

MTS SYSTEMS CORP
Form 10-K
November 27, 2017

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 the fiscal year ended September 30, 2017

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 No. 0-02382

MTS SYSTEMS CORPORATION

(Exact name of Registrant as specified in its charter)

Minnesota

41-0908057

(State or other jurisdiction

of incorporation or organization)

(I.R.S. Employer Identification No.)

14000 Technology Drive

55344

Eden Prairie, Minnesota

(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (952) 937-4000

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

Title of each class

Name of each exchange on which registered

Common Stock, \$0.25 par value

The NASDAQ Stock Market LLC
(NASDAQ Global Select Market)

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 by 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 Section 15(d) of the Act. 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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes ☒ No ☐

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

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,"

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"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 is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The aggregate market value of the voting and non-voting stock held by non-affiliates of the registrant as of April 1, 2017 was approximately \$1.0 billion based on the closing price of \$55.05 as of March 31, 2017 as reported on the NASDAQ.

As of November 22, 2017, there were 17,777,251 shares of Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of MTS Systems Corporation's Definitive Proxy Statement (to be filed pursuant to Regulation 14A within 120 days after the end of the fiscal year ended September 30, 2017) for its annual shareholders' meeting to be held on February 13, 2018, are incorporated by reference into Part III of this Annual Report on Form 10-K to the extent described in such Part.

MTS Systems Corporation
Annual Report on Form 10-K
For the Year Ended September 30, 2017

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PART I

ITEM 1. BUSINESS

Business Overview

MTS Systems Corporation is a leading global supplier of high-performance test systems and sensors that was incorporated under Minnesota law in 1966. Our operations are organized and managed in two reportable segments, Test and Sensors, based on global similarities within their markets, products, operations and distribution. The Test and Sensors segments represented 64% and 36% of our revenue, respectively, for the fiscal year ended September 30, 2017.

Terms

The terms "MTS," "we," "us," the "Company" or "our" in this Annual Report on Form 10-K, unless the context otherwise requires, refer to MTS Systems Corporation and its wholly owned subsidiaries.

Fiscal year 2017 refers to the fiscal year ended September 30, 2017; fiscal year 2016 refers to the fiscal year ended October 1, 2016; and fiscal year 2015 refers to the fiscal year ended October 3, 2015. Fiscal years 2017, 2016 and 2015 include 52, 52 and 53 weeks, respectively. All dollar amounts and shares are in thousands unless otherwise noted.

Products and Markets

Test

Our Test segment (Test) provides testing solutions including hardware, software and services which are used by customers in product development to characterize the product's mechanical properties. Our solutions simulate forces and motions that customers expect their products to encounter in use. Mechanical simulation testing in a lab setting is an accepted method to accelerate product development compared to reliance on full physical prototypes in real-world settings, proving ground testing, and virtual testing because it provides more controlled simulation and accurate measurement. The need for mechanical simulation increases in proportion to the cost of a product, the range and complexity of the physical environment in which the product will be used, expected warranty or recall risk and expense, governmental regulation and potential legal liability. A significant portion of Test products are considered by our customers to be capital expenditures. We believe the timing of purchases of our products may be impacted by interest rates, general economic conditions, product development cycles and new product initiatives.

A typical Test system includes a reaction frame to hold the prototype specimen, a hydraulic pump or electro-mechanical power source, piston actuators to create the force or motion and a computer controller with specialized software to coordinate the actuator movement, record and manipulate results. Lower force and less dynamic testing can usually be accomplished with electro-mechanical power sources, which are generally less expensive than hydraulic systems. In addition to these basic components, we sell a variety of accessories and spare parts.

We provide Test customers across all sectors with a spectrum of services to maximize product performance. Our service offerings include installation, product life cycle management, professional training, calibration and metrology, technical consulting and onsite and factory repair and maintenance.

Test has a diverse customer base by industry and geography. Regionally, the Americas, Europe and Asia represented approximately 29%, 19% and 52% of revenue for fiscal year 2017, respectively, based on customer location.

Products, service and customers are grouped into the following three global sectors:

Ground Vehicles (approximately 60% of Test revenue for fiscal year 2017)

This sector consists of automobile, truck, motorcycle, motorsports vehicles, construction equipment, agricultural equipment, rail and off-road vehicle manufacturers and their suppliers. Customers include original equipment manufacturers (OEMs), universities, government research and development institutes, motorsports teams and contract test facilities. Our products are used to measure and simulate solutions to assess durability, vehicle dynamics and aerodynamics of vehicles, sub-systems and components. Our products include:

Road simulators and component test systems for durability testing;

Vehicle performance test systems that evaluate ride handling, ride comfort and noise;

Vehicle dynamics simulators to test conceptual vehicle designs in advance of physical prototypes;

High-performance electrical motors and energy recovery systems for high-end automotive and aerospace applications;

Tire performance and rolling resistance measurement systems; and
Moving ground-plane systems and balances for vehicle aerodynamic measurements in wind tunnels.

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Materials (approximately 25% of Test revenue for fiscal year 2017)

This sector covers diverse industries such as power generation, aerospace, vehicles and bio-medical. Our products and services support customers in the research and development of products through the physical characterization of material properties, such as ceramics, composites and steel. Bio-medical applications include systems to test durability and performance of implants, prostheses and other medical and dental materials and devices.

Structures (approximately 15% of Test revenue for fiscal year 2017)

This sector serves the structural testing needs and services in the fields of aerospace, structural engineering, oil and gas, and wind energy, among others. The aerospace structural testing market consists of manufacturers of commercial, military and private aircraft and their suppliers that use our products, systems and software to perform static and fatigue testing of aircraft and space vehicles. Systems for structural engineering include high force static and dynamic testing, as well as seismic simulation tables used around the world to test the design of structures, such as bridges and buildings, and to help governments establish building codes. Structural engineering customers include construction companies, government agencies, universities and building materials manufacturers. The wind energy market consists of wind turbine manufacturers and their component suppliers that use our products to reduce cost and improve reliability of blades, bearings and entire wind turbines.

Sensors

Our Sensors segment (Sensors) is a global leader in sensing technologies and solutions used worldwide by design engineers and predictive maintenance professionals, serving customers with a focus on total customer satisfaction, and offering regional support to provide innovative and reliable sensing solutions. Sensors provides high-performance sensors used for acceleration, position, vibration, motion, pressure, force and sound measurement. Our products and solutions are used to enable automation, enhance precision and safety, and lower our customers' production costs by improving performance and reducing downtime. Revenue is partially fueled by our customers' spending on research and development activities and industrial capacity utilization. Sensors products and solutions serve the automotive, aerospace, industrial, defense, and research and development markets, as well as many other markets. Sensors manufactures products utilizing piezoelectric and magnetostriction technology, both of which provide an accurate and reliable sensor ideal for use in harsh operating environments.

During fiscal year 2016, we completed the acquisition of 100% of PCB Group, Inc. (PCB), a manufacturer of piezoelectric sensors and components used for vibration, pressure and force measurement. The acquisition of PCB expanded our market position in Sensors and our ability to deliver a wide variety of applications including acceleration, pressure, noise, force, load and torque to both enhance the performance of our customers' products and enable those products to enter the market more rapidly and reliably. Largely as a result of the acquisition of PCB, the percentage of total Sensors revenue attributable to test sensors, industrial sensors and systems sensors increased and the percentage of total Sensors revenue attributable to positional sensors decreased during fiscal year 2017. For additional information related to the acquisition of PCB, see Note 13 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K.

Sensors serves a diverse spectrum of customers by industry and geography. Regionally, the Americas, Europe and Asia represented approximately 47%, 35% and 18% of revenue for fiscal year 2017, respectively, based on customer location.

Products and customers are grouped into the following four global sectors:

Positional Sensors (approximately 35% of Sensors revenue for fiscal year 2017)

This sector consists of a wide range of industrial machinery OEMs and their end use customers with applications in all areas of manufacturing including plastics, steel, construction, agriculture, wood, mining and other factory automation applications. These sensors provide positional feedback for motion control systems, improve productivity by enabling high levels of automation and reduce maintenance costs, as well as enhance safety of machine operations.

Test Sensors (approximately 35% of Sensors revenue for fiscal year 2017)

This sector covers diverse industries, including test and measurement, automotive, rail, aerospace and defense. This sector includes a variety of applications including research and development; structural monitoring; ground testing of aircraft and vehicles; harsh environmental testing; impact sensors for shock and vibration testing; component and system performance; ride and handling; durability testing; and noise, vibration, and harshness testing. These sensors

provide engineers and scientists with precise and accurate measurements to accelerate technology advancement and reduce new product development cycle time.

Industrial Sensors (approximately 20% of Sensors revenue for fiscal year 2017)

This sector consists of sensors used in heavy industrial markets and energy and power generation. Sensors used in heavy industrial markets are primarily used to monitor the vibration and pressure in a wide spectrum of applications including motors, pumps, paper machines and steel rollers. These sensors provide valuable feedback on equipment

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performance, reducing downtime and maximizing safety and productivity. Sensors used in the energy and power generation markets are equipped to address hazardous and inaccessible locations, and serve gas and wind turbines, oil and gas refineries, nuclear power instrumentation as well as other critical energy infrastructure providers.

Systems Sensors (approximately 10% of Sensors revenue for fiscal year 2017)

This sector consists of dynamic test, measurement and sensing systems primarily used to test, model and monitor the behavior of structures and processes, and ensure safety and compliance from exposure to noise and vibration. This sector also includes the calibration systems used with a variety of sensors, a comprehensive rental offering of both transactional sensor products, and consultative systems that serve a broad range of testing and industrial customers. Financial and geographical information about our segments is included in Item 7 and in Item 8 of Part II of this Annual Report on Form 10-K.

Sales and Service

Test

Test products are sold worldwide through a direct field sales and service organization, independent representatives and distributors and, to a much lesser extent, through other means (e.g. catalogs, internet, etc.) for standard products and accessories. Direct field sales and service personnel are compensated through salary and order incentive programs. Independent representatives and distributors are either compensated through commissions based upon orders or discounts off list prices.

In addition to direct field sales and service personnel throughout the U.S., we have sales and service subsidiaries in Toronto, Canada; Berlin, Germany; Paris, France; Guildford, United Kingdom; Turin, Italy; Gothenburg and Gislaved, Sweden; Chinchon, Spain; Tokyo and Nagoya, Japan; Seoul, South Korea; Moscow, Russia; Chennai and Bangalore, India; and Beijing, Shanghai and Shenzhen, China.

The timing and volume of large orders (valued at \$5,000 or greater on a U.S. dollar-equivalent basis) may produce volatility in backlog and quarterly operating results. Most customer orders are based on fixed-price quotations and typically have an average sales cycle of three to nine months due to the technical nature of the test systems and customer capital expenditure approval processes. The sales cycle for larger, more complex test systems may be two years or longer.

Sensors

Sensors products are sold worldwide through a direct sales and service organization as well as through independent distributors. The direct sales and service organization is compensated through salary and commissions based upon revenue. The independent distributors purchase MTS products at wholesale pricing and resell the product to their customers.

In addition to direct field sales and service personnel throughout the U.S., we have sales subsidiaries in Treviolo, Italy; Hitchin, United Kingdom; Aubervilliers, France; Huckelhoven and Dresden, Germany; Beijing and Shanghai, China; Machida, Japan; Vandreuil, Canada; and Zaventem, Belgium. The Machida, Japan sales operation will be closed in the second quarter of fiscal year 2018.

The average sales cycle for Sensors ranges from approximately one week to one month for existing customers purchasing standard products. The average sales cycle for a new account can range from approximately two weeks to two years depending on customer testing and specification requirements.

Manufacturing and Engineering

Test

Test systems are largely built to order and primarily engineered and assembled at our headquarters in Eden Prairie, Minnesota. We also operate manufacturing facilities in Shenzhen and Shanghai, China, which manufacture materials test systems, and in Lexington, North Carolina and Guilford, United Kingdom which manufacture ground vehicles test systems. We perform certain smaller system assembly at our locations in Berlin, Germany and Seoul, South Korea. Installation of systems, training, service and consulting services are primarily delivered at customer sites. The engineering and assembly cycle for a typical Test system ranges from one to 12 months, depending on the complexity of the system and the availability of components. The engineering and assembly cycle for larger, more complex systems may be up to three years. We continue to look for ways to optimize manufacturing efficiencies, including facility closures.

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Sensors

Sensors are engineered and assembled regionally at facilities located in Depew, New York; Halifax and Cary, North Carolina; Farmington Hills, Michigan; Provo, Utah; Cincinnati, Ohio; and Lüdenscheld, Germany. The Machida, Japan engineering and assembly operation was closed during the third quarter of fiscal year 2017. Assembly cycles generally vary from several days to several weeks, depending on the degree of product customization, the size of the order and manufacturing capacity.

Sources and Availability of Raw Materials and Components

Test

A significant portion of test systems consist of materials and component parts purchased from independent vendors. We are dependent, in certain situations, on a limited number of vendors to provide raw materials and components, such as mechanical and electronic components. However, we have not experienced any recent issues in procuring materials, parts or components needed in our engineering or production processes.

As Test generally sells products and services based on fixed-price contracts, fluctuations in the cost of materials and components between the date of the order and the delivery date may impact the expected profitability. The material and component cost variability is considered in the estimation and customer negotiation process. We believe fluctuations in the cost of raw materials and components did not have a significant impact on our operating results for fiscal years 2017, 2016 and 2015.

Sensors

A significant portion of Sensors products consists of materials and component parts purchased from independent vendors. We are dependent, in certain situations, on a limited number of vendors to provide raw materials and components, such as mechanical and electronic components. However, we have not experienced any recent issues in procuring materials, parts or components needed in our engineering or production processes.

As Sensors generally sells products and services based on fixed-price contracts and the products are manufactured and delivered days to months from the time of order to shipment, fluctuations in the cost of materials and components between the date of the order and the delivery date are not likely to materially impact the expected profitability. We believe fluctuations in the cost of raw materials and components did not have a significant impact on our operating results for fiscal years 2017, 2016 and 2015.

Patents and Trademarks

We rely on a combination of patents, copyrights, trademarks and proprietary trade secrets to protect our proprietary technology, some of which are material to our segments. We have obtained numerous patents and trademarks worldwide and actively file and renew patents and trademarks on a global basis to establish and protect our proprietary technology. We are also party to exclusive and non-exclusive license and confidentiality agreements relating to our own and third-party technologies. We aggressively protect certain of our processes, products and strategies as proprietary trade secrets. Our efforts to protect intellectual property and avoid disputes over proprietary rights include ongoing review of third-party patents and patent applications.

Seasonality

There is no significant seasonality in Test or Sensors.

Working Capital

Test

Test does not have significant finished product inventory, but maintains inventories of materials and components to facilitate on-time product delivery. Test may have varying levels of work-in-process projects that are classified as inventories, net or unbilled accounts receivable in our Consolidated Balance Sheets, depending upon the manufacturing cycle, timing of orders, project revenue recognition and shipments to customers.

Payments are often received from Test customers upon order or at milestones during the fulfillment of the order depending on the size and customization of the system. These payments are recorded as advance payments from customers in our Consolidated Balance Sheets and reduced as revenue is recognized. Conversely, if revenue is recognized on a project prior to customer billing, an unbilled accounts receivable is recorded in our Consolidated Balance Sheets until the customer has been billed. Upon billing, it is recorded as accounts receivable, net in our Consolidated Balance Sheets. Changes in the average size, payment terms and revenue recognition for orders in Test

may have a significant impact on accounts receivable, net; unbilled accounts receivable; advance payments from customers; and inventories, net. It has not been our practice to provide rights of return for our products. Payment terms vary and are subject to negotiation.

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Sensors

Sensors has finished product inventory, as well as inventories of materials and components to facilitate rapid delivery of product to exceed customer expectations on delivery time. The type and amount of finished goods on hand are targeted based on historical and anticipated customer demands for high-volume products.

Payments are often received from Sensors customers based on negotiated payment terms. Revenue is primarily recognized when products are shipped.

Customers

We do not have a significant concentration of sales with any individual customer within Test or Sensors. Therefore, the loss of any one customer would not have a material impact on our results.

Backlog

Most of our products are built to order. Our backlog of orders, defined as firm orders from customers that remain unfulfilled, totaled approximately \$360,016, \$370,523 and \$353,013 at September 30, 2017, October 1, 2016 and October 3, 2015, respectively. Test backlog was \$311,551, \$331,044 and \$339,967 at September 30, 2017, October 1, 2016 and October 3, 2015, respectively. Sensors backlog was \$48,465, \$39,479 and \$13,046 at September 30, 2017, October 1, 2016 and October 3, 2015, respectively. Based on anticipated manufacturing schedules, we expect approximately 85% of the backlog as of September 30, 2017 will be converted to revenue in fiscal year 2018. Delays may occur in the conversion of backlog into revenue as a result of export licensing compliance, technical difficulties, specification changes, manufacturing capacity, supplier issues or access to the customer site for installation. While the backlog is subject to order cancellations, we have not historically experienced a significant number of order cancellations. Refer to Item 7 of Part II of this Annual Report on Form 10-K for further discussion of order cancellations.

Government Contracts

Revenue from U.S. Government contracts varies by year. A portion of our government business is subject to renegotiation of profits or termination of contracts or subcontracts at the election of the U.S. Government. In addition to contract terms, we must comply with procurement laws and regulations relating to the formation, administration and performance of U.S. Government contracts. Failure to comply with these laws and regulations could lead to the termination of contracts at the election of the U.S. Government or the suspension or debarment from U.S. Government contracting or subcontracting. U.S. Government revenue as a percentage of our total revenue was 4%, 3% and 3% for fiscal years 2017, 2016 and 2015, respectively.

Competition

Test

For relatively simple and inexpensive mechanical testing applications, customers may satisfy their needs internally by building their own test systems or using competitors who compete on price, performance, quality and service. For larger and more complex mechanical test systems, we compete directly with several companies worldwide based upon customer value including application knowledge, engineering capabilities, technical features, price, quality and service.

Sensors

We primarily compete on factors that include technical performance, price and customer service in new applications or in situations in which other sensing technologies have been used. Sensors competitors are typically larger companies that carry multiple sensors product lines, larger diverse companies with only a small portion of business in the sensors market, or smaller, privately held companies throughout the world.

Research and Development

We invest in significant product, system and software application development. Costs associated with most research and development (R&D) are expensed as incurred, totaling \$34,999, \$25,336 and \$23,705 for fiscal years 2017, 2016 and 2015, respectively. Total internal software development costs capitalized during fiscal years 2017 and 2016 were \$2,046 and \$2,761, respectively. We also strategically engage in customer funded development by contracting with customers for first-of-a-kind products and product enhancements, with costs expensed as incurred.

Environmental Compliance

We believe our operations are in compliance with all applicable material environmental regulations within the jurisdictions in which we operate. Capital expenditures for environmental compliance were not material in fiscal year 2017, 2016 and 2015, and we do not expect such expenditures will be material in fiscal year 2018.

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Employees

We had approximately 3,500 employees as of September 30, 2017, including approximately 1,340 employees located outside the United States.

Available Information

The U.S. Securities and Exchange Commission (SEC) maintains a website that contains reports, proxy and information statements and other information regarding issuers, including the Company, that file electronically with the SEC. The public can obtain any documents that we file with the SEC at <http://www.sec.gov>. We file annual reports, quarterly reports, current reports, proxy statements and other documents with the SEC under the Securities Exchange Act of 1934, as amended (the Exchange Act). The public may read and copy any materials that we file with the SEC at the SEC's Public Reference Room located at 100 F Street, N.E., Washington, D.C. 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330.

We also make available free of charge on or through the "Investor Relations" pages of our corporate website (www.mts.com) our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and, if applicable, amendments to those reports filed or furnished pursuant to the Exchange Act as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Our Code of Conduct (the Code), any waivers from and amendments to the Code and our Corporate Governance Guidelines, Articles of Incorporation and Bylaws, as well as the Charters for the Audit, Compensation and Leadership Development and Governance and Nominating Committees of our Board of Directors are also available free of charge on the "Investor Relations" pages of our corporate website (www.mts.com).

ITEM 1A. RISK FACTORS

Our business involves risks. The following summarizes what we believe to be the most important risks facing us that could adversely impact our business, financial condition or operating results. The information about these risks should be considered carefully together with the other information contained in this Annual Report on Form 10-K. Additional risks not currently known to us or that we currently deem to be immaterial may also adversely affect our business, financial condition or results of operations in future periods.

Market Risks

Our business is significantly international in scope.

We have manufacturing facilities in North America, Europe and Asia. Sales outside of the United States (U.S.), including export sales from U.S. business locations, accounted for approximately 70% of our revenue in fiscal year 2017. Accordingly, our business is subject to the political, economic and other risks that are inherent in operating in foreign countries. These risks include, but are not limited to:

- exposure to the risk of currency value fluctuations, where payment for products is denominated in a currency other than U.S. dollars;

- variability in the U.S. dollar value of foreign currency-denominated assets, earnings and cash flows;

- difficulty enforcing agreements, including patent and trademarks, and collecting receivables through foreign legal systems;

- trade protection measures and import or export licensing requirements;

- tax rates in certain foreign countries that exceed those in the U.S. and the imposition of withholding requirements on foreign earnings;

- higher danger of terrorist activity, war or civil unrest compared to domestic operations;

- imposition of tariffs, exchange controls or other restrictions;

- difficulty in staffing and managing global operations;

- required compliance with a variety of foreign laws and regulations and U.S. laws and regulations, such as the Foreign Corrupt Practices Act applicable to our international operations, and significant compliance costs and penalties for failure to comply with any of these laws and regulations; and

- changes in general economic and political conditions in countries where we operate, particularly in emerging markets.

Volatility in the global economy could adversely affect results.

Long-term disruptions in the capital and credit markets would likely adversely affect our customers' operations and financing of both our international and U.S. customers and could therefore result in a decrease in orders and revenue.

In addition, during periods of economic uncertainty, our customers' spending patterns and financing availability could be negatively impacted, reducing demand for our products and services.

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Fluctuations in foreign currency exchange rates could affect our financial results.

Although our financial results are reported in U.S. dollars, a large portion of our sales and operating costs are realized in Euros, Japanese yen, Chinese yuan and other foreign currencies. Our profitability is affected by movements of the U.S. dollar against these currencies in which we generate revenues and incur expenses. To the extent that we are unable to match revenues received in foreign currencies with costs paid in the same currency, exchange rate fluctuations in any such currency could have an adverse effect on financial results. During times of a strengthening U.S. dollar, our reported sales and earnings from our international operations will be lower because the applicable local currency will translate into fewer U.S. dollars. Significant long-term fluctuations in relative currency values, in particular, a significant change in the relative values of the U.S. dollar, Euro, Japanese yen or Chinese yuan, could have an adverse effect on our results of operations and financial condition given that approximately 70% of our revenue has historically been derived from customers outside of the U.S. Additionally, there has been and may continue to be volatility in currency exchange rates as a result of the United Kingdom's referendum held on June 23, 2016 in which British voters approved the United Kingdom's withdrawal from the European Union, commonly referred to as Brexit. As further described in Item 7 of Part II of this Annual Report on Form 10-K, revenue for fiscal year 2017 was negatively impacted by currency translation.

Our business is subject to strong competition.

Our products are sold in competitive markets throughout the world. Competition is based on application knowledge, product features and design, brand recognition, reliability, technology, breadth of product offerings, price, delivery, customer relationships and after-market support. If we are not perceived as competitive in overall value as measured by these criteria, our customers would likely choose solutions offered by our competitors or developed internally.

Our business is subject to customer demand cycles.

For many of our products, orders are subject to customers' procurement cycles and their willingness and ability to invest in capital, especially in the cyclical automotive, aircraft and machine tool industries. Any event that adversely impacts those customers' new product development activities may reduce their demand for our products.

We may experience difficulty obtaining materials or components for our products, or the cost of materials or components may increase.

We purchase materials and components from third-party suppliers, some of whom may be competitors. Other materials and components may be provided by a limited number of suppliers or by sole sources and could only be replaced with difficulty or at significant added cost. Additionally, some materials or components may become scarce or difficult to obtain in the market or they may increase in price. This could adversely affect the lead time within which we receive the materials or components, and in turn affect our commitments to our customers, or could adversely affect the cost or quality of materials.

Our level of indebtedness and interest rate fluctuations on that indebtedness could adversely affect our business and results of operations and may require the use of our available cash resources to meet repayment obligations, which could reduce the cash available for other purposes.

We have a senior secured credit facility that provides for a \$120,000 revolving credit facility and a \$455,400 tranche B term loan facility, both of which require that we pay a variable interest rate on outstanding borrowings. The debt under the tranche B term loan facility amortizes in equal quarterly installments in an aggregate annual amount equal to 1.00% of the original principal amount and matures on July 5, 2023. As of September 30, 2017, we did not have any borrowings under the revolving credit facility; however, we may, at times, use debt under the revolving credit facility to purchase shares of our common stock, finance working capital needs or continue to finance the growth of the business through acquisitions.

Our level of indebtedness may place us at a competitive disadvantage to our competitors that are not as highly leveraged. Fluctuations in interest rates can increase borrowing costs. We hedge against a portion of the risk on the term facility by swapping the variable rate for a fixed rate. Increases in interest rates may directly impact the amount of interest we are required to pay and reduce earnings accordingly. In addition, developments in tax policy, such as the disallowance of tax deductions for interest paid on outstanding indebtedness, could have a material adverse effect on our results of operations and liquidity. Further, our senior secured credit facility and the indenture governing our tangible equity units contain customary affirmative and negative covenants and certain restrictions on operations that

could impose operating and financial limitations and restrictions on us, including restrictions on our ability to enter into particular transactions and to engage in other actions that we may believe are advisable or necessary for our business. The loans under our term facility are also subject to mandatory prepayments in certain circumstances and require a prepayment of a certain percentage of our excess cash flow beginning in fiscal year 2018. We anticipate a significant payment will be due in the first quarter of fiscal year 2018 based on fiscal year 2017 results. This excess cash flow payment, and future required prepayments, will reduce our cash available for other purposes and could impact our ability to reinvest in other areas of our business.

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Our outstanding 8.75% tangible equity units (TEUs) may adversely affect the market price of our common stock. The market price of our common stock may be influenced by the outstanding TEUs sold in our June 2016 public offering. For example, additional shares of our common stock are currently and will continue to be issuable upon settlement of the purchase contract component of the tangible equity units through expiration on July 1, 2019. The settlement rates for such purchase contracts are subject to certain anti-dilution and make-whole adjustments that could increase, potentially significantly, the number of shares of our common stock issuable upon such settlement. As a result, the market price of our common stock could become more volatile and could be depressed by the following factors:

- investors' anticipation of the sale into the market of a substantial number of additional shares of common stock received upon settlement of the purchase contract component of the tangible equity units;
- possible sales of our common stock by investors who view the tangible equity units as a more attractive means of equity participation in the Company than owning shares of our common stock; and
- hedging or arbitrage trading activities that may develop involving the tangible equity units, the purchase contracts and our common stock.

In addition, our debt obligations under the senior amortizing note component of the tangible equity units may further influence the market price of our common stock, including but not limited to our ability to make timely payments to holders of the notes.

As a result of the delayed filing of our Annual Report on Form 10-K for the period ended October 1, 2016 and our Quarterly Report on Form 10-Q for the period ended December 31, 2016 with the SEC, we are not currently eligible to use a registration statement on Form S-3 to register the offer and sale of securities, which may adversely affect our ability to raise future capital in a timely manner or complete acquisitions.

We are not currently eligible to register the offer and sale of our securities using a registration statement on Form S-3 and we will not become eligible until we have timely filed certain periodic reports required under the Exchange Act for 12 consecutive calendar months, which will not be met until February 9, 2018 at the earliest. There can be no assurance when we will meet this requirement, which depends in part upon our ability to file our periodic reports on a timely basis in the future. Should we wish to register the offer and sale of our securities to the public before we are eligible to do so using Form S-3, our transaction costs and the amount of time required to complete the transaction could increase, making it more difficult to execute any such transaction successfully and potentially having an adverse effect on our financial condition.

Operational Risks

We identified material weaknesses in our internal control over financial reporting in fiscal years 2016 and 2015 which were subsequently remediated. If additional material weaknesses or significant deficiencies in our internal control over financial reporting are identified in the future, or if we fail to maintain an effective system of internal control over financial reporting, we may not be able to accurately report our financial results or prevent fraud, which could adversely affect our stock price and negatively impact our results of operations.

We previously identified material weaknesses in our internal control over financial reporting in fiscal years 2016 and 2015, as discussed in Controls and Procedures included Item 9A of Part II of this Annual Report on Form 10-K and our Annual Report on Form 10-K for fiscal year 2016, respectively. These material weaknesses were remediated, and management concluded that its internal control over financial reporting was effective as of September 30, 2017.

Future testing by us conducted in connection with Section 404 of the Sarbanes-Oxley Act, or the subsequent testing by our independent registered public accounting firm, may identify deficiencies in our internal controls over financial reporting. Effective internal controls over financial reporting are necessary for us to provide reliable financial reports and, together with adequate disclosure controls and procedures, are designed to prevent fraud. Any failure to implement required new or improved controls or difficulties encountered in their implementation could cause us to fail to meet our reporting obligations. The existence of a material weakness could cause our consolidated financial results to contain material misstatements, require prospective or retrospective changes to our consolidated financial statements, lead to a loss of investor confidence and have a negative impact on the trading price of our common stock, cause us to incur unforeseen costs, subject us to investigations by the SEC or other regulatory authorities, damage our reputation or have other potentially material adverse consequences.

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We plan to reorganize the Test business structure, processes and operating systems, which may not deliver the results we require for growth of the business.

We continue to invest in our Test operating model and modify our business processes and systems. Given the growth in demand and sophistication of testing needs across the primary markets served, on January 5, 2017, we announced that we plan to divide Test into two separate business units, "Materials Test Systems" and "Vehicles and Structure Test Systems." We anticipate that the division of our Test segment will result in us having three operating segments once discrete financial information is made available to our Chief Operating Decision Maker. We will continue to report only the Test and Sensors segments until such time. We continue to evaluate the timing of such implementation.

When the planned Test business structure reorganization is complete, the focus of the "Materials Test Systems" business unit will be on providing test solutions to global customers involved in developing and manufacturing advanced materials that are essential to biomedical, energy, automotive and aerospace applications. The "Vehicles and Structures Test Systems" business unit will focus on providing test solutions to automotive, aerospace, infrastructure and energy markets worldwide. We plan to restructure the Test business to make it a more scalable business model in the markets that we currently serve. Successful implementation of these initiatives is critical to the growth of our business. The execution of the reorganization of the Test business structure may have limited success or no success at all and may be negatively impacted if we are unable to hire leadership and key personnel for each of the Test business units.

We may not realize the growth opportunities and cost synergies that are anticipated from our acquisition of PCB. The benefits that are expected to result from our July 5, 2016 acquisition of PCB, the largest acquisition in our history, will depend, in part, on our ability to realize the anticipated growth opportunities and cost synergies that result from the acquisition. Our success in realizing these growth opportunities and cost synergies, and the timing of this realization, depends on the successful integration of PCB. There is a significant degree of difficulty and management distraction inherent in the process of integrating an acquisition as sizable as PCB. The process of integrating operations could cause an interruption of, or loss of momentum in, our and PCB's activities. Members of our senior management may be required to devote considerable amounts of time to this integration process, which will decrease the time they will have to manage other aspects of the Company, service existing customers, attract new customers and develop new products or strategies. If senior management is not able to effectively manage the integration process, or if any significant business activities are interrupted as a result of the integration process, our business could suffer. There can be no assurance that we will successfully or cost-effectively integrate PCB. The failure to do so could have a material adverse effect on our business, financial condition or results of operations.

Even if we are able to integrate PCB successfully, this integration may not result in the realization of the full benefits of the growth opportunities and cost synergies that we currently expect from this integration, and we cannot guarantee that these benefits will be achieved within anticipated timeframes or at all. For example, we may not be able to eliminate duplicative costs. Moreover, we may incur substantial expenses in connection with the integration of PCB, and such expenses may have a material adverse effect on our business, financial condition or results of operations. While it is anticipated that certain expenses will be incurred to achieve cost synergies, such expenses are difficult to estimate accurately, and may exceed current estimates. Accordingly, the benefits from the acquisition may be offset by costs incurred related to, or delays in, integrating the businesses.

PCB may have liabilities that are not known, probable or estimable at this time and we may become subject to additional risks and uncertainties relating to PCB and its business.

Upon completion of the acquisition of PCB, PCB became our wholly owned subsidiary and, as a result, we became subject to all of its liabilities. There could be unasserted claims or assessments that we failed or were unable to discover or identify in the course of performing our due diligence investigation of PCB. In addition, there may be liabilities that are neither probable nor estimable at this time that may become probable or estimable in the future. Any such liabilities, individually or in the aggregate, could have a material adverse effect on our financial results and our ability to make an indemnity claim against the sellers of PCB will be limited after the release of the escrow, which is anticipated in early calendar 2018. We may learn additional information about PCB that adversely affects us, such as unknown, unasserted or contingent liabilities and issues relating to compliance with applicable laws.

In addition, we may become subject to additional risks associated with PCB and its business, which could have a material adverse effect on our business, financial condition, results of operations or cash flows. The integration process may be complex, costly and time-consuming, as PCB was not previously operating as a public company. The difficulties of integrating the businesses include, among others:

- failure to implement our business plan for the combined business;
- unanticipated issues in integrating equipment, logistics, information, communications and other systems;
- possible inconsistencies in standards, controls, contracts, procedures and policies;
- impacts of change in control provisions in contracts and agreements;

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- failure to retain key customers and suppliers;
- unanticipated changes in applicable laws and regulations;
- failure to recruit and retain key employees to operate the combined business;
- increased competition within the industries in which PCB operates;
- inherent operating risks in the business;
- unanticipated issues, expenses and liabilities;
- additional reporting requirements pursuant to applicable rules and regulations; and
- additional requirements relating to internal control over financial reporting.

Our business operations may be affected by government contracting risks.

Government business is important to us and is expected to increase in the future. Revenue from U.S. Government contracts varies by year. Such revenue as a percent of our total revenue was 4%, 3% and 3% for fiscal years 2017, 2016 and 2015, respectively.

We must comply with procurement laws and regulations relating to the formation, administration and performance of U.S. Government contracts. Failure to comply with these laws and regulations could lead to suspension or debarment from U.S. Government contracting or subcontracting and result in administrative, civil or criminal penalties. Failure to comply could also have a material adverse effect on our reputation, our ability to secure future U.S. Government contracts and export control licenses, and our results of operations or financial condition. These laws and regulations also create compliance risks and affect how we do business with federal agency clients. U.S. Government contracts, as well as contracts with certain foreign governments with which we do business, are also subject to modification or termination by the government, either for the convenience of the government or for default as a result of our failure to perform under the applicable contract. Further, any investigation relating to, or suspension or debarment from, U.S. Government contracting could have a material impact on our results of operations as, during the duration of any suspension or debarment, we would be prohibited or otherwise limited in our ability to enter into prime contracts or subcontracts with U.S. Government agencies, certain entities that receive U.S. Government funds or that are otherwise subject to the Federal Acquisition Regulations, and certain state government or commercial customers who decline to contract with suspended or debarred entities. A federal suspension could also impact our ability to obtain export control licenses which are materially important to our business.

We are subject to risks because we design and manufacture first-of-a-kind products.

We design and build systems that are unique and innovative and, in some cases, the first created to address complex and unresolved issues. The design, manufacture and support of these systems may involve higher than planned costs. If we are unable to meet our customers' expectations, our reputation and ability to further utilize our expertise will likely be damaged.

The backlog, sales, delivery and acceptance cycle for many of our products is irregular and may not develop as anticipated.

Many of our products have long sales, delivery and acceptance cycles. In addition, our backlog is subject to order cancellations and our sales arrangements typically do not include specific cancellation provisions. If an order is canceled, we typically would only be entitled to receive reimbursement from the customer for actual costs incurred under the arrangement plus a reasonable margin. Events may cause recognition of orders, backlog and results of operations to be irregular over shorter periods of time. These factors include the timing of individual large orders which may be impacted by interest rates, customer capital spending and product development cycles, design and manufacturing problems, capacity constraints, delays in product readiness, damage or delays in transit, problems in achieving technical performance requirements, and various customer-initiated delays. Any such delay or any cancellations may cause fluctuations in our reported periodic financial results and may cause our stated conversion to revenue to be inaccurate.

The business could be adversely affected by product liability and commercial litigation.

Our products or services may be claimed to cause or contribute to personal injury or property damage to our customers' facilities. Additionally, we are, at times, involved in commercial disputes with third parties, such as customers, vendors and others. The ensuing claims may arise singularly, in groups of related claims or in class actions

involving multiple claimants. Such claims and litigation are frequently expensive and time consuming to resolve and may result in substantial liability to us, and any liability and related costs and expenses may not be recoverable through insurance or other forms of reimbursement.

We may experience difficulties obtaining and retaining the services of skilled employees.

We rely on knowledgeable, experienced and skilled technical personnel, particularly engineers, sales management and service personnel, to design, assemble, sell and service our products. We may be unable to attract, retain and motivate a sufficient number of such people which could adversely affect our business. The inability to transfer knowledge and transition between roles within these teams could also adversely affect our business.

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We may fail to protect our intellectual property effectively or may infringe upon the intellectual property of others. We have developed significant proprietary technology and other rights that are used in our businesses. We rely on trade secret, copyright, trademark and patent laws and contractual provisions to protect our intellectual property. While we take enforcement of these rights seriously, other companies such as competitors or others in markets in which we do not participate may attempt to copy or use our intellectual property for their own benefit. In addition, the intellectual property of others also has an impact on our ability to offer some of our products and services for specific uses or at competitive prices. Competitors' patents or other intellectual property may limit our ability to offer products and services to our customers. Any infringement on the intellectual property rights of others could result in litigation and adversely affect our ability to continue to provide, or could increase the cost of providing, our products and services.

Intellectual property litigation can be very costly and could result in substantial expense and diversion of our resources, both of which could adversely affect our businesses, financial condition and results. In addition, there may be no effective legal recourse against infringement of our intellectual property by third parties, whether due to limitations on enforcement of rights in foreign jurisdictions or as a result of other factors.

If we are unable to protect our information systems against misappropriation of data or breaches of security, our business operations and financial results could be adversely impacted. Evolving regulations and legal obligations related to data privacy, data protection and information security and our actual or perceived failure to comply with such obligations could have an adverse effect on our business.

Information security risks have generally increased in recent years because of the proliferation of new technologies and the increased sophistication and activities of cyber attacks. Although we strive to have appropriate security controls in place, prevention of security breaches cannot be assured, particularly as cyber threats continue to evolve. We may be required to expend additional resources to continue to enhance our security measures or to investigate and remediate any security vulnerabilities. The consequences of these risks could adversely impact our business operations and financial results.

In addition, our handling of certain data is subject to a variety of laws and regulations, which have been adopted by various federal, state and foreign governments to regulate the collection, distribution, use and storage of personal information of individuals. Several foreign countries in which we conduct business, including the European Economic Area (EEA), currently have in place, or have recently proposed, laws or regulations concerning privacy, data protection and information security, which are more restrictive than those imposed in the United States. Some of these laws are in their early stages and we cannot yet determine the impact these revised laws and regulations, if implemented, may have on our business. However, any failure or perceived failure by us to comply with these privacy laws, regulations, policies or obligations or any security incident that results in the unauthorized release or transfer of personally identifiable information or other customer data in our possession, could result in government enforcement actions, litigation, fines and penalties and/or adverse publicity, all of which could have an adverse effect on our reputation and business. For example, the new EEA-wide General Data Protection Regulation will become effective in our fiscal year 2018 and will replace the data protection laws of each EEA member state. If our privacy or data security measures fail to comply with applicable current or future laws and regulations, we may be subject to litigation, regulatory investigations and enforcement notices requiring us to change the way we use personal data. Government regulation imposes costs and other constraints.

Our manufacturing operations and past and present ownership and operations of real property are subject to extensive and changing federal, state, local and foreign laws and regulations, including laws and regulations pertaining to health and safety matters, as well as the handling or discharge of hazardous materials into the environment. We expect to continue to incur costs to comply with these laws and may incur penalties for any failure to do so. We may also be identified as a responsible party and be subject to liability relating to any investigation and cleanup of properties used for industrial purposes or the generation or disposal of hazardous substances. In addition, some of our products contain hazardous substances and are subject to requirements that regulate their content, such as the European Union's Restriction of Hazardous Substances Directive and analogous regulations elsewhere.

Some of our export sales require approval from the U.S. government. Changes in political relations between the U.S. and foreign countries and/or specific potential customers for which export licenses may be required, may cause a

license application to be delayed or denied, or a previously issued license withdrawn, rendering us unable to complete a sale or vulnerable to competitors who do not operate under such restrictions. Capital expenditures for environmental compliance were immaterial in fiscal year 2017, and we do not expect such expenditures will be material in fiscal year 2018; however, the factors described above may cause our estimates to differ from our expectations.

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We have been required to conduct a good faith reasonable country of origin analysis on our use of conflict minerals, which has imposed and may impose additional costs on us and could raise reputational and other risks.

The SEC has promulgated final rules in connection with the Dodd-Frank Wall Street Reform and Consumer Protection Act regarding disclosure of the use of certain minerals, known as conflict minerals, mined from the Democratic Republic of the Congo and adjoining countries. While there is pending litigation challenging these rules, we have incurred and will continue to incur costs associated with complying with these disclosure requirements, including costs to determine the source of any conflict minerals used in our products. We have adopted a policy relating to conflict minerals, incorporating the standards set forth in the Organisation for Economic Co-operation and Development Due Diligence Guidance, which affects the sourcing, supply, and pricing of materials used in our products. As we continue our due diligence, we may face reputational challenges if we are unable to verify the origins for all metals used in our products through the procedures we have and may continue to implement. We may also encounter challenges in our efforts to satisfy customers that may require all of the components of products purchased to be certified as conflict-free. If we are not able to meet customer requirements, customers may choose to disqualify us as a supplier.

We may not achieve our growth plans for the expansion of the business.

In addition to market penetration, our long-term success depends on our ability to expand our business through (a) new product development and service offerings; (b) mergers and acquisitions; and/or (c) geographic expansion. New product development and service offerings require that we maintain our ability to improve existing products, continue to bring innovative products and services to market in a timely fashion and adapt products and services to the needs and standards of current and potential customers. Our products and services may become less competitive or eclipsed by technologies to which we do not have access or which render our solutions obsolete.

Mergers and acquisitions will be accompanied by risks that may include:

- suitable candidates may not exist or may not be available at acceptable costs;
- failure to achieve the financial and strategic goals for the acquired and combined businesses;
- difficulty integrating the operations and personnel of the acquired businesses;
- disruption of ongoing business and distraction of management from the ongoing business;
- dilution of existing shareholders and earnings per share;
- unanticipated, undisclosed or inaccurately assessed liabilities, legal risks and costs; and
- difficulties retaining the key vendors, customers or employees of the acquired business.

Acquisitions of businesses having a significant presence outside the U.S. will increase our exposure to the risks of international operations discussed in the operational risk factors.

Geographic expansion may be outside of the U.S., and hence will be disproportionately subject to the risks of international operations discussed in the operational risk factors.

We may be required to recognize impairment charges for goodwill and long-lived assets.

As of September 30, 2017, the net carrying value of goodwill and long-lived assets (property and equipment, net and intangible assets, net) totaled \$724,771. We periodically assess the value of these assets for impairment in accordance with U.S. generally accepted accounting principles (GAAP). Significant negative industry or economic trends, disruptions to our businesses, significant unexpected or planned changes in use of the assets, divestitures and market capitalization declines may result in impairments to goodwill and other long-lived assets. Future impairment charges could significantly affect reported financial results.

We cannot guarantee that we will not record a material goodwill impairment charge in the future for the PCB reporting unit. Changes in our assumptions or estimates could materially affect the estimation of fair value of the PCB reporting unit and, therefore, could reduce the excess of fair value over the carrying value of the PCB reporting unit entirely resulting in goodwill impairment. Events and conditions that could negatively impact the estimated fair value include a sustained decline in our stock price, inability to realize the anticipated sales growth opportunities as a result of the PCB acquisition, unsuccessful integration of PCB, lack of development of new products and a decrease in projected profitability.

Our investigation during fiscal year 2017 relating to our China operations and our failure to maintain effective processes and controls relative to adherence to our Code of Conduct by employees involved with our business in

China during fiscal year 2016 may have an adverse effect on our business, financial condition or results of operations. In the first quarter of fiscal year 2017, we announced the initiation of an internal investigation into apparent violations of our Code of Conduct involving certain employees in our China operations, including association by those employees with an independent business that may compete with us in certain markets. As the apparent violations implicated members of leadership in our China operations, the Audit Committee engaged independent external counsel to conduct an investigation of

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our China operations in order to assess the impact of these apparent violations on the Company's financial input from China and to review for potential violations the Company's Code of Conduct, anticorruption compliance policies and procedures and related U.S. law. Independent forensic accountants, acting at the direction of external counsel, performed testing of certain transactions related to our China operations as part of this investigation. As of September 30, 2017, investigative work was completed and confirmed that the former China Test leader and several other former senior managers associated with our China Test operations violated the conflict of interest provisions of our Code of Conduct in connection with their involvement with an independent business that competed with the Company's low-end products in the China market. This inconsistent adherence to our Code of Conduct could have resulted in management override of internal control over financial reporting.

Our Code of Conduct and other internal policies prohibit us and our employees from engaging in unethical business practices. However, there can be no assurance that all of our employees or agents will refrain from acting in violation of such policies and procedures or that our processes and controls will be sufficient to detect any such violations. The investigation into potential violations of these policies, or even allegations of such violations, and evaluation of our internal controls, could disrupt our operations, involve significant management distraction, and lead to significant costs and expenses, including legal and accounting fees and such expenses may have a material adverse effect on our financial results. Further, if our employees or agents violate such policies and procedures, such actions could result in management override of internal controls over financial reporting. If we, or our employees or agents acting on our behalf, are found to have engaged in practices that violate these policies and/or applicable law, we could suffer severe fines and penalties, repayment of ill-gotten gains, injunctions on future conduct, securities litigation, material weaknesses in our financial reporting and other consequences that may have a material adverse effect on our business, financial condition or results of operations, including but not limited to our operations in China. In addition, our reputation, sales activities or stock price could be adversely affected if we become the subject of any negative publicity related to actual or potential violations of applicable laws and regulations.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

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ITEM 2. PROPERTIES

Shown below is a breakdown of the approximate square footage of our primary owned and leased facilities as of September 30, 2017. We consider our current facilities adequate to support our operations during fiscal year 2018.

Owned Property

Location	Use of Facility	Approximate Square Footage
Eden Prairie, Minnesota (U.S.)	Corporate headquarters and primary Test manufacturing and research	420,000
Depew, New York (U.S.)	Sensors manufacturing	47,000
	Sensors manufacturing, sales and service administration	91,000
	Sensors manufacturing	6,000
Cary, North Carolina (U.S.)	Sensors manufacturing, research and sales and service administration	65,000
Provo, Utah (U.S.)	Sensors sales and service administration	13,000
	Sensors manufacturing	12,000
Farmington Hills, Michigan (U.S.)	Sensors manufacturing, sales and service administration	16,000
Lancaster, New York (U.S.)	Sensors sales and service administration	1,000
Berlin, Germany	Test manufacturing and sales and service administration	72,000
Shanghai, China	Test manufacturing, sales and service administration	129,000
Shenzhen, China	Test manufacturing, research, sales and service administration	75,000
Total		947,000

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Leased Property

Location	Use of Facility	Lease Expires	Approximate Square Footage
Swartz Creek, Michigan (U.S.)	Test manufacturing and research	2022	8,000
Latham, New York (U.S.)	Sensors manufacturing, sales and service administration	2020	5,000
Cary, North Carolina (U.S.)	Sensors manufacturing	2020	8,000
Halifax, North Carolina (U.S.)	Sensors manufacturing, sales and service administration	2018	51,000
Lexington, North Carolina (U.S.)	Test manufacturing	2019	12,000
Cincinnati, Ohio (U.S.)	Sensors manufacturing, warehouse, sales and service administration	2018	16,000
	Sensors warehouse, sales and service administration	2018	9,000
San Clemente, California (U.S.)	Sensors warehouse, sales and service administration	2018	7,000
Beijing, China	Test sales and service administration	2018	6,000
	Sensors sales and service administration	2018	5,000
Shanghai, China	Test sales, service administration and assembly	2018	13,000
	Test sales and service administration	2018	7,000
	Test land under Shanghai facility	2056	161,000
Shenzhen, China	Test manufacturing and warehouse	2019	13,000
	Test manufacturing and warehouse	2019	16,000
	Test land under Shenzhen facility	2047	31,000
Creteil, France	Test sales and service administration	2018	16,000
Huckelhoven, Germany	Sensors sales and service administration	2021	12,000
Ludenscheid, Germany	Sensors manufacturing, research and sales and service administration	2018	48,000
	Sensors sales and service administration	2018	10,000
	Sensors manufacturing	2018	10,000
Tokyo, Japan	Test sales and service administration	2018	7,000
	Sensors sales and service administration	2020	5,000
Sungnam, South Korea	Test sales, service administration and assembly	2019	17,000
Guildford, U.K.	Test sales, service and manufacturing	2025	8,000
Berlin, Germany	Test land under Berlin facility	2052	97,000
Other Locations ¹	Test and Sensors other sales and service administration		85,000
Total			683,000

We also lease space in the U.S., Europe and Asia for Test and Sensors sales and service administration, including locations in China, France, Germany, India, Italy, Japan, Russia, Spain, Sweden, Canada and the United Kingdom. Neither the amount of leased space nor the rental obligations in these locations is significant individually or in aggregate.

Additional information relative to lease obligations is included in Management's Discussion and Analysis of Financial Condition and Results of Operations included in Item 7 of Part II of this Annual Report on Form 10-K.

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ITEM 3. LEGAL PROCEEDINGS

Discussion of legal matters is incorporated by reference from Note 14, "Commitments and Contingencies," included in Item 8 of Part II of this Annual Report on Form 10-K and should be considered an integral part of Item 3 of Part I of this Annual Report on Form 10-K.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

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PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Shares of our common stock are traded on the NASDAQ Global Select MarketSM under the trading symbol MTSC. The table below sets forth the quarterly high and low common stock prices for each quarter in fiscal years 2017 and 2016 as quoted on NASDAQ OnlineSM.

(per share data)	Market Price	
	High	Low
Fiscal Year 2017		
First Quarter	\$57.70	\$41.53
Second Quarter	59.00	51.75
Third Quarter	55.50	44.65
Fourth Quarter	54.35	45.60
Fiscal Year 2016		
First Quarter	68.28	55.59
Second Quarter	62.60	48.64
Third Quarter	61.88	41.68
Fourth Quarter	50.60	42.59

The number of record holders of our common stock, par value \$0.25 per share, as of November 22, 2017 was 675. This number does not reflect shareholders who hold their shares in the name of broker-dealers or other nominees.

Issuer Purchases of Equity Securities

(in thousands, except per share data)	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased As Part of Publicly Announced Plans or Programs	Maximum Number of Shares that May Yet be Purchased As Part of Publicly Announced Plans or Programs
July 2, 2017 - August 5, 2017	—	\$	—	438
August 6, 2017 - September 2, 2017	—	\$	—	438
September 3, 2017 - September 30, 2017	—	\$	—	438

We purchase common stock from time-to-time to mitigate dilution related to new shares issued as equity for employee compensation such as stock options, restricted stock, restricted stock units and employee stock purchase plan activity, as well as to return capital to shareholders not immediately required to fund ongoing operations.

Share Purchase Plan

Our Board of Directors approved, and on February 11, 2011 announced, a 2,000 share purchase authorization.

Authority over pricing and timing under this authorization has been delegated to management. The share purchase authorization has no expiration date. We made no purchases during the fourth quarter of fiscal year 2017. As of September 30, 2017, there were 438 shares available for purchase under the existing authorization.

Capped Calls

In connection with the pricing of the TEUs sold in our public offering in fiscal year 2016, we purchased capped calls from third party banking institutions (Capped Calls) for \$7,935. During fiscal year 2017, we settled approximately 10% of the Capped Calls, which resulted in us receiving and retiring 12 shares of our common stock. As of September 30, 2017 the range of shares of our common stock to be received under the outstanding Capped Calls was 0 to 293

shares, subject to market conditions. See Note 9 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K.

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Dividends

Our dividend policy is to maintain a payout ratio that allows dividends to increase in conjunction with the long-term growth of earnings per share, while sustaining dividends through economic cycles. Our dividend practice is to target, over time, a payout ratio of approximately 25% of net earnings per share. We have historically paid dividends to holders of our common stock on a quarterly basis. The declaration and payment of future dividends will depend on many factors, including, but not limited to, our earnings, financial condition, debt repayment obligations, business development needs and regulatory considerations and are at the discretion of our Board of Directors. During fiscal years 2017 and 2016, we declared quarterly cash dividends of \$0.30 per share to holders of our common stock, resulting in a payout ratio of 92% and 71% of net earnings per share, respectively. Our cash outlay for dividends paid was higher in fiscal year 2017 compared to fiscal year 2016 due to timing of payments in the 53rd week of fiscal year 2015.

Debt Covenants

Our credit agreement includes certain customary affirmative and negative covenants, including, among others, restrictions on our ability to incur debt, create liens, dispose of assets, make investments, loans, advances, guarantees and acquisitions, enter into transactions with affiliates, and enter into any restrictive agreements and customary events of default (including payment defaults, covenant defaults, change of control defaults and bankruptcy defaults). The credit agreement also contains financial covenants, including the ratio of consolidated total indebtedness to adjusted consolidated earnings before income, taxes, depreciation and amortization (Adjusted EBITDA), as defined in the credit agreement, as well as the ratio of Adjusted EBITDA to consolidated interest expense. As of September 30, 2017 and October 1, 2016, we were in compliance with these financial covenants. See Note 5 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K for further information on financing arrangements.

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Shareholder Performance Graph

The following graph compares the cumulative total shareholder return of our common stock over the last five fiscal years with the cumulative total shareholder return of the Russell 2000 Index and a peer group of companies in the Laboratory Apparatus and Analytical, Optical, Measuring and Controlling Instruments Standard Industrial Code (SIC Code 3820 Peer Group) that are traded on the NASDAQ, NYSE and NYSE American exchanges. The graph assumes that \$100 (in actual dollars) was invested at market close on September 29, 2012 in our common stock, the Russell 2000 Index and the SIC Code 3820 Peer Group and that all dividends were reinvested. The graph is not necessarily indicative of future investment performance.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN*

Among MTS Systems Corporation, the Russell 2000 Index, and SIC Code 3820 Peer Group

* \$100 invested on 9/29/2012 in stock or index, including reinvestment of dividends.

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	Fiscal Year					
(in actual dollars)	2012 ¹	2013 ¹	2014 ¹	2015	2016	2017
MTS Systems Corporation	\$100.00	\$121.47	\$133.51	\$114.15	\$93.17	\$110.63
Russell 2000 Index	100.00	130.10	137.32	138.54	158.02	190.80
SIC Code 3820 Peer Group ²	100.00	135.70	155.00	149.18	187.69	238.32

¹ Fiscal year 2014 refers to the fiscal year ended September 27, 2014, fiscal year 2013 refers to the fiscal year ended September 28, 2013 and fiscal year 2012 refers to the fiscal year ended September 29, 2012.

² Modified to remove non-exchange traded companies.

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ITEM 6. SELECTED FINANCIAL DATA

The following selected financial data should be read in conjunction with Item 7 and Item 8 of Part II of this Annual Report on Form 10-K.

(in thousands, except per share data)	Fiscal Year ¹					
	2017	2016	2015	2014	2013	
Operating Results						
Revenue	\$787,955	\$650,147	\$563,934	\$564,328	\$569,439	
Gross profit	302,278	231,404	219,613	223,643	231,939	
Gross margin %	38.4	% 35.6	% 38.9	% 39.6	% 40.7	%
Research and development expense	\$34,999	\$25,336	\$23,705	\$23,844	\$22,812	
Research and development expense as a % of revenue	4.4	% 3.9	% 4.2	% 4.2	% 4.0	%
Effective income tax rate	(9.0)	)% 18.0	% 23.2	% 28.1	% 27.1	%
Net income	\$25,084	\$27,494	\$45,462	\$42,009	\$57,806	
Net income as a % of revenue	3.2	% 4.2	% 8.1	% 7.4	% 10.2	%
Earnings per share						
Basic	\$1.32	\$1.72	\$3.03	\$2.76	\$3.69	
Diluted	\$1.31	\$1.70	\$3.00	\$2.73	\$3.64	
Weighted average shares outstanding²						
Basic	19,040	16,027	14,984	15,218	15,664	
Diluted	19,137	16,179	15,142	15,397	15,861	
Depreciation and amortization	35,523	24,077	21,106	19,279	16,589	
Financial Position						
Total assets	\$1,189,692	\$1,188,020	\$460,831	\$487,408	\$451,277	
Interest-bearing debt ³	474,309	484,985	21,183	60,000	35,000	
Total shareholders' equity	428,777	405,260	258,142	258,127	256,537	
Interest-bearing debt as a % of shareholders' equity	110.6	% 119.7	% 8.2	% 23.2	% 13.6	%
Return on equity ⁴	6.2	% 10.7	% 17.6	% 16.4	% 25.5	%
Return on invested capital ⁵	7.3	% 8.6	% 15.5	% 15.4	% 22.5	%
Other Statistics						
Backlog of orders at year-end	\$360,016	\$370,523	\$353,013	\$326,473	\$290,151	
Dividends declared per share	1.20	1.20	1.20	1.20	1.20	
Capital Expenditures	17,798	20,806	18,445	20,038	29,690	

¹ Fiscal years 2017, 2016, 2015, 2014 and 2013 include 52, 52, 53, 52 and 52 weeks, respectively.

² Assumes the conversion of potential common shares using the treasury stock method.

³ Interest-bearing debt consists of long-term debt for fiscal years 2017 and 2016 and short-term borrowings for fiscal years 2015, 2014 and 2013.

⁴ Calculated by dividing net income by beginning shareholders' equity.

⁵ The measure Return on Invested Capital (ROIC) is not a measure of performance presented in accordance with GAAP. ROIC is calculated by dividing adjusted net income by average invested capital. Adjusted net income is calculated by excluding after-tax interest expense from reported net income. In addition, adjusted net income also excludes acquisition-related expenses, net of tax; acquisition integration expense, net of tax; acquisition inventory fair value adjustment, net of tax; restructuring expense, net of tax; and China investigation expense, net of tax. Average invested capital is defined as the aggregate of average interest-bearing debt and average shareholders' equity and is calculated as the sum of current and prior year ending amounts divided by two. Because the ratio is not prescribed or authorized by GAAP, the ROIC percentage is a non-GAAP financial measure. We believe ROIC is useful to investors as a measure of operating performance and the effectiveness of the use of capital in our operations. We use ROIC as a measure to monitor and evaluate operating performance relative to our invested

capital. This measure should not be construed as an alternative to, or substitute for, return on equity or any other measure determined in accordance with GAAP.

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Presented below is the reconciliation of ROIC to average invested capital, the nearest GAAP measure, and a reconciliation of each non-GAAP financial measure used to its nearest GAAP measure:

	Fiscal Year					
(in thousands)	2017	2016	2015	2014	2013	
Net income	\$25,084	\$27,494	\$45,462	\$42,009	\$57,806	
Acquisition-related expenses, net of tax	(814)	7,322	—	—	—	
Acquisition integration expense, net of tax	2,659	2,049	—	—	—	
Acquisition inventory fair value adjustment, net of tax	5,909	5,692	—	—	—	
Restructuring expense, net of tax	2,980	1,465	—	4,376	—	
China investigation expense, net of tax	6,749	—	—	—	—	
Interest expense, net of tax	23,133	6,065	767	637	372	
Adjusted net income*	\$65,700	\$50,087	\$46,229	\$47,022	\$58,178	
Total beginning shareholders' equity	\$405,260	\$258,142	\$258,127	\$256,537	\$226,719	
Total ending shareholders' equity	428,777	405,260	258,142	258,127	256,537	
Total beginning interest-bearing debt	484,985	21,183	60,000	35,000	—	
Total ending interest-bearing debt	474,309	484,985	21,183	60,000	35,000	
Sum of invested capital	\$1,793,331	\$1,169,570	\$597,452	\$609,664	\$518,256	
Average invested capital*	\$896,666	\$584,785	\$298,726	\$304,832	\$259,128	
Return on invested capital*	7.3	% 8.6	% 15.5	% 15.4	% 22.5	%

*Denotes non-GAAP financial measures.

Presented below is a reconciliation of adjusted net income to net income, which reconciles the tax impact of the non-GAAP financial measure of adjusted net income presented in the table above.

	Fiscal Year								
	2017			2016			2015		
(in thousands)	Pre-Tax	Tax	Net	Pre-Tax	Tax	Net	Pre-Tax	Tax	Net
Net income	\$23,011	\$(2,073)	\$25,084	\$33,512	\$6,018	\$27,494	\$59,172	\$13,710	\$45,462
Acquisition-related expenses ^a	—	814	(814)	10,170	2,848	7,322	—	—	—
Acquisition integration expense ^a	3,577	918	2,659	2,846	797	2,049	—	—	—
Acquisition inventory fair value adjustment ^a	7,975	2,066	5,909	7,916	2,224	5,692	—	—	—
Restructuring expense ⁷	4,079	1,099	2,980	2,165	700	1,465	—	—	—
China investigation expense ^a	9,209	2,460	6,749	—	—	—	—	—	—
Interest expense ^a	31,218	8,085	23,133	8,424	2,359	6,065	1,204	437	767
Adjusted net income*	\$79,069	\$13,369	\$65,700	\$65,033	\$14,946	\$50,087	\$60,376	\$14,147	\$46,229

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	Fiscal Year					
	2014			2013		
(in thousands)	Pre-Tax	Tax	Net	Pre-Tax	Tax	Net
Net income	\$58,443	\$16,434	\$42,009	\$79,254	\$21,448	\$57,806
Restructuring expense [†]	6,336	1,960	4,376	—	—	—
Interest expense ^a	1,003	366	637	591	219	372
Adjusted net income [*]	\$65,782	\$18,760	\$47,022	\$79,845	\$21,667	\$58,178

In determining the tax impact of acquisition-related expenses, acquisition integration expense, acquisition inventory fair value adjustment, China investigation expense and interest expense, we applied a U.S. effective income tax rate before discrete items.

[†] In determining the tax impact of restructuring expenses, we applied the statutory rate in effect for each jurisdiction where restructuring expenses were incurred.

^{*} Denotes non-GAAP financial measures.

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ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) is designed to provide a reader of our financial statements with a narrative from the perspective of management on our financial condition, results of operations, liquidity and certain other factors that may affect our future results. Our MD&A is presented in nine sections:

Overview

Financial Results

Cash Flow Comparison

Liquidity and Capital Resources

Off-balance Sheet Arrangements

Critical Accounting Policies

Recently Issued Accounting Pronouncements

Quarterly Financial Information

Forward-looking Statements

Our MD&A should be read in conjunction with the Consolidated Financial Statements and related Notes included in Item 8 of Part II of this Annual Report on Form 10-K. All dollar amounts are in thousands unless otherwise noted.

Overview

MTS Systems Corporation is a leading global supplier of high performance test systems and sensors. Our testing hardware and software solutions help customers accelerate and improve design, development and manufacturing processes and are used for determining the mechanical behavior of materials, products and structures. Our high performance sensors provide controls for a variety of applications measuring acceleration, position, vibration, motion, pressure, force and sound.

Our goal is to sustain profitable enterprise growth, consistently generate strong cash flow and deliver a strong return on invested capital to our shareholders by leveraging our leadership position in the research and development and industrial global end markets for high-performance test systems and sensors. Our desire is to be the innovation leader in creating test and measurement solutions and to provide total customer satisfaction. We believe we can create value for our customers by helping to enhance the precision, improve the reliability and create superior safety for their products, while reducing the delivery time to market for their products. Our competitive advantages include our proprietary technology and advanced application expertise, our expansive global footprint with long-term customer relationships, our large installed base of testing equipment and our expanded presence in the rapidly growing sensors market. We believe these competitive advantages position us well in both the test and sensors markets to deliver profitable growth in the years ahead.

We are working toward our goals of sustained five to seven percent growth in annual revenue; three to four points of expanded earnings before interest, taxes, depreciation and amortization (EBITDA); and mid-teens for return on invested capital (ROIC). We believe the growth in our end markets, combined with four primary opportunities we are currently pursuing, will support these goals:

- Realize growth within the rapidly expanding Sensors market through an increase in our global market share and new product development;

- Expand Test services offerings into our large installed base of Test equipment;

- Capitalize on growth opportunities in the Test materials sector spurred by new manufacturing processes, focus on light-weight materials in aerospace and ground vehicle markets, and trends in energy exploration; and

- Adapt our industry-leading ground vehicle testing applications to align with emerging trends in vehicle electrification, autonomous vehicles, and simulation.

We believe that our business model supports our growth objectives, provided that we continue to move aggressively to build our infrastructure, expand our offerings and execute on opportunities with our key customers around the world. In order to accelerate our revenue growth over the next five years, investments in infrastructure, sales support and field service capacity and capability are essential.

Fiscal Year

We have a 5-4-4 week, quarterly accounting cycle with the fiscal year ending on the Saturday closest to September 30. Fiscal years 2017, 2016 and 2015 ended September 30, 2017, October 1, 2016 and October 3, 2015, respectively. Fiscal years 2017, 2016 and 2015 include 52, 52 and 53 weeks, respectively.

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Debt Repricing

In the fourth quarter of fiscal year 2017, we completed the repricing of our \$455,400 tranche B term loan facility to reduce the applicable rate by 100 basis points. We also repriced our revolving credit facility of up to \$120,000 to reduce the applicable rate by 100 basis points and make certain reductions to the commitment fee rates. Currently, there are no borrowings against the revolving credit facility. See Note 5 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K.

Conversion of 8.75% Tangible Equity Units (TEUs)

During the third quarter of fiscal year 2016, we issued 1,150 TEUs in a registered public offering primarily to finance the acquisition of PCB. The equity component of our TEUs will automatically settle upon expiration on July 1, 2019, unless converted earlier at the election of the holder. During fiscal year 2017, holders of our TEUs elected to early convert the equity component on 473 of our outstanding TEUs at the minimum conversion rate of 1.9841 which resulted in the issuance of 939 shares of our common stock. See Note 9 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K.

Settlement of Capped Calls

In connection with the pricing of our TEUs sold in our public offering in fiscal year 2016, we purchased capped calls from third party banking institutions (Capped Calls) for \$7,935. During fiscal year 2017, we settled approximately 10% of the Capped Calls, which resulted in us receiving and retiring 12 shares of our common stock. As of September 30, 2017, the range of shares of our common stock to be received under the outstanding Capped Calls was 0 to 293 shares, subject to market conditions. See Note 9 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K.

Restructuring Initiatives

In fiscal year 2017, we initiated a series of Test workforce reductions and facility closures intended to increase organizational effectiveness, gain manufacturing efficiencies and provide cost savings that can be reinvested in our growth initiatives. As a result, during the fourth quarter of fiscal year 2017, we recorded \$2,899 of pre-tax severance and related expense and \$23 of pre-tax facility closure costs.

During the fourth quarter of fiscal year 2016, we initiated plans to reduce costs in Sensors by closing our Machida, Japan manufacturing facility in the third quarter of fiscal year 2017. We incurred severance and related pre-tax expense of \$1,036 in fiscal year 2017 related to this action. During the fourth quarter of fiscal year 2017, in an effort to further reduce costs and create economic efficiencies, we initiated plans to close our Machida, Japan sales office in the second quarter of fiscal year 2018. We incurred additional severance and related pre-tax expense of \$121 in fiscal year 2017 related to this action.

See Note 12 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K.

Foreign Currency

Approximately 70% of our revenue has historically been derived from customers outside of the U.S. Our financial results are principally exposed to changes in exchange rates between the U.S. dollar and the Euro, the Japanese yen and the Chinese yuan. A change in foreign exchange rates could positively or negatively affect our reported financial results. The discussion below quantifies the impact of foreign currency translation on our financial results for the periods discussed.

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Financial Results

Fiscal Year 2017 Compared to Fiscal Year 2016

Total Company

Results of Operations

The following table compares results of operations in fiscal years 2017 and 2016, separately identifying the estimated impact of currency translation, the acquisition of PCB for the first three quarters of fiscal year 2017 for comparability, and restructuring expenses incurred in fiscal year 2017.

(in thousands)	2017	Estimated				2016
		Business Change	Acquisition / Restructuring 1	Currency Translation		
Revenue	\$787,955	\$11,926	\$ 129,197	\$ (3,315)		\$650,147
Cost of sales	485,677	(6,722)	76,786	(3,130)		418,743
Gross profit	302,278	18,648	52,411	(185)		231,404
Gross margin	38.4	%				35.6 %
Operating expenses						
Selling and marketing	124,912	926	29,133	(139)		94,992
General and administrative	87,539	(2,356)	20,969	(387)		69,313
Research and development	34,999	2,482	7,192	(11)		25,336
Total operating expenses	247,450	1,052	57,294	(537)		189,641
Income from operations	\$54,828	\$17,596	\$ (4,883)	\$ 352		\$41,763

The Acquisition / Restructuring column includes revenues and costs from the acquisition of PCB for the first three quarters of fiscal year 2017, including the fair value adjustment to acquired inventory of \$7,975, costs incurred as part of the acquisition of PCB, and restructuring expenses incurred in fiscal year 2017. The first three quarters of fiscal year 2016 did not include PCB results since the acquisition closed in the fourth quarter of fiscal year 2016; therefore, the estimated impact of PCB for the first three quarters of fiscal year 2017 is separately identified herein for comparability.

Revenue

(in thousands)	2017	2016	Increased / (Decreased)	
			\$	%
Revenue	\$787,955	\$650,147	\$137,808	21.2%

The increase in revenue of 21.2% was driven by the PCB acquisition and overall growth in our Sensors business, partially offset by a decrease in Test primarily due to the unfavorable impact of currency translation. Test revenue decreased \$8,178 or 1.6% primarily driven by lower orders in the last half of fiscal year 2016 and the first half of fiscal year 2017. Sensors revenue increased \$145,986 or 105.9% primarily driven by the PCB acquisition and overall growth in our Sensors business. Excluding the impact of currency translation and the contribution of PCB for the first three quarters of fiscal year 2017, revenue increased 1.8%.

Revenue by geography was as follows:

(in thousands)	2017	2016	Increased / (Decreased)	
			\$	%
Americas	\$278,776	\$185,883	\$92,893	50.0%
Europe	192,491	163,944	28,547	17.4%
Asia	316,688	300,320	16,368	5.5 %
Total Revenue	\$787,955	\$650,147	\$137,808	21.2%

Although selective product price changes were implemented during each of these fiscal years, the overall impact of pricing changes did not have a material effect on revenue.

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Gross Profit

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Gross profit	\$302,278	\$231,404	\$70,874	30.6%
Gross margin	38.4	% 35.6	% 2.8	ppts

Gross profit increased 30.6% primarily due to the gross profit contribution from the PCB acquisition, higher revenue volume in Sensors, and a continued focus on Test project execution, partially offset by reduced Test revenue volume. Gross margin rate increased 2.8 percentage points primarily due to the gross profit contribution from the PCB acquisition, the fair value adjustment on the acquired inventory in the fourth quarter of the prior year of \$7,916, and a continued focus on Test project execution, partially offset by a \$7,975 fair value adjustment on acquired inventory recognized in the first quarter of fiscal year 2017, nonrecurring restructuring costs incurred in the current year of \$3,140, and higher compensation expenses. Excluding the impact of currency translation, the contribution of PCB for the first three quarters of fiscal year 2017, nonrecurring restructuring costs incurred in both fiscal years, and fair value adjustment on acquired inventory recorded in the fourth quarter of the prior year, gross profit increased 3.9% and the gross margin rate increased 0.8 percentage points.

Selling and Marketing Expense

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Selling and marketing	\$124,912	\$94,992	\$29,920	31.5%
% of Revenue	15.9	% 14.6	%	

Selling and marketing expenses increased 31.5% primarily due to the addition of PCB expenses, higher commission and compensation expenses, and China investigation expenses. Excluding the impact of currency translation, the contribution of PCB for the first three quarters of fiscal year 2017, nonrecurring restructuring costs incurred in both fiscal years, and China investigation expenses, selling and marketing expense increased 1.0%.

General and Administrative Expense

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
General and administrative	\$87,539	\$69,313	\$18,226	26.3%
% of Revenue	11.1	% 10.7	%	

General and administrative expense increased 26.3% primarily due to the addition of PCB expenses, China investigation expenses of \$8,451, higher professional and legal fees, and increased compensation expenses, partially offset by nonrecurring PCB acquisition-related expenses of \$11,867 incurred in the prior year. Excluding the impact of currency translation, the contribution of PCB for the first three quarters of fiscal year 2017, nonrecurring restructuring costs incurred in both years, and China investigation expenses, general and administrative expense increased 3.3%.

Research and Development Expense

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Research and development	\$34,999	\$25,336	\$9,663	38.1%
% of Revenue	4.4	% 3.9	%	

Research and development (R&D) expense increased 38.1% primarily due to the addition of PCB expenses, focused R&D spending to meet certain Test market needs, and continued investments in Sensors product development. Excluding the impact of currency translation, the contribution of PCB for the first three quarters of fiscal year 2017, and China investigation expenses, R&D expenses increased 9.1%.

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Income from Operations

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Income from operations	\$54,828	\$41,763	\$13,065	31.3%
% of Revenue	7.0	% 6.4	%	

Income from operations increased 31.3% primarily due to the contribution of PCB to income from operations, nonrecurring PCB acquisition-related expenses of \$12,514 incurred in the prior year, leverage on higher revenue volume in our Sensors business, improved Test gross margin driven by a continued focus on project execution, and nonrecurring restructuring costs of \$2,165 incurred in the prior year, partially offset by China investigation expenses of \$9,209 and nonrecurring restructuring costs of \$4,079 incurred in the current year. Excluding the impact of currency translation, the contribution of PCB for the first three quarters of fiscal year 2017, nonrecurring restructuring costs and acquisition-related expenses incurred in both years, fair value adjustment on acquired inventory recorded in the fourth quarter of the prior year, and China investigation expenses, income from operations increased 6.5%.

Interest Expense, Net

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Interest expense, net	\$30,821	\$8,489	\$22,332	263.1%

The increase in interest expense is due to a full year of interest expense recognized in fiscal year 2017 on the debt incurred to finance the acquisition of PCB. Current year interest expense, net included \$23,643 interest expense for the tranche B term loan facility, \$3,863 amortization of capitalized debt issuance costs, and \$1,521 interest expense for TEU debt. As a result of the repricing of the tranche B term loan facility in the fourth quarter of fiscal year 2017, current year interest expense, net also included \$1,147 repricing costs and \$503 in non-cash charges for the loss on debt extinguishment resulting from the write-off of existing unamortized debt financing costs.

Prior year interest expense, net included \$5,750 interest expense for the tranche B term loan facility, \$1,389 amortization of capitalized debt issuance costs, \$562 interest expense for TEU debt, \$502 in non-cash charges for the loss on debt extinguishment from the write-off of existing capitalized debt issuance costs related to the revolving credit facility, and \$323 of interest expense on the revolving credit facility.

Other Income (Expense), Net

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Other income (expense), net	\$(996)	\$238	\$(1,234)	(518.5)%

The decrease in other income (expense), net was primarily driven by current year losses on foreign currency transactions.

Income Tax Provision (Benefit)

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Income tax provision (benefit)	\$(2,073)	\$6,018	\$(8,091)	(134.4)%
Effective rate	(9.0)	% 18.0	% (27.0)	) ppts

The provision for income taxes declined during fiscal year 2017 primarily due to a decrease in income before taxes. The effective tax rate was lower during fiscal year 2017 primarily due to certain discrete benefits of \$2,801 recognized during the third quarter of fiscal year 2017, which consisted of additional U.S. tax benefits for prior fiscal years associated with domestic manufacturing, deductible PCB acquisition-related expenses, and the U.S. R&D tax credit. Excluding the impact of these discrete benefits, the effective tax rate for fiscal year 2017 was 3.2%, and declined compared to the prior year due to lower income before taxes and a more favorable geographic mix of earnings.

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The effective tax rate of 18.0% during fiscal year 2016 included a \$2,283 discrete tax benefit for retroactive reinstatement of the U.S. R&D tax credit, which was partially offset by a one-time tax cost of \$1,834 associated with nondeductible PCB acquisition-related expenses. Excluding the impact of these items, the effective tax rate for fiscal year 2016 was 19.3%.

Net Income

			Increased / (Decreased)	
(in thousands, except per share data)	2017	2016	\$	%
Net income	\$25,084	\$27,494	\$(2,410)	(8.8)%
Diluted earnings per share	\$1.31	\$1.70	\$(0.39)	(22.9)%

Net income declined due to higher operating expenses and increased interest expense, partially offset by higher gross profit and the current year tax benefit resulting primarily from nonrecurring discrete items. Diluted earnings per share was negatively impacted by increased interest expense, higher amortization expense related to the PCB acquisition, and the issuance of common stock and TEUs in fiscal year 2016, partially offset by increased income from operations and the current year tax benefit.

Backlog

Backlog of undelivered orders at September 30, 2017 was \$360,016, a decrease of \$10,507 or 2.8%, compared to backlog of \$370,523 at October 1, 2016. Based on anticipated manufacturing schedules, we expect approximately 85% of the backlog as of September 30, 2017 will be converted into revenue during fiscal year 2018. The conversion rate was up from the prior year rate of 80% due to a shift in Test backlog composition from larger custom orders to shorter cycle, more rapidly turning orders and the completion of certain custom orders.

We believe backlog is not an absolute indicator of future revenue because a portion of the orders in backlog could be canceled at the customer's discretion. While the backlog is subject to order cancellations, we have not historically experienced a significant number of order cancellations. During fiscal year 2017, order cancellations did not have a material effect on backlog. During fiscal year 2016, one custom order in Test totaling \$8,567 was canceled. This canceled order was booked in a fiscal year prior to the year in which it was canceled.

Test Segment

Results of Operations

The following table compares results of operations in fiscal years 2017 and 2016 for Test, separately identifying the estimated impact of currency translation and restructuring expenses incurred in fiscal year 2017.

		Estimated			
(in thousands)	2017	Business Change	Acquisition / Restructuring 2	Currency Translation	2016
Revenue	\$504,087	\$(4,151)	\$ —	\$ (4,027)	\$512,265
Cost of sales	334,855	(6,304)	2,439	(3,520)	342,240
Gross profit	169,232	2,153	(2,439)	(507)	170,025
Gross margin	33.6 %				33.2 %

Operating expenses

Selling and marketing	69,783	377	112	(356)	69,650
General and administrative	51,365	9,190	371	(406)	42,210
Research and development	19,462	1,962	—	(5)	17,505
Total operating expenses	140,610	11,529	483	(767)	129,365
Income from operations	\$28,622	\$(9,376)	\$ (2,922)	\$ 260	\$40,660

² The Acquisition / Restructuring column includes restructuring expenses incurred in fiscal year 2017. The acquisition of PCB did not have an impact on Test results of operations during fiscal year 2017.

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Revenue

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Revenue	\$504,087	\$512,265	\$(8,178)	(1.6)%

Revenue decreased 1.6% primarily due to lower orders in the last half of fiscal year 2016 and the first half of fiscal year 2017 and the unfavorable impact of currency translation, partially offset by a continued focus on project execution and growth in service revenue. Excluding the impact of currency translation, revenue decreased 0.8%. Sales momentum in the Americas was offset by declines in Europe and Asia primarily driven by automotive manufacturers. Revenue by geography was as follows:

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Americas	\$146,338	\$131,273	\$15,065	11.5 %
Europe	93,296	106,941	(13,645)	(12.8)%
Asia	264,453	274,051	(9,598)	(3.5)%
Total Revenue	\$504,087	\$512,265	\$(8,178)	(1.6)%

Gross Profit

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Gross profit	\$169,232	\$170,025	\$(793)	(0.5)%
Gross margin	33.6 %	33.2 %	0.4	ppts

Gross profit decreased 0.5%. The gross margin rate increased by 0.4 percentage points primarily due a continued focus on project execution and effective cost containment, partially offset by higher compensation expenses, nonrecurring restructuring costs incurred in the current year, and investment in product performance. Excluding the impact of currency translation and nonrecurring restructuring costs incurred in both years, gross profit increased 1.1% and gross margin rate increased 0.7 percentage points.

Selling and Marketing Expense

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Selling and marketing	\$69,783	\$69,650	\$133	0.2 %
% of Revenue	13.8 %	13.6 %		

Selling and marketing expense increased 0.2% primarily due to increased compensation expenses and China investigation expenses, partially offset by lower commission expense commensurate with lower revenue, cost containment measures, and the favorable impact of currency translation. Excluding the impact of currency translation, nonrecurring restructuring costs incurred in both fiscal years, and China investigation expenses, selling and marketing expense decreased 0.1%.

General and Administrative Expense

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
General and administrative	\$51,365	\$42,210	\$9,155	21.7 %
% of Revenue	10.2 %	8.2 %		

General and administrative expense increased 21.7% primarily due to China investigation expenses of \$8,451 and increased professional and legal fees, partially offset by the favorable impact of currency translation. Excluding the impact of currency translation, nonrecurring restructuring costs incurred in both years, and China investigation expenses, general and administrative expense increased 2.8%.

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Research and Development Expense

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Research and development	\$19,462	\$17,505	\$1,957	11.2%
% of Revenue	3.9	% 3.4	%	

R&D expense increased 11.2% primarily due to additional focused R&D spending to meet certain market needs, higher compensation expenses and China investigation expenses. Excluding the impact of currency translation and China investigation expenses, R&D expense increased 10.0%.

Income from Operations

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Income from operations	\$28,622	\$40,660	\$(12,038)	(29.6)%
% of Revenue	5.7	% 7.9	%	

Income from operations decreased 29.6% primarily due to higher operating expenses which included \$9,209 of China investigation expenses and \$2,922 of nonrecurring restructuring costs incurred in the current year, partially offset by \$847 of nonrecurring restructuring costs incurred in the prior year. Excluding the impact of currency translation, nonrecurring restructuring costs incurred in both fiscal years, and China investigation expenses, income from operations decreased 2.4%.

Backlog

Backlog of undelivered orders at September 30, 2017 was \$311,551, a decrease of 5.9% from backlog of \$331,044 at October 1, 2016. Based on anticipated manufacturing schedules, we expect approximately 83% of the backlog as of September 30, 2017 will be converted into revenue during fiscal year 2018. The conversion rate was up from the prior year rate of 78% due to a shift from larger custom orders to shorter cycle, more rapidly turning orders and a push to complete custom orders. Order cancellations in fiscal year 2017 did not have a material effect on backlog. At the end of fiscal year 2016, backlog was negatively impacted by cancellations of custom orders in Test totaling \$8,567.

Sensors Segment

Results of Operations

The following table compares results of operations in fiscal years 2017 and 2016 for Sensors, separately identifying the estimated impact of currency translation, the acquisition of PCB for the first three quarters of fiscal year 2017 for comparability, and restructuring expense incurred in fiscal year 2017.

		Estimated			
(in thousands)	2017	Business Change	Acquisition / Restructuring 3	Currency Translation	2016
Revenue	\$283,868	\$16,077	\$ 129,197	\$ 712	\$137,882
Cost of sales	150,822	(418)	74,347	390	76,503
Gross profit	133,046	16,495	54,850	322	61,379
Gross margin	46.9	%			44.5 %
Operating expenses					
Selling and marketing	55,129	549	29,021	217	25,342
General and administrative	36,174	(11,546)	20,598	19	27,103
Research and development	15,537	520	7,192	(6)	7,831
Total operating expenses	106,840	(10,477)	56,811	230	60,276
Income from operations	\$26,206	\$26,972	\$ (1,961)	\$ 92	\$1,103

The Acquisition / Restructuring column includes revenues and costs from the acquisition of PCB for the first three quarters of fiscal year 2017, including the fair value adjustment to acquired inventory of \$7,975, costs incurred as part of the acquisition of PCB, and restructuring expenses incurred in fiscal year 2017. The first three quarters of fiscal year 2016 did not include PCB results since the acquisition closed in the fourth quarter of fiscal year 2016; therefore, the estimated impact of PCB for the first three quarters of fiscal year 2017 is separately identified herein for comparability.

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Revenue

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Revenue	\$283,868	\$137,882	\$145,986	105.9%

Revenue increased 105.9% primarily due to increased volume as a result of the PCB acquisition. Excluding the impact of currency translation and PCB revenue for the first three quarters of fiscal year 2017, revenue growth was 11.7%. Strong demand in the positional sensors sector, particularly in the heavy industrial markets, and new revenue opportunities in the test sensors sector drove revenue growth.

Revenue by geography was as follows:

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Americas	\$132,438	\$54,610	\$77,828	142.5%
Europe	99,195	57,003	42,192	74.0%
Asia	52,235	26,269	25,966	98.8%
Total Revenue	\$283,868	\$137,882	\$145,986	105.9%

Gross Profit

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Gross profit	\$133,046	\$61,379	\$71,667	116.8%
Gross margin	46.9%	44.5%	2.4	ppts

Gross profit increased 116.8% primarily due to gross profit contribution from the PCB acquisition and growth in our positional and test sensors sectors. The gross margin rate increased 2.4 percentage points primarily due to the \$7,916 fair value adjustment on acquired inventory in the fourth quarter of the prior year and leverage on increased revenue volume. The increase was partially offset by the gross margin contribution from the PCB acquisition in the first three quarters of fiscal year 2017, which included a \$7,975 fair value adjustment on acquired inventory recognized in the first quarter of fiscal year 2017, and additional labor costs from the movement of production in Machida, Japan to the U.S. due to the closure of the Machida manufacturing facility. Excluding the impact of currency translation, the contribution of PCB for the first three quarters of fiscal year 2017, nonrecurring restructuring costs incurred in both fiscal years, and the fair value adjustments on acquired inventory recorded in both fiscal years, gross profit increased 10.7% and the gross margin rate declined 0.4 percentage points.

Selling and Marketing Expense

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Selling and marketing	\$55,129	\$25,342	\$29,787	117.5%
% of Revenue	19.4%	18.4%		

Selling and marketing expense increased 117.5% primarily driven by the addition of PCB expenses and higher commission and compensation expenses. Excluding the impact of currency translation, PCB expenses for the first three quarters of fiscal year 2017, and nonrecurring restructuring costs incurred in both fiscal years, selling and marketing expense increased 4.1%.

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General and Administrative Expense

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
General and administrative	\$36,174	\$27,103	\$9,071	33.5 %
% of Revenue	12.7	% 19.7	%	

General and administrative expense increased 33.5% primarily driven by the addition of PCB expenses and investments in infrastructure, partially offset by nonrecurring PCB acquisition-related expenses of \$11,867 incurred in the prior year. Excluding the impact of currency translation, PCB expenses for the first three quarters of fiscal year 2017, nonrecurring restructuring costs incurred in both fiscal years, and prior year acquisition-related expenses, general and administrative expense increased 4.9%.

Research and Development Expense

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Research and development	\$15,537	\$7,831	\$7,706	98.4 %
% of Revenue	5.5	% 5.7	%	

R&D expense increased 98.4% primarily driven by the addition of PCB expenses and continued investments in product development. Excluding the impact of currency translation and PCB expenses for the first three quarters of fiscal year 2017, R&D expense increased 7.0%.

Income from Operations

			Increased / (Decreased)	
(in thousands)	2017	2016	\$	%
Income from operations	\$26,206	\$1,103	\$25,103	2,275.9 %
% of Revenue	9.2	% 0.8	%	

Income from operations increased \$25,103 primarily due to PCB acquisition-related expenses of \$12,514 incurred in the prior year, the contribution of PCB to income from operations, and leverage on increased revenue volume. Excluding the impact of currency translation, PCB expenses for the first three quarters of fiscal year 2017, nonrecurring restructuring costs and acquisition-related expenses incurred in both years, and the fair value adjustment on acquired inventory recorded both fiscal years, income from operations increased \$5,224.

Backlog

Backlog of undelivered orders at September 30, 2017 was \$48,465, an increase of 22.8% compared to backlog of \$39,479 at October 1, 2016.

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Fiscal Year 2016 Compared to Fiscal Year 2015

Total Company

Results of Operations

The following table compares results of operations in fiscal years 2016 and 2015, separately identifying the estimated impact of currency translation, the acquisition of PCB in fiscal year 2016 and restructuring expense incurred in fiscal year 2016.

(in thousands)	2016	Estimated Business Change	Acquisition / Restructuring 1	Currency Translation	2015
Revenue	\$650,147	\$45,456	\$ 44,503	\$ (3,746)	\$563,934
Cost of sales	418,743	44,233	32,518	(2,329)	344,321
Gross profit	231,404	1,223	11,985	(1,417)	219,613
Gross margin	35.6	%			38.9 %

Operating expenses

Selling and marketing	94,992	3,253	9,432	(667)	82,974
General and administrative	69,313	1,601	16,860	(586)	51,438
Research and development	25,336	(793)	2,515	(91)	23,705
Total operating expenses	189,641	4,061	28,807	(1,344)	158,117
Income from operations	\$41,763	\$(2,838)	\$(16,822)	\$(73)	\$61,496

¹ The Acquisition / Restructuring column includes revenues and costs from the acquisition of PCB, costs incurred as part of the acquisition of PCB and restructuring costs (acquisition and restructuring costs).

Revenue

(in thousands)	2016	2015	Increased / (Decreased)	
Revenue	\$650,147	\$563,934	\$86,213	15.3 %

The increased revenue of 15.3% was driven by higher sales volumes in the Test segment and the PCB acquisition. Excluding the impact of higher sales volume attributable to the PCB acquisition and currency translation, revenue increased 8.1%. Test revenue increased \$49,385 or 10.7% due to strong project execution and conversion of backlog, partially offset by a 0.7% unfavorable currency translation. Sensors revenue increased \$36,828 or 36.4% driven by contributions from the PCB acquisition, partially offset by a decrease in sales volume in our legacy Sensors business and a 0.4% unfavorable impact of currency translation.

Revenue by geography was as follows:

(in thousands)	2016	2015	Increased / (Decreased)	
Americas	\$185,883	\$173,523	\$12,360	7.1 %
Europe	163,944	149,308	14,636	9.8 %
Asia	300,320	241,103	59,217	24.6 %
Total Revenue	\$650,147	\$563,934	\$86,213	15.3 %

Although selective product price changes were implemented during each of these fiscal years, the overall impact of pricing changes did not have a material effect on revenue.

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Gross Profit

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Gross profit	\$231,404	\$219,613	\$11,791	5.4%
Gross margin	35.6	% 38.9	% (3.3	) ppts

Gross profit increased 5.4% due to increased sales volumes and backlog conversion in Test and increased sales volume as a result of three months of profit from the PCB acquisition, partially offset by lower sales volumes in our legacy Sensors business and the unfavorable impact of currency translation. Our gross margin rate decreased by 3.3 percentage points primarily as a result of higher compensation expense from the investment in resources in Test and Sensors, the acquisition of PCB, which included a \$7,916 fair value adjustment related to the acquired inventory, and inefficiencies in executing complex projects in Test resulting in higher than expected costs. The decrease was further expanded by unfavorable leverage from lower sales volumes in Sensors due to industrial market weakness across the globe in fiscal year 2016. The decrease was partially offset by an increase in Test revenues. Excluding the impact of currency translation, three months of profit from the acquisition of PCB, and acquisition and restructuring costs, the gross margin rate decreased 2.7 percentage points.

Selling and Marketing Expense

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Selling and marketing	\$94,992	\$82,974	\$12,018	14.5%
% of Revenue	14.6	% 14.7	%	

Selling and marketing expenses increased 14.5% primarily due to three months of expenses from the PCB acquisition, restructuring costs and higher compensation expense in Test, offset by lower compensation expense and cost containment measures in Sensors. Excluding the impact of currency translation, acquisition and restructuring costs, selling and marketing expense increased 3.9%.

General and Administrative Expense

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
General and administrative	\$69,313	\$51,438	\$17,875	34.8%
% of Revenue	10.7	% 9.1	%	

General and administrative expense increased 34.8% driven by \$11,867 of PCB acquisition-related expenses, three months of expenses from the PCB acquisition, restructuring costs and higher professional fees. Excluding the impact of currency translation, PCB acquisition-related expenses, acquisition and restructuring costs, general and administrative expenses increased 3.1%.

Research and Development Expense

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Research and development	\$25,336	\$23,705	\$1,631	6.9%
% of Revenue	3.9	% 4.2	%	

Research and development (R&D) expense increased 6.9% primarily due to higher compensation expense from Test employee headcount additions, three months of expenses from the PCB acquisition and restructuring costs, partially offset by employee headcount reductions and R&D project spending cost containment measures in our legacy Sensors business. Excluding the impact of currency, acquisition and restructuring costs, R&D expenses decreased 3.3%.

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Income from Operations

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Income from operations	\$41,763	\$61,496	\$(19,733)	(32.1)%
% of Revenue	6.4	% 10.9		%

Income from operations declined 32.1% due to higher gross profit being more than offset by higher operating expenses which included PCB acquisition-related expenses, three months of expenses related to the acquisition of PCB and restructuring costs of \$28,807. Excluding the impact of currency translation, acquisition and restructuring costs, income from operations decreased 4.6%.

Interest Expense, Net

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Interest expense, net	\$8,489	\$795	\$7,694	967.8%

Interest expense, net increased primarily due to interest incurred related the tranche B term loan and the TEUs originated in fiscal year 2016. Interest expense included \$5,750 related to the tranche B term loan, \$1,389 from amortization of capitalized debt issuance costs, \$562 related to the TEUs, \$502 from the write-off of capitalized debt issuance costs related to the previous credit facility and \$323 of interest expense from borrowings under the previous credit facility.

Other Income (Expense), Net

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Other income (expense), net	\$238	\$(1,529)	\$1,767	115.6%

The increase in other income (expense), net was primarily driven by sales and use tax refunds and a decrease in the losses on foreign currency transactions.

Income Tax Provision (Benefit)

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Income tax provision (benefit)	\$6,018	\$13,710	\$(7,692)	(56.1)%
Effective rate	18.0	% 23.2	% (5.2	) ppts

The provision for income taxes declined during fiscal year 2016 primarily due to a decrease in income before taxes. The effective tax rate was lower during fiscal year 2016 primarily due to tax benefits from the enactment of legislation on December 18, 2015 that made the U.S. R&D tax credit permanent as of January 1, 2015. Fiscal year 2016 includes a discrete tax benefit of \$2,283 related to the reinstatement of the R&D tax credit. The rate was also lower due to a favorable geographic mix of earnings, with foreign income generally taxed at lower rates than domestic income. These benefits were partially offset by nondeductible PCB acquisition-related costs. Fiscal year 2015 included a tax benefit of \$1,836 due to the resolution of audit matters in connection with the Internal Revenue Service examination of tax years ended October 1, 2011 and September 29, 2012. We also recognized a tax benefit of \$2,098 during fiscal year 2015 due to the enactment of tax legislation on December 19, 2014 that retroactively extended the R&D tax credit.

Net Income

			Increased / (Decreased)	
(in thousands, except per share data)	2016	2015	\$	%
Net income	\$27,494	\$45,462	\$(17,968)	(39.5)%
Diluted earnings per share	\$1.70	\$3.00	\$(1.30	) (43.3)%

Net income declined due to higher operating expenses, partially offset by higher gross profit and a lower income tax provision. The year-to-date diluted earnings per share decline was driven by acquisition and restructuring costs, the issuance of common

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stock and TEUs, higher compensation expense from the investment in resources in Test and Sensors and inefficiencies in executing complex projects in Test.

Backlog

Backlog of undelivered orders at October 1, 2016 was \$370,523, an increase of \$17,510 or 5.0%, compared to backlog of \$353,013 at October 2, 2015. Test backlog was \$331,044 and \$339,967 at October 1, 2016 and October 2, 2015, respectively. Sensors backlog was \$39,479 and \$13,046 at October 1, 2016 and October 2, 2015, respectively. Based on anticipated manufacturing schedules as of October 1, 2016, we estimated approximately 80% of the backlog as of October 1, 2016 would be converted into revenue during fiscal year 2017. The conversion rate was up from the prior year rate of 76% due to a shift from larger custom orders to shorter cycle, quicker turning orders in fiscal year 2016 and the completion of certain custom orders.

We believe backlog is not an absolute indicator of future revenue because a portion of the orders in backlog could be canceled at the customer's discretion. While the backlog is subject to order cancellations, we have not historically experienced a significant number of order cancellations. During fiscal year 2016, one custom order in Test totaling \$8,567 was canceled. During fiscal year 2015, two custom orders in Test totaling \$8,484 were canceled. These canceled orders were booked in a fiscal year prior to the year in which they were canceled.

Test Segment**Results of Operations**

The following table compares results of operations in fiscal years 2016 and 2015 for Test, separately identifying the estimated impact of currency translation and restructuring expense incurred in fiscal year 2016.

(in thousands)	2016	Estimated			2015
		Business Change	Acquisition / Restructuring ²	Currency Translation	
Revenue	\$512,265	\$52,677	\$ —	\$ (3,292)	\$462,880
Cost of sales	342,240	46,007	299	(2,077)	298,011
Gross profit	170,025	6,670	(299)	(1,215)	164,869
Gross margin	33.2 %				35.6 %
Operating expenses					
Selling and marketing	69,650	5,766	129	(691)	64,446
General and administrative	42,210	1,795	414	(560)	40,561
Research and development	17,505	(70)	5	(7)	17,577
Total operating expenses	129,365	7,491	548	(1,258)	122,584
Income from operations	\$40,660	\$(821)	\$ (847)	\$ 43	\$42,285

² The acquisition of PCB did not have an impact on the results of operations of Test during fiscal year 2016.

Revenue

(in thousands)	2016	2015	Increased / (Decreased)	
			\$	%
Revenue	\$512,265	\$462,880	\$49,385	10.7 %

Revenue increased 10.7% primarily due to a focus on project execution, backlog conversion and higher service revenue, partially offset by the unfavorable impact of currency translation. Excluding the impact of currency translation, revenue increased 11.4% as the revenue decline in the Americas region was more than offset by improvements in the Asia and Europe regions.

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Revenue by geography was as follows:

		Increased / (Decreased)	
(in thousands)	2016	2015	\$ %
Americas	\$ 131,273	\$ 142,464	\$ (11,191) (7.9) %
Europe	106,941	100,501	6,440 6.4 %
Asia	274,051	219,915	54,136 24.6 %
Total Revenue	\$ 512,265	\$ 462,880	\$ 49,385 10.7 %

Gross Profit

		Increased / (Decreased)	
(in thousands)	2016	2015	\$ %
Gross profit	\$ 170,025	\$ 164,869	\$ 5,156 3.1 %
Gross margin	33.2 %	35.6 %	(2.4) ppts

Gross profit increased 3.1% primarily due to increased sales volume. The gross margin rate decreased 2.4 percentage points driven by inefficiencies in executing several large complex projects, resulting in higher than expected costs, increased indirect labor headcount and a higher concentration of custom projects which typically have lower margins and restructuring costs. The decrease was partially offset by an increase in revenue.

Selling and Marketing Expense

		Increased / (Decreased)	
(in thousands)	2016	2015	\$ %
Selling and marketing	\$ 69,650	\$ 64,446	\$ 5,204 8.1 %
% of Revenue	13.6 %	13.9 %	

Selling and marketing expense increased 8.1% primarily driven by higher compensation expense, higher commission expense from increased revenue, higher incentive compensation and restructuring costs of \$129, partially offset by cost containment measures. Excluding the impact of currency translation and restructuring costs, selling and marketing expense increased 8.9%.

General and Administrative Expense

		Increased / (Decreased)	
(in thousands)	2016	2015	\$ %
General and administrative	\$ 42,210	\$ 40,561	\$ 1,649 4.1 %
% of Revenue	8.2 %	8.8 %	

General and administrative expense increased 4.1% primarily due to higher professional fees, increased compensation expense and restructuring costs of \$414, partially offset by a reduction in legal costs. Excluding the impact of currency translation and restructuring costs, general and administrative expense increased 4.4%.

Research and Development Expense

		Increased / (Decreased)	
(in thousands)	2016	2015	\$ %
Research and development	\$ 17,505	\$ 17,577	\$ (72) (0.4) %
% of Revenue	3.4 %	3.8 %	

R&D expense decreased 0.4% primarily due a reduction in R&D project spending driven by redeployment of resources to certain capitalized engineering projects, partially offset by higher compensation expense.

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Income from Operations

(in thousands)	2016	2015	Increased / (Decreased)	
			\$	%
Income from operations	\$40,660	\$42,285	\$(1,625)	(3.8)%
% of Revenue	7.9	% 9.1	%	

Income from operations decreased 3.8% due to higher compensation expense, inefficiencies in executing complex projects, higher concentration of custom projects and restructuring expenses of \$847, partially offset by an increase in revenue.

Backlog

Backlog of undelivered orders at October 1, 2016 was \$331,044, a decrease of 2.6% from backlog of \$339,967 at October 2, 2015. Based on anticipated manufacturing schedules as of October 1, 2016, we estimated approximately 78% of the backlog as of October 1, 2016 would be converted into revenue during fiscal year 2017. The conversion rate was up from the prior year rate of 75% due to a shift from larger custom orders to shorter cycle, quicker turning orders in fiscal year 2016 and a push to complete custom orders. As previously mentioned, backlog at the end of fiscal years 2016 and 2015 was negatively impacted by cancellations of custom orders in Test totaling \$8,567 and \$8,484, respectively.

Sensors Segment

Results of Operations

The following table compares results of operations in fiscal years 2016 and 2015 for Sensors, separately identifying the estimated impact of currency translation, the acquisition of PCB in fiscal year 2016 and restructuring expense incurred in fiscal year 2016.

(in thousands)	2016	Estimated			2015
		Business Change	Acquisition / Restructuring 1	Currency Translation	
Revenue	\$137,882	\$(7,221)	\$ 44,503	\$ (454)	) \$101,054
Cost of sales	76,503	(1,774)	) 32,219	(252)	) 46,310
Gross profit	61,379	(5,447)	) 12,284	(202)	) 54,744
Gross margin	44.5	%			54.2 %

Operating expenses

Selling and marketing	25,342	(2,513)	) 9,303	24	18,528
General and administrative	27,103	(194)	) 16,446	(26)	) 10,877
Research and development	7,831	(723)	) 2,510	(84)	) 6,128
Total operating expenses	60,276	(3,430)	) 28,259	(86)	) 35,533
Income from operations	\$1,103	\$(2,017)	\$ (15,975)	) \$ (116)	) \$19,211

¹ The Acquisition / Restructuring column includes revenues and costs from the acquisition of PCB, costs incurred as part of the acquisition of PCB and restructuring costs (acquisition and restructuring costs).

Revenue

(in thousands)	2016	2015	Increased / (Decreased)	
			\$	%
Revenue	\$137,882	\$101,054	\$36,828	36.4%

Revenue increased 36.4% primarily due to increased revenue from sales volume as a result of the acquisition of PCB, partially offset by lower sales volumes in our legacy Sensors business. Excluding the impact of currency translation and the impact of the PCB acquisition, revenue decreased 7.1%. Sensors sales continue to be negatively impacted by

industrial market weakness around the globe, specifically in the heavy industrial machine steel, fluid power and oil and gas markets.

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Revenue by geography was as follows:

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Americas	\$54,610	\$31,059	\$23,551	75.8%
Europe	57,003	48,807	8,196	16.8%
Asia	26,269	21,188	5,081	24.0%
Total Revenue	\$137,882	\$101,054	\$36,828	36.4%

Gross Profit

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Gross profit	\$61,379	\$54,744	\$6,635	12.1%
Gross margin	44.5	% 54.2	% (9.7)	) ppts

Gross profit increased 12.1% primarily due to increased sales volumes as a result of the PCB acquisition, partially offset by lower sales volumes in our legacy Sensors business and restructuring costs of \$762. The gross margin rate decreased 9.7 percentage points due to the acquisition of PCB, which included a \$7,916 fair value adjustment related to the acquired inventory, unfavorable leverage from lower sales volumes and higher indirect labor expense in our legacy Sensors business and restructuring costs. Excluding the impact of currency translation, acquisition and restructuring costs, the gross margin rate declined 1.7 percentage points.

Selling and Marketing Expense

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Selling and marketing	\$25,342	\$18,528	\$6,814	36.8%
% of Revenue	18.4	% 18.3	%	

Selling and marketing expense increased 36.8% primarily driven by three months of expenses from the PCB acquisition and restructuring costs, partially offset by lower compensation expense, reduced travel expense as part of cost containment measures and lower commission expense. Excluding the impact of currency translation, acquisition and restructuring costs, selling and marketing expense decreased 13.6%.

General and Administrative Expense

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
General and administrative	\$27,103	\$10,877	\$16,226	149.2%
% of Revenue	19.7	% 10.8	%	

General and administrative expense increased 149.2% primarily due to PCB acquisition-related expenses of \$11,867, three months of expenses from the acquisition of PCB and restructuring costs. Excluding the impact of currency translation and acquisition and restructuring costs, general and administrative expenses decreased 1.8%.

Research and Development Expense

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Research and development	\$7,831	\$6,128	\$1,703	27.8%
% of Revenue	5.7	% 6.1	%	

R&D expense increased 27.8% primarily driven by three months of expenses from the acquisition of PCB, partially offset by lower compensation from headcount reductions and a decline in R&D project spending as part of cost containment measures. Excluding the impact of currency translation, acquisition and restructuring costs, R&D expense decreased 11.8%.

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Income from Operations

			Increased / (Decreased)	
(in thousands)	2016	2015	\$	%
Income from operations	\$ 1,103	\$ 19,211	\$ (18,108)	(94.3)%
% of Revenue	0.8	% 19.0	%	

Income from operations declined 94.3% primarily due to PCB acquisition-related expenses of \$12,514, loss on operations from PCB and restructuring costs. Excluding the impact of currency translation and acquisition and restructuring costs, income from operations would have decreased 10.5%.

Backlog

Backlog of undelivered orders at October 1, 2016 was \$39,479, an increase of 202.6% compared to backlog of \$13,046 at October 2, 2015. The increase in backlog was primarily due to the acquisition of PCB.

Cash Flow Comparison - Fiscal Years 2017, 2016 and 2015

Total cash and cash equivalents increased \$23,953 for fiscal year 2017. The increase was primarily driven by \$35,523 in depreciation and amortization, \$25,084 of net income, a \$10,785 increase in working capital resulting from general timing of purchases and payments, a \$7,975 fair value adjustment related to acquired inventory in connection with the PCB acquisition, \$5,600 of stock-based compensation, \$5,579 of proceeds from the exercise of stock options and share purchases under our employee stock purchase plan (ESPP) and \$4,781 in accrued payroll and related costs. The cash receipts were partially offset by dividend payments of \$20,079, investment in property and equipment of \$17,798, a decrease in other assets and liabilities of \$15,617, \$9,127 in deferred income taxes and payments of TEU debt of \$8,541.

Total cash and cash equivalents increased \$33,012 for fiscal year 2016. The increase was primarily due to \$440,163 in net proceeds from the issuance of long-term debt, \$110,926 in net cash received from the issuance of TEUs, \$74,301 in net proceeds from the issuance of common stock, \$27,494 of net income and \$24,077 in depreciation and amortization. The cash receipts were partially offset by a payment of \$580,920, net of cash received, for the acquisition of PCB, \$21,343 of net repayments under short-term borrowings, investment in property and equipment of \$20,806, purchases of shares of common stock under our share purchase program and stock-based compensation arrangements of \$18,414 and dividend payments of \$13,932.

Total cash and cash equivalents decreased \$8,629 for fiscal year 2015. The decrease was primarily due to \$50,026 in repayments of short-term borrowings and debt issuance costs, \$29,115 in purchases of our common stock, dividend payments of \$22,445 and investment in property and equipment of \$18,445. The decrease was partially offset by net income of \$45,462, \$21,106 in depreciation and amortization, \$19,040 for decreased working capital requirements, \$11,183 received through short-term borrowings, \$7,351 in stock-based compensation and \$4,847 of proceeds received from the exercise of stock options and share purchases under our ESPP.

Cash flows from operating activities provided cash totaling \$71,652 during fiscal year 2017 compared to \$67,881 during fiscal year 2016 and \$100,436 during fiscal year 2015.

Fiscal year 2017 cash flow from operating activities was primarily generated from \$35,523 of depreciation and amortization, \$25,084 in net income, \$7,652 decrease in accounts receivable and unbilled accounts receivable resulting from general timing and collections, \$7,975 fair value adjustment related to acquired inventory in connection with the PCB acquisition, \$5,600 of stock-based compensation and \$4,781 increase in accrued payroll and related costs. The cash received was partially offset by \$15,617 decrease in other assets and liabilities and a \$9,127 decrease in deferred income taxes.

Fiscal year 2016 cash flow from operating activities was primarily generated from \$27,494 in net income, \$24,077 of depreciation and amortization, \$9,057 increase in accrued payroll and related costs, \$7,916 fair value adjustment related to acquired inventory in connection with the PCB acquisition, \$7,224 of stock-based compensation, \$5,701 increase in advanced payments from customers due to a focus on early collection efforts, \$5,647 increase in accounts payable resulting from general timing of purchases and payments and \$3,365 decrease in inventories. The cash received was partially offset by \$22,059 increase in accounts and unbilled contracts receivable resulting from general

timing and collections and \$5,274 in deferred income taxes.

Fiscal year 2015 cash flow from operating activities was primarily driven by \$45,462 in net income, \$21,106 of depreciation and amortization, \$13,065 increase in advance payments received from customers driven by the mix of orders, \$6,772 increase in accounts payable resulting from general timing of purchases and payments, \$3,308 decrease in accounts and unbilled

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receivables resulting from general timing of billing and collections, partially offset by \$4,105 increase in inventories to support future revenue.

Cash flows from investing activities required \$18,606, \$600,212 and \$19,112 use of cash during fiscal years 2017, 2016 and 2015, respectively. Fiscal year 2017 cash usage was primarily due to \$17,798 in investments in property and equipment to support business growth and a \$853 payment related to the acquisition of PCB. Fiscal year 2016 cash usage was due to payments of \$580,920, net of cash received, for the acquisition of PCB and \$20,806 in investments in property and equipment to support business growth, partially offset by proceeds received from the sale of property and equipment of \$1,514. Fiscal year 2015 cash usage was due to \$18,445 in investments in property and equipment and payments of \$667 associated with the acquisition of Instrument and Calibration Sweden AB (ICS).

Cash flows from financing activities used cash of \$30,481 in fiscal year 2017, compared to cash provided of \$564,479 in fiscal year 2016 and cash used of \$84,785 in fiscal year 2015.

Cash used in fiscal year 2017 was primarily driven by dividend payments of \$20,079, \$8,541 in payments of TEU debt and \$4,881 of payments of long-term debt, partially offset by \$5,579 of proceeds from the exercise of stock options and share purchases under our ESPP.

Cash provided in fiscal year 2016 was primarily driven by \$440,163 in net proceeds from the issuance of long-term debt, \$110,926 in net cash received from the issuance of TEUs, \$74,301 in net cash received from the issuance of common stock and \$20,000 from receipts under short-term borrowings. These increases were partially offset by \$41,343 in repayments of short-term borrowings, \$19,837 in payments of debt issuance costs, the purchase of shares of common stock under our share purchase program and stock-based compensation arrangements in an aggregate amount of \$18,414, dividend payments of \$13,932 and \$7,935 related to payments for the Capped Calls purchased in connection with the issuance of the TEUs.

Cash was used in fiscal year 2015 to repay \$50,026 of short-term borrowings, purchase shares under our share purchase program and stock-based compensation arrangements in an aggregate amount of \$29,115 and to pay dividends of \$22,445. The usage of cash was partially offset by \$11,183 received through short-term borrowings and \$4,847 of proceeds received in connection with stock option exercises and share purchases under our ESPP.

Liquidity and Capital Resources

We had cash and cash equivalents of \$108,733 as of September 30, 2017. Of this amount, \$33,528 was located in North America, \$31,208 in Europe and \$43,997 in Asia. Of the \$75,205 of cash located outside of North America, approximately \$58,234 is not available for use in the U.S. without the incurrence of U.S. federal and state income tax consequences.

The North American balance was primarily invested in bank deposits. The balances in Europe and Asia were primarily invested in money market funds and bank deposits. In accordance with our investment policy, we place cash equivalent investments with issuers who have high-quality investment credit ratings. In addition, we limit the amount of investment exposure we have with any particular issuer. Our investment objectives are to preserve principal, maintain liquidity and achieve the best available return consistent with our primary objectives of safety and liquidity. As of September 30, 2017, we held no short-term investments.

As of September 30, 2017, our capital structure was comprised of \$43,274 in short-term debt, \$431,035 in long-term debt and \$428,777 in shareholders' equity. The Consolidated Balance Sheet also includes \$16,670 of unamortized debt issuance costs. Total interest-bearing debt at September 30, 2017 was \$474,309. On July 5, 2016, we entered into a credit agreement with a consortium of financial institutions (the Credit Agreement). The Credit Agreement provides for senior secured credit facilities consisting of a Revolving Credit Facility and a Term Facility. The maturity date of the Revolving Credit Facility is July 5, 2021 and the maturity date of the loans under the Term Facility is July 5, 2023, unless a term loan lender agrees to extend the maturity date pursuant to a loan modification agreement made in accordance with the terms of the Credit Agreement.

The Credit Agreement also requires mandatory prepayments on our Term Facility in certain circumstances, including a required prepayment of a certain percentage of our excess cash flow for each fiscal year, beginning with fiscal year 2017. The excess cash flow payment that will be due in the first quarter of fiscal year 2018 based on fiscal year 2017 results is reflected in the contractual obligations chart below as a payment obligation due on long-term debt in less than one year.

Under the Credit Agreement, we are subject to customary affirmative and negative covenants, including, among others, restrictions on our ability to incur debt, create liens, dispose of assets, make investments, loans, advances, guarantees and acquisitions, enter into transactions with affiliates, and enter into any restrictive agreements and customary events of default (including payment defaults, covenant defaults, change of control defaults and bankruptcy defaults). The Credit Agreement also contains financial covenants, including the ratio of consolidated total indebtedness to adjusted consolidated earnings before income, taxes, depreciation and amortization (Adjusted EBITDA), as defined in the Credit Agreement, as well as the ratio of

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Adjusted EBITDA to consolidated interest expense. These covenants restrict our ability to pay dividends and purchase outstanding shares of common stock. As of September 30, 2017 and October 1, 2016, we were in compliance with these financial covenants.

Shareholders' equity increased by \$23,517 during fiscal year 2017 primarily due to net income of \$25,084, other comprehensive income of \$9,820, stock-based compensation of \$5,620, employee exercise of stock options of \$4,559 and employee stock purchases of \$1,020. The increase was partially offset by \$20,415 in dividends declared and \$1,785 in purchases of our common stock.

We believe that our liquidity, represented by funds available from cash, cash equivalents, our Revolving Credit Facility and anticipated cash from operations is adequate to fund ongoing operations for our short-term and long-term internal growth opportunities, capital expenditures, dividends and share purchases.

Contractual Obligations

As of September 30, 2017, our contractual obligations were as follows:

(in thousands)	Total	Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
Long-term debt ¹	\$471,843	\$32,136	\$16,491	\$9,200	\$414,016
Interest payable on long-term debt ²	113,361	21,100	37,660	36,604	17,997
Capital lease obligations ³	2,466	522	1,102	842	—
Operating lease obligations ⁴	10,625	4,833	3,601	955	1,236
Other long-term obligations ⁵	15,997	1,958	2,845	2,146	9,048
Total contractual obligations ⁶	\$614,292	\$60,549	\$61,699	\$49,747	\$442,297

Long-term debt includes the tranche B term loan facility (Term Facility) debt and the debt component of the TEUs.

The Term Facility amounts due in less than one year consist of the 1% annual payment and the calculated required annual excess cash flow prepayment based on fiscal year 2017 results due in the first quarter of fiscal year 2018.

¹ The Term Facility amounts for periods subsequent to less than one year exclude excess cash flow prepayments which may be required under the provisions of the Term Facility based on fiscal year 2018 and subsequent fiscal year results as future prepayment amounts, if any, are not reasonably estimable as of September 30, 2017. Refer to Note 5 and Note 9 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K for additional information regarding our financing arrangements and our TEUs.

² Interest payable on long-term debt includes interest on the Term Facility, the debt component of TEUs and capital lease obligations.

Capital lease obligations represent contractual vehicle leases. Refer to Note 1 and Note 5 to the Consolidated

³ Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K for additional information regarding our capital lease obligations.

Operating leases are primarily for office space, as well as vehicles and equipment. Refer to Note 14 to the

⁴ Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K for additional lease information.

⁵ Other long-term obligations include liabilities under pension and other retirement plans and warehouse fee obligations.

Long-term income tax liabilities for uncertain tax positions have been excluded from the contractual obligations table as we are unable to make a reasonably reliable estimate of the amount and period of related future payments.

⁶ As of September 30, 2017, our long-term liability for uncertain tax positions was \$5,849. Refer to Note 8 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K for additional income tax information.

As of September 30, 2017, we had letters of credit and guarantees outstanding totaling \$47,086 and \$22,800, respectively, primarily to bond advance payments and performance guarantees related to customer contracts in Test. Off-balance Sheet Arrangements

As of September 30, 2017, we did not have any off-balance sheet arrangements that have, or are reasonably likely to have, a current or future material effect on our financial condition, changes in financial condition, revenues or

expenses, results of operations, liquidity, capital expenditures or capital resources that are material to investors.

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Critical Accounting Policies

The Consolidated Financial Statements have been prepared in accordance with GAAP, which require us to make estimates and assumptions in certain circumstances that affect amounts reported. The preparation of these financial statements requires us to make estimates and assumptions, giving due consideration to materiality, that affect the reported amounts of assets and liabilities, revenues and expenses and related disclosures of any contingent assets and liabilities at the date of the financial statements. We regularly review our estimates and assumptions, which are based on historical experience and on various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We believe that of our significant accounting policies, the following are particularly important to the portrayal of our results of operations and financial position and are subject to an inherent degree of uncertainty as they may require the application of a higher level of judgment by us. For further information see "Summary of Significant Accounting Policies" under Note 1 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K.

Revenue Recognition

We are required to comply with a variety of technical accounting requirements in order to achieve consistent and accurate revenue recognition. The most significant area of judgment and estimation is percentage-of-completion contract accounting. We develop cost estimates that include materials, component parts, labor and overhead costs. Detailed costs plans are developed for all aspects of the contracts during the bidding phase. Cost estimates are largely based on actual historical performance of similar projects combined with current knowledge of the projects in progress. Significant factors that impact the cost estimates include technical risk, inflationary cost of materials and labor, changes in scope, and schedule and internal and subcontractor performance. Actual costs incurred during the project phase are monitored and compared to the estimates on a monthly basis. Cost estimates are revised based on changes in circumstances. Anticipated losses on long-term contracts are recognized when such losses become evident.

Inventories

We maintain a material amount of inventory to support our engineering and manufacturing operations. This inventory is stated at the lower of cost or market. We establish a reserve for excess, slow-moving and obsolete inventory that is equal to the difference between the cost and estimated net realizable value for that inventory. These reserves are based on a regular review and comparison of current inventory levels to planned production, planned and historical sales of the inventory, and expected product lives. It is possible changes to inventory reserves may be required in the future resulting in charges to cost of sales if there is a significant decline in demand for our products and we do not adjust our manufacturing production accordingly.

Impairment of Long-lived Assets

We review the carrying value of long-lived assets or asset groups, such as property and equipment and intangible assets subject to amortization, when events or changes in circumstances such as asset utilization, physical change, legal factors or other matters indicate that the carrying value may not be recoverable. We review the carrying value of indefinite-lived intangible assets annually or when events or changes in circumstances occur that would indicate that the carrying value may not be recoverable. When this review indicates the carrying value of an asset or asset group exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset or asset group, we recognize an asset impairment charge against income from operations. The amount of the impairment loss recorded is the amount by which the carrying value of the impaired asset or asset group exceeds its fair value.

Goodwill

Goodwill represents the excess of cost over the fair value of the identifiable net assets of businesses acquired and allocated to our reporting units at the time of acquisition. Goodwill is tested for impairment annually and when an event occurs or circumstances change that indicate the carrying value of the reporting unit may not be recoverable.

Evaluating goodwill for impairment involves the determination of the fair value of each reporting unit in which goodwill is recorded using a qualitative or quantitative analysis. A reporting unit is an operating segment or a component of an operating segment for which discrete financial information is available and reviewed by management on a regular basis.

Prior to completing the quantitative analysis described below, we have the option to perform a qualitative assessment of goodwill for impairment to determine whether it is more likely than not (i.e. a likelihood of more than 50%) that the fair value of a reporting unit is less than its carrying amount, including goodwill and other intangible assets. If we conclude the fair value is more likely than not less than the carrying value, we perform the quantitative analysis.

Otherwise, no further testing is needed.

If the quantitative analysis is required, the impairment test is used to compare the calculated fair value of each reporting unit to its carrying value, including goodwill. We estimate the fair value of a reporting unit using both the income approach and the

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market approach. The income approach uses a discounted cash flow model that requires input of certain estimates and assumptions requiring judgment, including projections of economic conditions and customer demand, revenue and margins, changes in competition, operating costs and new product introductions. The market approach uses a multiple of earnings and revenue based on guidelines for publicly traded companies. Fair value calculations contain significant judgments and estimates. If the fair value exceeds the carrying value, no further work is required and no impairment loss is recognized. If the carrying value exceeds the fair value, an impairment loss shall be recognized in an amount equal to that excess, limited to the total amount of goodwill allocated to that reporting unit.

We performed our annual test of goodwill impairment during the fourth quarter of fiscal year 2017. As of September 30, 2017, we determined there was no impairment of our goodwill. While we believe the estimates and assumptions used in determining the fair value of our reporting units are reasonable, significant changes in estimates of future cash flows, such as those caused by unforeseen events or changes in market conditions, could materially impact the fair value of a reporting unit which could result in the recognition of a goodwill impairment charge. See Note 1 and Note 2 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K.

Software Development Costs

We incur costs associated with the development of software to be sold, leased or otherwise marketed. Software development costs are expensed as incurred until technological feasibility has been established, at which time future costs incurred are capitalized until the product is available for general release to the public. A certain amount of judgment and estimation is required to assess when technological feasibility is established, as well as the ongoing assessment of the recoverability of capitalized costs. In evaluating the recoverability of capitalized software costs, we compare expected product performance utilizing forecasted revenue amounts to the total costs incurred to date and estimates of additional costs to be incurred. If revised forecasted product revenue is less than and/or revised forecasted costs are greater than the previously forecasted amounts, the net realizable value may be lower than previously estimated, which could result in the recognition of an impairment charge in the period in which such a determination is made.

Warranty Obligations

We are subject to warranty obligations on sales of our products. We record general warranty provisions based on an estimated warranty expense percentage applied to current period revenue. The percentage applied reflects our historical warranty claims experience over the preceding 12-month period. Both the experience percentage and the warranty liability are evaluated on an ongoing basis for adequacy. In addition, warranty provisions are also recognized for certain nonrecurring product claims that are individually significant. A certain amount of judgment is required in determining appropriate reserve levels for anticipated warranty claims. While these reserve levels are based on our historical warranty claims experience, they may not reflect the actual claims that will occur over the upcoming warranty period and additional warranty reserves may be required.

Income Taxes

We record a tax provision for the anticipated tax consequences of the reported results of operations. Deferred tax assets and liabilities are measured using the currently enacted tax rates that apply to taxable income in effect for the years in which those deferred tax assets and liabilities are expected to be realized or settled. We record a valuation allowance to reduce deferred tax assets to the amount that is believed more likely than not to be realized. We believe it is more likely than not that forecasted income, including income that may be generated as a result of certain tax planning strategies, together with the tax effects of the deferred tax liabilities, will be sufficient to fully recover the remaining net realizable value of its deferred tax assets. In the event that all or part of the net deferred tax assets are determined not to be realizable in the future, an adjustment to the valuation allowance would be charged to earnings in the period such determination is made. In addition, the calculation of tax liabilities involves significant judgment in estimating the impact of uncertainties in the application of complex tax laws. Resolution of these uncertainties in a manner inconsistent with our expectations could have a material impact on our financial condition and operating results. See Note 8 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K for additional information on income taxes.

Business Acquisitions

We account for acquired businesses using the acquisition method of accounting which requires that the assets acquired and liabilities assumed be recorded at the date of acquisition at their respective fair values. The judgments made in determining the estimated fair value assigned to each class of assets acquired and liabilities assumed, as well as asset lives, can materially impact net income. Accordingly, for significant items, we typically obtain assistance from a third-party valuation firm.

There are several methods that can be used to determine the fair value of assets acquired and liabilities assumed in a business combination. For intangible assets, we historically have utilized the "income method." This method starts with a forecast of all of the expected future net cash flows attributable to the subject intangible asset. These cash flows are then adjusted to present value by applying an appropriate discount rate that reflects the risk factors associated with the cash flow streams. Some of the

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more significant estimates and assumptions inherent in the income method (or other methods) include the projected future cash flows (including timing) and the discount rate reflecting the risks inherent in the future cash flows. Estimating the useful life of an intangible asset also requires judgment. For example, different types of intangible assets will have different useful lives, influenced by the nature of the asset, competitive environment and rate of change in the industry. Certain assets may even be considered to have indefinite useful lives. All of these judgments and estimates can significantly impact the determination of the amortization period of the intangible asset, and thus net income.

In connection with the acquisition of PCB consummated in fiscal year 2016, the final valuation of assets acquired and liabilities assumed was completed during the third quarter of fiscal year 2017.

Recently Issued Accounting Pronouncements

Information regarding new accounting pronouncements is included in "Recently Issued Accounting Pronouncements" under Note 1 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K.

Quarterly Financial Information

Revenue and operating results reported on a quarterly basis do not necessarily reflect trends in demand for our products or our operating efficiency. Revenue and operating results in any quarter may be significantly affected by customer shipments, installation timing or the timing of the completion of one or more contracts where revenue is recognized upon shipment or customer acceptance rather than on the percentage-of-completion method of revenue recognition. Our use of the percentage-of-completion revenue recognition method for large, long-term projects generally has the effect of minimizing significant fluctuations quarter-over-quarter. See Note 1 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K for additional information on our revenue recognition policy. Quarterly earnings also vary as a result of the use of estimates including, but not limited to, the rates used in recording federal, state and foreign income tax expense. See Note 1 and Note 8 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K for additional information on our use of estimates and income tax related matters, respectively.

Selected quarterly financial information was as follows:

(in thousands, except per share data)	First Quarter (unaudited)	Second Quarter (unaudited)	Third Quarter (unaudited)	Fourth Quarter ¹ (unaudited)	Full Year ²
Fiscal Year 2017					
Revenue	\$ 199,279	\$ 193,424	\$ 193,764	\$ 201,488	\$ 787,955
Gross profit	73,464	78,856	75,556	74,402	302,278
Income before income taxes	2,181	8,660	7,983	4,187	23,011
Net income	\$ 1,705	\$ 7,199	\$ 10,610	\$ 5,570	\$ 25,084
Earnings per share					
Basic	\$ 0.09	\$ 0.38	\$ 0.56	\$ 0.29	\$ 1.32
Diluted	\$ 0.09	\$ 0.38	\$ 0.55	\$ 0.29	\$ 1.31
Fiscal Year 2016					
Revenue	\$ 140,501	\$ 137,098	\$ 157,700	\$ 214,848	\$ 650,147
Gross profit	52,511	45,144	58,113	75,636	231,404
Income before income taxes	13,090	4,221	9,982	6,219	33,512
Net income	\$ 11,774	\$ 2,998	\$ 7,150	\$ 5,572	\$ 27,494
Earnings per share					
Basic	\$ 0.79	\$ 0.20	\$ 0.46	\$ 0.29	\$ 3.03
Diluted	\$ 0.78	\$ 0.20	\$ 0.46	\$ 0.29	\$ 3.00

¹ In the fourth quarter of fiscal year 2016, we recorded out-of-period adjustments that increased net income in the fourth quarter by \$968. The adjustments relate to prior quarters in fiscal years 2016 and 2015. We have evaluated

the out-of-period adjustments and have determined that they are not material to our financial position or results of operations for any quarterly period in fiscal years 2016 or 2015.

- ² The earnings per share amounts for each quarter may not sum to the fiscal year amounts due to rounding and the effect of weighting.

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Forward-looking Statements

Statements contained in this Annual Report on Form 10-K including, but not limited to, the discussion under Item 7 of Part II, Management's Discussion and Analysis of Financial Condition and Results of Operations, that are not statements of historical fact are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 (the Act). In addition, certain statements in our future filings with the SEC, in press releases, and in oral and written statements made by us or with our approval that are not statements of historical fact constitute forward-looking statements within the meaning of the Act. Examples of forward-looking statements include, but are not limited to: (i) projections of revenue, ROIC, EBITDA, income or loss, earnings or loss per share, the payment or nonpayment of dividends, capital structure, the adequacy of our liquidity and reserves, the anticipated level of expenditures required and other statements concerning future financial performance; (ii) statements of our plans and objectives by our management or Board of Directors, including those relating to products or services, merger or acquisition activity and the potential impact of newly acquired businesses; (iii) statements of assumptions underlying such statements; (iv) statements regarding business relationships with vendors, customers or collaborators or statements relating to our order cancellation history, our ability to convert our backlog of undelivered orders into revenue, the timing of purchases, competitive advantages and growth in end markets; (v) statements relating to the potential business and financial impact that the findings of our completed investigation in China may have on our financial condition, results of operations and internal controls; (vi) statements regarding our ability to report additional operating segments, to raise capital in a timely manner or to complete acquisitions in the future; and (vii) statements regarding products, their characteristics, fluctuations in the costs of raw materials for products, our geographic footprint, performance, sales potential or effect in the hands of customers. Words such as "believes," "anticipates," "expects," "intends," "targeted," "should," "potential," "goals," "strategy," and similar expressions are intended to identify forward-looking statements, but are not the exclusive means of identifying such statements.

Forward-looking statements involve risks and uncertainties that may cause actual results to differ materially from those in such statements. Factors that could cause actual results to differ from those discussed in the forward-looking statements include, but are not limited to, those described in Item 1A of Part I, Risk Factors, of this Annual Report on Form 10-K. The performance of our business and our securities may be adversely affected by these factors and by other factors common to other businesses and investments, or to the general economy. Forward-looking statements are qualified by some or all of these risk factors. Therefore, you should consider these forward-looking statements with caution and form your own critical and independent conclusions about the likely effect of these risk factors on our future performance. Forward-looking statements speak only as of the date on which statements are made, and we undertake no obligation to update any forward-looking statement to reflect events or circumstances after the date on which such statement is made to reflect the occurrence of unanticipated events or circumstances. Readers should carefully review the disclosures and the risk factors described in this and other documents we file from time to time with the SEC, including our Quarterly Reports on Form 10-Q and Current Reports on Form 8-K.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Foreign Currency Exchange Risk

Approximately 70% of our revenue has historically been derived from customers outside of the U.S. Our international subsidiaries have functional currencies other than our U.S. dollar reporting currency and, occasionally, transact business in currencies other than their functional currencies. These non-functional currency transactions expose us to market risk on assets, liabilities and cash flows recognized on these transactions.

The strengthening of the U.S. dollar relative to foreign currencies decreases the value of foreign currency-denominated revenue and earnings when translated into U.S. dollars resulting in an unfavorable currency translation impact on revenue and earnings. Conversely, the weakening of the U.S. dollar increases the value of foreign currency-denominated revenue and earnings resulting in a favorable currency translation impact on revenue and earnings. The following table illustrates financial results utilizing currency exchange rates from the prior year to estimate the impact of currency on the following financial items.

Foreign Currency Exchange Rates

(in thousands)

2017 2016 2015

(Unfavorable) favorable impact from currency translation on

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Revenue	\$(3,315)	\$(3,746)	\$(33,118)
Net income	\$187	\$(78)	\$(2,193)

The estimated net effect of currency translation on revenue was unfavorable in fiscal year 2017, primarily driven by the unfavorable translation impact associated with the relative strengthening in the value of the U.S. dollar against the Chinese yuan and British pound during fiscal year 2017, partially offset by the favorable translation impact associated with the relative weakening in the value of the U.S. dollar against the Japanese yen during the first two quarters of fiscal year 2017 as well as fluctuations in the value of the U.S. dollar against the Euro during fiscal year 2017.

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A hypothetical 10% appreciation or depreciation in foreign currencies against the U.S. dollar, assuming all other variables are held constant, would result in an increase or decrease in fiscal year 2017 revenue of approximately \$27,961.

We have operational procedures to mitigate these non-functional currency exposures. We also utilize foreign currency exchange contracts to exchange currencies at set exchange rates on future dates to offset expected gains or losses on specifically identified exposures.

Mark-to-market gains and losses on derivatives designated as cash flow hedges in our currency hedging program are recorded within accumulated other comprehensive income in the Consolidated Balance Sheets. We recognize gains and losses associated with the fair value of cash flow hedges at the time a gain or loss is recognized on the hedged exposure in the Consolidated Statements of Income or at the time the cash flow hedge is determined to be ineffective. The associated mark-to-market gains and losses are reclassified from accumulated other comprehensive income to the same line item in the Consolidated Statements of Income in which the underlying hedged transaction is reported. Net gains and losses on foreign currency transactions, included in the accompanying Consolidated Statements of Income were net losses of \$2,499, \$1,567 and \$2,510 in fiscal years 2017, 2016 and 2015, respectively. See Note 4 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K for additional information on our cash flow hedge currency exchange contracts.

Interest Rates

We are directly exposed to changes in market interest rates on cash, cash equivalents, short-term investments and long-term debt, and are indirectly exposed to the impact of market interest rates on overall business activity.

On floating-rate investments, increases and decreases in market interest rates will increase or decrease future interest income, respectively. On floating-rate debt, increases or decreases in market interest rates will increase or decrease future interest expense, respectively. On fixed-rate investments, increases or decreases in market interest rates do not impact future interest income but may decrease or increase the fair market value of the investments, respectively. On fixed-rate debt, increases or decreases in market interest rates do not impact future interest expense but may decrease or increase the fair market value of the debt, respectively.

As of September 30, 2017, we had cash and cash equivalents of \$108,733, some of which was invested in interest-bearing bank deposits or money market funds, with interest rates that are reset every 1 to 89 days, and generate interest income that will vary based on changes in short-term interest rates. A hypothetical decrease of 100 basis points in market interest rates, assuming all other variables were held constant, would decrease interest income by approximately \$130 on an annualized basis.

Secured floating rate credit facilities require interest payments to be calculated at a floating rate and are therefore impacted by increases or decreases in market interest rates. We have swapped a portion of our floating-rate debt to a fixed rate such that the interest expense on this debt will not vary with changes in short-term interest rates. See Note 4 to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report on Form 10-K for additional information on our interest rate swaps. A hypothetical increase of 100 basis points in floating interest rates, assuming all other variables were held constant, would result in a \$1,850 increase in future annual interest expense.

As of September 30, 2017, a discount rate of 2.0% and an expected rate increase in future compensation levels of 3.0% was used in the calculation of the pension liability related to the non-contributory, defined benefit pension plan of one of our international subsidiaries.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Our audited financial statements and notes thereto described in Item 15 of Part IV of this Annual Report on Form 10-K, and appearing on pages F-1 through F-46 of this Annual Report on Form 10-K, are incorporated by reference herein. See also "Quarterly Financial Data" in Management's Discussion and Analysis under Item 7 of Part II of this Annual Report on Form 10-K, which is incorporated by reference herein.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

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ITEM 9A. CONTROLS AND PROCEDURES

(a) Evaluation of Disclosure Controls and Procedures

Our management, including our Chief Executive Officer and Chief Financial Officer, have conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended (the Exchange Act)), as of September 30, 2017. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of September 30, 2017, our disclosure controls and procedures were effective.

For purposes of Rule 13a-15(e) under the Exchange Act, the term disclosure controls and procedures means controls and other procedures of an issuer that are designed to ensure that information required to be disclosed by the issuer in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by an issuer in the reports that it files or submits under the Exchange Act is accumulated and communicated to the issuer's management, including its Chief Executive Officer and Chief Financial Officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

(b) Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) under the Exchange Act.

The 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 also 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;
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial
- (ii) 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.

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of the Company's annual or interim financial statements will not be prevented or detected on a timely basis.

Under the supervision of the Audit Committee of the Board of Directors and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting using the criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on our assessment and those criteria, our Chief Executive Officer and Chief Financial Officer concluded that our internal control over financial reporting was effective as of September 30, 2017.

KPMG, LLP, an independent registered public accounting firm, has audited the effectiveness of the Company's internal control over financial reporting as of September 30, 2017, and has issued a report which is included herein.

(c) Remediation of Material Weaknesses in Internal Control Over Financial Reporting

Remediation of Material Weaknesses Disclosed in Fiscal Year 2016 Annual Report on Form 10-K

As previously disclosed in Item 9A of Part II of our Annual Report on Form 10-K for fiscal year 2016, management determined that our internal control over financial reporting was not effective as of October 1, 2016 due to material weaknesses over control activities with respect to effective processes and controls relative to adherence to its Code of

Conduct by employees

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involved with its business in China, which could have led to management override of internal controls over financial reporting. Further, the Company did not have effective monitoring activities to ensure adherence with its Code of Conduct.

To remediate the material weaknesses in our internal control over financial reporting described in Item 9A of Part II of our Annual Report on Form 10-K for fiscal year 2016, we performed a comprehensive review of procedures and related controls and conducted training globally in support of our Code of Conduct. Additionally, we are conducting more robust monitoring to ensure ongoing adherence to our Code of Conduct in light of the findings of the investigation. We have also enhanced our third-party intermediary diligence and monitoring processes, with the support of and guidance from external resources, and have continued clear and consistent messaging on compliance expectations at all levels of the organization.

Management has determined that the remediation actions discussed above were effectively designed and demonstrated effective operation for a sufficient period of time to enable us to conclude that the material weaknesses regarding internal control activities with respect to effective processes and controls relative to adherence to its Code of Conduct by employees involved with its business in China have been remediated as of September 30, 2017.

(d) Changes in Internal Control Over Financial Reporting

We acquired PCB on July 5, 2016, and we have implemented our internal control structure over PCB and incorporated its operations into our assessment of internal control over financial reporting as of September 30, 2017. We have extended our oversight and monitoring processes that support internal control over financial reporting to include the operations of PCB.

Other than the acquisition of PCB discussed above and the actions described under "Remediation of Material Weakness in Internal Control Over Financial Reporting," there were no other changes in the Company's internal control over financial reporting during the fourth quarter of fiscal year 2017 that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

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Report of Independent Registered Public Accounting Firm

The Board of Directors and Shareholders

MTS Systems Corporation:

We have audited MTS Systems Corporation's internal control over financial reporting as of September 30, 2017, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). MTS Systems Corporation's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit 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 audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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 (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) 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 (3) 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.

In our opinion, MTS Systems Corporation maintained, in all material respects, effective internal control over financial reporting as of September 30, 2017, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of MTS Systems Corporation and subsidiaries as of September 30, 2017 and October 1, 2016, and the related consolidated statements of income, comprehensive income, shareholders' equity, and cash flows, and the related financial statement Schedule II, for each of the fiscal years in the three-year period ended September 30, 2017, and our report dated November 27, 2017 expressed an unqualified opinion on those consolidated financial statements.

/s/ KPMG LLP

Minneapolis, Minnesota
November 27, 2017

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ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The required information by this Item 10 with respect to our directors, our Code of Conduct, compliance with Section 16(a) of the Exchange Act and our Audit Committee, including our Audit Committee financial experts, is incorporated by reference to the information set forth under the headings "Election of Directors" and "Other Information – Section 16(a) Beneficial Ownership Reporting Compliance" in our Definitive Proxy Statement for the Annual Meeting of Shareholders scheduled to be held on February 13, 2018.

Executive Officers serve at the discretion of and are elected by our Board of Directors. There are no family relationships amongst any of the executive officers named, nor is there any undisclosed arrangement or understanding pursuant to which any person was selected as an officer. The business experience of the executive officers over the last five years, their present position, their age and the year in which such person became an executive officer are presented below.

Name	Age	Position
Jeffrey A. Graves	56	Director, President and Chief Executive Officer
William C. Becker	64	President, Materials Test Systems
Steven B. Harrison	51	President, Vehicles and Structure Test Systems
David T. Hore	52	President, MTS Sensors
Brian T. Ross	41	Senior Vice President and Chief Financial Officer

Jeffrey A. Graves, a director since 2012, is President and CEO of the Company, a role he has served in since May 2012. Prior to joining the Company, he was President, CEO and a director of C&D Technologies, Inc. (a manufacturer, marketer and distributor of electrical power storage systems for the standby power storage market) from July 2005 until May 2012. Prior to that time, he held various executive positions at Kemet Electronics Corporation from 2001 to 2005, including CEO; various leadership positions with General Electric Company's Power Systems Division and Corporate Research & Development Center from 1995 to 2001; prior to 1995, various positions of increasing responsibility at Rockwell International Corporation and Howmet Corporation. Dr. Graves has served as a director of Teleflex Incorporated and Hexcel Corporation since 2007.

William C. Becker is President, Materials Test Systems, a role he has served in since October 2016. Prior to rejoining the Company, Mr. Becker was Managing Director at Zwick, USA (a subsidiary of Zwick/Roell AG and a manufacturer of material testing products) from 2010 to August 2016. Mr. Becker had roles of increasing responsibility with the Company from 1978 to 2009.

Steven B. Harrison is President, MTS Vehicles and Structure Test Systems, a role he has served in since February 2017. Prior to joining the Company, Mr. Harrison served as President from August 2015 to December 2016 and Chief Commercial Officer from August 2012 to August 2015 of AAR Airlift Group, Inc. (a wholly owned subsidiary of AAR CORP and a provider of aviation services to the worldwide commercial aerospace and governmental/defense industries). Prior to AAR, Mr. Harrison served as the President and CEO of National Airlines (an international provider of on demand cargo and passenger services) from September 2010 through July 2012.

David T. Hore is President, MTS Sensors, a role he has served in since July 2016 when he joined the Company through the acquisition of PCB, where he served as its President since 2004.

Brian T. Ross is Senior Vice President and Chief Financial Officer, a role he has served in since May 2017. Prior to this role, Mr. Ross was Corporate Controller of the Company from December 2014 to May 2017. Prior to joining the Company, Mr. Ross was Director of Financial Planning and Analysis with Digi International, Inc. (a leading provider of machine-to-machine networking solutions) from September 2008 to December 2014. Mr. Ross also served as Controller at Restore Medical (a medical device manufacturer) from July 2006 to August 2008, following a seven year tenure at PricewaterhouseCoopers (a registered public accounting firm).

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ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item 11 is incorporated by reference to the information set forth under headings "Executive Compensation," "Election of Directors – Non-Employee Director Compensation," and "Other Information – Compensation Committee Interlocks and Insider Participation" in our Definitive Proxy Statement for the Annual Meeting of Shareholders scheduled to be held on February 13, 2018.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this Item 12 is incorporated by reference to the information set forth under the heading "Other Information – Security Ownership of Principal Shareholders and Management" and "Other Information – Information Regarding Equity Compensation Plans" in our Definitive Proxy Statement for the Annual Meeting of Shareholders scheduled to be held on February 13, 2018.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this Item 13 is incorporated by reference to the information set forth under the headings "Election of Directors – Other Information Regarding the Board" and "Other Information – Related Party Transactions" in our Definitive Proxy Statement for the Annual Meeting of Shareholders scheduled to be held February 13, 2018.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item 14 is incorporated by reference to the information set forth under the heading "Ratification of Appointment of Independent Registered Public Accounting Firm" in our Definitive Proxy Statement for the Annual Meeting of Shareholders scheduled to be held on February 13, 2018.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as part of this Annual Report on Form 10-K:

(1) Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

Consolidated Balance Sheets as of September 30, 2017 and October 1, 2016

Consolidated Statements of Income for the Fiscal Years Ended September 30, 2017, October 1, 2016 and October 3, 2015

Consolidated Statements of Comprehensive Income for the Fiscal Years Ended September 30, 2017, October 1, 2016 and October 3, 2015

Consolidated Statements of Shareholders' Equity for the Fiscal Years Ended September 30, 2017, October 1, 2016 and October 3, 2015

Consolidated Statements of Cash Flows for the Fiscal Years Ended September 30, 2017, October 1, 2016 and October 3, 2015

Notes to Consolidated Financial Statements

(2) Financial Statement Schedules

See accompanying Index to Financial Statements on page F-1

All other schedules

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(3)Exhibits

Exhibit

NumberDescription

- 2.1 Agreement and Plan of Merger, dated April 5, 2016, by and among the Company, Nickel Merger Sub Inc., PCB Group, Inc., and David T. Hore, John A. Lally and David M. Lally as the Shareholder Representative Group thereto (excluding schedules and exhibits, which the registrant agrees to furnish supplementally to the Securities and Exchange Commission upon request), incorporated by reference to Exhibit 2.1 of the Company's Current Report on Form 8-K filed April 6, 2016.
- 3.1 Restated and Amended Articles of Incorporation, incorporated by reference to Exhibit 3.a of the Company's Form 10-K for the fiscal year ended September 29, 2012.
- 3.2 Amended and Restated Bylaws, incorporated by reference to Exhibit 3.b of the Company's Current Report on Form 8-K filed November 28, 2011.
- 4.1 Indenture, dated as of June 15, 2016, by and between the Company and U.S. Bank National Association, as trustee, incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed June 15, 2016.
- 4.2 First Supplemental Indenture, dated as of June 15, 2016, by and between the Company and U.S. Bank National Association, as trustee, incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed June 15, 2016.
- 4.3 Purchase Contract Agreement, dated as of June 15, 2016, by and among the Company, U.S. Bank National Association, as purchase contract agent and as attorney-in-fact for the holders of the purchase contracts from time to time, and U.S. Bank National Association, as trustee under the Indenture, incorporated by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed June 15, 2016.
- 4.4 Form of Tangible Equity Unit (included in Exhibit 4.3 above).
- 4.5 Form of Purchase Contract (included in Exhibit 4.3 above).
- 4.6 Form of Amortizing Note (included in Exhibit 4.2 above).
- 4.7 Form of Common Stock Certificate, incorporated by reference to Exhibit 4.1 to the Company's Registration Statement on Form S-3 filed June 7, 2016.
- 4.8 Form of Senior Indenture, incorporated by reference to Exhibit 4.2 to the Company's Registration Statement on Form S-3 filed June 7, 2016.
- 4.9 Form of Subordinated Indenture, incorporated by reference to Exhibit 4.3 to the Company's Registration Statement on Form S-3 filed June 7, 2016.
- 10.1 * Executive Variable Compensation Plan, incorporated by reference to Appendix A of the Company's Proxy Statement filed December 30, 2014.
- 10.2 * Amended and Restated 2012 Employee Stock Purchase Plan, incorporated by reference to Exhibit 10.2 of the Company's Form 10-K for the fiscal year ended October 1, 2016.

10.3 * Restated Executive Deferred Compensation Plan (2005), incorporated by reference to Exhibit 10.3 of the Company's Current Report on Form 8-K filed October 28, 2008.

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- 10.4 * MTS Systems Corporation 2011 Stock Incentive Plan, conformed copy including all amendments through February 9, 2016, incorporated by reference to Annex B of the Company's Definitive Proxy Statement on Schedule 14A filed December 30, 2015.
- 10.5 * Form of Notice of Grant and Terms and Conditions of Employee Options under 2011 Stock Incentive Plan, incorporated by reference to Exhibit 99.1 of the Company's Registration Statement on Form S-8 filed February 9, 2011.
- 10.6 * Form of Notice of Grant and Terms and Conditions of Employee Restricted Stock Units under 2011 Stock Incentive Plan, incorporated by reference to Exhibit 99.2 of the Company's Registration Statement on Form S-8 filed February 9, 2011.
- 10.7 * Form of Notice of Grant and Terms and Conditions of Employee Restricted Stock under 2011 Stock Incentive Plan, incorporated by reference to Exhibit 99.3 of the Company's Registration Statement on Form S-8 filed February 9, 2011.
- 10.8 * Form of Notice of Grant and Terms and Conditions of Restricted Stock for Directors under 2011 Stock Incentive Plan, incorporated by reference to Exhibit 99.4 of the Company's Registration Statement on Form S-8 filed February 9, 2011.
- 10.9 * Form of Notice of Grant of Restricted Stock and Restricted Stock Agreement – Director under the 2011 Stock Incentive Plan, incorporated by reference to Exhibit 10.1 of the Company's Form 10-Q for the fiscal quarter ended December 28, 2013.
- 10.10 * Form of Notice of Grant of Restricted Stock Units and Restricted Stock Agreement – Non-Employee Director under the 2011 Stock Incentive Plan, incorporated by reference to Exhibit 10.2 of the Company's Form 10-Q for the fiscal quarter ended December 28, 2013.
- 10.11 * Uniform Terms and Conditions Applicable to Non-Employee Director Restricted Stock Unit Grants under the 2011 Stock Incentive Plan, incorporated by reference to Exhibit 10.3 of the Company's Form 10-Q for the fiscal quarter ended December 28, 2013.
- 10.12 * Form of Notice of Grant of Restricted Stock Units and Restricted Stock Unit Agreement – Employee under the 2011 Stock Incentive Plan, incorporated by reference to Exhibit 10.4 of the Company's Form 10-Q for the fiscal quarter ended December 28, 2013.
- 10.13 * Uniform Terms and Conditions Applicable to Employee Restricted Stock Unit Grants under the 2011 Stock Incentive Plan, incorporated by reference to Exhibit 10.5 of the Company's Form 10-Q for the fiscal quarter ended December 28, 2013.
- 10.14 * Form of Notice of Grant of Non-Qualified Stock Options and Option Agreement – Employee under the 2011 Stock Incentive Plan, incorporated by reference to Exhibit 10.6 of the Company's Form 10-Q for the fiscal quarter ended December 28, 2013.
- 10.15 * Uniform Terms and Conditions Applicable to Employee Option Grants under the 2011 Stock Incentive Plan, incorporated by reference to Exhibit 10.7 of the Company's Form 10-Q for the fiscal quarter ended December 28, 2013.
- 10.16 *

Uniform Terms and Conditions Applicable to Employee Performance Restricted Stock Unit Agreements under the 2011 Stock Incentive Plan, incorporated by reference to Exhibit 10.16 of the Company's Form 10-K for the fiscal year ended October 3, 2015.

10.17* Form of Notice of Grant Performance Restricted Stock Units and Performance Restricted Stock Unit Agreement - Employee under the 2011 Stock Incentive Plan, incorporated by reference to Exhibit 10.17 of the Company's Form 10-K for the fiscal year ended October 3, 2015.

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- 10.18* MTS Systems Corporation 2017 Stock Incentive Plan, incorporated by reference to Annex A of the Company's Definitive Proxy Statement on Schedule 14A filed April 25, 2017.
- 10.19* Form of Restricted Stock Unit Agreement - Employee under 2017 Stock Incentive Plan, incorporated by reference to Exhibit 99.2 of the Company's Registration Statement on Form S-8 filed June 7, 2017.
- 10.20* Form of Non-Qualified Stock Option Agreement - Employee under 2017 Stock Incentive Plan, incorporated by reference to Exhibit 99.3 of the Company's Registration Statement on Form S-8 filed June 7, 2017.
- 10.21* Form of Performance Restricted Stock Agreement - Employee under 2017 Stock Incentive Plan, incorporated by reference to Exhibit 99.4 of the Company's Registration Statement on Form S-8 filed June 7, 2017.
- 10.22* Form of Restricted Stock Unit Agreement - Non-employee Director under 2017 Stock Incentive Plan, incorporated by reference to Exhibit 99.5 of the Company's Registration Statement on Form S-8 filed June 7, 2017.
- 10.23* Letter Agreement, dated as of March 31, 2012, by and between the Company and Jeffrey A. Graves, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed April 9, 2012.
- 10.24* Employment Agreement, dated as of April 1, 2016, by and between PCB Group, Inc. and David T. Hore, incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed July 7, 2016.
- 10.25* First Amendment to Employment Agreement, dated as of November 8, 2016, by and between PCB Group, Inc. and David T. Hore, incorporated by reference to Exhibit 10.22 of the Company's Form 10-K for the fiscal year ended October 1, 2016.
- 10.26* Letter Agreement, dated August 24, 2016, by and between the Company and William C. Becker, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed January 5, 2017.
- 10.27* Letter Agreement, dated December 30, 2016, by and between the Company and Steven B. Harrison, incorporated by reference to Exhibit 10.2 of the Company's Current Report on Form 8-K filed January 5, 2017.
- 10.28* Mutual Separation and Release Agreement, dated April 18, 2017, by and between the Company and Catherine L. Powell, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed April 18, 2017.
- 10.29* Form of Indemnification Agreement between the Company and each of its directors and executive officers, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed September 1, 2006.
- 10.30* Amended and Restated Executive Severance Plan, incorporated by reference to Exhibit 10.26 of the Company's Form 10-K for the fiscal year ended October 1, 2016.
- 10.31* Amended and Restated Executive Change in Control Severance Plan, incorporated by reference to Exhibit 10.27 of the Company's Form 10-K for the fiscal year ended October 1, 2016.

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- 10.32 Credit Agreement, dated as of July 5, 2016, among the Company; the foreign subsidiaries of the Company party thereto, the lenders party thereto and JPMorgan Chase Bank N.A., as administrative agent, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed July 7, 2016.
- 10.33 Amendment No. 1 to Credit Agreement, dated as of July 29, 2016, by and among the Company, JPMorgan Chase Bank, N.A., as Administrative Agent and Swingline Lender, JPMorgan Chase Bank, N.A. and U.S. Bank National Association, as Issuing Banks, the Revolving Lenders party thereto and Bank of America, N.A., as an Additional Lender, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed August 1, 2016.
- 10.34 Form of Consent Memorandum, effective as of January 24, 2017, executed by the lenders party thereto and JPMorgan Chase Bank, N.A. as administrative agent, and acknowledged and agreed to by the Company, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed January 24, 2017.
- 10.35 Amendment No. 2 to Credit Agreement, dated as of July 6, 2017, by and among the Company, JPMorgan Chase Bank, N.A., as Administrative Agent and Swingline Lender, JPMorgan Chase Bank, N.A. and U.S. Bank National Association, as Issuing Banks, the Revolving Lenders party thereto and Bank of America, N.A., as an Additional Lender, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed July 6, 2017.
- 10.36 Capped Call Transaction Confirmation, dated as of June 9, 2016, by and between the Company and JPMorgan Chase Bank, National Association, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed June 15, 2016.
- 10.37 Capped Call Transaction Confirmation, dated as of June 9, 2016, by and between the Company and Wells Fargo Bank, National Association, incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed June 15, 2016.
- 10.38 Additional Capped Call Transaction Confirmation, dated as of June 16, 2016, by and between the Company and JPMorgan Chase Bank, National Association, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed June 21, 2016.
- 10.39 Additional Capped Call Transaction Confirmation, dated as of June 16, 2016, by and between the Company and Wells Fargo Bank, National Association, incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed June 21, 2016.
- 12.1 Computation of ratio of earnings to fixed charges (filed herewith).
- 21.1 Subsidiaries of the Registrant (filed herewith).
- 23.1 Consent of Independent Registered Public Accounting Firm (filed herewith).
- 31.1 Certification of the Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).
- 31.2 Certification of the Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).

32.1 Certification of the Chief Executive Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (filed herewith).

32.2 Certification of the Chief Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (filed herewith).

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101.INS ** XBRL Instance Document (filed herewith).

101.SCH ** XBRL Taxonomy Extension Schema Document (filed herewith).

101.CAL ** XBRL Taxonomy Extension Calculation Linkbase Document (filed herewith).

101.DEF ** XBRL Taxonomy Extension Definition Linkbase Document (filed herewith).

101.LAB ** XBRL Taxonomy Extension Label Linkbase Document (filed herewith).

101.PRE ** XBRL Taxonomy Extension Presentation Linkbase Document (filed herewith).

- * Denotes a contract or executive compensation plan or arrangement required to be filed as an exhibit pursuant to Item 15 of Form 10-K.

- ** XBRL (Extensible Business Reporting Language) information is furnished and not filed or a part of a registration statement or prospectus for purposes of Sections 11 or 12 of the Securities Act of 1933, as amended, is deemed not filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and otherwise is not subject to liability under these sections.

ITEM 16. FORM 10-K SUMMARY

Not applicable.

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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.

MTS SYSTEMS
CORPORATION

Date: November 27, 2017 /s/ JEFFREY A.
GRAVES
Jeffrey A. Graves
President and
Chief Executive
Officer
(Principal
Executive
Officer)

Date: November 27, 2017 /s/ BRIAN T.
ROSS
Brian T. Ross
Senior Vice
President and
Chief Financial
Officer
(Principal
Financial Officer
and Principal
Accounting
Officer)

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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.

/s/ JEFFREY A. GRAVES Jeffrey A. Graves	President and Chief Executive Officer and Director (Principal Executive Officer)	November 27, 2017
/s/ BRIAN T. ROSS Brian T. Ross	Senior Vice President and Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	November 27, 2017
/s/ DAVID J. ANDERSON David J. Anderson	Non-Executive Chair of the Board	November 27, 2017
/s/ DAVID D. JOHNSON David D. Johnson	Director	November 27, 2017
/s/ RANDY J. MARTINEZ Randy J. Martinez	Director	November 27, 2017
/s/ MICHAEL V. SCHROCK Michael V. Schrock	Director	November 27, 2017
/s/ GAIL P. STEINEL Gail P. Steinel	Director	November 27, 2017
/s/ MAXIMILIANE C. STRAUB Maximiliane C. Straub	Director	November 27, 2017
/s/ CHUN HUNG (KENNETH) YU Chun Hung (Kenneth) Yu	Director	November 27, 2017

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MTS Systems Corporation and Subsidiaries

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Report of Independent Registered Public Accounting Firm

The Board of Directors and Shareholders

MTS Systems Corporation:

We have audited the accompanying consolidated balance sheets of MTS Systems Corporation and subsidiaries as of September 30, 2017 and October 1, 2016, and the related consolidated statements of income, comprehensive income, shareholders' equity, and cash flows for each of the fiscal years in the three year period ended September 30, 2017. In connection with our audits of the consolidated financial statements, we also have audited financial statement Schedule II. These consolidated financial statements and financial statement schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements and financial statement schedule based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of MTS Systems Corporation and subsidiaries as of September 30, 2017 and October 1, 2016, and the results of their operations and their cash flows for each of the fiscal years in the three year period ended September 30, 2017, in conformity with U.S. generally accepted accounting principles. Also, in our opinion, the related financial statement schedule, when considered in relation to the basic consolidated financial statements taken as a whole, presents fairly, in all material respects, the information set forth therein.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), MTS Systems Corporation's internal control over financial reporting as of September 30, 2017, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated November 27, 2017 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

/s/ KPMG LLP

Minneapolis, Minnesota
November 27, 2017

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Consolidated Balance Sheets

(in thousands, except per share data)

	September 30, 2017	October 1, 2016
Assets		
Current assets		
Cash and cash equivalents	\$ 108,733	\$84,780
Accounts receivable, net of allowance for doubtful accounts of \$5,371 and \$3,923, respectively	123,994	133,500
Unbilled accounts receivable	76,914	76,626
Inventories, net	127,728	132,566
Prepaid expenses and other current assets	19,880	12,793
Total current assets	457,249	440,265
Property and equipment, net	99,930	100,789
Goodwill	369,762	369,700
Intangible assets, net	255,079	266,789
Other long-term assets	4,116	5,061
Deferred income taxes	3,556	5,416
Total assets	\$ 1,189,692	\$ 1,188,020
Liabilities and Shareholders' Equity		
Current liabilities		
Current maturities of long-term debt, net	\$ 39,095	\$9,850
Accounts payable	47,515	46,383
Accrued payroll and related costs	49,434	45,505
Advance payments from customers	76,712	72,728
Accrued warranty costs	6,018	5,718
Accrued income taxes	4,464	3,445
Accrued dividends	5,278	4,942
Other accrued liabilities	18,873	27,550
Total current liabilities	247,389	216,121
Long-term debt, less current maturities, net	418,544	455,001
Deferred income taxes	74,981	86,020
Non-current accrued income taxes	5,855	6,232
Defined benefit pension plan obligation	8,588	13,744
Other long-term liabilities	5,558	5,642
Total liabilities	760,915	782,760
Shareholders' Equity		
Common stock, \$0.25 par value; 64,000 shares authorized: 17,760 and 16,660 shares issued and outstanding as of September 30, 2017 and October 1, 2016, respectively	4,440	4,165
Additional paid-in capital	163,632	154,879
Retained earnings	261,258	256,589
Accumulated other comprehensive income (loss)	(553)	(10,373)
Total shareholders' equity	428,777	405,260
Total liabilities and shareholders' equity	\$ 1,189,692	\$ 1,188,020

The accompanying Notes to Consolidated Financial Statements are an integral part of these consolidated financial statements.

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Table of ContentsConsolidated Statements of Income
(in thousands, except per share data)

For the fiscal year ended	September 30, 2017	October 1, 2016	October 3, 2015
Revenue			
Product	\$ 691,471	\$562,340	\$484,835
Service	96,484	87,807	79,099
Total revenue	787,955	650,147	563,934
Cost of sales			
Product	427,405	365,401	296,962
Service	58,272	53,342	47,359
Total cost of sales	485,677	418,743	344,321
Gross profit	302,278	231,404	219,613
Operating expenses			
Selling and marketing	124,912	94,992	82,974
General and administrative	87,539	69,313	51,438
Research and development	34,999	25,336	23,705
Total operating expenses	247,450	189,641	158,117
Income from operations	54,828	41,763	61,496
Interest expense, net	(30,821)	) (8,489	) (795)
Other income (expense), net	(996)	) 238	(1,529)
Income before income taxes	23,011	33,512	59,172
Income tax provision (benefit)	(2,073)	) 6,018	13,710
Net income	\$ 25,084	\$27,494	\$45,462
Earnings per share			
Basic			
Earnings per share	\$ 1.32	\$1.72	\$3.03
Weighted average common shares outstanding	19,040	16,027	14,984
Diluted			
Earnings per share	\$ 1.31	\$1.70	\$3.00
Weighted average common shares outstanding	19,137	16,179	15,142
Dividends declared per share	\$ 1.20	\$1.20	\$1.20

The accompanying Notes to Consolidated Financial Statements are an integral part of these consolidated financial statements.

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Consolidated Statements of Comprehensive Income

(in thousands, except per share data)

For the fiscal year ended	September 30, 2017	October 1, 2016	October 3, 2015
Net income	\$ 25,084	\$ 27,494	\$ 45,462
Other comprehensive income (loss), net of tax			
Foreign currency translation gain (loss) adjustments	3,273	(332)	(11,215)
Derivative instruments			
Unrealized net gain (loss)	2,110	(855)	2,226
Net (gain) loss reclassified to earnings	98	214	(2,738)
Defined benefit pension plan			
Unrealized net gain (loss)	4,132	(4,213)	(874)
Net (gain) loss reclassified to earnings	696	408	350
Currency exchange rate gain (loss)	(489)	(18)	850
Other comprehensive income (loss)	9,820	(4,796)	(11,401)
Comprehensive income	\$ 34,904	\$ 22,698	\$ 34,061

The accompanying Notes to Consolidated Financial Statements are an integral part of these consolidated financial statements.

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Consolidated Statements of Shareholders' Equity

(in thousands, except per share data)

	Common Stock		Additional		Accumulated	Total
	Shares	Amount	Paid-In	Retained	Other Comprehensive	Shareholders'
	Issued		Capital	Earnings	Income (Loss)	Equity
Balance, September 27, 2014	15,180	\$3,795	\$6,112	\$242,396	\$ 5,824	\$ 258,127
Total comprehensive income	—	—	—	45,462	(11,401)	34,061
Exercise of stock options	92	23	3,904	—	—	3,927
Stock-based compensation	57	14	7,443	—	—	7,457
Tax benefit from equity compensation	—	—	734	—	—	734
Issuance for employee stock purchase plan	16	4	916	—	—	920
Common stock purchased and retired	(413)	(103)	(14,834)	(14,178)	—	(29,115)
Dividends, \$1.20 per share	—	—	—	(17,969)	—	(17,969)
Balance, October 3, 2015	14,932	\$3,733	\$4,275	\$255,711	\$ (5,577)	\$ 258,142
Total comprehensive income	—	—	—	27,494	(4,796)	22,698
Issuance of common stock, net of issuance costs	1,897	474	73,827	—	—	74,301
Issuance of tangible equity units, net of issuance costs	—	—	84,511	—	—	84,511
Purchase of capped calls	—	—	(7,935)	—	—	(7,935)
Exercise of stock options	68	17	2,782	—	—	2,799
Stock-based compensation	47	12	7,144	—	—	7,156
Tax shortfall from equity compensation	—	—	(172)	—	—	(172)
Issuance for employee stock purchase plan	24	6	1,042	—	—	1,048
Common stock purchased and retired	(308)	(77)	(10,595)	(7,742)	—	(18,414)
Dividends, \$1.20 per share	—	—	—	(18,874)	—	(18,874)
Balance, October 1, 2016	16,660	\$4,165	\$154,879	\$256,589	\$ (10,373)	\$ 405,260
Total comprehensive income	—	—	—	25,084	9,820	34,904
Conversion of tangible equity units	939	235	(235)	—	—	—
Settlement of capped calls	(12)	(3)	3	—	—	—
Exercise of stock options	112	28	4,531	—	—	4,559
Stock-based compensation	69	17	5,603	—	—	5,620
Tax shortfall from equity compensation	—	—	(386)	—	—	(386)
Issuance for employee stock purchase plan	25	6	1,014	—	—	1,020
Common stock purchased and retired	(33)	(8)	(1,777)	—	—	(1,785)
Dividends, \$1.20 per share	—	—	—	(20,415)	—	(20,415)
Balance, September 30, 2017	17,760	\$4,440	\$163,632	\$261,258	\$ (553)	\$ 428,777

The accompanying Notes to Consolidated Financial Statements are an integral part of these consolidated financial statements.

Table of ContentsConsolidated Statements of Cash Flows
(in thousands)

For the fiscal year ended	September 30, 2017	October 1, 2016	October 3, 2015
Cash Flows from Operating Activities			
Net income	\$ 25,084	\$ 27,494	\$ 45,462
Adjustments to reconcile net income to net cash provided by (used in) operating activities			
Stock-based compensation	5,600	7,224	7,351
Excess tax benefits from stock-based compensation	(208)	) (187	) (771)
Fair value adjustment to acquired inventory	7,975	7,916	—
Net periodic pension benefit cost	1,768	1,136	986
Depreciation and amortization	35,523	24,077	21,106
Amortization of debt issuance costs	3,863	1,054	162
Loss on debt extinguishment	503	502	—
Deferred income taxes	(9,127	) (5,274	) 459
Bad debt provision (recovery), net	1,930	957	1,210
Changes in operating assets and liabilities			
Accounts receivable and unbilled accounts receivable	7,652	(22,059	) 3,308
Inventories, net	(2,253	) 3,365	(4,105)
Prepaid expenses	(1,486	) (1,086	) (1,673)
Accounts payable	1,751	5,647	6,772
Accrued payroll and related costs	4,781	9,057	(835)
Advance payments from customers	3,635	5,701	13,065
Accrued warranty costs	278	414	445
Other assets and liabilities	(15,617	) 1,943	7,494
Net Cash Provided by (Used in) Operating Activities	71,652	67,881	100,436
Cash Flows from Investing Activities			
Purchases of property and equipment	(17,798	) (20,806	) (18,445)
Proceeds from sale of property and equipment	45	1,514	—
Purchases of business, net of acquired cash	(853	) (580,920	) (667)
Net Cash Provided by (Used in) Investing Activities	(18,606	) (600,212	) (19,112)
Cash Flows from Financing Activities			
Payment of long-term debt	(4,881) —	—
Proceeds from issuance of long-term debt	—	460,000	—
Proceeds from issuance of common stock, net of issuance costs	—	74,301	—
Proceeds from issuance of equity component of tangible equity units, net of issuance costs	—	84,511	—
Payment for capped calls	—	(7,935) —
Proceeds from issuance of debt component of tangible equity units	—	27,386	—
Payment of debt component of tangible equity units	(8,541	) (2,401) —
Payment of debt issuance costs for long-term debt	(782	) (19,837) —
Payment of debt issuance costs for debt component of tangible equity units	—	(971) —
Payment of debt issuance costs for revolving credit facility	(200	) (920	) (26)
Receipts under short-term borrowings	—	20,000	11,183
Payments under short-term borrowings	—	(41,343	) (50,000)
Excess tax benefits from stock-based compensation	208	187	771
Cash dividends	(20,079	) (13,932	) (22,445)
Proceeds from exercise of stock options and employee stock purchase plan	5,579	3,847	4,847

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Payments to purchase and retire common stock	(1,785) (18,414) (29,115)
Net Cash Provided by (Used in) Financing Activities	(30,481) 564,479	(84,785)
Effect of Exchange Rate Changes on Cash and Cash Equivalents	1,388	864	(5,168)
Cash and Cash Equivalents				
Increase (decrease) during the year	23,953	33,012	(8,629)
Balance, beginning of period	84,780	51,768	60,397	
Balance, End of Period	\$ 108,733	\$ 84,780	\$ 51,768	
Supplemental Disclosures				
Cash paid during the year for				
Interest	\$ 29,881	\$ 1,225	\$ 816	
Income taxes	11,478	10,826	10,199	
Non-cash investing and financing activities				
Deferred endowment consideration not yet paid	—	1,000	—	
Net working capital adjustment not yet received	—	513	—	
Property and equipment acquired under capital lease	2,747	—	—	
Dividends declared not yet paid	5,278	4,942	—	
Debt issuance costs not yet paid recorded in accounts payable and other accrued liabilities	—	235	—	

The accompanying Notes to Consolidated Financial Statements are an integral part of these consolidated financial statements.

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Notes to Consolidated Financial Statements

(Dollars and shares in thousands, unless otherwise noted)

NOTE 1 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Nature of Operations

MTS Systems Corporation is a leading global supplier of high-performance test systems and sensors. Our testing hardware and software solutions help customers accelerate and improve design, development and manufacturing processes and are used for determining the mechanical behavior of materials, products and structures. Our high-performance sensors are used for measuring acceleration, position, vibration, motion, pressure, force and sound.

Fiscal Year

We have a 5-4-4 week, quarterly accounting cycle with our fiscal year ending on the Saturday closest to September 30. Fiscal years 2017, 2016 and 2015 ended September 30, 2017, October 1, 2016 and October 3, 2015, respectively. Fiscal years 2017, 2016 and 2015 include 52, 52 and 53 weeks, respectively.

Consolidation

The Consolidated Financial Statements include the accounts of MTS Systems Corporation and its wholly owned subsidiaries. Significant intercompany account balances and transactions have been eliminated.

Revenue Recognition

We recognize revenue on a sales arrangement when it is realized or realizable and earned, which occurs when all of the following criteria have been met: (1) persuasive evidence of an arrangement exists; (2) delivery and title transfer has occurred or services have been rendered; (3) the sales price is fixed and determinable; (4) collectability is reasonably assured; and (5) all significant obligations to the customer have been fulfilled.

Orders that are manufactured and delivered in less than six months with routine installations and no special acceptance protocols may contain multiple elements for revenue recognition purposes. We consider each deliverable that provides value to the customer on a standalone basis a separable element. Separable elements in these arrangements may include the design and manufacture of hardware and essential software, installation services, training and/or post contract maintenance and support. We initially allocate consideration to each separable element using the relative selling price method. Selling prices are determined based on either vendor-specific objective evidence (VSOE) (the actual selling prices of similar products and services sold on a standalone basis) or, in the absence of VSOE, our best estimate of the selling price. Factors considered in determining estimated selling prices for applicable elements generally include overall economic conditions, customer demand and costs incurred to provide the deliverable, as well as our historical pricing practices. Under these arrangements, revenue associated with each delivered element is recognized in an amount equal to the lesser of the consideration initially allocated to the delivered element or the amount for which payment is not deemed contingent upon future delivery of other elements in the arrangement. Under arrangements where special acceptance protocols exist, installation services and training are not considered separable. Accordingly, revenue for the entire arrangement is recognized upon the completion of installation, training and fulfillment of any other significant obligations specific to the terms of the arrangement. Arrangements that do not contain any separable elements are typically recognized when the products are shipped and title has transferred to the customer.

Certain contractual arrangements require longer production periods, generally longer than six months (long-term contracts), and may contain non-routine installations and special acceptance protocols. These arrangements often include hardware and essential software, installation services, training and support. Long-term contractual arrangements involving essential software typically include significant production, modification and customization. For long-term arrangements with essential software and all other long-term arrangements with complex installations and/or unusual acceptance protocols, revenue is recognized using the percentage-of-completion method, based on the cost incurred to date relative to estimated total cost of the contract. Elements of an arrangement that do not separately fall within the scope of the percentage-of-completion method (e.g. training and post contract software maintenance and support) are recognized as the service is provided in amounts determined based on VSOE, or in the absence of VSOE, our best estimate of the selling price.

Under the terms of our long-term contracts, revenue recognized using the percentage-of-completion method may not, in certain circumstances, be invoiced until completion of contractual milestones, upon shipment of the equipment or upon installation and acceptance by the customer. Unbilled amounts for these contracts are included in unbilled accounts receivable in the Consolidated Balance Sheets.

Revenue from the rental of equipment is recognized in the period that the rental is provided. Revenue from the profit on the sale of used rental equipment is recognized when the products are shipped and title has transferred. Rental revenue is included in product revenue in the Consolidated Statements of Income.

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Revenue from arrangements for services such as maintenance, repair, consulting and technical support are recognized either as the service is performed or ratably over the defined contractual period for service maintenance contracts. Revenue from post contract software maintenance and support services is recognized ratably over the defined contractual period of the maintenance agreement.

Our sales arrangements typically do not include specific performance, cancellation, termination or refund-type provisions. In the event a customer cancels a contractual arrangement, we would typically be entitled to receive reimbursement from the customer for actual costs incurred under the arrangement plus a reasonable margin.

Revenue is recorded net of taxes collected from customers that are remitted to governmental authorities with the collected taxes recorded as current liabilities until remitted to the relevant government authority.

Shipping and Handling

Freight revenue billed to customers is reported within revenue in the Consolidated Statements of Income. Expenses incurred for shipping products to customers are reported within cost of sales in the Consolidated Statements of Income.

Research and Development

Research and development (R&D) costs associated with new products are charged to operations as incurred. We have also allocated certain resources to capitalized software development activities. Total internal software development costs capitalized during fiscal years 2017 and 2016 were \$2,046 and \$2,761, respectively.

Foreign Currency

The financial position and results of operations of our foreign subsidiaries are measured using local currency as the functional currency. Assets and liabilities are translated using fiscal period-end exchange rates and monthly statements of income are translated using average exchange rates applicable to each month, with the resulting translation adjustments recorded as a separate component of shareholders' equity. Net gains and losses from foreign currency transactions are recognized in the Consolidated Statements of Income. We recorded net foreign currency transaction losses of \$2,499, \$1,567 and \$2,510 during fiscal years 2017, 2016 and 2015, respectively.

Cash and Cash Equivalents

Cash and cash equivalents represent cash, demand deposits and highly liquid investments with original maturities of three months or less. Cash equivalents are recorded at cost, which approximates fair value. Cash equivalents, both inside and outside the U.S., are invested in bank deposits or money market funds and are held in local currency denominations.

Accounts Receivable and Long-term Contracts

We grant credit to customers, but it generally does not require collateral or other security from domestic customers. When deemed appropriate, receivables from customers located outside the U.S. are supported by letters of credit from financial institutions. The allowance for doubtful accounts is based on our assessment of the collectability of specific customer accounts and includes consideration of the credit worthiness and financial condition of those specific customers. We record an allowance to reduce receivables to the amount reasonably believed to be collectible and consider factors such as the financial condition of the customer and the aging of the receivables. If there is a deterioration of a customer's financial condition, if we become aware of additional information related to the credit worthiness of a customer or if future actual default rates on trade receivables differ from those currently anticipated, we may adjust the allowance for doubtful accounts, which would affect earnings in the period the adjustments were made.

We enter into long-term contracts for customized equipment sold to our customers. Under the terms of such contracts, revenue recognized using the percentage-of-completion method may be invoiced upon completion of contractual milestones, shipment to the customer, or installation and customer acceptance. Unbilled amounts relating to these contracts are included in unbilled accounts receivable in the Consolidated Balance Sheets. Amounts unbilled as of September 30, 2017 are expected to be invoiced during fiscal year 2018.

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Inventories

Inventories consist of material, labor and overhead costs and are stated at the lower of cost or market value determined under the first-in, first-out accounting method. Certain inventories are measured using the weighted average cost method. Inventories, net were as follows:

(in thousands)	2017	2016
Components, assemblies and parts	\$86,991	\$87,119
Customer projects in various stages of completion	30,225	32,575
Finished goods	10,512	12,872
Total inventories, net	\$127,728	\$132,566

Software Development Costs

We capitalize certain software development costs related to software to be sold, leased or otherwise marketed. Capitalized software development costs include purchased materials and services, salary and benefits of our development and technical support staff and other costs associated with the development of new products and services. Software development costs are expensed as incurred until technological feasibility has been established, at which time future costs incurred are capitalized until the product is available for general release to the public. Based on our product development process, technological feasibility is generally established once product and detailed program designs have been completed, uncertainties related to high-risk development issues have been resolved through coding and testing, and we have the capability to manufacture the end product. Once a software product is available for general release to the public, capitalized development costs associated with that product will begin to be amortized to cost of sales in the Consolidated Statements of Income over the product's estimated economic life, using the greater of straight-line or a method that results in cost recognition in future periods that is consistent with the anticipated timing of product revenue recognition.

Our capitalized software development costs are subject to an ongoing assessment of recoverability, which is impacted by estimates and assumptions of future revenues and expenses for these software products, as well as other factors such as changes in product technologies. Any portion of unamortized capitalized software development costs that are determined to be in excess of net realizable value will be expensed in the period such a determination is made. We capitalized \$2,900, \$3,637 and \$2,834 of software development costs during fiscal years 2017, 2016 and 2015, respectively. Amortization expense for software development costs was \$892, \$892 and \$2,403 for fiscal years 2017, 2016 and 2015, respectively. See Note 2 for additional information on capitalized software development costs.

Impairment of Long-lived Assets

We review the carrying value of long-lived assets or asset groups, such as property and equipment and intangibles subject to amortization, when events or changes in circumstances such as asset utilization, physical change, legal factors or other matters indicate that the carrying value may not be recoverable. When this review indicates the carrying value of an asset or asset group exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset or asset group, we recognize an asset impairment charge against income from operations. The amount of the impairment loss recorded is the amount by which the carrying value of the impaired asset or asset group exceeds its fair value.

Property and Equipment

Property and equipment, are capitalized at cost, including additions, replacements and improvements, while repairs and maintenance are expensed as incurred. Depreciation is recorded over the following estimated useful lives of the asset:

Asset Type	Useful Life
Buildings and improvements	10 to 40 years
Machinery and equipment	3 to 10 years

Building and equipment additions are generally depreciated on a straight-line basis for financial reporting purposes and on an accelerated basis for income tax purposes. Property and equipment includes assets held under capital leases, consisting of machinery and equipment, and are recorded at the present value of minimum lease payments and are amortized on a straight-line basis over the estimated life of the asset or the lease term. Amortization of assets held as capital leases is included in depreciation expense in the Consolidated Statements of Income. See Note 2 for additional

information on property and equipment.

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Goodwill and Indefinite-lived Intangible Assets

Goodwill represents the excess of cost over the fair value of the identifiable net assets of businesses acquired and allocated to our reporting units at the time of acquisition. We test goodwill for impairment annually in the fourth quarter and when an event occurs or circumstances change that indicate the carrying value of the reporting unit may not be recoverable. As of both September 30, 2017 and October 1, 2016, we determined there was no impairment of our goodwill or indefinite-lived intangible assets.

Evaluating goodwill for impairment involves the determination of the fair value of each reporting unit in which goodwill is recorded using a qualitative or quantitative analysis. A reporting unit is an operating segment or a component of an operating segment for which discrete financial information is available and reviewed by management on a regular basis. For fiscal year 2017, we identified three reporting units: Test, Temposonics and PCB Group, Inc. (PCB).

Prior to completing the quantitative analysis described below, we have the option to perform a qualitative assessment of goodwill for impairment to determine whether it is more likely than not (a likelihood of more than 50%) that the fair value of a reporting unit is less than its carrying amount, including goodwill and other intangible assets. If we conclude the fair value is more likely than not less than the carrying value, we perform the quantitative analysis. Otherwise, no further testing is needed.

If the quantitative analysis is required, the impairment test is used to compare the calculated fair value of each reporting unit to its carrying value, including goodwill. We estimate the fair value of a reporting unit using both the income approach and the market approach. The income approach uses a discounted cash flow model that requires input of certain estimates and assumptions requiring judgment, including projections of revenue, profit margins, operating costs, capital expenditures, changes in working capital, discount rates and perpetual growth rates based on economic conditions, customer demand, changes in competition and new product introductions. The market approach uses a multiple of earnings and revenue based on guidelines for publicly traded companies. Fair value calculations contain significant judgments and estimates. If the fair value exceeds the carrying value, no further work is required and no impairment loss is recognized. If the carrying value exceeds the fair value, an impairment loss shall be recognized in an amount equal to that excess, limited to the total amount of goodwill allocated to that reporting unit. In fiscal year 2017, we elected to perform the quantitative analysis of goodwill for our three reporting units as described above as this is the first goodwill assessment following a full fiscal year of operations for PCB. Based on the analysis, we determined that goodwill was not impaired for any of our reporting units. The fiscal year 2017 impairment test indicated the fair value of the Test and Temposonics reporting units significantly exceeded their carrying values. The PCB reporting unit exceeded its carrying value by approximately 11 percent. As of September 30, 2017, our Test, Temposonics and PCB reporting units had goodwill balances of \$25,109, \$1,475 and \$343,178, respectively.

While we believe the estimates and assumptions used in determining the fair value of our reporting units are reasonable, significant changes in estimates of future cash flows, such as those caused by unforeseen events or changes in market conditions, could materially impact the fair value of a reporting unit which could result in the recognition of a goodwill impairment charge and adversely affect financial results.

We performed our annual test of goodwill during the fourth quarter of fiscal year 2017, utilizing discount rates of approximately 10 percent based on market, company specific and reporting unit specific data to discount projected future cash flows for each reporting unit and perpetual growth rates of 3 percent based on historical and forecasted reporting unit and industry growth rates.

For the PCB reporting unit, we performed the quantitative analysis on the fair values resulting from the discounted cash flow analysis utilizing alternate assumptions that reflect reasonably possible changes to future assumptions. Based on the analysis, a 50 basis point increase in the discount rate utilized in the discounted cash flow analysis would not have resulted in the PCB reporting unit failing the quantitative analysis of the impairment test. Additionally, a 50 basis point decrease in the estimated perpetual sales growth rates utilized in the discounted cash flow analysis would not have resulted in the PCB reporting unit failing the quantitative analysis of the impairment test.

Changes in our assumptions or estimates could materially affect the estimation of fair value of the PCB reporting unit and, therefore, could reduce the excess of fair value over the carrying value of the PCB reporting unit entirely

resulting in goodwill impairment. Events and conditions that could negatively impact the estimated fair value include a sustained decline in our stock price, inability to realize the anticipated sales growth opportunities as a result of the PCB acquisition, unsuccessful integration of PCB, lack of development of new products and a decrease in projected profitability.

In fiscal year 2016, we performed a qualitative assessment of goodwill for our Test and Temposonics reporting units as described above. Based on the assessment, we determined it was not necessary to perform the goodwill impairment test for any of our reporting units.

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Intangible assets with indefinite lives are not amortized. These assets are tested annually for impairment and when an event occurs or circumstances change that indicate the carrying value of the asset may not be recoverable. Fair value of indefinite-lived intangible assets is primarily determined using a relief from royalty method if a quantitative analysis is deemed necessary.

See Note 2 for additional information on goodwill and intangible assets.

Other Long-term Assets

Other assets at September 30, 2017 and October 1, 2016 primarily consisted of cash value of life insurance policies, security deposits paid on leased property and debt issuance costs.

Warranty Obligations

Sales of our products and systems are subject to limited warranty obligations that are included in customer contracts. For sales that include installation services, warranty obligations generally extend for a period of 12 to 24 months from the date of either shipment or acceptance based on the contract terms. Product obligations generally extend for a period of 12 to 24 months from the date of purchase. Certain products offered in our Sensors segment include a lifetime warranty.

Under the terms of these warranties, we are obligated to repair or replace any components or assemblies deemed defective due to workmanship or materials. We reserve the right to reject warranty claims where it is determined that failure is due to normal wear, customer modifications, improper maintenance or misuse. We record general warranty provisions based on an estimated warranty expense percentage applied to current period revenue. The percentage applied reflects our historical warranty claims experience over the preceding 12-month period. Both the experience percentage and the warranty liability are evaluated on an ongoing basis for adequacy. Warranty provisions are also recognized for certain unanticipated product claims that are individually significant.

Changes to accrued warranty costs were as follows:

(in thousands)	2017	2016
Beginning accrued warranty costs	\$5,718	\$4,695
Warranty claims	(4,383)	(5,592)
Warranty provisions	4,310	5,273
Adjustments to preexisting warranties	352	731
Acquired warranty obligations	—	608
Currency translation	21	3
Ending accrued warranty costs	\$6,018	\$5,718

Derivative Financial Instruments

Our results of operations could be materially impacted by changes in foreign currency exchange rates, as well as interest rates on our floating-rate indebtedness. In an effort to manage exposure to these risks, we periodically enter into forward and option currency exchange contracts, interest rate swaps and forward interest rate swaps. Since the market value of these hedging contracts is derived from current market rates, they are classified as derivative financial instruments. We do not use derivatives for speculative or trading purposes. The derivative contracts contain credit risk to the extent that our bank counterparties may be unable to meet the terms of the agreements. The amount of such credit risk is generally limited to the unrealized gains, if any, in such contracts. Such risk is minimized by limiting those counterparties to major financial institutions of high credit quality. For derivative instruments executed under master netting arrangements, we have the contractual right to offset fair value amounts recognized for the right to reclaim cash collateral with obligations to return cash collateral. We do not offset fair value amounts recognized on these derivative instruments. As of both September 30, 2017 and October 1, 2016, we did not have any foreign exchange contracts with credit-risk related contingent features. See Note 4 for additional information on derivatives and hedging activities.

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Income Taxes

We record a tax provision for the anticipated tax consequences of the reported results of operations. Deferred tax assets and liabilities are measured using the currently enacted tax rates that apply to taxable income in effect for the years in which those deferred tax assets and liabilities are expected to be realized or settled. We record a valuation allowance to reduce deferred tax assets to the amount that is believed more likely than not to be realized. We believe it is more likely than not that forecasted income, including income that may be generated as a result of certain tax planning strategies, together with the tax effects of the deferred tax liabilities, will be sufficient to fully recover the remaining net realizable value of our deferred tax assets. In the event that all or part of the net deferred tax assets are determined not to be realizable in the future, an adjustment to the valuation allowance would be charged to earnings in the period such determination is made. In addition, the calculation of tax liabilities involves significant judgment in estimating the impact of uncertainties in the application of complex tax laws. Resolution of these uncertainties in a manner inconsistent with our expectations could have a material impact on our financial condition and operating results. See Note 8 for additional information on income taxes.

Earnings Per Common Share

Basic earnings per share is computed by dividing net income by the daily weighted average number of common shares outstanding during the applicable period. The 8.75% tangible equity units (TEUs) are assumed to be settled at the minimum settlement amount of 1.9841 shares per TEU when calculating weighted average common shares outstanding for purposes of basic earnings per share.

Using the treasury stock method, diluted earnings per share includes the potentially dilutive effect of common shares issued in connection with outstanding stock-based compensation options and grants. The potentially dilutive effect of common shares issued in connection with outstanding stock options is determined based on the average market price for the period. For diluted earnings per share, the TEUs are assumed to be settled at a conversion factor based on our daily volume-weighted average price per share of our common stock for the 20 consecutive trading days preceding the end of the current fiscal year quarter not to exceed 2.3810 shares of common stock per TEU.

Under the treasury stock method, shares associated with certain stock options have been excluded from the diluted weighted average shares outstanding calculation because the exercise of those options would lead to a net reduction in common shares outstanding or anti-dilution. As a result, stock options to acquire 726, 673 and 179 weighted common shares have been excluded from the diluted weighted shares outstanding calculation for fiscal years 2017, 2016 and 2015, respectively.

In connection with the pricing of the TEUs, we purchased capped calls. The capped calls will not be reflected in the calculation of diluted earnings per share until settled as they are anti-dilutive. See Note 9 for additional information on our equity instruments.

Basic and diluted earnings per share were calculated as follows:

(in thousands, except per share data)	2017	2016	2015
Net income	\$25,084	\$27,494	\$45,462
Weighted average common shares outstanding	19,040	16,027	14,984
Effect of dilutive securities			
Stock-based compensation	97	105	158
Tangible equity units	—	47	—
Weighted average dilutive common shares outstanding	19,137	16,179	15,142
Earnings per share			
Basic	\$1.32	\$1.72	\$3.03
Diluted	\$1.31	\$1.70	\$3.00

Stock-based Compensation

We measure the cost of employee services received in exchange for the award of equity instruments based on the fair value of the award at the date of grant. We recognize the cost over the period during which an employee is required to

provide services in exchange for the award.

For purposes of determining estimated fair value of stock-based payment awards, we utilize the Black-Scholes option pricing model, which requires the input of certain assumptions requiring management judgment. Because our employee stock option awards have characteristics significantly different from those of traded options and because changes in the input assumptions

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can materially affect fair value estimates, existing models may not provide a reliable single measure of the fair value of employee stock options. We will continue to assess the assumptions and methodologies used to calculate estimated fair value of stock-based compensation. Circumstances may change and additional data may become available over time that could result in changes to these assumptions and methodologies and thereby materially impact the fair value determination of future grants of stock-based payment awards. If factors change and we employ different assumptions in future periods, the compensation expense recorded may differ significantly from the stock-based compensation expense recorded in the current period. See Note 6 for additional information on stock-based compensation.

Loss Contingencies

We establish an accrual for loss contingencies when it is both probable that an asset has been impaired or a liability has been incurred and the amount of the loss can be reasonably estimated. When both of these criteria are not met, we do not establish an accrual. However, when there is at least a reasonable possibility that a loss has been incurred, but it is not probable or reasonably estimable, we disclose the nature of the loss contingency and an estimate of the possible loss or range of loss, as applicable. Any adjustment made to a loss contingency accrual during an accounting period affects the earnings of the period.

Use of Estimates

The preparation of financial statements in accordance with U.S. generally accepted accounting principles (GAAP) requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities as of the date of the financial statements and reported amounts of revenue and expense during the reporting period. Additionally, we frequently undertake significant technological innovation on certain of our long-term contracts, involving performance risk that may result in delayed delivery of product and/or revenue and gross profit variation due to changes in the ultimate costs of these contracts versus estimates. On an ongoing basis, we evaluate our estimates including those related to receivables, inventory, property and equipment, intangible assets, warranties, accrued expenses, stock-based compensation, income taxes and capitalized software, among others. Actual results could differ from those estimates.

Recently Issued Accounting Pronouncements

Revenue Recognition

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers (Topic 606), and in August 2015, issued ASU No. 2015-14, Revenue from Contracts with Customers (Topic 606): Deferral of Effective Date, which amended ASU No. 2014-09 as to the effective date of the standard. The guidance, as amended, clarifies the principles for revenue recognition in transactions involving contracts with customers. Determination of when and how revenue is recognized will be based on a five-step analysis. The new guidance will require revenue recognition to depict the transfer of promised goods or services to a customer in an amount that reflects the consideration a company expects to receive in exchange for those goods or services. The mandatory effective date of the new revenue recognition standard was deferred by one year under ASU No. 2015-14.

In March 2016, the FASB issued ASU No. 2016-08, Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations (Reporting Revenue Gross versus Net), which amends ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606), to clarify principal versus agent guidance in situations in which a revenue transaction involves a third party in providing goods or services to a customer. In such circumstances, an entity must determine whether the nature of its promise to the customer is to provide the underlying goods or services (i.e., the entity is the principal in the transaction) or to arrange for the third party to provide the underlying goods or services (i.e., the entity is the agent in the transaction). To determine the nature of its promise to the customer, the entity must first identify each specified good or service to be provided to the customer and then (before transferring it) assess whether it controls each specified good or service. The new guidance clarifies how an entity should identify the unit of accounting (the specified good or service) for the principal versus agent evaluation, and how it should apply the control principle to certain types of arrangements, such as service transactions, by explaining what a principal controls before the specified good or service is transferred to the customer.

In April 2016, the FASB issued ASU No. 2016-10, Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing, to amend ASU No. 2014-09, Revenue from Contracts with Customers (Topic

606), on identifying performance obligations to allow entities to disregard items that are immaterial in the context of the contract, clarify when a promised good or service is separately identifiable from other promises in the a contract and allow an entity to elect to account for the cost of shipping and handling performed after control of a good has been transferred to the customer as a fulfillment cost or an expense. The updated guidance also clarifies how an entity would evaluate the nature of its promise in granting a license of intellectual property, which determines whether the entity recognizes revenue over time or at a point in time, and other aspects relative to licensing.

In May 2016, the FASB issued ASU No. 2016-11, Revenue Recognition (Topic 605) and Derivatives and Hedging (Topic 815): Rescission of SEC Guidance Because of Accounting Standards Updates 2014-09 and 2014-16 Pursuant to Staff Announcements

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at the March 3, 2016 EITF Meeting (SEC Update), which rescinds previous guidance on revenue and expense recognition for freight services in process, accounting for shipping and handling fees and costs and accounting for consideration given by a vendor to a customer.

In May 2016, the FASB issued ASU No. 2016-12, Revenue from Contracts with Customers (Topic 606):

Narrow-Scope Improvements and Practical Expedients, which amends ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606), to clarify that, for a contract to be considered completed at transition, all (or substantially all) of the revenue must have been recognized under legacy GAAP. The amendment also added an expedient to ease transition for contracts that were modified prior to adoption of the new revenue standard, clarifies how an entity should evaluate the collectibility threshold and when an entity can recognize non-refundable considerations received as revenue if the arrangement does not meet the standard's contract criteria. The amendment clarifies that fair value of non-cash considerations should be measured at contract inception when determining the transaction price and allows an entity to make an accounting policy election to exclude from the transaction price certain types of taxes collected from a customer if it discloses the policy.

In December 2016, the FASB issued ASU No. 2016-20, Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers, which amends ASU 2014-09, Revenue from Contracts with Customers (Topic 606), providing thirteen corrections and improvements to the new revenue standard.

The aforementioned revenue standards and amendments are required to be adopted for annual periods beginning after December 15, 2017, including interim periods within that annual period, which is our fiscal year 2019. The new standards and amendments may be adopted retrospectively for all periods presented, or adopted using a modified retrospective approach. Early adoption is permitted for annual reporting periods beginning after December 15, 2016, and interim periods within that annual period, which is our fiscal year 2018. We intend to adopt the aforementioned revenue standards and amendments for our fiscal year 2019. We currently anticipate utilizing the modified retrospective approach as our method of adoption. We have substantially completed our review and analysis of our sales channels, selected contracts, policies and practices as compared to the new guidance and continue to work through implementation steps. We continue to evaluate our procedural and related system requirements related to the provisions of this standard. We are updating and rewriting our revenue recognition accounting policy as needed to reflect the requirements of this standard. In fiscal year 2018, we expect to draft our new revenue disclosures. We anticipate the revenue recognition methodology for the majority of our products and contracts will remain substantially unchanged; however, the methodology and timing of revenue recognition for a portion of our contracts will likely change. Certain contracts may have a delay in revenue recognition until the customer takes control of the product, while certain products and contracts may accelerate revenue recognition to recognize revenue over the life of the contract. We are currently evaluating the impact that these changes in methodology will have on our consolidated financial statements.

Other

In July 2015, the FASB issued ASU No. 2015-11, Inventory (Topic 330): Simplifying the Measurement of Inventory, which modifies existing requirements regarding measuring inventory at the lower of cost or market. Under current inventory standards, the market value requires consideration of replacement cost, net realizable value and net realizable value less an approximately normal profit margin. The new guidance replaces market with net realizable value defined as estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation. This eliminates the need to determine and consider replacement cost or net realizable value less an approximately normal profit margin when measuring inventory. The standard is required to be adopted for annual periods beginning after December 15, 2016, including interim periods within that annual period, which is our fiscal year 2018. The amendment is to be applied prospectively with early adoption permitted. The adoption of this guidance will have no impact on our financial condition, results of operations or disclosures.

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 824), which requires lessees to recognize a right-of-use asset, representing the right to use the underlying asset for the lease term, and a lease liability on the balance sheet for all leases with terms greater than 12 months. Lessees can forgo recognizing a right-of-use asset and lease liability with lease terms of 12 months or less on the balance sheet through accounting policy elections as long as the lease does not include options to purchase the underlying assets that are reasonably certain to be exercised. The

new guidance also requires certain qualitative and quantitative disclosures designed to assess the amount, timing and uncertainty of cash flows arising from leases, along with additional key information about leasing arrangements. The standard is required to be adopted for annual periods beginning after December 15, 2018, including interim periods within that annual period, which is our fiscal year 2020. The amendment is to be applied using a modified retrospective approach, which includes a number of optional practical expedients, with early adoption permitted. We are currently evaluating the impact the adoption of this guidance will have on our financial condition, results of operations or disclosures.

In March 2016, the FASB issued ASU No. 2016-04, Liabilities—Extinguishments of Liabilities (Subtopic 405-20): Recognition of Breakage for Certain Prepaid Stored-Value Products, which amends existing guidance on extinguishing financial liabilities

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for certain prepaid stored-value products. The new standard requires recognition of the expected breakage amount or the value that is ultimately not redeemed either proportionally in earnings as redemption occurs or when redemption is remote, if issuers are not entitled to breakage. The standard is required to be adopted for annual periods beginning after December 15, 2017, including interim periods within that annual period, which is our fiscal year 2019. The amendment is to be applied either using a modified retrospective approach by recognizing a cumulative-effect adjustment to retained earnings as of the beginning of the year or retrospectively to each period presented. Early adoption is permitted. We are currently evaluating the impact, if any, the adoption of this guidance may have on our financial condition, results of operations or disclosures.

In March 2016, the FASB issued ASU No. 2016-09, Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting, which is intended to simplify certain aspects of accounting for share-based compensation arrangements, including modifications to the accounting for income taxes upon vesting or settlement of awards, employer tax withholding on share-based compensation, classification on the statement of cash flows and forfeitures. The standard is required to be adopted for annual periods beginning after December 15, 2016, including interim periods within that annual period, which is our fiscal year 2018. Certain aspects of the amendment are to be applied using a retrospective transition method, while others are to be applied either prospectively or retrospectively. Early adoption is permitted, but all amendments must be adopted in the same period and must be reflected as of the beginning of the fiscal year that includes the interim period. We are finalizing the impact of adoption; however, we do not expect the adoption of any of the provisions within this standard to have a significant impact on our financial condition, results of operations or disclosures.

In June 2016, the FASB issued ASU No. 2016-13, Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments, which changes the accounting for credit losses on instruments measured at amortized cost by adding an impairment model that is based on expected losses rather than incurred losses. An entity will recognize as an allowance its estimate of expected credit losses, which is believed to result in more timely recognition of such losses as the standard eliminates the probable initial recognition threshold. The standard is required to be adopted for annual periods beginning after December 15, 2019, including interim periods within that annual period, which is our fiscal year 2021. The amendment is to be applied using a modified-retrospective approach as a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which adopted. Early adoption is permitted for annual periods beginning after December 15, 2018, including interim periods within that annual period, which is our fiscal year 2020. We have not yet evaluated the impact the adoption of this guidance will have on our financial condition, results of operations or disclosures.

In August 2016, the FASB issued ASU No. 2016-15, Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments, which provides guidance on the classification of certain cash receipts and cash payments with the objective of reducing diversity in practice. The standard is required to be adopted for annual periods beginning after December 15, 2017, including interim periods within that annual period, which is our fiscal year 2019. The amendment is to be applied retrospectively, but if impracticable to do so, the amendments related to that issue would be applied prospectively. Early adoption is permitted. We have not yet evaluated the impact the adoption of this guidance will have on our financial condition, results of operations or disclosures.

In October 2016, the FASB issued ASU No. 2016-16, Income Taxes (Topic 740), Intra-Entity Transfers of Assets Other Than Inventory, which requires companies to account for the income tax effects of intercompany sales and transfers of assets other than inventory when the transfer occurs. Current guidance requires companies to defer the income tax effects of intercompany transfers of assets until the asset has been sold to an outside party or otherwise recognized. The standard is required to be adopted for annual periods beginning after December 15, 2017, including interim periods within that annual period, which is our fiscal year 2019. The amendment is to be applied using a modified retrospective approach. Early adoption is permitted as of the beginning of an annual period. We have not yet evaluated the impact of adoption of this guidance will have on our financial condition, results of operations or disclosures.

In January 2017, the FASB issued ASU No. 2017-01, Business Combinations (Topic 805): Clarifying the Definition of a Business, which changes the definition of a business to assist entities with evaluating when a set of transferred assets and activities is a business. The new guidance clarifies that a business must also include at least one substantive

process and narrows the definition of outputs by more closely aligning it with how outputs are described in Accounting Standards Codification (ASC) 606, Revenue from Contracts with Customers. The standard is required to be adopted for annual periods beginning after December 15, 2017, including interim periods within that annual period, which is our fiscal year 2019. The amendment is to be applied prospectively with early adoption permitted. We do not expect the adoption of this standard to have a material effect on our financial condition, results of operations or disclosures as the standard only applies to businesses acquired after the adoption date.

In March 2017, the FASB issued ASU No. 2017-07, Compensation - Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost, which changes how employers that sponsor defined benefit pension or other postretirement benefit plans present the net periodic benefit cost in the income

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statement. The new guidance requires the service cost component of net periodic benefit cost to be presented in the same income statement line items as other employee compensation costs arising from services rendered during the period with only the service cost component eligible for capitalization in assets. Other components of the net periodic benefit cost are to be stated separately from the line items that include the service cost and outside of operating income. These components are not eligible for capitalization in assets. The standard is required to be adopted for annual periods beginning after December 15, 2017, including interim periods within that annual period, which is our fiscal year 2019. The amendment is to be applied retrospectively. Early adoption is permitted as of the beginning of an annual period. We have not yet evaluated the impact of adoption of this guidance will have on our financial condition, results of operations or disclosures.

In May 2017, the FASB issued ASU 2017-09, Compensation - Stock Compensation (Topic 718): Scope of Modification Accounting, which clarifies when changes to the terms or conditions of a share-based payment award must be accounted for as modifications. Modification guidance must be applied if the fair value, vesting conditions or classification of the awards changes. The standard is required to be adopted for annual periods beginning after December 15, 2017, including interim periods within that annual period, which is our fiscal year 2019. The amendment is to be applied prospectively to an award modified on or after the adoption date, with early adoption permitted. We do not expect the adoption of this standard to have a material effect on our financial condition, results of operations or disclosures.

In August 2017, the FASB issued ASU No. 2017-12, Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities, which amends the hedge accounting model in ASC 815 to enable entities to better portray the economics of their risk management activities in the financial statements and enhance the transparency and understandability of hedge results. The standard is required to be adopted for annual periods beginning after December 15, 2018, including interim periods within that annual period, which is our fiscal year 2020. The amendment is to be applied using a modified retrospective approach, with early adoption permitted. We have not yet evaluated the impact of adoption of this guidance will have on our financial condition, results of operations or disclosures.

Adopted

In July 2015, the FASB issued ASU No. 2015-12, Plan Accounting: Defined Benefit Pension Plans (Topic 960), Defined Contribution Pension Plans (Topic 962), Health and Welfare Benefit Plans (Topic 965): (Part I) Fully Benefit-Responsive Investment Contracts, (Part II) Plan Investment Disclosures, (Part III) Measurement Date Practical Expedient (consensus of the FASB Emerging Issues Task Force). The standard allows for a plan with a fiscal year end that does not coincide with the end of the calendar month to measure its investments and investment-related accounts using the month end closest to its fiscal year end. In previous guidance, the measurement date was required to coincide with the fiscal year end. We adopted ASU No. 2015-12 on a prospective basis for the annual period ended September 30, 2017. The adoption of the standard had no effect on our fiscal year 2017 financial condition, results of operations or disclosures as the measurement date and fiscal year end coincide.

In September 2015, the FASB issued ASU No. 2015-16, Business Combinations (Topic 805): Simplifying the Accounting for Measurement-Period Adjustments, which eliminates the requirement for an acquirer in a business combination to account for measurement-period adjustments retrospectively. Under the existing business combination standard, an acquirer reports provisional amounts with respect to acquired assets and liabilities when their measurements are incomplete as of the end of the reporting period. The provisional amounts and the related impact on earnings are adjusted by restating prior period financial statements during the measurement period which cannot exceed one year from the date of acquisition. The new guidance requires that the cumulative impact of a measurement-period adjustment, including the impact on prior periods, be recognized in the reporting period in which the adjustment is identified, eliminating the requirement to restate prior period financial statements. The new guidance also requires disclosure of the nature and amount of measurement-period adjustments as well as information with respect to the portion of the adjustments recorded in current-period earnings that would have been recorded in previous reporting periods if the adjustments to provisional amounts had been recognized as of the acquisition date. We adopted ASU No. 2015-16 on a prospective basis for the annual period ended September 30, 2017, including interim periods within that annual period. The adoption of the standard had no material effect on our financial

condition, results of operations or disclosures for fiscal year 2017.

In January 2017, the FASB issued ASU No. 2017-04, Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment, which eliminates the requirement to calculate the implied fair value of goodwill to measure a goodwill impairment charge or Step 2 of the goodwill impairment analysis. Instead, an impairment charge will be recorded based on the excess of a reporting unit's carrying amount over its fair value using Step 1 of the goodwill impairment analysis. We early adopted ASU No. 2017-04 on a prospective basis for our annual and interim goodwill impairment testing performed in the fourth quarter of fiscal year 2017. The adoption of this standard had no effect on our financial condition, results of operations or disclosures as no impairment of goodwill was identified in fiscal year 2017.

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NOTE 2 CAPITAL ASSETS

Property and Equipment

Property and equipment, net are as follows:

(in thousands)	2017	2016
Land and improvements	\$2,867	\$2,865
Buildings and improvements	60,340	59,350
Machinery and equipment	196,621	189,406
Assets held under capital leases	2,747	—
Total property and equipment	262,575	251,621
Less: Accumulated depreciation	(162,645)	(150,832)
Total property and equipment, net	\$99,930	\$100,789

Goodwill

Changes to the carrying amount of goodwill are as follows:

(in thousands)	Test	Sensors	Total
Balance, October 3, 2015	\$26,243	\$1,434	\$27,677
Acquisitions ¹	—	343,242	343,242
Adjustment related to finalization of purchase accounting ¹	(530)	—	(530)
Currency translation gain (loss)	(691)	2	(689)
Balance, October 1, 2016	\$25,022	\$344,678	\$369,700
Adjustment related to finalization of purchase accounting ¹	—	(64)	(64)
Currency translation gain (loss)	87	39	126
Balance, September 30, 2017	\$25,109	\$344,653	\$369,762

¹ See Note 13 for additional information regarding acquisitions.

See Note 1 for additional information on our goodwill impairment analysis.

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Intangible Assets

Intangible assets are as follows:

	September 30, 2017			
(in thousands)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Value	Weighted Average Useful Life (in Years)
Software development costs	\$26,083	\$ (15,830)	\$ 10,253	5.9
Technology and patents	46,731	(9,399)	37,332	14.9
Trademarks and trade names	6,936	(2,484)	4,452	25.6
Customer lists	157,016	(13,359)	143,657	15.8
Land-use rights	2,377	(492)	1,885	26.4
Trade names	57,500	—	57,500	Indefinite
Total intangible assets	\$296,643	\$ (41,564)	\$ 255,079	15.0

	October 1, 2016			
(in thousands)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Value	Weighted Average Useful Life (in Years)
Software development costs	\$23,184	\$ (14,938)	\$ 8,246	6.0
Technology and patents	46,672	(6,360)	40,312	14.9
Trademarks and trade names	6,903	(1,911)	4,992	25.5
Customer lists	156,987	(3,372)	153,615	15.8
Land-use rights	2,369	(245)	2,124	26.3
Trade names	57,500	—	57,500	Indefinite
Total intangible assets	\$293,615	\$ (26,826)	\$ 266,789	15.1

Amortization expense recognized during fiscal years 2017, 2016 and 2015 was \$14,665, \$5,517 and \$4,058, respectively.

See Note 1 for additional information on our intangible asset impairment analysis.

Estimated future amortization expense related to finite-lived intangible assets is as follows:

Fiscal Year	Amortization Expense (in thousands)
2018	\$ 15,422
2019	15,638
2020	15,357
2021	15,357
2022	15,174
Thereafter	120,631

Future amortization amounts presented above are estimates. Actual future amortization expense may be different due to fluctuations in foreign currency exchange rates, future acquisitions, impairments, changes in amortization periods or other factors.

NOTE 3 FAIR VALUE MEASUREMENTS

In determining the fair value of financial assets and liabilities, we currently utilize market data or other assumptions that we believe market participants would use in pricing the asset or liability in the principal or most advantageous market and adjust for non-performance and/or other risk associated with the company as well as counterparties, as appropriate. When considering market participant assumptions in fair value measurements, the following fair value

hierarchy distinguishes between observable and unobservable inputs, which are categorized in one of the following levels:

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Level 1: Unadjusted quoted prices which are available in active markets for identical assets or liabilities accessible to us at the measurement date.

Level 2: Inputs other than quoted prices included in Level 1 inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the asset or liability.

Level 3: Unobservable inputs for the asset or liability used to measure fair value to the extent that observable inputs are not available, thereby allowing for situations in which there is little, if any, market activity for the asset or liability at the measurement date.

The hierarchy gives the highest priority to Level 1, as this level provides the most reliable measure of fair value, while giving the lowest priority to Level 3.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

Financial assets and liabilities subject to fair value measurements on a recurring basis are as follows:

	September 30, 2017			
(in thousands)	Level 1	Level 2	Level 3	Total
Assets				
Currency contracts ¹	\$—	\$150	\$—	\$150
Interest rate swaps ²	—	3,499	—	3,499
Total assets	—	3,649	—	3,649

Liabilities

Currency contracts ¹	—	551	—	551
Total liabilities	\$—	\$551	\$—	\$551

	October 1, 2016			
(in thousands)	Level 1	Level 2	Level 3	Total
Assets				
Currency contracts ¹	\$—	\$149	\$—	\$149
Total assets	—	149	—	149

Liabilities

Currency contracts ¹	—	711	—	711
Total liabilities	\$—	\$711	\$—	\$711

Based on observable market transactions of spot currency rates and forward currency rates on equivalently-termed instruments. Carrying amounts of the financial assets and liabilities are equal to the fair value. See Note 4 for additional information on derivative financial instruments.

² Based on London Interbank Offered Rate (LIBOR) and spot rates. Carrying amount of the financial asset is equal to the fair value. See Note 4 for additional information on derivative financial instruments.

Assets and Liabilities Measured at Fair Value on a Nonrecurring Basis

We measure certain financial instruments at fair value on a nonrecurring basis. These assets primarily include goodwill, intangible assets and other long-lived assets acquired either as part of a business acquisition, individually or with a group of other assets, as well as property and equipment. These assets were initially measured and recognized at amounts equal to the fair value determined as of the date of acquisition or purchase subject to changes in value only for foreign currency translation. Periodically, these assets are tested for impairment, by comparing their respective carrying values to the estimated fair value of the reporting unit or asset group in which they reside. In the event any of these assets were to become impaired, we would recognize an impairment loss equal to the amount by which the carrying value of the reporting unit, impaired asset or asset group exceeds its estimated fair value. Fair value measurements of reporting units are estimated using an income approach involving discounted or undiscounted cash flow models that contain certain Level 3 inputs requiring management judgment, including projections of economic conditions and customer demand, revenue and margins, changes in competition, operating costs, working capital

requirements and new product introductions. Fair value measurements of the reporting units associated with our goodwill balances are estimated at least annually in the fourth quarter of each fiscal year for purposes of impairment

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testing if a quantitative analysis is performed. Fair value measurements associated with our indefinite-lived intangible assets are estimated at least annually in the fourth quarter of each fiscal year for purposes of impairment testing if a quantitative analysis is required. Fair value measurements associated with our intangible assets, other long-lived assets and property and equipment are estimated when events or changes in circumstances such as market value, asset utilization, physical change, legal factors or other matters indicate that the carrying value may not be recoverable. See Note 1 and Note 2 for additional information on goodwill, indefinite-lived intangible assets, other long-lived assets, property and equipment and impairment testing.

Assets and Liabilities Not Measured at Fair Value

Certain financial instruments are not measured at fair value but are recorded at carrying amounts approximating fair value based on their short-term nature or variable interest rate. These financial instruments include cash and cash equivalents, accounts receivable and accounts payable.

Other Financial Instruments

Other financial instruments subject to fair value measurements include debt, which is recorded at carrying value in the Consolidated Balance Sheets. The carrying amount and estimated fair values of our debt are as follows:

September 30, 2017					
(in thousands)	Carrying Value	Fair Value	Level 1	Level 2	Level 3
Debt component of tangible equity units ³	\$16,443	\$19,844	\$ —	\$19,844	\$ —
Tranche B term loan ⁴	455,400	457,085	—	457,085	—
Total debt	\$471,843	\$476,929	\$ —	\$476,929	\$ —
October 1, 2016					
(in thousands)	Carrying Value	Fair Value	Level 1	Level 2	Level 3
Debt component of tangible equity units ³	\$24,985	\$28,080	\$ —	\$28,080	\$ —
Tranche B term loan ⁴	460,000	465,465	—	465,465	—
Total debt	\$484,985	\$493,545	\$ —	\$493,545	\$ —

The fair value of the TEUs is based on the most recently quoted price for the outstanding securities, adjusted for any known significant deviations in value. The estimated fair value of these long-term obligations is not necessarily indicative of the amount that would be realized in a current market exchange. See Note 9 for additional information on the TEUs.

The fair value of the tranche B term loan is based on the most recently quoted market price for the outstanding debt instrument, adjusted for any known significant deviations in value. The estimated fair value of the debt obligation is not necessarily indicative of the amount that would be realized in a current market exchange. See Note 5 for additional information on debt instruments.

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NOTE 4 DERIVATIVE INSTRUMENTS AND HEDGING ACTIVITIES

Our currency exchange and interest rate swaps are designated as cash flow hedges and qualify as hedging instruments. We also have derivatives which are not designated as cash flow hedges and, therefore, are accounted for and reported under foreign currency guidance. Regardless of designation for accounting purposes, we believe all of our derivative instruments are hedges of transactional risk exposures. The fair value of our outstanding designated and undesignated derivative assets and liabilities are reported in the Consolidated Balance Sheets as follows:

(in thousands)	September 30, 2017	
	Prepaid Expenses and Other Current Assets	Other Accrued Liabilities
Designated hedge derivatives		
Cash flow derivatives	\$ 73	\$ 551
Interest rate swaps	3,499	—
Total designated hedge derivatives	3,572	551
Undesignated hedge derivatives		
Balance sheet derivatives	77	—
Total hedge derivatives	\$ 3,649	\$ 551

(in thousands)	October 1, 2016	
	Prepaid Expenses and Other Current Assets	Other Accrued Liabilities
Designated hedge derivatives		
Cash flow derivatives	\$ 149	\$ 633
Undesignated hedge derivatives		
Balance sheet derivatives	—	78
Total hedge derivatives	\$ 149	\$ 711

A reconciliation of the net fair value of foreign exchange cash flow hedge assets and liabilities subject to master netting arrangements that are recorded in the Consolidated Balance Sheets to the net fair value that could have been reported in the Consolidated Balance Sheets are as follows:

(in thousands)	Gross Recognized Amount	Gross Offset Amount	Net Amount Presented	Derivatives Subject to Offset	Cash Collateral Received	Net Amount ¹
September 30, 2017						
Assets	\$ 3,572	\$ —	—\$ 3,572	\$ (210)	\$ —	—\$ 3,362
Liabilities	551	—	551	(210)	—	341
October 1, 2016						
Assets	\$ 149	\$ —	—\$ 149	\$ (147)	\$ —	—\$ 2
Liabilities	633	—	633	(147)	—	486

¹ Net fair value of foreign exchange cash flow hedge assets / liabilities that could have been reported in the Consolidated Balance Sheets.

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Currency exchange contracts utilized to maintain the functional currency value of expected financial transactions denominated in foreign currencies are designated as cash flow hedges. Qualifying gains and losses related to changes in the market value of these contracts are reported as a component of accumulated other comprehensive income (loss) (AOCI) within shareholders' equity in the Consolidated Balance Sheets and reclassified into earnings in the same period during which the underlying hedged transaction affects earnings. The effective portion of the cash flow hedges represents the change in fair value of the hedge that offsets the change in the functional currency value of the hedged item. We periodically assess whether our currency exchange contracts are effective and, when a contract is determined to be no longer effective as a hedge, we discontinue hedge accounting prospectively. Subsequent changes in the market value of ineffective currency exchange contracts are recognized as an increase or decrease in revenue in the Consolidated Statements of Income as that is the same line item in which the underlying hedged transaction is reported.

As of September 30, 2017 and October 1, 2016, we had outstanding cash flow hedge currency exchange contracts with gross notional U.S. dollar equivalent amounts of \$29,136 and \$29,092, respectively. Upon netting offsetting contracts to sell foreign currencies against contracts to purchase foreign currencies, irrespective of contract maturity dates, the net notional U.S. dollar equivalent amount of contracts outstanding was \$24,093 and \$24,884 at September 30, 2017 and October 1, 2016, respectively. As of September 30, 2017, the net market value of the foreign currency exchange contracts was a net liability of \$478, consisting of \$73 in assets and \$551 in liabilities. As of October 1, 2016, the net market value of the foreign currency exchange contracts was a net liability of \$484, consisting of \$149 in assets and \$633 in liabilities.

The pretax amounts recognized in AOCI on currency exchange contracts, including (gains) losses reclassified into earnings in the Consolidated Statements of Income and gains (losses) recognized in other comprehensive income (loss) (OCI), are as follows:

(in thousands)	2017	2016
Beginning unrealized net gain (loss) in AOCI	\$ (400)	\$ 608
Net (gain) loss reclassified into revenue (effective portion)	(459)	) 334
Net gain (loss) recognized in OCI (effective portion)	416	(1,342)
Ending unrealized net gain (loss) in AOCI	\$(443)	\$(400)

The amount recognized in earnings as a result of the ineffectiveness of cash flow hedges was \$8 in the fiscal year ended September 30, 2017 and less than \$1 in each of the fiscal years ended October 1, 2016 and October 3, 2015. As of September 30, 2017, the amount projected to be reclassified from AOCI into earnings in the next 12 months was a net loss of \$444. The maximum remaining maturity of any forward or optional contracts at September 30, 2017 was 1.3 years.

Interest Rate Swaps

On October 20, 2016, we entered into a floating to fixed interest rate swap agreement to mitigate our exposure to interest rate increases related to a portion of our tranche B term loan facility. The total notional amount of the interest rate swap is \$275,000 as of September 30, 2017. The swap agreement expires April 3, 2021. As a result of this agreement, every month we pay fixed interest at 1.256% in exchange for interest received at one month U.S. LIBOR. The market value of the interest rate swap as of September 30, 2017 was an asset of \$3,499. The interest rate swap has been designated as a cash flow hedge. As a result, changes in the fair value of the interest rate swap are recorded in AOCI within shareholders' equity in the Consolidated Balance Sheets.

The pre-tax amounts recognized in AOCI on interest rate swaps, including (gains) losses reclassified into earnings in the Consolidated Statements of Income and gains (losses) recognized in OCI, are as follows:

(in thousands)	2017	2016
Beginning unrealized net gain (loss) in AOCI	\$ —	\$ —
Net (gain) loss reclassified into interest expense (effective portion)	614	—
Net gain (loss) recognized in OCI (effective portion)	2,885	—
Ending unrealized net gain (loss) in AOCI	\$3,499	\$ —

As of September 30, 2017, the amount projected to be reclassified from AOCI into earnings in the next 12 months was a net gain of \$853.

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Foreign Currency Balance Sheet Derivatives

We also use foreign currency derivative contracts to maintain the functional currency value of monetary assets and liabilities denominated in non-functional foreign currencies. The gains and losses related to the changes in the market value of these derivative contracts are included in other income (expense), net in the Consolidated Statements of Income.

As of September 30, 2017 and October 1, 2016, we had outstanding foreign currency balance sheet derivative contracts with gross notional U.S. dollar equivalent amounts of \$52,208 and \$13,187, respectively. Upon netting offsetting contracts by counterparty banks to sell foreign currencies against contracts to purchase foreign currencies, irrespective of contract maturity dates, the net notional U.S. dollar equivalent amount of contracts outstanding at September 30, 2017 and October 1, 2016 was \$14,762 and \$1,347, respectively. As of September 30, 2017 and October 1, 2016, the net market value of the foreign exchange balance sheet derivative contracts was a net asset of \$77 and a net liability of \$78, respectively.

The net gain (loss) recognized in the Consolidated Statements of Income on foreign exchange balance sheet derivative contracts are as follows:

(in thousands)	2017	2016	2015
Net gain (loss) recognized in other income (expense), net	\$(876)	\$(950)	\$582

NOTE 5 FINANCING

Long-term debt consists of the following:

(in thousands)	2017	2016
Long-term debt		
Tranche B term loan, 1.00% amortizing per year, maturing July 5, 2023	\$455,400	\$460,000
Tangible equity units, 8.75% coupon, maturing July 1, 2019 ¹	16,443	24,985
Capital lease obligations	2,466	—
Total long-term debt	\$474,309	\$484,985
Less: Unamortized underwriting discounts, commissions and other expenses	(12,491)	(16,843)
Less: Current maturities of tranche B term loan debt ^{2, 3}	(33,600)	(4,600)
Less: Current maturities of TEU debt ²	(9,152)	(8,541)
Less: Current maturities of capital lease obligations ²	(522)	—
Total long-term debt, less current maturities, net	\$418,544	\$455,001

¹ See Note 9 for more information on our TEUs issued in the third quarter of fiscal year 2016.

In addition to the current maturities above, current maturities of long-term debt, net on the Consolidated Balance Sheets includes the current portion of unamortized underwriting discounts, commissions and other expenses of \$4,179 and \$3,291 as of September 30, 2017 and October 1, 2016, respectively.

As of September 30, 2017, current maturities of tranche B term loan consists of the 1% annual payment and

³ calculated required annual Excess Cash Flow payment as defined below, as well as planned prepayments. As of October 1, 2016, current maturities of tranche B term loan consists of the 1% annual payment.

Tranche B Term Loan and Revolving Credit Facility

In the fourth quarter of fiscal year 2016, we entered into a credit agreement with U.S. Bank National Association and HSBC Bank USA, National Association as Co-documentation Agents, Wells Fargo Bank, National Association as Syndication Agent, JPMorgan Chase Bank, N.A. as Administrative Agent and JP Morgan Chase Bank, N.A. and Wells Fargo Securities, LLC as Joint Bookrunners and Joint Lead Arrangers (the Credit Agreement). The Credit Agreement provides for senior secured credit facilities consisting of a \$120,000 revolving credit facility (the Revolving Credit Facility) which expires on July 5, 2021, and a \$460,000 tranche B term loan facility (the Term Facility) which expires on July 5, 2023. The proceeds of the Revolving Credit Facility can be drawn upon to refinance existing indebtedness and for working capital and other general corporate purposes up to a maximum of \$120,000. The proceeds of the Term Facility were used for financing the acquisition of PCB. The Term Facility amortizes in equal quarterly installments equal to 1% of the original principal amount.

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In the fourth quarter of fiscal year 2017, we completed a repricing of the tranche B term loan through an amendment to the Credit Agreement (Second Credit Agreement Amendment) to reduce the Applicable Rate (as defined in the Credit Agreement) by 100 basis points for both the Term Facility and Revolving Credit Facility and to make certain reductions to the Revolving Credit Facility commitment fee rates. During the fourth quarter of 2017, in connection with the execution of the Second Credit Agreement Amendment, we paid debt financing costs of \$1,770, of which \$1,147 was expensed in interest expense, net in the Consolidated Income Statements and \$623 was capitalized in current maturities of long-term debt, net; long-term debt, less current maturities, net; and prepaid expenses and other current assets in the Consolidated Balance Sheets. We also recognized non-cash charges of \$503 in interest expense, net in the Consolidated Income Statements for the loss on debt extinguishment resulting from the write-off of existing unamortized debt financing costs.

The primary categories of borrowing include Alternate Base Rate (ABR) Borrowings (ABR Term Loans and ABR Revolving Loans), Swingline Loans and Eurocurrency Borrowing (each as defined in the Credit Agreement). ABR Borrowings and Swingline Loans made in U.S. dollars under the Credit Agreement bear interest at a rate per annum equal to the ABR plus the Applicable Rate. The ABR is defined as the greater of (a) the Prime Rate (as defined in the Credit Agreement) in effect on such day, (b) the New York Federal Reserve Bank Rate (NYFRB Rate) (as defined in the Credit Agreement) in effect on such day plus $\frac{1}{2}$ of 1.00%, or (c) the Adjusted LIBOR (as defined in the Credit Agreement) for a one-month interest period in dollars on such day plus 1.00%. The ABR for ABR Term Loans shall not be less than 1.75% per annum. The Applicable Rate for any ABR Revolving Loans is based upon the leverage ratio applicable on such date. As of September 30, 2017, the Applicable Rate was 2.25% per annum for ABR Term Loans.

Eurocurrency Borrowings made under the Credit Agreement bear interest at a rate per annum equal to the Adjusted LIBOR Rate plus the Applicable Rate. The Adjusted LIBOR Rate is defined as an interest rate per annum equal to (a) the LIBOR Rate for such interest period multiplied by (b) the Statutory Reserve Rate (as defined in the Credit Agreement). The Applicable Rate for any Eurocurrency Revolving Loans is based upon the leverage ratio applicable on such date. The Adjusted LIBOR Rate for Eurocurrency Term Loans shall not be less than 0.75% per annum. Based on our leverage ratio as of September 30, 2017, the Applicable Rate for Eurocurrency Revolving Loans was 4.00%. As of September 30, 2017, the Applicable Rate for Eurocurrency Term Loans was 3.25% per annum, plus the applicable Adjusted LIBOR rate of 1.24%. The weighted average interest rate on the Term Facility during fiscal year 2017 was 4.96%.

As of September 30, 2017, there were no borrowings against the Revolving Credit Facility, and we had outstanding letters of credit drawn from the credit facility totaling \$37,811, leaving approximately \$82,189 of unused borrowing capacity. Commitment fees are payable on the unused portion of the Revolving Credit Facility at rates between 0.25% and 0.40% based on our leverage ratio. For the fiscal years ended September 30, 2017 and October 1, 2016, commitment fees incurred totaled \$405 and \$271, respectively.

The Credit Agreement governing the Term Facility requires us to prepay outstanding term loans, subject to certain exceptions, depending on the leverage ratio with (a) up to 50% of the Company's annual Excess Cash Flow (as defined in the Credit Agreement) and (b) 100% of the net cash proceeds of (i) certain asset sales and casualty and condemnation events, subject to reinvestment rights and certain other exceptions; and (ii) any incurrence or issuance of certain debt, other than debt permitted under the Credit Agreement. We may voluntarily prepay outstanding loans under the Term Facility at any time without premium or penalty. All obligations under the Term Facility are unconditionally guaranteed by certain of the Company's existing wholly owned domestic subsidiaries, and are secured, subject to certain exceptions, by substantially all of the Company's assets and the assets of the Company's subsidiary guarantors.

Under the Credit Agreement, we are subject to customary affirmative and negative covenants, including, among others, restrictions on our ability to incur debt, create liens, dispose of assets, make investments, loans, advances, guarantees and acquisitions, enter into transactions with affiliates, and enter into any restrictive agreements and customary events of default (including payment defaults, covenant defaults, change of control defaults and bankruptcy defaults). The Credit Agreement also contains financial covenants, including the ratio of consolidated total indebtedness to adjusted consolidated earnings before income, taxes, depreciation and amortization (Adjusted

EBITDA), as defined in the Credit Agreement, as well as the ratio of Adjusted EBITDA to consolidated interest expense. These covenants restrict our ability to purchase outstanding shares of common stock. As of September 30, 2017 and October 1, 2016, we were in compliance with these financial covenants.

See Note 3 for additional information on the fair value of the tranche B term loan and the TEU debt.

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Interest Rate Swaps

On October 20, 2016, in order to mitigate our exposure to interest rate increases on our variable rate debt, we entered into a variable to fixed amortizing interest rate swap. See Note 4 for additional information on derivative financial instruments.

The interest rate swap will be reduced to the following notional amounts over the next five years:

(in thousands)	Notional Amount
October 3, 2017	\$255,000
October 3, 2018	225,000
October 3, 2019	180,000
October 3, 2020	125,000
April 3, 2021	—

Future Maturities of Long-term Debt

Future maturities of long-term debt, excluding unamortized original issue discounts and deferred financing costs, for the next five fiscal years and thereafter are as follows:

Fiscal Year ⁴	Future Maturities (in thousands)
2018	\$ 32,658
2019	12,432
2020	5,161
2021	5,179
2022	4,863
Thereafter	414,016

Includes the 1% annual payment on the tranche B term loan, calculated required annual Excess Cash Flow prepayment on the tranche B term loan for fiscal year 2017 results due in the first quarter of fiscal year 2018, current maturities of TEU debt and current maturities of capital lease obligations. For fiscal year 2019 and thereafter,

⁴ excludes any Excess Cash Flow prepayments which may be required under the provisions of the Credit Agreement for the tranche B term loan based on fiscal year 2018 and subsequent fiscal year results because the amount of future prepayments, if any, is not reasonably estimable as of September 30, 2017. Capital lease obligations expire on various dates through fiscal year 2022.

Letters of Credit and Guarantees

As of September 30, 2017, we had outstanding letters of credit and guarantees totaling \$47,086 and \$22,800, respectively, primarily to bond advance payments and performance guarantees related to customer contracts in Test.

NOTE 6 STOCK-BASED COMPENSATION

We compensate our officers, directors and employees with stock-based compensation under the 2011 Stock Incentive Plan (the 2011 Plan) and the 2017 Stock Incentive Plan (the 2017 Plan) approved by our shareholders and administered under the supervision of our Board of Directors.

During fiscal year 2016, our shareholders approved a 1,500 share increase in the number of shares that could be issued under the 2011 Plan, bringing the aggregate total to 3,800 shares. In the third quarter of fiscal year 2017, the 2017 Plan was approved by our shareholders. The 2017 Plan provides stock incentive awards in the form of stock options (incentive and non-qualified), stock appreciation rights, restricted stock, restricted stock units, performance stock, performance stock units and other stock awards. Awards under the 2017 Plan may be granted to officers, directors, employees and key service providers. Effective upon approval of the 2017 Plan, no new awards may be granted under the 2011 Plan, and carryover activity for forfeitures and cancellations of unvested grants under the 2011 Plan will become available for issuance under the 2017 Plan. In addition to the carryover activity from the 2011 Plan, 1,500 shares are authorized for issuance under the 2017 Plan. As of September 30, 2017, a total of 1,566 shares were

available for issuance under the 2017 Plan. Shares will be available for issuance under the 2017 Plan until June 6, 2027.

In fiscal year 2011, our shareholders approved a 2012 Employee Stock Purchase Plan (the 2012 ESPP) that was effective beginning January 1, 2012. During fiscal years 2017, 2016 and 2015, we issued shares of our common stock to participants under the 2012 ESPP. As of September 30, 2017, a total of 639 shares were available for issuance under the 2012 ESPP. Shares will be available for issuance under the 2012 ESPP until December 31, 2021.

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Stock-based Compensation Expense

Stock-based compensation expense was as follows:

(in thousands)	2017	2016	2015
Stock-based compensation expense by type of award			
Employee stock options	\$1,588	\$2,436	\$2,683
Employee stock purchase plan	298	519	239
Restricted stock and restricted stock units	3,737	4,203	4,536
Amounts capitalized as inventory	(1,444)	(2,354)	(1,985)
Amounts recognized in income for amounts previously capitalized as inventory	1,421	2,420	1,878
Total stock-based compensation included in income from operations	5,600	7,224	7,351
Income tax benefit on stock-based compensation	(1,893)	(2,421)	(2,564)
Net compensation expense included in net income	\$3,707	\$4,803	\$4,787

As of September 30, 2017, there was \$2,457 of total unrecognized stock option expense related to non-vested awards, which is expected to be recognized over a weighted average period of approximately 1.2 years. As of September 30, 2017, there was \$6,190 of total unrecognized restricted stock expense related to non-vested awards of restricted stock units, which is expected to be recognized over a weighted average period of approximately 1.2 years.

Stock Options

Stock options are granted at exercise price equal to the closing market price of our stock on the date of grant.

Generally, stock options vest proportionally on the first three anniversaries of the grant date and expire, depending on the date of grant, five or seven years from the grant date.

The fair value of stock options granted under stock-based compensation programs has been estimated as of the date of each grant using the multiple option form of the Black-Scholes valuation model based on the grant price and assumptions regarding the expected grant life, stock price volatility, dividends and risk-free interest rates. Each vesting period of an option award is valued separately, and recognized evenly over the respective vesting period. The weighted average per share fair value of stock options granted during fiscal years 2017, 2016 and 2015 was \$8.91, \$11.71 and \$12.16, respectively.

The weighted average assumptions used to determine fair value of stock options granted were as follows:

	2017	2016	2015
Expected life (in years)	4.0	4.1	3.5
Risk-free interest rate	1.6 %	1.5 %	1.1 %
Expected volatility	29.2 %	26.7 %	27.4 %
Dividend yield	2.6 %	2.0 %	1.8 %

The expected life represents the period that the stock option awards are expected to be outstanding and was determined based on historical and anticipated future exercise and expiration patterns. The risk-free interest rate used is based on the yield of constant maturity U.S. Treasury bonds on the grant date with a remaining term equal to the expected life of the grant. Stock price volatility is estimated based on a historical weekly price observation. The dividend yield assumption is based on the annualized current dividend divided by the share price on the grant date. Stock option activity was as follows:

	2017		2016		2015	
(in thousands, except per share data)	Shares	WAEP ¹	Shares	WAEP ¹	Shares	WAEP ¹
Options outstanding at beginning of year	784	\$ 60.34	687	\$ 58.17	634	\$ 53.72
Granted	288	\$ 46.35	316	\$ 61.57	172	\$ 67.28
Exercised	(112)	\$ 40.68	(68)	\$ 41.10	(92)	\$ 42.88
Forfeited or expired	(194)	\$ 60.74	(151)	\$ 61.74	(27)	\$ 63.39
Options outstanding at end of year	766	\$ 57.86	784	\$ 60.34	687	\$ 58.17
Options eligible for exercise at year end	329	\$ 64.52	331	\$ 56.23	304	\$ 48.56

¹ Weighted Average Exercise Price

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Options outstanding at September 30, 2017 had a weighted average remaining contractual term of 5.0 years and an aggregate intrinsic value of \$1,899. Options eligible for exercise at September 30, 2017 had a weighted average remaining contractual term of 3.7 years and an aggregate intrinsic value of \$18.

The total intrinsic value of stock options exercised during the fiscal years ended September 30, 2017, October 1, 2016 and October 3, 2015 was \$1,467, \$1,082 and \$2,484, respectively.

Restricted Stock, Restricted Stock Units and Performance Restricted Stock Units

We award restricted stock units to directors. The restricted stock units vest one year from the date of the grant, provided the director continues to serve on the Board of Directors. The directors are entitled to cash dividend equivalents on restricted stock units, but they do not have voting rights on the unvested shares until they become owners of the shares, unless otherwise approved by the Compensation and Leadership Development Committee of the Board of Directors. Additionally, in fiscal year 2013, we awarded restricted stock to our directors that vest proportionately on the first three anniversaries of the grant date. For restricted stock awarded to directors, participants are entitled to cash dividends and voting rights on unvested shares, but the sale and transfer of these shares is restricted during the vesting period. Restricted stock and restricted stock units are valued based on the market value of the shares at the date of grant with the value allocated to expense evenly over the restricted period.

We award restricted stock units to key employees. Awards are valued based on the market value of our stock as of the date of grant with the value recognized as expense evenly over the restricted period. Restricted stock units vest proportionally on the first three anniversaries of the grant date. Participants awarded restricted stock units are not entitled to cash dividends or voting rights on unvested units.

We award performance restricted stock units to key employees. Performance restricted stock units vest based on attainment of return on invested capital performance targets at the end of one, two and three year performance periods. Participants awarded performance restricted stock units are not entitled to cash dividends or voting rights on unvested units. Performance restricted stock units are valued based on the market value of our shares as of the date of grant with the value recognized as an expense over the life of the performance period. Once the performance criteria has been met, the value of the performance restricted stock units is finalized.

Restricted stock activity was as follows:

	2017	2016	2015
(in thousands, except per share data)	Shares ²	Shares ²	Shares ²
Unvested shares at beginning of year	—	3	9
Granted	—	—	—
Vested and released	—	(3)	(6)
Forfeited	—	—	—
Unvested shares at end of year	—	—	3

² Weighted Average Grant Date Fair Value per Share

Restricted stock unit and performance restricted stock unit activity was as follows:

	2017	2016	2015
(in thousands, except per share data)	Shares ³	Shares ³	Shares ³
Outstanding at beginning of year	165	119	98
Granted	157	114	74
Vested and released	(68)	(47)	(47)
Forfeited	(31)	(21)	(6)
Outstanding at end of year	223	165	119

³ Weighted Average Grant Date Fair Value per Share

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Employee Stock Purchase Plan

Our U.S. employees are eligible to participate in the 2012 ESPP. Employee purchases of our stock are funded through payroll deductions over calendar six-month periods. The purchase price is 85% of the lower of the market price at the beginning or end of the six-month period. The shares are required to be held by the employee for at least eighteen months subsequent to the purchase. Employee stock purchase plan share awards are valued based on the value of the discount feature plus the fair value of the optional features, which is determined as of the date of grant using the Black-Scholes valuation model. The value of these share awards is allocated to expense evenly over each purchase period.

Two purchase periods closed in fiscal year 2017 with the combined issuance of 25 shares at a weighted average price of \$40.49 per share. In fiscal years 2016 and 2015, purchases were 24 shares and 16 shares, respectively, with weighted average prices per share of \$44.20 and \$58.96, respectively.

NOTE 7 EMPLOYEE BENEFIT PLANS

Retirement Savings Plan

We sponsor a defined contribution retirement savings plan subject to the provisions of the Employee Retirement Income Security Act. Employees may contribute a portion of their eligible compensation to the plan on a pretax or after-tax basis. We match a portion of certain employee contributions by contributing cash into the investment options selected by the employees. The total amount contributed by MTS is determined by plan provisions for matching contributions as well as at our discretion. Matching contributions were 75% of eligible compensation for fiscal years 2017 and 2016 and 50% of eligible compensation for fiscal year 2015, up to a maximum of 6% of compensation subject to Internal Revenue Service (IRS) limitations. Employer matching contributions were \$4,967, \$4,628 and \$2,732 for fiscal years 2017, 2016 and 2015, respectively. We did not make any discretionary contributions under the plan in fiscal years 2017, 2016 and 2015.

Defined Benefit Pension Plan

We sponsor a non-contributory, defined benefit pension plan for eligible employees of one of our German subsidiaries. This plan provides benefits based on the employee's years of service and compensation during the years immediately preceding retirement, termination, disability or death, as defined in the plan. We use a September 30 measurement date for this defined benefit pension plan.

We recognize the funded status of the defined benefit pension plan in our Consolidated Balance Sheets, recognize changes in the funded status in the year in which the changes occur through comprehensive income and measure the plan's assets and obligations that determine the plan's funded status as of the end of our fiscal year.

The portion of the pretax amount in AOCI as of October 1, 2016 that was recognized in earnings during fiscal year 2017 was \$996. The portion of the pretax amount in AOCI as of September 30, 2017 that is expected to be recognized as a component of net periodic retirement cost during fiscal year 2018 is \$524. The actuarial gain in fiscal year 2017 of \$5,214 was primarily a result of the change in the discount rate from 1.28% in fiscal year 2016 to 1.99% in fiscal year 2017.

Changes in benefit obligations and plan assets were as follows:

(in thousands)	2017	2016
Change in benefit obligation		
Projected benefit obligation, beginning of year	\$34,434	\$27,272
Service cost	1,426	971
Interest cost	431	608
Actuarial (gain) loss	(5,214)	6,123
Currency translation	1,866	93
Benefits paid	(663)	(633)
Projected benefit obligation, end of year	\$32,280	\$34,434
Change in plan assets		
Fair value of plan assets, beginning of year	\$19,950	\$18,767
Actual return on plan assets	1,848	1,119
Employer contributions	663	633

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Currency translation	1,088	64
Benefits paid	(663)	(633)
Fair value of plan assets, end of year	\$22,886	\$19,950

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The funded status of the defined benefit pension plan and amounts included in our Consolidated Balance Sheets were as follows:

(in thousands)	2017	2016
Funded status		
Funded status, end of year	\$(9,394)	\$(14,484)
Actuarial net loss in AOCI, pretax	9,261	15,476
Net amount recognized	\$(133)	\$992
Included in Consolidated Balance Sheets		
Accrued payroll and related costs	\$(806)	\$(740)
Defined benefit pension plan obligation	(8,588)	(13,744)
Deferred income taxes	2,809	4,685
AOCI, net of tax	6,452	10,791
Net amount recognized	\$(133)	\$992

The weighted average assumptions used to determine the defined benefit pension plan obligation as of September 30, 2017 and October 1, 2016 in the Consolidated Balance Sheets and the net periodic benefit cost for fiscal year 2018 were as follows:

	2017	2016
Discount rate	1.99 %	1.28 %
Expected rate of return on plan assets	5.50 %	5.50 %
Expected rate of increase in future compensation levels	3.00 %	3.00 %

The discount rate is calculated based on zero-coupon bond yields published by the Deutsche Bundesbank for maturities that match the weighted average duration of the pension liability, adjusted for the average credit spread of corporate bond rates above the government bond yields.

The expected rate of return on plan assets represents the weighted average of the expected returns on individual asset categories in the portfolio. We use investment services to assist with determining the overall expected rate of return on plan assets. Factors considered in our determination include historical long-term investment performance and estimates of future long-term returns by asset class.

The overall objective of our investment policy and strategy for the defined benefit pension plan is to maintain sufficient liquidity to pay benefits and minimize the volatility of returns while earning the highest possible rate of return over time to satisfy the benefit obligations. The plan fiduciaries assist us with setting our long-term strategic investment objectives for the defined benefit pension plan assets. The objectives include preserving the funded status of the trust and balancing risk and return. Investment performance and plan asset mix are reviewed periodically. As of both September 30, 2017 and October 1, 2016, plan assets were invested in a single mutual fund, the underlying assets of which were allocated to fixed income and cash and cash equivalents categories as shown in the table below. Any decisions to change the asset allocation are made by the plan fiduciaries. The investment in equity and fixed income securities has a long-term targeted allocation of assets of 50% equity and 50% fixed income.

The actual defined benefit pension plan asset allocations within the balanced mutual fund are as follows:

	Percentage of Plan Assets	
	2017	2016
Fixed income securities ¹	71.4 %	75.5 %
Cash and cash equivalents ²	28.6 %	24.5 %
Total	100.0 %	100.0 %

¹ Fixed income securities are comprised primarily of international government agency and international corporate bonds with investment grade ratings.

² Cash and cash equivalents include deposit accounts holding cash in Euros and other currencies and term deposits primarily held as collateral for equity futures. The market values of the equity and futures are linked to the values of

equity indices of developed country markets, including the U.S., Great Britain, Europe, Canada, Switzerland and Japan.

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The fair value of the defined benefit pension plan assets, which are subject to fair value measurement as described in Note 3, are as follows:

September 30, 2017			
(in thousands)	Level 1	Level 2 3	Level 3 Total
Mutual fund ¹	\$—\$22,886	\$	—\$22,886

October 1, 2016			
(in thousands)	Level 1	Level 2 3	Level 3 Total
Mutual fund ¹	\$—\$19,950	\$	—\$19,950

¹ The fair value of the mutual fund is valued based on closing prices from national exchanges, if the underlying securities are traded on an active market, or fixed income pricing models that use observable market inputs.

Net periodic benefit cost for the defined benefit pension plan included the following components:

(in thousands)	2017	2016	2015
Service cost	\$1,426	\$971	\$860
Interest cost	431	608	634
Expected return on plan assets	(1,085)	(1,027)	(1,009)
Net amortization and deferral	996	584	501
Special termination benefits	—	—	—
Net periodic benefit cost	\$1,768	\$1,136	\$986

The accumulated benefit obligation of our defined benefit pension plan as of September 30, 2017 and October 1, 2016 was \$29,581 and \$30,716, respectively.

Future pension benefit payments, which reflect expected future service for the next five fiscal years and the combined five fiscal years thereafter, are as follows:

Fiscal Year	Pension Benefit Payments (in thousands)
2018	\$ 806
2019	876
2020	924
2021	1,038
2022	1,107
2023 through 2027	6,152
Total	\$ 10,903

Other Retirement Plans

Certain of our international subsidiaries have non-contributory, unfunded post-retirement benefit plans that provide retirement benefits for eligible employees and managing directors. Generally, these post-retirement plans provide benefits that accumulate based on years of service and compensation levels. As of September 30, 2017 and October 1, 2016, the aggregate liabilities associated with these post-retirement benefit plans was \$4,585 and \$4,508, respectively.

NOTE 8 INCOME TAXES

The components of income (loss) before income taxes were as follows:

(in thousands)	2017	2016	2015
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Domestic	\$(9,658)	\$5,345	\$31,827
Foreign	32,669	28,167	27,345
Total income (loss) before income taxes	\$23,011	\$33,512	\$59,172

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The income tax provision (benefit) was as follows:

(in thousands)	2017	2016	2015
Current			
Federal	\$(1,493)	\$3,169	\$4,588
State	156	138	527
Foreign	11,980	6,712	8,025
Deferred	(12,716)	(4,001)	570
Income tax provision (benefit)	\$(2,073)	\$6,018	\$13,710

A reconciliation from the U.S. federal statutory income tax rate to our effective income tax rate is as follows:

(in thousands)	2017	2016	2015
U.S. federal statutory income tax rate	35 %	35 %	35 %
Impact from foreign operations	(10)	(5)	(4)
State income taxes, net of federal benefit	(1)	—	1
R&D tax credits	(22)	(16)	(8)
Domestic production activities deduction	(10)	(2)	(2)
Foreign tax credits	—	—	—
Acquisition costs	(3)	5	—
Nondeductible stock option expense and other permanent items	2	1	1
Effective income tax rate	(9) %	18 %	23 %

The effective tax rate was lower during fiscal year 2017 primarily due to certain discrete benefits of \$2,801 recognized during the third quarter of fiscal year 2017, which consisted of additional U.S. tax benefits for prior fiscal years associated with domestic manufacturing, deductible PCB acquisition-related expenses, and the U.S. R&D tax credit. Excluding the impact of these discrete benefits, the effective tax rate for fiscal year 2017 was 3.2%, and declined compared to the prior year due to lower income before taxes and a more favorable geographic mix of earnings. The effective tax rate of 18.0% during fiscal year 2016 included a \$2,283 discrete tax benefit for retroactive reinstatement of the U.S. R&D tax credit, which was partially offset by a one-time tax cost of \$1,834 associated with nondeductible PCB acquisition-related expenses. Excluding the impact of these items, the effective tax rate for fiscal year 2016 was 19.3%.

The effective tax rate of 23.2% during fiscal year 2015 included a discrete tax benefit of \$1,836 due to the resolution of audit matters in connection with the IRS examination of tax years ended October 1, 2011 and September 29, 2012 and a discrete tax benefit of \$2,098 during fiscal year 2015 for retroactive reinstatement of the U.S. R&D tax credit. Excluding the impact of these discrete benefits, the effective tax rate for fiscal year 2015 was 29.8%.

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A summary of the deferred tax assets and liabilities are as follows:

(in thousands)	2017	2016
Deferred tax assets		
Accrued compensation and benefits	\$13,841	\$15,888
Inventory reserves	6,550	6,128
Other assets	4,920	4,685
Allowance for doubtful accounts	1,766	1,488
Net operating loss carryovers	227	140
State and foreign tax credit carryovers	3,358	1,249
Research and development tax credit carryovers	2,231	1,540
Unrealized derivative instrument gains	—	185
Total deferred tax asset before valuation allowance	32,893	31,303
Less valuation allowance	(3,487)	(3,009)
Total deferred tax assets	29,406	\$28,294
Deferred tax liabilities		
Property and equipment	13,382	\$15,128
Foreign deferred revenue and other	3,009	3,320
Intangible assets	83,207	90,450
Unrealized derivative instrument gains	1,233	—
Total deferred tax liabilities	100,831	\$108,898
Net deferred tax assets (liabilities)	\$(71,425)	\$(80,604)

As of September 30, 2017, we had a Minnesota R&D tax credit carryover of \$2,231, which may be carried forward fifteen years. We have determined that the benefit of this tax credit is not likely to be realized before it expires and have recorded a full valuation allowance against this deferred tax asset. As of September 30, 2017, we had New York and North Carolina investment tax credit carryovers of \$1,224, which we acquired as part of the PCB acquisition. We have determined that the benefit of these state tax credit carryovers is not likely to be recognized and we have recorded a full valuation allowance against this deferred tax asset.

During fiscal year 2017, we repatriated \$15,272 of current earnings from our German and Japanese subsidiaries. We recorded \$11 of tax expense during fiscal year 2017 related to these repatriations. During fiscal year 2016, we repatriated \$10,324 of earnings from our German and Japanese subsidiaries. We recorded a \$112 tax benefit during fiscal year 2016 related to these repatriations. During fiscal year 2015, we repatriated \$9,194 of current earnings from our German and Japanese subsidiaries. We recorded a \$1,057 tax benefit during fiscal year 2015 related to these repatriations.

We have not recognized a deferred tax liability for the undistributed earnings of certain foreign operations because those subsidiaries have invested or will invest the undistributed earnings indefinitely. As of September 30, 2017 and October 1, 2016, undistributed earnings were \$111,717 and \$93,510, respectively. Because of the availability of U.S. foreign tax credits, it is impracticable for us to determine the amount of U.S. federal tax liability that would be payable if these earnings were not indefinitely reinvested. Deferred taxes are recorded for earnings of foreign operations when we determine that such earnings are no longer indefinitely reinvested.

A summary of changes to our liability for unrecognized tax benefits is as follows:

(in thousands)	2017	2016
Beginning liability for unrecognized tax benefits	\$6,232	\$5,649
Increase due to tax positions related to the current year	852	269
Increase (decrease) due to tax positions related to prior years	189	500
Decrease due to settlements with tax authorities	(493)	—
Decrease due to lapse of statute of limitations	(931)	(186)
Exchange rate change	—	—
Ending liability for unrecognized tax benefits	\$5,849	\$6,232

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Included in the liability of unrecognized tax benefits as of September 30, 2017 and October 1, 2016 are potential benefits of \$3,234 and \$3,429, respectively, that, if recognized, would affect the effective tax rate.

As of September 30, 2017 and October 1, 2016, we have accrued interest related to uncertain income tax positions of approximately \$404 and \$519, respectively. As of September 30, 2017 and October 1, 2016, no accrual for penalties related to uncertain tax positions existed. Interest and penalties related to uncertain tax positions are included in interest expense, net and general and administrative expense, respectively, on the Consolidated Statements of Income. We are subject to U.S. federal income tax as well as income tax of numerous state and foreign jurisdictions. We are no longer subject to U.S. federal tax examinations for fiscal years before 2014 and with limited exceptions, state and foreign income tax examinations for fiscal years before 2011. During fiscal year 2015, the IRS completed the audit of our consolidated income tax returns for fiscal years 2011 and 2012. During fiscal year 2017, the German tax authorities concluded an audit of our German subsidiaries' fiscal years 2012, 2013 and 2014 income tax returns. As of September 30, 2017, we do not expect significant changes in the amount of unrecognized tax benefits for our U.S. or foreign subsidiaries during the next 12 months.

As of September 30, 2017 and October 1, 2016, we were expected to receive income tax refunds within the next fiscal year. As a result, we recognized a current income tax receivable of \$5,392 and \$3,238 as of September 30, 2017 and October 1, 2016, respectively, which is included in prepaid expenses and other current assets in the Consolidated Balance Sheets.

NOTE 9 SHAREHOLDERS' EQUITY

(Dollars and shares in thousands, except per share and per TEU data)

Share Issuance

During the third quarter of fiscal year 2016, we issued 1,897 shares of our common stock at \$42.00 per share in a registered public offering primarily to finance the acquisition of PCB, to repay amounts outstanding under our existing revolving credit facility and to pay related costs, fees and expenses. Total net proceeds for fiscal year 2016 were as follows:

(in thousands)	Common Stock	Additional Paid-in Capital	Total
Public offering	\$ 474	\$ 79,221	\$ 79,695
Less: Underwriting discounts and commissions	—	(4,782)	(4,782)
Less: Other expenses ¹	—	(612)	(612)
Issuance of common stock, net	\$ 474	\$ 73,827	\$ 74,301

¹ Other expenses include direct and incremental costs related to the issuance of the common stock.

Tangible Equity Units

During the third quarter of fiscal year 2016, we issued 1,150 TEUs in a registered public offering primarily to finance the acquisition of PCB, to repay amounts outstanding under our existing revolving credit facility and to pay related costs, fees and expenses. Total proceeds, net of underwriting discounts, commissions and other expenses were \$110,926. Each TEU has a stated amount of \$100 per TEU and is comprised of a prepaid stock purchase contract and a senior amortizing note having a final installment payment date of July 1, 2019. We allocated the proceeds from the issuance of the TEUs between equity and debt based on the relative fair values of the respective components of each TEU. The fair value of the prepaid stock purchase contracts, net of underwriting discounts, commissions and other expenses, was recorded in additional paid-in capital in the Consolidated Balance Sheets. The fair value of the senior amortizing notes, net of underwriting discounts, commissions and other expenses, was split between current maturities of long-term debt, net and long-term debt, less current maturities, net in the Consolidated Balance Sheets. Underwriting discounts, commissions and other costs directly associated with the TEU-related debt are amortized using the effective interest rate method over the three-year term of the instrument.

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The aggregate values assigned upon issuance to each component of the TEUs, based on the relative fair value of the respective components, were as follows:

(in thousands, except fair value price per TEU)	Equity Component	Debt Component	Total
Fair value price per TEU ²	\$ 76.19	\$ 23.81	\$ 100.00
Gross proceeds	\$ 87,614	\$ 27,386	\$ 115,000
Less: Underwriting discounts and commissions	(2,628)	(822)	(3,450)
Less: Other expenses ³	(475)	(149)	(624)
Issuance of TEUs, net	\$ 84,511	\$ 26,415	\$ 110,926

² The fair value price allocation between equity and debt for each TEU was determined using a discounted cash flow model.

³ Other expenses include direct and incremental costs related to the issuance of the TEUs.

Equity Component

Unless converted earlier at the option of the holder, each prepaid stock purchase contract will automatically settle on July 1, 2019. If converted prior to the automatic settlement date at the option the holder, the minimum of 1.9841 shares of our common stock are delivered to the holder of each prepaid stock purchase contract. On the automatic settlement date, a minimum of 1.9841 shares and a maximum of 2.3810 shares of our common stock, subject to adjustment based upon the applicable market value discussed below, will be delivered to the holder of each prepaid stock purchase contract at the settlement date.

The number of shares of our common stock issuable upon settlement of each purchase contract on July 1, 2019 will be determined as follows:

• if the applicable market value is equal to or greater than the threshold appreciation price of \$50.40 per share, holders will receive 1.9841 shares of common stock per purchase contract, or the minimum settlement rate;

• if the applicable market value is greater than the reference price of \$42.00 per share, but less than the threshold appreciation price of \$50.40 per share, holders will receive a number of shares of common stock equal to \$100 per TEU divided by the applicable market value; or

• if the applicable market value is less than or equal to the reference price of \$42.00 per share, holders will receive 2.3810 shares of common stock per purchase contract, or the maximum settlement rate.

The "applicable market value" is defined as the average of the daily volume-weighted average price of the common stock on each of the 20 consecutive trading days beginning on, and including, the 23rd scheduled trading day immediately preceding July 1, 2019.

During fiscal year 2017, certain holders of our TEUs elected to early convert the equity component on 473 of our outstanding TEUs at the minimum conversion rate of 1.9841 which resulted in the issuance of 939 shares of our common stock. There were 677 and 1,150 units of the equity component of TEUs outstanding as of September 30, 2017 and October 1, 2016, respectively.

Debt Component

The senior amortizing note was issued with an initial principal amount of \$27,386, or \$23.8136 per TEU. Equal quarterly cash installments of \$2.1875 per amortizing note (except for the October 1, 2016 installment payment, which was \$2.5764 per amortizing note) will be paid, which in the aggregate will be equivalent to a 8.75% cash distribution per year with respect to each \$100 stated amount per TEU. Each installment will constitute a payment of interest and partial repayment of principal.

Earnings Per Common Share

The TEUs have a dilutive effect on our earnings per share. The 1.9841 minimum shares to be issued are included in the calculation of basic weighted average shares outstanding. The 0.3969 difference between the minimum shares and the 2.3810 maximum shares is potentially dilutive, and accordingly, is included in our diluted earnings per share on a pro rata basis to the extent the applicable market value is higher than the reference price but less than the threshold appreciation price. See Note 1 for additional information regarding the calculation of earnings per share.

Capped Calls

In connection with the pricing of the TEUs sold in our public offering in fiscal year 2016, we purchased capped calls from third party banking institutions (Capped Calls) for \$7,935. The initial Capped Calls were for 2,282 equivalent shares of our common stock with a strike price of \$50.40, a cap price of \$58.80 and an expiration date of July 1, 2019 (Capped Call Expiration). The

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value of the Capped Calls is settled with shares of our common stock, based on the approximate market value of our common stock at such time, and may be settled as the TEUs are early converted or settled upon Capped Call Expiration.

During fiscal year 2017, we settled approximately 10% of the Capped Calls, which resulted in us receiving and retiring 12 shares of our common stock. As of September 30, 2017, the range of shares of our common stock to be received under the outstanding Capped Calls was 0 to 293 shares, which will be realized if our stock price closes at or below \$50.40 or at \$58.80, respectively, upon Capped Call Expiration. Settlement of the Capped Calls prior to Capped Call Expiration may be for fewer shares than the maximum of 293 shares.

NOTE 10 OTHER COMPREHENSIVE INCOME (LOSS)

Other comprehensive income (loss), a component of shareholders' equity, consists of foreign currency translation adjustments, gains or losses on derivative instruments and defined benefit pension plan adjustments.

Income tax expense or benefit allocated to each component of other comprehensive income (loss) was as follows:

	2017			2016			2015		
(in thousands)	Pre-tax	Tax	Net	Pre-tax	Tax	Net	Pre-tax	Tax	Net
Foreign currency translation gain (loss) adjustments	\$3,273	\$—	\$3,273	\$(332)	\$—	\$(332)	\$(11,215)	\$—	\$(11,215)
Derivative instruments									
Unrealized net gain (loss)	3,301	(1,191)	2,110	(1,342)	487	(855)	3,492	(1,266)	2,226
Net (gain) loss reclassified to earnings	155	(57)	98	334	(120)	214	(4,299)	1,561	(2,738)
Defined benefit pension plan									
Unrealized net gain (loss)	5,918	(1,786)	4,132	(6,034)	1,821	(4,213)	(1,252)	378	(874)
Net (gain) loss reclassified to earnings	996	(300)	696	584	(176)	408	501	(151)	350
Currency exchange rate gain (loss)	(489)	—	(489)	(18)	—	(18)	850	—	850
Other comprehensive income (loss)	\$13,154	\$(3,334)	\$9,820	\$(6,808)	\$2,012	\$(4,796)	\$(11,923)	\$522	\$(11,401)

The changes in the net-of-tax balances of each component of AOCI were as follows:

(in thousands)	Foreign Currency Translation Adjustments	Unrealized Derivative Instrument Adjustments	Defined Benefit Pension Plan Adjustments	Total
Balance, September 27, 2014	\$ 12,220	\$ 898	\$ (7,294)	\$ 5,824
Other comprehensive net gain (loss) reclassifications	(11,215)	2,226	(24)	(9,013)
Net (gain) loss reclassified to earnings	—	(2,738)	350	(2,388)
Other comprehensive income (loss)	(11,215)	(512)	326	(11,401)
Balance, October 3, 2015	\$ 1,005	\$ 386	\$ (6,968)	\$ (5,577)
Other comprehensive net gain (loss) reclassifications	(332)	(855)	(4,231)	(5,418)
Net (gain) loss reclassified to earnings	—	214	408	622
Other comprehensive income (loss)	(332)	(641)	(3,823)	(4,796)
Balance, October 1, 2016	\$ 673	\$ (255)	\$ (10,791)	\$ (10,373)
Other comprehensive net gain (loss) reclassifications	3,273	2,110	3,643	9,026
Net (gain) loss reclassified to earnings	—	98	696	794
Other comprehensive income (loss)	3,273	2,208	4,339	9,820
Balance, September 30, 2017	\$ 3,946	\$ 1,953	\$ (6,452)	(553)

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The effect on certain line items in the Consolidated Statements of Income of amounts reclassified out of AOCI was as follows:

(in thousands)	2017	2016	2015	Affected Line Item in the Consolidated Statements of Income
Derivative instruments				
Currency exchange contracts gain (loss)	\$459	\$(334)	\$4,299	Revenue
Interest rate swap contracts gain (loss)	(614)	—	—	Interest expense, net
Income tax benefit (expense)	57	120	(1,561)	Income tax provision (benefit)
Total net gain (loss) on derivative instruments	(98)	(214)	2,738	Net income
Defined benefit pension plan				
Actuarial loss	(543)	(319)	(273)	Cost of sales
Actuarial loss	(282)	(165)	(143)	Selling and marketing
Actuarial loss	(171)	(100)	(85)	General and administrative
Total actuarial loss	(996)	(584)	(501)	Income before income taxes
Income tax benefit	300	176	151	Income tax provision (benefit)
Total net loss on pension plan	(696)	(408)	(350)	Net income
Total net of tax reclassifications out of AOCI included in net income	\$(794)	\$(622)	\$2,388	

NOTE 11 BUSINESS SEGMENT INFORMATION

Our Chief Executive Officer (the Chief Operating Decision Maker) regularly reviews financial information for our two operating segments, Test and Sensors. Test provides testing equipment, systems and services to the ground vehicles, materials and structures sectors. Sensors provides high performance sensors for acceleration, position, vibration, motion, pressure and force measurement.

In evaluating each segment's performance, our Chief Executive Officer focuses on income from operations. This measure excludes interest income and expense, income taxes and other non-operating items. Corporate expenses, including costs associated with various support functions such as human resources, information technology, legal, finance, and accounting, and general and administrative costs are allocated to the reportable segments on the basis of revenue.

On January 5, 2017, we announced the division of our Test segment into two separate business units, "Material Test Systems" and "Vehicles and Structure Test Systems." The division of our Test segment will result in us having three operating segments once discrete financial information is made available to our Chief Operating Decision Maker. We will continue to report only the Test and Sensors segments until such time. We continue to evaluate the timing of such implementation.

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Financial information by reportable segment is as follows:

(in thousands)	2017	2016	2015
Revenue			
Test	\$504,087	\$512,265	\$462,880
Sensors	283,868	137,882	101,054
Total revenue	\$787,955	\$650,147	\$563,934

Income from Operations

Test	\$28,622	\$40,660	\$42,285
Sensors	26,206	1,103	19,211
Total income from operations	\$54,828	\$41,763	\$61,496

Identifiable Assets

Test	\$374,698	\$395,067	\$369,515
Sensors	814,994	792,953	91,316
Total identifiable assets	\$1,189,692	\$1,188,020	\$460,831

Goodwill

Test	\$25,109	\$25,022	\$26,243
Sensors	344,653	344,678	1,434
Total goodwill	\$369,762	\$369,700	\$27,677

Capital Expenditures

Test	\$13,281	\$17,570	\$14,652
Sensors	4,517	3,236	3,793
Total capital expenditures	\$17,798	\$20,806	\$18,445

Depreciation and Amortization

Test	\$17,275	\$17,279	\$18,342
Sensors	18,248	6,798	2,764
Total depreciation and amortization	\$35,523	\$24,077	\$21,106

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Geographic information is as follows:

(in thousands)	2017	2016	2015
Revenue			
U.S.	\$246,679	\$154,707	\$151,288
Europe	192,491	163,944	149,308
China	174,044	152,264	131,727
Asia, excluding China	142,644	148,056	109,376
Americas, excluding U.S.	32,097	31,176	22,235
Total revenue	\$787,955	\$650,147	\$563,934

Property and Equipment, Net

U.S.	\$78,080	\$79,794	\$59,312
Europe	15,296	13,695	13,071
China	5,542	5,630	6,260
Asia, excluding China	1,012	1,670	1,811
Total property and equipment, net	\$99,930	\$100,789	\$80,454

Revenue by geographic area is presented based on customer location. The U.S. and China were the only countries with revenue in excess of 10% of total revenue during fiscal years 2017, 2016 and 2015. No single customer accounted for 10% or more of consolidated revenue for fiscal years 2017, 2016 and 2015. Revenue is not reported for each of our products and services because it is impracticable to do so.

NOTE 12 RESTRUCTURING AND RELATED COSTS

Fiscal Year 2017 Restructuring

In fiscal year 2017, we initiated a series of Test workforce reductions and facility closures intended to increase organizational effectiveness, gain manufacturing efficiencies and provide cost savings that can be reinvested in our growth initiatives. As a result, during the fourth quarter of fiscal year 2017, we recorded \$2,899 of pre-tax severance and related expense and \$23 of pre-tax facility closure costs. In fiscal year 2018, we expect to incur \$1,000 to \$3,000 of additional pre-tax severance and related expense and facility closure costs related to these actions. No cash outlay was required in fiscal year 2017. The majority of the expenses are expected to be paid in fiscal year 2018.

In an effort to reduce costs and create economic efficiencies in Sensors, we initiated plans to close our Machida, Japan sales office in the second quarter of fiscal year 2018. We incurred severance and related pre-tax expense of \$121 in fiscal year 2017. The severance and related costs are expected to be paid during the second quarter of fiscal year 2018. We expect to incur additional severance of approximately \$104 and \$17 pre-tax expense in fiscal years 2018 and 2019, respectively, which is expected to be paid during the first quarter of fiscal year 2019.

Fiscal Year 2016 Restructuring

During the fourth quarter of fiscal year 2016, we initiated plans to reduce costs in Sensors by closing our Machida, Japan manufacturing facility in the third quarter of fiscal year 2017. We incurred severance and related pre-tax expense of \$1,036 in fiscal year 2017. As of September 30, 2017, we have incurred a total of \$1,964 of pre-tax expense, including \$1,444 and \$520 of pre-tax expense related to severance and facility closure costs, respectively. The severance and facility closing costs are expected to be paid during the first quarter of fiscal year 2018.

During the third quarter of fiscal year 2016, we initiated restructuring actions to further reduce our cost structure, primarily in our Corporate area and Test segment, through terminations, elimination of certain open positions as a result of employees leaving voluntarily throughout fiscal year 2016 and reductions in contractors. The restructuring activities resulted in severance and related pre-tax expense of \$1,237 in fiscal year 2016. All severance and related costs have been paid as of September 30, 2017.

Fiscal Year 2014 Restructuring

During fiscal year 2014, we initiated workforce and other cost reduction actions at certain of our Test locations in the U.S. and Europe. As a result of these cost reduction actions, we incurred severance and related costs of \$6,336 in fiscal year 2014. No restructuring expenses were recognized during fiscal years 2017, 2016 or 2015 related to these

restructuring actions.

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Restructuring expense included in the Consolidated Statements of Income for all restructuring actions for fiscal years 2017 and 2016 was as follows. There was no restructuring expense in fiscal year 2015.

(in thousands)	Test	Sensors	Total
Fiscal year 2017			
Cost of sales	\$2,439	\$701	\$3,140
Selling and marketing	112	203	315
General and administrative	371	253	624
Research and development	—	—	—
Total restructuring expense for fiscal year 2017	\$2,922	\$1,157	\$4,079

Fiscal year 2016			
Cost of sales	\$299	\$762	\$1,061
Selling and marketing	129	155	284
General and administrative	414	401	815
Research and development	5	—	5
Total restructuring expense for fiscal year 2016	\$847	\$1,318	\$2,165

Restructuring expense accruals included in the Consolidated Balance Sheets for all restructuring actions were as follows:

	2017		2016		2014	
(in thousands)	Test	Sensors	MTS	Sensors	Test	Total
Balance, October 3, 2015	\$—	\$—	\$—	\$—	\$1,548	\$1,548
Restructuring expense	—	—	1,237	928	—	2,165
Payments	—	—	(1,238)	—	(498)	(1,736)
Other adjustments	—	—	336	—	—	336
Currency translation	—	—	(27)	7	3	(17)
Balance, October 1, 2016	\$—	\$—	\$308	\$935	\$1,053	\$2,296
Restructuring expense	2,922	121	—	1,036	—	4,079
Payments	—	—	(303)	(1,652)	(352)	(2,307)
Other adjustments	(23)	—	—	—	—	(23)
Currency translation	—	(1)	(5)	(110)	33	(83)
Balance, September 30, 2017	\$2,899	\$120	\$—	\$209	\$734	\$3,962

Restructuring expense accruals included in the Consolidated Balance Sheets were as follows:

(in thousands)	2017	2016
Accrued payroll and related costs	\$3,485	\$1,066
Other accrued liabilities	98	520
Other long-term liabilities	379	710
Total severance and related costs	\$3,962	\$2,296

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NOTE 13 BUSINESS ACQUISITIONS

PCB Group, Inc. Acquisition

On July 5, 2016, we acquired 100% of the outstanding capital stock of PCB for a purchase price of \$581,773 subject to certain adjustments for cash, indebtedness, transaction costs and the level of net working capital that were made at closing. The transaction was accounted for under the acquisition method of accounting. PCB is a manufacturer of piezoelectric sensors and components used for pressure, force and vibration measurement and is headquartered in Depew, New York. We funded the acquisition of PCB with existing cash on hand as well as funds raised through borrowings under the Term Facility in an aggregate principal amount of \$460,000, proceeds from registered public offerings of our TEUs and common stock and the \$43,500 of restricted cash that was placed in escrow during the third quarter of fiscal year 2016 to secure termination fees that would have become payable to PCB had the acquisition not occurred under the definitive purchase agreement. The restricted cash was paid to the shareholders of PCB as part of the estimated purchase price. See Note 5 and Note 9 for additional financing information.

The acquired assets, liabilities and operating results have been included in our financial statements within Sensors from the date of acquisition. We included \$129,197 of revenue and operating income of \$2,773 for the first three quarters of fiscal year 2017 and \$44,503 of revenue and an operating loss of \$2,143 for the fourth quarter of fiscal year 2016 from PCB in our Consolidated Statements of Income. The operating income in fiscal year 2017 and the operating loss in fiscal year 2016 include a fair value adjustment to the acquired PCB inventory of \$7,975 and \$7,916, respectively. Costs of \$10,170 associated with the acquisition of PCB were expensed as incurred in the Consolidated Statements of Income within the Sensors segment in fiscal year 2016.

The final purchase price of PCB consisted of the following:

(in thousands)

Consideration paid to PCB shareholders and employees ¹	\$580,000
Consideration for PCB closing cash	11,612
Deferred endowment consideration ²	1,000
Net preacquisition earn-out	(141)
Net working capital adjustment ³	(147)
Cash acquired	(10,551)
Total estimated purchase price, net of cash acquired	\$581,773

Of the \$580,000 consideration paid to PCB, we paid \$10,000 directly to employees of PCB on behalf of the PCB shareholders during the fourth quarter of fiscal year 2016. The payment was made pursuant to the definitive purchase agreement entered into with PCB in connection with the acquisition.

² The deferred endowment consideration was paid during the third quarter of fiscal year 2017.

³ Payment was received for the net working capital adjustment during the fourth quarter of fiscal year 2017.

PCB's products include accelerometers, microphones, calibration systems, pressure sensors, load and torque sensors, force sensors, single- and multi-channel telemetry, ground fault detection and smart sensing solutions. PCB serves end markets including test and measurement, power and energy, aerospace and defense, industrial measurement and instrumentation, automotive and rail and acoustics and environmental noise monitoring. The acquisition strengthens our current Sensors business with complementary sensor products and expands channels to market, balancing the revenue mix between Test and Sensors, while enhancing our margin profile and creating significant cross-selling opportunities across the combined portfolio.

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The following table summarizes the final fair value measurement of the assets acquired and liabilities assumed net of cash acquired as of the date of acquisition:

(in thousands)

Assets	
Accounts receivable	\$21,008
Inventories	57,981
Prepaid expenses and other current assets	2,362
Property and equipment	19,649
Intangible assets	
Customer lists	153,900
Trademarks and trade names	58,500
Technology	35,300
Land-use rights	1,200
Other long-term assets	1,796
Total identifiable assets acquired	351,696
Liabilities	
Accounts payable	(6,786)
Accrued payroll and related costs	(7,137)
Non-current deferred tax liability	(94,141)
Other accrued and long-term liabilities	(5,037)
Total identifiable liabilities acquired	(113,101)

Net identifiable assets acquired	238,595
Goodwill	343,178
Total estimated purchase price consideration, net of cash acquired	\$581,773

The fair value measurement was completed as of July 1, 2017. Measurement period adjustments were recorded in fiscal year 2017 and were not material. The impact to the Consolidated Statements of Income for fiscal year 2017 related to income effects that would have been recognized in the prior year if the measurement period adjustments were recorded at acquisition date was not material. The gross amount of the accounts receivable acquired was \$21,726, of which \$718 was expected to be uncollectible as of completion of fair value measurement as of July 1, 2017.

Goodwill was calculated as the difference between the acquisition date fair value of the total purchase price consideration and the fair value of the net assets acquired and represents the future economic benefits that we expect to achieve as a result of the acquisition. This resulted in a purchase price in excess of the fair value of identifiable net assets acquired. The purchase price also included the fair value of other assets that were not identifiable, not separately recognizable under accounting rules (e.g., assembled workforce) of immaterial value in addition to a going concern element that represents our ability to earn a higher rate of return on the group of assets than would be expected on the separate assets as determined during the valuation process. Based on the fair value measurement of the assets acquired and liabilities assumed, we allocated \$343,178 to goodwill for the expected synergies from combining PCB with our existing business. All of the goodwill was assigned to Sensors. None of the goodwill is deductible for income tax purposes.

The fair value of acquired identifiable assets was determined using the income approach on an individual project basis. In performing these valuations, the key underlying probability-adjusted assumptions of the discounted cash flows were projected revenues, gross margin expectations and operating cost estimates. The valuations were based on the information that was available as of the acquisition date and the expectations and assumptions that have been deemed reasonable by us. There are inherent uncertainties and management judgment required in these determinations. The fair value measurements of the assets acquired and liabilities assumed were based on valuations involving significant unobservable inputs, or Level 3 in the fair value hierarchy.

The fair value of the acquired intangible assets was \$248,900. The expected lives of the acquired intangible assets are approximately 15 years for developed technology, 16 years for customer lists, 5 years for leasehold interest and 3 years for

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finite-lived trademarks and trade names. The acquired intangible assets are being amortized on a straight-line basis. Trade names having a value of \$57,500 are considered to have indefinite lives.

Pro Forma Financial Information (Unaudited)

The following unaudited pro forma financial information presents the combined results of operations of MTS Systems Corporation as if the acquisition of PCB had occurred as of the beginning of the fiscal years ended October 1, 2016 and October 3, 2015. The unaudited pro forma information is not necessarily indicative of what our consolidated results of operations actually would have been had the acquisition occurred at the beginning of each fiscal year. In addition, the unaudited pro forma financial information does not attempt to project the future results of operations of the combined company.

(in thousands except per share data)	2016	2015
Revenue	\$782,379	\$743,595
Net income	18,779	39,324

Earnings per share

Basic	\$0.93	\$2.05
Diluted	0.92	2.04

The unaudited pro forma financial information is based on certain assumptions which we believe are reasonable, directly attributable to the transactions, factually supportable and do not reflect the cost of any integration activities or the benefits from the acquisition of PCB and synergies that may be derived from any integration activities.

The unaudited pro forma financial information above gives effect to the following:

• Incremental amortization and depreciation expense related to the estimated fair value of identifiable intangible assets and property, plant and equipment from the purchase price allocation.

• Exclusion of the purchase accounting impact of the incremental charge reported in cost of sales for the sale of acquired inventory that was written-up to fair value of \$7,916.

• Includes \$22,968 of interest expense on outstanding debt entered into as part of funding the acquisition.

• Pro forma adjustments tax affected by 20% tax rate.

Weighted average shares outstanding was adjusted to increase the amount by 4,179 shares for both basic and diluted shares in the earnings per share calculation to reflect the financing of the acquisition of PCB in the form of the issuance of shares of common stock and the minimum shares to be issued for our TEUs at the minimum settlement rate.

Our pro forma 2016 and 2015 fiscal years ended on October 1, 2016 and October 3, 2015, respectively, while PCB's fiscal years ended on December 31, 2016 and December 31, 2015, respectively. The full-year unaudited pro forma financial information for fiscal year 2016 combines our audited financial information for the fiscal year ended October 1, 2016 and the unaudited financial information of PCB for the 12 months ended October 1, 2016. The unaudited financial information of PCB for the 12 months ended October 1, 2016 was determined by adding PCB's unaudited financial information for the three months ended December 31, 2015 (PCB's fourth quarter of 2015), the unaudited financial information for the six months ended June 30, 2016 (PCB's first six months of 2016) and the audited financial information of PCB for the period from acquisition (July 5, 2016) to October 1, 2016. The full-year unaudited pro forma financial information for fiscal year 2015 combines our audited financial information for the fiscal year ended October 3, 2015 and the audited financial information of PCB for the year ended December 31, 2015. Due to the different fiscal year ends, the pro forma statement of income for both fiscal year 2016 and 2015 included PCB's unaudited financial information for the three months ended December 31, 2015 (PCB's fourth quarter of 2015). Summarized operating information about the duplicated quarter is as follows:

(in thousands)

Revenue	\$45,140
Net income	3,582

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Instrument and Calibration Sweden AB Acquisition

On June 29, 2015, we acquired Instrument and Calibration Sweden AB (ICS), a supplier of testing equipment and calibration services located in Sweden, for a purchase price of \$667. During fiscal year 2016, goodwill of \$530 was determined to be attributable to customer lists and reclassified to intangible assets. The assets, liabilities and operating results have been included in our financial statements within Test from the date of acquisition.

NOTE 14 COMMITMENTS AND CONTINGENCIES

Internal Investigation Related to China Operations

As previously reported by us, in November 2016, after the end of fiscal year 2016, we initiated an internal investigation into apparent violations of our Code of Conduct involving certain employees in our China operations, including association by those employees with an independent business that may compete with us in certain markets. As the apparent violations implicated members of leadership in our China operations, the Audit Committee engaged independent external counsel to conduct an investigation of our China operations in order to assess the impact of these apparent violations on financial input from China and to review for potential violations to our Code of Conduct, anticorruption compliance policies and procedures and related U.S. law. Independent forensic accountants, acting at the direction of external counsel, performed testing of certain transactions related to our China operations as part of this investigation.

Substantial investigative work was completed during fiscal year 2017 and confirmed the former China Test leader and several other former senior managers associated with our China Test operations violated the conflict of interest provisions of our Code of Conduct in connection with their involvement with an independent business that competed with our low-end products in the China market. This inconsistent adherence to our Code of Conduct could have resulted in management override of internal control over financial reporting.

In light of, and to address the findings of the investigation, and to remediate the material weakness in our internal control over financial reporting resulting from the conclusion described in the prior paragraph, we are conducting more robust monitoring to ensure ongoing adherence to our Code of Conduct. We have also enhanced our third-party intermediary diligence and monitoring processes, with the support of and guidance from external resources, and have continued clear and consistent messaging on compliance expectations at all levels of the organization.

To address the challenges presented by the findings of the investigation of our China operations, we are exploring multiple business alternatives to address the low-end materials market. The consideration of these alternatives could possibly result in a future expectation of sale or disposal of certain assets that could cause an impairment charge to be recognized in a subsequent period. As of September 30, 2017, we do not anticipate any material impairment charges for the tangible and intangible assets. We are prepared to assess the mix of products, markets in which we compete and manner by which we select and utilize resellers, agents, consultants and vendors to support these commitments.

Government Investigation

As previously reported by us with disclosures starting in March 2012, we investigated certain gift, travel, entertainment and other expenses incurred in connection with some of our operations in the Asia Pacific region. This investigation focused on possible violations of Company policy, corresponding internal control issues and possible violations of applicable law, including the Foreign Corrupt Practices Act. Substantial investigative work was completed on this matter and we implemented remedial measures, including changes to internal control procedures and removing certain persons formerly employed in our Korea office. We voluntarily disclosed this matter to the Department of Justice and the SEC (the Agencies). We also investigated certain business practices in China, starting in 2014 and that investigation had a similar focus to the 2012 investigation described above. We have also updated the Agencies regarding the China investigation described in the Internal Investigation Related to China Operations above. We were notified by the Agencies in August 2017 that their respective investigations were closed as to MTS without further action taken by either U.S. agency. With the closure of the government investigations by the Agencies and the steps being taken by the Company voluntarily, we believe that the matter has been resolved. We are committed to continuing to monitor compliance with our Code of Conduct and applicable law.

Litigation

We are subject to various claims, legal actions and complaints arising in the ordinary course of business. We believe the final resolution of legal matters outstanding as of September 30, 2017 will not have a material adverse effect on

our consolidated financial position or results of operations. We expense legal costs as incurred.

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Operating Leases

We have operating lease commitments for equipment, automobiles, land and facilities that expire on various dates through 2052. Total lease expense was \$7,506, \$7,053 and \$5,787 for fiscal years 2017, 2016 and 2015, respectively. Minimum annual rents payable under operating leases for the next five fiscal years and thereafter are as follows:

	Operating Lease
Fiscal Year Payments	(in thousands)
2018	\$ 4,833
2019	2,320
2020	1,281
2021	591
2022	364
Thereafter	1,236
Total	\$ 10,625

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MTS Systems Corporation

Schedule II – Summary of Consolidated Allowances for Doubtful Accounts

Changes to the allowance for doubtful accounts were as follows:

(in thousands)	2017	2016	2015
Beginning balance	\$3,923	\$3,411	\$2,609
Provisions / (recoveries)	1,930	957	1,210
Amounts written-off / payments	(551)	(330)	(267)
Currency translation (gain) loss	69	(115)	(141)
Ending balance	\$5,371	\$3,923	\$3,411

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