.8 million, $253.5 million and $224.5 million, respectively, during fiscal years ended September 30, 2021, 2020 and 2019.

Property, plant and equipment by geographic area as of September 30, 2021 and 2020 are as follows (in thousands):

	September 30,	
	2021	2020
North America	$ 60,710	$ 53,608
Asia / Pacific/ Other	55,494	23,455
Europe	14,515	11,672
	$ 130,719	$ 88,735

Property, plant and equipment located in the United States amounted to $60.6 million and $53.6 million, respectively, at September 30, 2021 and 2020.

20. 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, 2021 and 2020 (in thousands):

Description	September 30, 2021	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	$ 21	$ 21	$ —	$ —
Available-for-sale securities	3,679	—	3,679	—
Foreign exchange contracts	153	—	153	—
Total Assets	$ 3,853	$ 21	$ 3,832	$ —
Liabilities:				
Foreign exchange contracts	$ 165	$ —	$ 165	$ —
Acquisition-related contingent consideration	9,400	—	—	9,400
Total Liabilities	$ 9,565	$ —	$ 165	$ 9,400

Description	September 30, 2020	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	$ —	$ 50	$ —
Available-for-sale securities	3,168	—	3,168	—
Foreign exchange contracts	370	—	370	—
Total Assets	$ 3,588	$ —	$ 3,588	$ —
Liabilities:				
Foreign exchange contracts	$ 238	$ —	$ 238	$ —
Total Liabilities	$ 238	$ —	$ 238	$ —

Cash Equivalents

Cash equivalents 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 consist primarily of treasury bills and agency bonds 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 consist of municipal securities, bank certificate of deposits, 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 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

Acquisition-related Contingent Consideration

Acquisition-related contingent consideration is measured and reported at fair value using the real options method based on the unobservable inputs that are significant to the fair value and classified with Level 3 of the fair value hierarchy. The amount is contingent based on the acquired business' performance for the twelve-month period ending December 31, 2021. Please refer to Note 4, "Acquisitions" for further detail. Changes in the fair value of contingent consideration resulting from a change in the underlying inputs are recognized in results of operations until the arrangement is settled.

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

During fiscal year 2021 and 2020, 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.

21. Commitments and Contingencies

GENEWIZ Tariff Matter

As part of the Company's continued integration of GENEWIZ, which was acquired in November 2018, the Company initiated a review, with the assistance of a third-party consultant, of the transaction value that the Company has used to calculate tariffs on inter-company imports of samples shipped from its GENEWIZ business. As a result of the third-party review and in light of a new interpretation surrounding the valuation method used to calculate the estimated transaction value, the Company revised its estimate of the tariffs owed and as a result recorded a liability of $7.0 million in the fiscal year 2021. Of the total liability, $2.7 million is for the period prior to the acquisition of GENEWIZ and an additional $4.3 million is for the period since the Company acquired GENEWIZ in November 2018. The Company intends to pay any tariffs determined to be owed. The Company does not expect to incur any significant penalties associated with such tariffs. As a result of the change in estimate, basic net income per share decreased $0.09 for the fiscal year 2021. Diluted net income per share also decreased $0.09 for the same period.

Letters of Credit

At September 30, 2021, the Company had $1.3 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, 2021, and the Company currently does not anticipate any of these obligations to be called in the near future.

Purchase Commitments

At September 30, 2021, the Company has non-cancelable commitments of $65.9 million, including purchase orders for inventory of $44.0 million, information technology related commitments of $15.9 million, and China facility commitments of $6.0 million.

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. The Company may also have certain indemnification obligations pursuant to claims made under the definitive agreement it entered into with Edwards in connection with the Company's sale of its semiconductor cryogenics business. See Note 3, "Discontinued Operations" for further information. 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 matters, 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.

22. Quarterly Information (Unaudited)

Our revenue, gross profit, operating income (loss), net income, income (loss) from continuing operations, basic and diluted earnings per share on a quarterly basis are presented below (in thousands, except per share amounts):

	Year Ended September 30, 2021			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenue	$ 118,142	$ 129,535	$ 129,087	$ 136,939
Gross profit	57,335	57,900	62,431	66,143
Operating income (loss)	356	(9,321)	(883)	(21,241)
Income (loss) from continuing operations	2,706	(7,336)	(1,842)	(22,397)
Net income	26,028	23,748	39,166	21,805
Basic net income per share	0.35	0.32	0.53	0.29
Diluted net income per share	0.35	0.32	0.53	0.29

	Year Ended September 30, 2020			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenue	$ 91,688	$ 95,304	$ 93,299	$ 108,246
Gross profit	38,686	41,663	39,263	52,536
Operating loss	(12,022)	(11,145)	(12,051)	(1,382)
Loss from continuing operations	(5,320)	(10,603)	(9,858)	(581)
Net income	13,057	9,127	13,696	28,973
Basic net income per share	0.18	0.12	0.19	0.39
Diluted net income per share	0.18	0.12	0.19	0.39

23. Subsequent Events

Dividend

On November 2, 2021, the Company's Board of Directors declared a cash dividend of $0.10 per share payable on December 23, 2021 to common stockholders of record as of December 3, 2021. 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 within the time periods specified in the SEC's rules and forms 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, 2021, 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 generally accepted accounting principles in the United Sates, or 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, 2021. 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 this evaluation, management concluded that the Company's internal control over financial reporting was effective as of September 30, 2021.

The effectiveness of our internal control over financial reporting as of September 30, 2021 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears in Item 8, "Financial Statements and Supplementary Data" of this Form 10-K.

Changes in Internal Control Over Financial Reporting

There were no changes in internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the fiscal fourth quarter ended September 30, 2021, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. *Other Information*

None.

Item 9C. *Disclosure Regarding Foreign Jurisdictions that Prevent Inspections*

Not applicable.

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 2022 annual meeting of stockholders to be filed by us within 120 days after the close of our fiscal year, or the 2022 Proxy Statement, under the captions “Proposal No. 1 Election of Directors,” [“Delinquent Section 16(a) Reports,”] “Other Matters-Standards of Conduct,” “Other Matters-Stockholder Proposals and Recommendations for Director” and “Corporate Governance” and is incorporated herein by reference.

Item 11. *Executive Compensation*

The information required by this Item 11 is contained under the captions “Corporate Governance,” “Compensation of Director” and “Executive Officers” in the 2022 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 captions “Security Ownership of Certain Beneficial Owners and Management” and “Equity Compensation Plan Information” in the 2022 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 captions “Related Party Transactions,” “Corporate Governance” and “Compensation of Directors” in the 2022 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 2022 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.
- 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
2.01*	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).
2.02*	Agreement of Merger, dated as of September 26, 2018, by and among the Company, GENEWIZ Group, Darwin Acquisition Company, and Shareholder Representative Services L.L.C. (incorporated herein by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K, filed on November 15, 2018).
2.03*	Asset Purchase Agreement, dated August 27, 2018, among the Company, Edwards Vacuum LLC, and for certain sections thereof, Atlas Copco AB (incorporated herein by reference to Exhibit 10.29 to the Company's Annual Report on Form 10-K, filed on November 29, 2018).
2.04	Amendment No. 1, dated as of February 12, 2019, to Asset Purchase Agreement dated as of August 27, 2018, among the Company, Edwards Vacuum LLC, and for certain sections, Atlas Copco AB (incorporated herein by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K, filed on February 13, 2019).
2.05*	Amendment No. 2, dated June 28, 2019, to Asset Purchase Agreement dated as of August 27, 2018, among the Company, Edwards Vacuum LLC, and for certain sections, Atlas Copco AB (incorporated herein by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K, filed on July 5, 2019).
2.06*	Equity Interest Purchase Agreement, dated as of September 20, 2021, by and between the Company and Altar BidCo, Inc. (incorporated herein by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K, filed on September 21, 2021).
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).
4.02	Description of Securities (incorporated herein by reference to Exhibit 4.02 of the Company’s Annual Report on Form 10-K, filed on December 17, 2019).
10.01**	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).
10.02**	Employment Agreement, effective as of April 5, 2010, by and between the Company 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).
10.03**	Offer letter, dated September 5, 2013, between the Company and Lindon G. Robertson (incorporated herein by reference to Exhibit 10.03 of the Company’s Annual Report on Form 10-K, filed on December 17, 2019).
10.04**	Letter Agreement, dated June 4, 2015, between the Company 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).
10.05**	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).
10.06**	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, filed on August 4, 2017).
10.07**	Offer Letter dated September 12, 2018, between the Company and Amy Liao (incorporated herein by reference to Exhibit 10.10 of the Company’s Annual Report on Form 10-K, filed on December 17, 2019).
10.08**	Letter Agreement, dated October 4, 2021, between the Company and Amy Liao.
10.09**	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).
10.10**	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).
10.11**	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).
10.12**	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).
10.13**	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).
10.14**	2020 Equity Incentive Plan (incorporated herein by reference to Exhibit 10.1 to the Company’s Current Report on Form 8 K, filed on February 1, 2021).

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, as filed on November 28, 2011).
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**	Form of Restricted Stock Unit Award Notice under the 2020 Equity Incentive Plan.
10.18**	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).
10.19**	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 Company's Annual Report on Form 10-K, filed on November 23, 2010).
10.20**	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).
10.21**	Non-Employee Director Restricted Stock Unit Deferral Election Form under the 2020 Equity Incentive Plan.
10.22**	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).
10.23	Credit Agreement, dated as of May 26, 2016, by and among the Company, Brooks Life Sciences, Inc. (fka 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).
10.24	Consent and First Amendment to Credit Agreement, dated October 4, 2017, by and among Wells Fargo Bank, National Association, as Administrative Agent, the Company and Brooks Life Sciences, Inc. (fka 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).
10.25	Guaranty and Security Agreement, dated as of May 26, 2016, 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).
10.26	Credit Agreement, dated October 4, 2017, by and among the Company, 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).
10.27	Incremental Amendment, dated as of November 15, 2018, to that certain Credit Agreement dated as of October 4, 2017, among the Company, the several lenders party thereto from time to time and Morgan Stanley Senior Funding, Inc., as administrative agent for the Lenders (incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on November 15, 2018).

10.28	Amendment No. 2, dated as of February 15, 2019, to Credit Agreement dated as of October 4, 2017, among the Company, the several lenders party thereto from time to time and Morgan Stanley Senior Funding, Inc., as administrative agent for the Lenders (incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on February 22, 2019).
10.29	Guarantee and Security Agreement, dated October 4, 2017, by and among the Company, Brooks Life Sciences, Inc. (fka 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).
21.01	Subsidiaries of the Company.
23.01	Consent of PricewaterhouseCoopers LLP
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.
101	The following material from the Company's Annual Report on Form 10-K, for the year ended September 30, 2021, formatted in iXBRL (Inline eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets; (ii) the Consolidated Statements of Operations; (iii) the Consolidated Statements of Comprehensive Income; (iv) the Consolidated Statements of Cash Flows; (v) the Consolidated Statements of Changes in Equity; and (vi) the Notes to Consolidated Financial Statements. The instance document does not appear in the Interactive Data File because XBRL tags are embedded in the iXBRL document.
104	Cover Page Interactive Data File (formatted as iXBRL and contained in Exhibit 101).

* Certain schedules and exhibits have been omitted from this Exhibit pursuant to Item 601(a)(5) of Regulation S-K. Brooks Automation, Inc. will furnish a copy of any omitted schedule or exhibit to the U.S. Securities and Exchange Commission or its staff upon request.

** Management contract, compensatory plan or agreement.

Item 16. ***Form 10-K Summary***

None.

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
President and Chief Executive Officer

Date: November 24, 2021

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.

Signature	Title	Date
/S/ STEPHEN S. SCHWARTZ Stephen S. Schwartz	Director, President and Chief Executive Officer (Principal Executive Officer)	November 24, 2021
/S/ LINDON G. ROBERTSON Lindon G. Robertson	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	November 24, 2021
/S/ DAVID PIETRANTONI David Pietrantoni	Vice President - Finance and Corporate Controller (Principal Accounting Officer)	November 24, 2021
/S/ FRANK E. CASAL Frank E. Casal	Director	November 24, 2021
/S/ ROBYN C. DAVIS Robyn C. Davis	Director	November 24, 2021
/S/ JOSEPH R. MARTIN Joseph R. Martin	Director	November 24, 2021
/S/ ERICA J. MCLAUGHLIN Erica J. McLaughlin	Director	November 24, 2021
/S/ KRISHNA G. PALEPU Krishna G. Palepu	Director	November 24, 2021
/S/ MICHAEL ROSENBLATT Michael Rosenblatt	Director	November 24, 2021
/S/ ALFRED WOOLLACOTT III Alfred Woollacott III	Director	November 24, 2021
/S/ MARK S. WRIGHTON Mark S. Wrighton	Director	November 24, 2021
/S/ ELLEN M. ZANE Ellen M. Zane	Director	November 24, 2021