MKS INSTRUMENTS, INC.

ANNUAL REPORT 2015

MKS INSTRUMENTS, INC. (NASDAQ: MKSI) is a global provider of instruments, subsystems and process control solutions that measure, control, power, monitor and analyze critical parameters of advanced manufacturing processes to improve process performance and productivity.

FINANCIAL HIGHLIGHTS

SELECTED CONSOLIDATED FINANCIAL DATA
(in thousands, except per share data)

Year Ended December 31,	2015	2014	2013	2012	2011
Statement of Operations					
Net revenues	$ 813,524	$ 780,869	$ 669,420	$ 643,508	$ 822,517
Gross profit	362,872	337,766	266,574	269,479	374,988
Income from operations (1)	156,612	135,142	58,387	74,223	184,925
Net income (2)	122,297	115,778	35,776	48,029	129,731
Diluted net income per share	2.28	2.16	0.67	0.90	2.45
Non-GAAP net earnings	119,073	101,179	48,388	53,337	127,930
Non-GAAP net earnings per share	2.22	1.89	0.90	1.00	2.42
Cash dividends paid per common share	0.675	0.655	0.64	0.62	0.60
Balance Sheet					
Cash and cash equivalents	$ 227,574	$ 305,437	$ 288,902	$ 287,588	$ 312,916
Short-term investments (3)	430,663	286,795	361,120	339,811	260,476
Working capital (3)	848,527	791,665	811,214	801,029	796,343
Total assets	1,273,347	1,224,044	1,213,018	1,152,562	1,133,935
Short-term obligations	—	—	—	—	1,932
Other liabilities	21,482	38,595	63,073	61,095	47,492
Stockholders' equity	$ 1,160,881	$ 1,081,822	$ 1,021,523	$ 1,012,156	$ 990,012

(1) Income from operations for 2015 includes $2.1 million of restructuring charges. Income from operations for 2014 includes $2.5 million of restructuring charges and $0.5 million of acquisition related costs from our acquisition of Granville-Phillips in May 2014. Income from operations for 2013 includes $2.6 million of costs and other benefits related to the retirement of the Company's Chief Executive Officer in the fourth quarter of 2013, $1.4 million of restructuring charges and $1.1 million from an insurance reimbursement related to a 2012 litigation settlement. Income from operations for 2012 includes $5.3 million for payment of a litigation settlement and $1.3 million of acquisition related costs from our acquisition of Plasmart, Inc. in 2012.

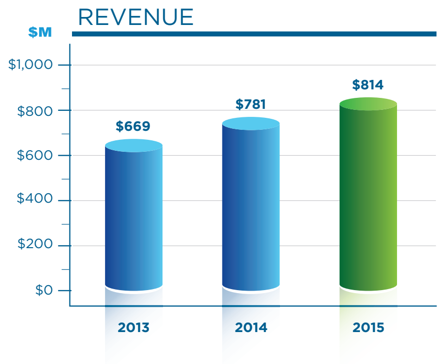
(2) Net income for 2015 includes charges, net of tax, of $1.4 million of restructuring costs. Net income for 2015 also includes $7.7 million in tax credits for reserve releases related to the settlement of tax audits. Net income for 2014 includes charges, net of tax, of $1.5 million of restructuring costs and $0.3 million of acquisition related costs. Net income for 2014 also includes $14.6 million in tax credits for reserve releases related to the settlement of tax audits and the expiration of the statute of limitations. Net income for 2013 includes charges, net of tax, of $1.6 million of costs and other benefits related to the retirement of the Company's Chief Executive Officer and $0.9 million of restructuring costs and a benefit, net of tax, of $0.7 million from an insurance reimbursement related to a 2012 litigation settlement. Net income for 2012 includes charges, net of tax, of $3.3 million for a litigation settlement and $0.8 million of acquisition related costs.

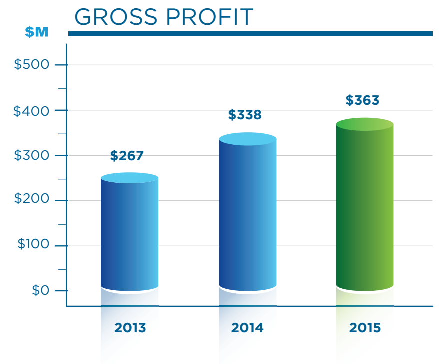
(3) For the years ended December 31, 2014, 2013, 2012 and 2011, short-term investments have been updated to include investments with contractual maturities greater than one year from the date of purchase as management had the ability and intent, if necessary, to liquidate any of its cash equivalents and investments in order to meet the Company's liquidity needs in the next twelve months. Accordingly, working capital has been updated for each year to include investments with contractual maturities greater than one year from the date of purchase.

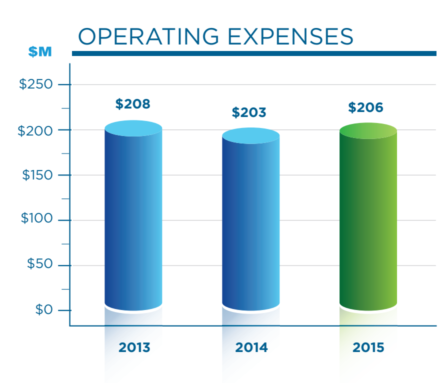
Non-GAAP amounts exclude amortization of acquired intangible assets, costs associated with completed acquisitions, income related to the sale of excess and obsolete inventory previously written down to net realizable value, certain excess and obsolete inventory charges, inventory step-up adjustments related to acquisitions, restructuring charges, discrete tax benefits and charges, and the related tax effect of these adjustments. These non-GAAP measures are not in accordance with Accounting Principles Generally Accepted in the United States of America (GAAP). MKS' management believes the presentation of these non-GAAP financial measures is useful to investors for comparing prior periods and analyzing ongoing business trends and operating results.

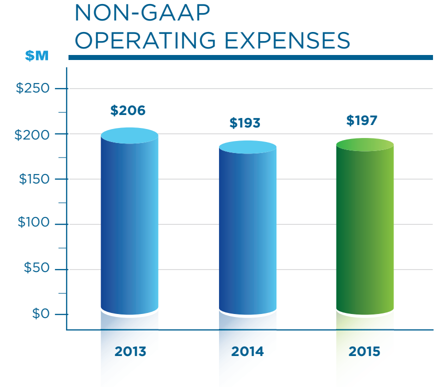
Special Note Regarding Forward-Looking Statements: MKS management believes that this Annual Report on Form 10-K contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act and Section 21E of the Securities Exchange Act. When used herein, the words "believe," "anticipate," "plan," "expect," "estimate," "intend," "may," "see," "will," "would" and similar expressions are intended to identify forward-looking statements. These forward-looking statements reflect management's current opinions and are subject to certain risks and uncertainties that could cause actual results to differ materially from those stated or implied. MKS assumes no obligation to update this information. Risks and uncertainties include, but are not limited to, those discussed in the section entitled "Risk Factors."

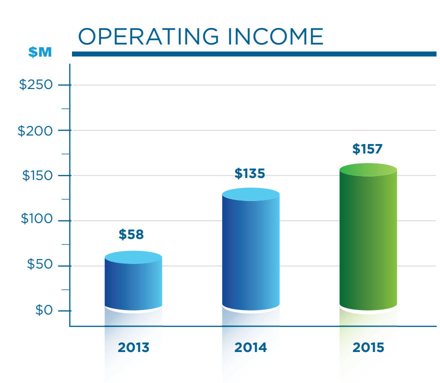
PERFORMANCE & PROFITABILITY

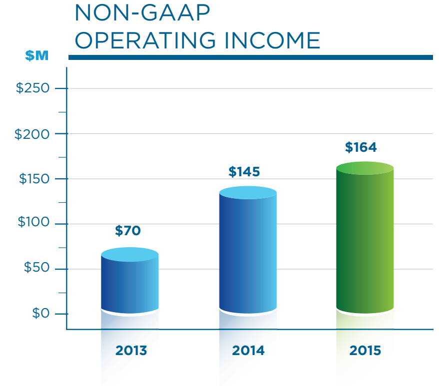


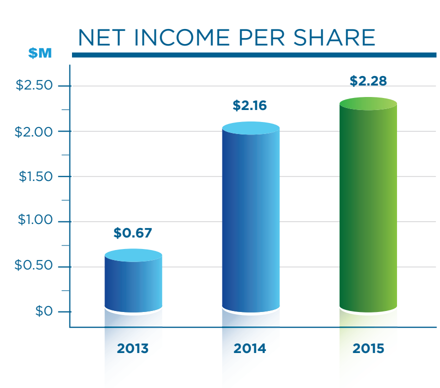


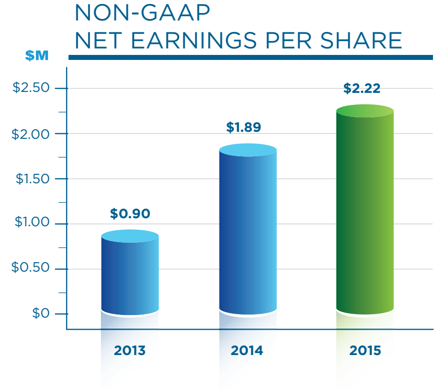












A Message To Our SHAREHOLDERS

I am proud to report on our performance for 2015, which was another great year for MKS. My management team and our employees worked tirelessly this past year and, as a result, revenue increased another 4% over last year resulting in our 3rd consecutive year of growth.

Additionally, we set a record for sales to the semiconductor market which increased 3% over an already strong 2014, and combined sales to all other markets were also up, increasing 6% year over year. These are good results, but our story is not only about increasing sales, but also about sustained, profitable growth.

Over the last 24 months we have made significant changes in organization, operations and culture as we worked together to achieve our goals for technical leadership and customer engagement, as well as to measurably improve profitability and enhance shareholder value. We have redeployed and strengthened our technical resources to be closer to our customers—and their customers—so that we better understand their technical challenges and can help solve their problems quickly and collaboratively.

We have dedicated ourselves to supporting, solving, and consequently benefiting from, the technical challenges being addressed by the semiconductor industry as they implement 3D structures and sub-20 nanometer critical dimensions. We have also increased our focus on expansion into other adjacent, technology intensive and growing markets including thin film, environmental, research and life sciences and industrial manufacturing where we have numerous market opportunities to fuel continued growth.

We have made, and will continue to make, investments in strategic marketing and business development to identify the best opportunities to help drive gainful growth, while also investing in brand awareness to demonstrate the depth and breadth of MKS' worldwide capabilities, especially in new markets.

We have worked determinedly to improve the profitability of the Company, and we have achieved significant improvement in our financial model. For example, 57% of our incremental revenue flowed through to Non-GAAP operating income, and we achieved an 18% increase in Non-GAAP net earnings in 2015 over 2014. Free cash flow was also up by more than 40% from last year.

A sound and efficient capital deployment strategy is important to us. This includes a healthy recurring dividend, opportunistic stock buy backs, and a focus on strategic M&A, as evidenced by the recent announcement of our intention to acquire Newport Corporation, a leader in photonics, lasers and precision optics. In 2015, we increased our dividend rate for the third time since initiating it in 2011, generated approximately $125 million in free cash flow and deployed approximately $60 million in capital for shareholder dividends, share repurchases and the acquisition of Precisive LLC, a leader in optical analyzers.

In my letter to you last year I outlined our plan to focus and change MKS to become more profitable while expanding our technical leadership and commitments to our customers. I am pleased with the progress we have made, and in 2016, we will continue to seek out further improvements, invest wisely, operate efficiently, and strategically target programs and activities which support continued profitable growth to deliver long-term shareholder value.

In closing, I want to thank the management team and our dedicated employees for their contributions to our achievements, and I want to thank you, our customers and shareholders, for your continued support of MKS.

Gerald G. Colella
Chief Executive Officer and President

Executive MANAGEMENT Team

Gerald G. Colella
Chief Executive Officer
and President

John R. Abrams
Senior Vice President
Global Sales and Service

Seth H. Bagshaw
Vice President,
Chief Financial Officer
and Treasurer

Kathleen F. Burke
Vice President,
General Counsel and
Assistant Secretary

John F. Ippolito
Vice President
Corporate Development

Catherine M. Langtry
Vice President
Global Human Resources

John T. C. Lee
Senior Vice President
Business Units

Brian Quirk
Senior Vice President
Global Operations

Eric S. Snyder
Vice President
Quality and Reliability

RECONCILIATION

RECONCILIATION OF GAAP INCOME FROM OPERATIONS TO NON-GAAP NET EARNINGS

(in thousands, except per share data) Year Ended December 31,	2015	2014	2013	2012	2011
Income from operations	$ 122,297	$ 115,778	$ 35,776	$ 48,029	$ 129,731
Adjustments (net of tax, if applicable)					
Amortization of intangible assets	6,764	4,945	2,139	1,036	1,015
Executive retirement costs	—	—	2,581	—	—
Excess and obsolete inventory adjustment	488	—	6,423	—	—
Sale of previously written down inventory	(2,098)	—	—	—	—
Restructuring	2,074	2,464	1,364	343	—
Special tax (benefit)/expense	(7,692)	(21,117)	2,928	—	(2,548)
Acquisition costs	30	499	171	1,258	—
Acquisition inventory step-up	—	2,179	—	303	—
Litigation	—	—	—	5,316	—
Insurance reimbursement	—	—	(1,071)	—	—
Tax effect of adjustments	(2,790)	(3,569)	(1,923)	(2,948)	(268)
Non-GAAP net earnings	$ 119,073	$ 101,179	$ 48,388	$ 53,337	$ 127,930

RECONCILIATION OF GAAP OPERATING EXPENSES TO NON-GAAP OPERATING EXPENSES

(in thousands, except per share data) Year Ended December 31,	2015	2014	2013	2012	2011
GAAP operating expenses	$ 206,260	$ 202,624	$ 208,187	$ 195,256	$ 190,063
Adjustments					
Amortization of intangible assets	(6,764)	(4,945)	(2,139)	(1,036)	(1,015)
Executive retirement costs	—	—	(2,581)	—	—
Restructuring	(2,074)	(2,464)	(1,364)	(343)	—
Acquisition costs	(30)	(499)	(171)	(1,258)	—
Acquisition inventory step-up	—	(2,179)	—	(303)	—
Litigation	—	—	—	(5,316)	—
Insurance reimbursement	—	—	1,071	—	—
Non-GAAP operating expenses	$ 197,392	$ 192,537	$ 203,003	$ 187,000	$ 189,048

RECONCILIATION OF GAAP INCOME FROM OPERATIONS TO NON-GAAP INCOME FROM OPERATIONS

(in thousands, except per share data) Year Ended December 31,	2015	2014	2013	2012	2011
Income from operations	$ 156,612	$ 135,142	$ 58,387	$ 74,223	$ 184,925
Adjustments					
Amortization of intangible assets	6,764	4,945	2,139	1,036	1,015
Executive retirement costs	—	—	2,581	—	—
Excess and obsolete charge	488	—	6,423	—	—
Sale of previously written down inventory	(2,098)	—	—	—	—
Restructuring	2,074	2,464	1,364	343	—
Acquisition costs	30	499	171	1,258	—
Acquisition inventory step-up	—	2,179	—	303	—
Litigation	—	—	—	5,316	—
Insurance reimbursement	—	—	(1,071)	—	—
Non-GAAP income from operations	$ 163,870	$ 145,229	$ 69,994	$ 82,479	$ 185,940

RECONCILIATION OF GAAP NET INCOME PER SHARE TO NON-GAAP NET EARNINGS PER SHARE

(in thousands, except per share data) Year Ended December 31,	2015	2014	2013	2012	2011
GAAP net income per share	$ 2.28	$ 2.16	$ 0.67	$ 0.90	$ 2.45
Adjustments (net of tax, if applicable)					
Amortization of intangible assets	0.13	0.09	0.04	0.02	0.02
Executive retirement costs	—	—	0.05	—	—
Excess and obsolete inventory adjustment	—	—	0.12	—	—
Sale of previously written down inventory	(0.04)	—	—	—	—
Restructuring	0.04	0.05	0.03	0.01	—
Special tax (benefit)/expense	(0.14)	(0.39)	0.05	—	(0.05)
Acquisition costs	—	0.01	—	0.02	—
Acquisition inventory step-up	—	0.04	—	0.01	—
Litigation	—	—	—	0.10	—
Insurance reimbursement	—	—	(0.02)	—	—
Tax effect of adjustments	(0.05)	(0.07)	(0.04)	(0.06)	(0.01)
Non-GAAP net earnings per share	$ 2.22	$ 1.89	$ 0.90	$ 1.00	$ 2.42
Weighted average shares outstanding	53,560	53,515	53,481	53,234	52,847

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 December 31, 2015

or

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

Commission File number 0-23621

MKS INSTRUMENTS, INC.

(Exact Name of Registrant as Specified in Its Charter)

Massachusetts	**04-2277512**
(State or other Jurisdiction of Incorporation or Organization)	*(IRS Employer Identification No.)*
2 Tech Drive, Suite 201, Andover, Massachusetts	**01810**
(Address of Principal Executive Offices)	*(Zip Code)*

(978) 645-5500
(Registrant's Telephone Number, including area code)

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

Title of class	Name of exchange on which registered
Common Stock, no par value	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 in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 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, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ (Do not check if a smaller reporting company) Smaller reporting company ☐

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

Aggregate market value of the voting and non-voting common equity held by nonaffiliates of the registrant as of June 30, 2015 based on the closing price of the registrant's common stock on such date as reported by the NASDAQ Global Select Market: $2,024,748,115.

Number of shares outstanding of the issuer's common stock, no par value, as of February 19, 2016: 53,242,650

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement for MKS' Annual Meeting of Stockholders to be held on May 2, 2016 are incorporated by reference into Part III of this Form 10-K.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act and Section 21E of the Securities Exchange Act. When used herein, the words "believe," "anticipate," "plan," "expect," "estimate," "intend," "may," "see," "will," "would" and similar expressions are intended to identify forward-looking statements although not all forward looking statements contain these identifying words. These forward-looking statements reflect management's current opinions and are subject to certain risks and uncertainties that could cause actual results to differ materially from those stated or implied. MKS assumes no obligation to update this information. Risks and uncertainties include, but are not limited to, those discussed in the section entitled "Risk Factors" of this annual report on Form 10-K.

PART I

Item 1. *Business*

MKS Instruments, Inc. (the "Company" or "MKS") was founded in 1961 as a Massachusetts corporation. We are a global provider of instruments, subsystems and process control solutions that measure, control, power, monitor and analyze critical parameters of advanced manufacturing processes to improve process performance and productivity. We also provide services relating to the maintenance and repair of our products, software maintenance, installation services and training.

We group our products into three groups of similar products based upon the similarity of product function. These three groups of products are: Instruments, Control and Vacuum Products; Power and Reactive Gas Products; and Analytical Solutions Products. Our products are derived from our core competencies in pressure measurement and control, materials delivery, gas composition analysis, control and information technology, power and reactive gas generation and vacuum technology. Our products are used in diverse markets, applications and processes. Our primary served markets are manufacturers of capital equipment for semiconductor devices, and for other thin film applications, including flat panel displays, solar cells light emitting diodes ("LEDs"), data storage media, and other advanced coatings. We also leverage our technology in other markets with advanced manufacturing applications, including medical equipment, pharmaceutical manufacturing, energy generation and environmental monitoring.

Effective January 1, 2015, we changed the structure of our reportable segments based upon how the information is provided to our Chief Operating Decision Maker. Our four reportable segments prior to the change in structure were: Advanced Manufacturing Capital Equipment, Analytical Solutions Group, Europe Region Sales & Service and Asia Region Sales & Service. Our current structure still reflects four reportable segments, however, the composition of the segments has changed.

Our current reportable segments are Advanced Manufacturing Capital Equipment, Global Service, Asia Region Sales and Other. The primary change to the segment structure was to separate worldwide service from product sales and create a separate reportable segment known as Global Service. Product sales in the Advanced Manufacturing Capital Equipment segment remained with that segment. Asia product sales became a separate reportable segment. The product sales from the operating segments that made up the Analytical Solutions Group and Europe Region Sales were combined into the Other segment and are not reported separately, as they are individually immaterial and collectively remain below the separate segment guidelines. We report corporate expenses and certain intercompany pricing transactions in a Corporate and Eliminations reconciling column.

The Advanced Manufacturing Capital Equipment segment includes the development, manufacture and sales of instruments, control and vacuum products; and power and reactive gas products, all of which are utilized in semiconductor processing and other similar advanced manufacturing processes. Sales in this segment include both external sales and intercompany product sales, which are recorded at transfer prices in accordance with applicable tax requirements. The Global Service segment includes the worldwide servicing of instruments, control and vacuum products, power and reactive gas products and certain other product groups, all of which are utilized in semiconductor processing and other similar advanced manufacturing processes. The Asia Region Sales segment mainly includes sale of products that are re-sold from the Advanced Manufacturing Capital Equipment and Other segments into Asia regions. The Other segment includes operating segments that are not required to be reported separately as reportable segments and includes sales of products that are re-sold from the Advanced Manufacturing Capital Equipment into Europe regions as well as sales from other operating segments.

For further information on our segments please see Note 21 to the Notes to the Consolidated Financials contained in this Annual Report on Form 10-K.

Since our inception, we have focused on satisfying the needs of our customers by establishing long-term, collaborative relationships. We have a diverse base of customers that includes manufacturers of semiconductor capital equipment and semiconductor devices; thin film equipment, process industries, environmental monitoring, life science and other advanced manufacturing companies, as well as university, government and industrial research laboratories.

We file reports, proxy statements and other documents with the Securities and Exchange Commission ("SEC"). You may read and copy any document we file at the SEC Headquarters at the Office of Investor Education and Assistance, 100 F Street, NE, Washington, D.C. 20549. You should call 1-800-SEC-0330 for more information on the public reference room. Our SEC filings are also available to you on the SEC's internet site at http://www.sec.gov.

Our internet address is http://www.mksinst.com. We are not including the information contained in our website as part of, or incorporating it by reference into, this annual report on Form 10-K. We make available free of charge through our internet site our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to these reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as soon as reasonably practicable after we electronically file such materials with, or furnish them to, the SEC.

Recent Events

On February 23, 2016, we announced that we had entered into a definitive agreement to acquire Newport Corporation ("Newport"), a worldwide leader in photonics solutions. Pursuant to the merger agreement, and subject to the terms and conditions contained therein, at the closing of the acquisition, we will acquire all of the outstanding shares of Newport for a purchase price of approximately $980 million in cash. The parties' obligations to consummate the acquisition are subject to customary closing conditions, including required approvals for the transaction from governmental authorities and approval from Newport's shareholders. Our obligations under the merger agreement are not subject to any financing condition.

Markets and Applications

We are focused on improving process performance and productivity by measuring, controlling, powering, monitoring and analyzing advanced manufacturing processes in semiconductor, thin film and certain other advanced market sectors. Approximately 69%, 70% and 68% of our net revenues for the years 2015, 2014 and 2013, respectively, were from sales to semiconductor capital equipment manufacturers and semiconductor device manufacturers. Approximately 31%, 30% and 32% of our net revenues in the years 2015, 2014 and 2013, respectively, were from other advanced manufacturing applications. These include, but are not limited to, thin film processing equipment applications such as flat panel displays; LEDs, solar cells, data storage media and other thin film coatings; as well as medical equipment, pharmaceutical manufacturing, energy generation and environmental monitoring processes; other industrial manufacturing; and university, government and industrial research laboratories.

During the years 2015, 2014 and 2013, international net revenues accounted for approximately 44%, 43% and 46% of our total net revenues, respectively. Net revenues from our Japan and Korea subsidiaries were 21%, 20% and 20% of our total net revenues for the years 2015, 2014 and 2013, respectively. Long-lived assets, excluding long-term tax-related accounts located in the U.S., were $56.6 million, $57.7 million and $60.7 million as of December 31, 2015, 2014 and 2013, respectively. Long-lived assets, excluding long-term tax-related accounts located outside of the U.S., were $14.7 million, $17.0 million, and $19.0 million as of December 31, 2015, 2014 and 2013, respectively.

Semiconductor Manufacturing Applications

The majority of our sales are derived from products sold to semiconductor capital equipment manufacturers and semiconductor device manufacturers. Our products are used in the major semiconductor processing steps such as depositing thin films of material onto silicon wafer substrates and etching and cleaning circuit patterns. In addition, we provide specialized instruments and software to monitor and analyze process performance.

We anticipate that the semiconductor manufacturing market will continue to account for a substantial portion of our sales. While the semiconductor device manufacturing market is global, major semiconductor capital equipment manufacturers are concentrated in China, Japan, Korea, Taiwan and the United States.

Other Advanced Manufacturing Applications

Our products are used in the manufacture of flat panel displays, LEDs, data storage media, solar cells and other coating applications, including architectural glass, that require the same or similar thin film processes as semiconductor manufacturing.

Flat Panel Display Manufacturing

Flat panel displays are used in electronic hand-held devices, laptop computers, desktop computer monitors and television sets. We sell products to flat panel display equipment manufacturers and to end-users in the flat panel display market. Major manufacturers of flat panel displays are concentrated in China, Japan, Korea and Taiwan, and major manufacturers of flat panel display equipment are concentrated in China, Japan, Korea and the United States. The transition to larger panel sizes and higher display resolution is driving the need for improved process control to reduce defects.

Light Emitting Diodes

LEDs are made using vacuum processes similar to semiconductor chip manufacturing. Because of their high brightness and long life, as well as environmentally friendly benefits such as lower power consumption, LEDs have experienced rapid acceptance in back side lighting of flat screen television displays and in general lighting applications.

Solar Cells

Our products are used in crystalline silicon and thin film processes to manufacture photovoltaic cells. Crystalline silicon technology requires wafer based deposition systems and is currently the dominant manufacturing technology in the solar panel industry.

Data Storage Media

Our products are used to manufacture storage media that store and read data magnetically; optical storage media that store and read data using laser technology; hard disks; data storage devices; and digital video discs.

The transition to higher density storage capacity requires manufacturing processes incorporating tighter process controls. Major manufacturers of storage media are concentrated in Japan and the Asia Pacific region, and major manufacturers of storage media capital equipment are concentrated in Europe, Korea and the United States.

Other Advanced Coatings

Thin film coatings for diverse applications such as architectural glass and packaging are deposited using processes similar to those used in semiconductor manufacturing. Thin film processing manufacturers are concentrated in Europe, Korea and the United States.

Other Advanced Applications

Our products are used in other advanced applications, including energy generation and environmental monitoring processes such as nuclear fuel processing, fuel cell research, greenhouse gas monitoring, and chemical agent detection; medical instrument sterilization; consumable medical supply manufacturing and pharmaceutical applications. Our power delivery products are also incorporated into other end-market products such as medical imaging equipment. In addition, our products are sold to government, university and industrial laboratories for vacuum applications involving research and development in materials science, physical chemistry and electronics materials. Major equipment and process providers and research laboratories are concentrated in Europe, Korea and the United States.

Product Groups

We group our products into three product groups, based upon the similarity of the product function, type of product and manufacturing processes. These three groups of products are: Instruments, Control and Vacuum Products; Power and Reactive Gas Products; and Analytical Solutions Products.

Instruments, Control and Vacuum Products

This group of products includes pressure and vacuum measurement solutions, materials delivery products, automation and control products and vacuum products.

Pressure and Vacuum Measurement Solutions. Each of our pressure measurement and control product lines consists of products that are designed for a variety of pressure ranges and accuracies.

Baratron® Pressure Measurement Products. These products are typically used to measure the pressure of the gases being distributed upstream of the process chambers, process chamber pressures and pressures between process chambers, vacuum pumps and exhaust lines. We believe we offer the widest range of gas pressure measurement instruments in the semiconductor and advanced thin film materials processing industries.

Automatic Pressure and Vacuum Control Products. These products enable precise control of process pressure by electronically actuating valves that control the flow of gases in and out of the process chamber to minimize the difference between desired and actual pressure in the chamber.

In most cases, Baratron® pressure measurement instruments provide the pressure input to the automatic pressure control device. Together, these components create an integrated automatic pressure control subsystem. Our pressure control products can also accept inputs from other measurement instruments, enabling the automatic control of gas input or exhaust based on parameters other than pressure.

Vacuum Gauging Products. We offer a wide range of vacuum instruments consisting of vacuum measurement sensors and associated power supply and readout units as well as transducers where the sensor and electronics are integrated within a single package. These gauges complement our Baratron® capacitance manometers for medium and high vacuum ranges.

Granville-Phillips® Gauges. Our indirect gauges use thermal conductivity and ionization gauge technologies to measure pressure and vacuum levels, and our direct gauges use the pressure measurement technology of a Micro-electromechanical systems (MEMS)-based piezo sensor.

Materials Delivery Products. Each of our materials delivery product lines combines MKS flow, pressure measurement and control technologies to provide customers with integrated subsystems and precise control capabilities that are optimized for a given application.

Flow Measurement and Control Products. Flow measurement products include gas flow measurement products based upon thermal conductivity and pressure technologies. The flow control products combine the flow measurement device with valve control elements based upon solenoid, piezo-electric and piston pump technologies. These products measure and automatically control the mass flow rate of gases into the process chamber.

Valve Products. Our vacuum valves are used for vacuum isolation of vacuum lines, load locks, vacuum chambers and pumps for chamber isolation and vacuum containment. The MKS family of vacuum isolation valves include bellows and ball valves, manual, pneumatic and electro-pneumatic actuated valves in heated or unheated angle and inline configurations, safety shut off valves and soft start valves. Our pressure control valve line includes butterfly, vane and poppet throttle valves with integrated control subsystems.

Automation and Control Products. We design and manufacture a suite of products that allow semiconductor and other manufacturing customers to better control their processes through computer-controlled automation. These products include automation platforms, programmable automation controllers, temperature controllers, software solutions for automation, I/O and distributed programmable I/O, gateways and connectivity products.

Automation and control products are used to connect sensors, actuators and subsystems to the chamber and system control computers. They support a variety of industry-standard connection methods as well as conventional discrete digital and analog signals. Chamber and system control computers process these signals in real time and allow customers to precisely manage the process conditions.

Connecting sensors, chambers and tools to the factory network is essential for improving quality and productivity. Our connectivity products allow information to flow from the process sensors and subsystems and from the process tool control computer to the factory network. By enabling this information flow, we believe that we help customers optimize their processes through advanced process control, and diagnose equipment problems from a remote location, which is referred to as “e-diagnostics.”

Vacuum Products. This group of products consists of vacuum technology products, including vacuum containment components, effluent management subsystems and custom stainless steel chambers, vessels and pharmaceutical process equipment hardware and housings.

Stainless Steel Components, Process Solutions and Custom Stainless Steel Hardware. Our vacuum process solutions consist of vacuum fittings, traps and heated lines that are used downstream from the process chamber to control process effluent gases by preventing condensable materials from depositing particles near or back into the process chamber.

Custom Vacuum Solutions. Our design and manufacturing facilities build high purity chambers for material and thin film coating processes. We design and build custom panels, weldments, American Society of Manufacturing Engineers vessels and housings, as well as a line of Bioprocessing Equipment Standard certified components for biopharmaceutical processes.

Power and Reactive Gas Products

This group of products includes power delivery and reactive gas generation products used in semiconductor and other thin film applications and in medical imaging equipment applications.

Power Delivery Products. We design and manufacture microwave, direct current and radio frequency power delivery systems as well as radio frequency matching networks and metrology products. In the semiconductor, thin film and other market sectors, our power supplies are used to provide energy to various etching, stripping and deposition processes. Our power amplifiers are also used in medical imaging equipment.

Reactive Gas Generation Products. We design and manufacture reactive gas generation products, which create reactive species. A reactive species is an atom or molecule in an unstable state, which is used to facilitate various chemical reactions in processing of thin films (deposition of films, etching and cleaning of films and surface modifications). A number of different technologies are used to create reactive gas including different plasma technologies and barrier discharge technologies.

Our reactive gas products include ozone generators and subsystems used for deposition of insulators onto semiconductor devices, ozonated water delivery systems for advanced semiconductor wafer and flat panel display and solar panel cleaning, microwave plasma based products for photo resist removal and food and beverage applications and a line of remote plasma generators which provide reactive gases for a wide range of semiconductor, flat panel and other thin film process applications.

As materials are deposited on wafers, films, or solar cells, the deposited material also accumulates on the walls of the vacuum process chamber. Our atomic fluorine generators are used to clean the process chambers between deposition steps to reduce particulates and contamination caused by accumulated build up on the chamber walls.

Analytical Solutions Products

This group of products includes gas composition analysis products as well as information technology products and custom vacuum solutions.

Gas Composition Analysis Products. Gas composition analysis instruments are sold to a wide variety of industries including the engine development, environmental emissions monitoring, air safety monitoring and semiconductor industries.

Mass Spectrometry-Based Gas Composition Analysis Instruments. These products are based on quadrupole mass spectrometer sensors that separate gases based on molecular weight. These sensors include built-in electronics and software that analyzes the composition of background and process gases in the process chamber. These instruments are provided both as bench top laboratory systems and as process gas monitoring systems used in the diagnosis of semiconductor manufacturing process systems.

Fourier Transform Infra-Red (FTIR) Based Gas Composition Analysis Products. FTIR-based products provide information about the composition of gases by measuring the absorption of infra-red light as it passes through the sample being measured. Gas analysis applications include measuring the compositions of mixtures of reactant gases; measuring the purity of individual process gases; measuring the composition of process exhaust gas streams to determine process health; monitoring emissions to ensure environmental compliance and monitoring ambient air for safety. These instruments are provided as stand-alone monitors and as process gas monitoring systems.

Tunable Filter Spectroscopy (TFS™) Products. The TFS sensor platform consists of a light source, a sample cell (for gases, liquids or solids), a wavelength separating element (spectrometer) and a photo-detector. A wavelength separating element "slices" the wavelength components of the broadband light source which then interacts with the sample molecules. The resulting spectrum acts as "fingerprints" which are used to identify sample components and/or quantify the sample composition. Our TFS products provide real-time gas analysis in the natural gas analysis and hydrocarbon processing industries.

Mass spectrometry-based, FTIR-based and TFS-based gas monitoring systems can indicate out-of-bounds conditions, such as the presence of undesirable contaminant gases and water vapor or out-of-tolerance amounts of specific gases in the process, which alert operators to diagnose and repair faulty equipment.

Information Technology Products. We design software products including design of experiment and multivariate analysis software, quality prediction, optimization, interactive decision-making, advanced process control, and early fault detection for analyzing large and complex data sets. Our focus is on providing solutions which improve the quality and yield of manufacturing processes for the pharmaceutical, biotech and other industries.

Custom Vacuum Solutions. Our fabrication facility builds precision machined components and electromechanical assemblies for the analytical instrument, scientific, semiconductor and medical industries to ultra-high vacuum standards.

Customers

Our largest customers include leading semiconductor capital equipment manufacturers such as Applied Materials, Inc. and Lam Research Corporation. Revenues to our top ten customers accounted for approximately 49%, 50% and 46% of our net revenues for the years 2015, 2014 and 2013, respectively. Applied Materials, Inc. accounted for approximately 18%, 19% and 17% and Lam Research Corporation accounted for 13%, 13% and 12% of our net revenues for the years 2015, 2014 and 2013, respectively.

Sales, Marketing, Service and Support

Our worldwide sales, marketing, service and support organization is critical to our strategy of maintaining close relationships with semiconductor capital equipment and device manufacturers and manufacturers of other advanced applications. We sell our products primarily through our direct sales force. As of December 31, 2015, we had 168 sales employees worldwide, located in China, Germany, Italy, Japan, Korea, the Netherlands, Singapore, Sweden, Taiwan, the United Kingdom and the United States. We also maintain sales representatives and agents in a number of countries, who supplement our direct sales force. We maintain a marketing staff that identifies customer requirements, assists in product planning and specifications, and focuses on future trends in semiconductor and other markets.

As semiconductor device manufacturers have become increasingly sensitive to the significant costs of system downtime, they have required that suppliers offer comprehensive local repair service and close customer support. Manufacturers require close support to enable them to repair, modify, upgrade and retrofit their equipment to improve yields and adapt new materials or processes. To meet these market requirements, technical support is provided from offices located in China, Germany, Japan, Korea, Singapore, Taiwan, the United Kingdom and the United States. Repair and calibration services are provided at nineteen internal service depots and six authorized service providers located worldwide. We typically provide warranties for one to three years, depending upon the type of product, with the majority of our products ranging from one to two years.

Research and Development

Our products incorporate sophisticated technologies to power, measure, control and monitor increasingly complex gas-related semiconductor and other advanced manufacturing processes, thereby enhancing uptime, yield and throughput for our customers. Our products have continuously advanced as we strive to meet our customers' evolving needs. We have developed, and continue to develop, new products to address industry trends, such as the shrinking of integrated circuit critical dimensions to 14 nanometers and below and, in the flat panel display and solar markets, the transition to larger substrate sizes, which require more advanced process control technology. In addition, we have developed, and continue to develop, products that support the migration to new classes of materials, ultra-thin layers, and new structures such as copper for low resistance conductors, high-k dielectric materials for capacitors and gates and low-k dielectric materials for low loss insulators and 3D structures that are used in small geometry manufacturing. We involve our marketing, engineering, manufacturing and sales personnel in the development of new products in order to reduce the time to market for new products. Our employees also work closely with our customers' development personnel, helping us to identify and define future technical needs on which to focus research and development efforts. We support research at academic institutions targeted at advances in materials science and semiconductor process development.

As of December 31, 2015, we had 363 research and development employees, primarily located in the United States. Our research and development expenses were $68.3 million, $62.9 million and $63.6 million for the years 2015, 2014 and 2013, respectively. Our research and development efforts include numerous projects, none of which are individually material, and generally have a duration of 3 to 30 months depending upon whether the product is an enhancement of existing technology or a new product. Our current initiatives include projects to enhance the performance characteristics of older products, to develop new products and to integrate various technologies into subsystems.

Manufacturing

Our manufacturing facilities are located in the China, Germany, Israel, Italy, Korea, Mexico, the United Kingdom and the United States. Manufacturing activities include the assembly and testing of components and subassemblies, which are integrated into our products. We outsource some of our subassembly work. We purchase a wide range of electronic, mechanical and electrical components, some of which are designed to our specifications. We consider our lean manufacturing techniques and responsiveness to customers' significantly fluctuating product demands to be a competitive advantage. As of December 31, 2015, we had 1,324 manufacturing related employees, located mostly in China and the United States.

Competition

The market for our products is highly competitive. Principal competitive factors include:

- historical customer relationships;
- product quality, performance and price;
- breadth of product line;
- manufacturing capabilities; and
- customer service and support.

Although we believe that we compete favorably with respect to these factors, there can be no assurance that we will continue to do so.

We encounter substantial competition in most of our product lines, although no single competitor competes with us across all product lines. Certain of our competitors may have greater financial and other resources than we do. In some cases, competitors are smaller than we are, but are well established in specific product niches. Hitachi Ltd. and Horiba Ltd. offer materials delivery products that compete with our product line of mass flow controllers. Nor-Cal Products, Inc. and VAT, Inc. offer products that compete with our vacuum components. Inficon, Inc. offers products that compete with our vacuum measurement and gas analysis products and our vacuum gauging products. Advanced Energy Industries, Inc. offers products that compete with our power delivery and reactive gas generator products.

Patents and Other Intellectual Property Rights

We rely on a combination of patent, copyright, trademark and trade secret laws and license agreements to establish and protect our proprietary rights. As of December 31, 2015, we owned 376 U.S. patents and 696 foreign patents that expire at various dates through 2035. As of December 31, 2015, we had 77 pending U.S. patent applications. Foreign counterparts of certain U.S. applications have been filed or may be filed at the appropriate time.

We require each of our employees, including our executive officers, to enter into standard agreements pursuant to which the employee agrees to keep confidential all of our proprietary information and to assign to us all inventions while they are employed by us.

Employees

As of December 31, 2015, we employed 2,181 persons. We believe that our ongoing success depends upon our continued ability to attract and retain highly skilled employees for whom competition is intense. None of our employees is represented by a labor union or is party to a collective bargaining agreement. We believe that our employee relations are good.

Acquisitions

On March 17, 2015, we acquired Precisive, LLC ("Precisive") for $12.1 million, net of cash acquired of $0.4 million. Precisive is an innovative developer of optical analyzers based on Tunable Filter Spectroscopy, which provide real-time gas analysis in the natural gas and hydrocarbon processing industries, including refineries, hydrocarbon processing plants, gas-to-power machines, biogas processes and fuel gas transportation and metering, while delivering customers a lower total cost of ownership.

On May 30, 2014, we acquired Granville-Phillips ("GP"), a division of Brooks Automation, Inc., for $87 million. GP is a leading global provider of vacuum measurement and control instruments to the semiconductor, thin film and general industrial markets.

On March 12, 2013, we acquired Alter S.r.l. ("Alter") located in Reggio Emilia, Italy. Alter develops advanced microwave power generators, components and systems for industrial microwave heating, microwave plasma coating and semiconductor applications. The purchase price, net of cash acquired and after final debt and working capital post-closing adjustments, was $2.4 million.

Item 1A. ***Risk Factors***

The following factors could materially affect MKS' business, financial condition or results of operations and should be carefully considered in evaluating our company and our business, in addition to other information presented elsewhere in this report.

Our business depends substantially on capital spending in the semiconductor industry, which is characterized by periodic fluctuations that may cause a reduction in demand for our products.

Approximately 69%, 70% and 68% of our net revenues for the years 2015, 2014 and 2013, respectively, were from sales to semiconductor capital equipment manufacturers and semiconductor device manufacturers, and we expect that sales to such customers will continue to account for a substantial portion of our sales. Our business depends upon the capital expenditures of semiconductor device manufacturers, which in turn depends upon the demand for semiconductors.

Historically, the semiconductor market has been highly cyclical and has experienced periods of overcapacity, resulting in significantly reduced demand for capital equipment, which may result in lower gross margins due to reduced absorption of manufacturing overhead. In addition, many semiconductor manufacturers have operations and customers in Asia, a region that in past years has experienced serious economic problems including currency devaluations, debt defaults, lack of liquidity and recessions.

The cyclicality of the semiconductor market is demonstrated by the changes in sales to semiconductor capital equipment and device manufacturers in past years. For example, our sales to semiconductor capital equipment manufacturers and semiconductor device manufacturers increased by 3%, 19% and 14% in 2015, 2014 and 2013, respectively. We cannot be certain of the timing or magnitude of future semiconductor industry downturns or recoveries. A decline in the level of orders as a result of any downturn or slowdown in the semiconductor capital equipment industry could have a material adverse effect on our business, financial condition and results of operations.

Our quarterly operating results have fluctuated, and are likely to continue to vary significantly, which may result in volatility in the market price of our common stock.

A substantial portion of our shipments occurs shortly after an order is received and therefore, we operate with a low level of backlog. As a result, a decrease in demand for our products from one or more customers could occur with limited advance notice and could have a material adverse effect on our results of operations in any particular period. A significant percentage of our expenses are fixed and based in part on expectations of future net revenues. The inability to adjust spending quickly enough to compensate for any shortfall would magnify the adverse impact of a shortfall in net revenues on our results of operations. Factors that could cause fluctuations in our net revenues include:

- the timing of the receipt of orders from major customers;
- shipment delays;
- disruption in sources of supply;
- seasonal variations in capital spending by customers;
- production capacity constraints; and
- specific features requested by customers.

In addition, our quarterly operating results may be adversely affected due to charges incurred in a particular quarter, for example, relating to inventory obsolescence, warranty, bad debt or asset impairments.

As a result of the factors discussed above, it is likely that we may in the future experience quarterly or annual fluctuations and that, in one or more future quarters, our operating results may fall below the expectations of public market analysts or investors. In any such event, the price of our common stock could fluctuate or decline significantly.

The loss of net revenues from any one of our major customers would likely have a material adverse effect on us.

Our top ten customers accounted for approximately 49%, 50% and 46% of our net revenues for the years 2015, 2014 and 2013, respectively. One customer, Applied Materials, Inc., accounted for approximately 18%, 19% and 17% of our net revenues for the years 2015, 2014 and 2013, respectively, and another customer, Lam Research Corporation, accounted for 13%, 13% and 12% of our net revenues for the years 2015, 2014 and 2013, respectively. The loss of a major customer or any reduction in orders by these customers, including reductions due to market or competitive conditions, would likely have a material adverse effect on our business, financial condition and results of operations. None of our significant customers has entered into an agreement with us requiring it to purchase any minimum quantity of our products. The demand for our products from our semiconductor capital equipment customers depends on the cyclicality of our served markets, specifically semiconductor device manufacturer customers.

Attempts to lessen the adverse effect of any loss or reduction of net revenues through the rapid addition of new customers could be difficult because prospective customers typically require lengthy qualification periods prior to placing volume orders with a new supplier. Our future success will continue to depend upon:

- our ability to maintain relationships with existing key customers;
- our ability to attract new customers and satisfy any required qualification periods;

- our ability to introduce new products in a timely manner for existing and new customers; and
- the successes of our customers in creating demand for their capital equipment products that incorporate our products.

As part of our business strategy, we have entered into and may enter into or seek to enter into business combinations and acquisitions that may be difficult and costly to integrate, may be disruptive to our business, may dilute stockholder value or may divert management attention.

We have made acquisitions and, as a part of our business strategy, we may enter into additional business combinations and acquisitions. Acquisitions are typically accompanied by a number of risks, including the difficulty of integrating the operations, technology and personnel of the acquired companies, the potential disruption of our ongoing business and distraction of management, possible internal control weaknesses of the acquired companies, expenses related to the acquisition and potential unknown liabilities associated with acquired businesses. We may also be placed at a competitive disadvantage by selling products in markets and geographies that are new to us. In addition, if we are not successful in completing acquisitions that we may pursue in the future, we may be required to re-evaluate our growth strategy, and we may incur substantial expenses and devote significant management time and resources in seeking to complete proposed acquisitions that may not generate benefits for us.

In addition, with future acquisitions, we could use substantial portions of our available cash as all or a portion of the purchase price. We could also issue additional securities as consideration for these acquisitions, which could cause significant stockholder dilution, or obtain debt financing, which could reduce our future cash flow, without achieving the desired accretion to our business. Further, our prior acquisitions and any future acquisitions may not ultimately help us achieve our strategic goals and may pose other risks to us.

As a result of our previous acquisitions, we have several different decentralized operating and accounting systems. We will need to continue to modify our accounting policies, internal controls, procedures and compliance programs to provide consistency across all of our operations. In order to increase efficiency and operating effectiveness and improve corporate visibility into our decentralized operations, we are currently implementing a worldwide Enterprise Resource Planning ("ERP") system. We expect to continue to implement the ERP system in phases over the next few years. Any future implementations may risk potential disruption of our operations during the conversion periods and the implementations could require significantly more management time and higher implementation costs than currently estimated.

Risk related to the acquisition of Newport

On February 23, 2016, we announced that we had entered into a definitive agreement to acquire Newport, a worldwide leader in photonics solutions. Pursuant to the merger agreement, and subject to the terms and conditions contained therein, at the closing of the acquisition, we will acquire all of the outstanding shares of Newport for a purchase price of approximately $980 million in cash. The parties' obligations to consummate the transaction are subject to customary closing conditions, including required approvals for the transaction from governmental authorities and approval from Newport's shareholders. The failure to satisfy all of the required conditions could delay the completion of the acquisition for a significant period of time or prevent it from occurring. Any delay in completing the acquisition could cause us to not realize some or all of the benefits that we expect to achieve if the acquisition is successfully completed within our expected timeframe. If we are unable to complete the proposed acquisition, we may have incurred substantial expenses and diverted significant management time and resources from our ongoing business. There can be no assurance that the conditions to the closing of the transaction will be satisfied or waived or that the transaction will be completed.

We are operating and, until the completion of the acquisition, will continue to operate, independently of Newport. It is possible that the pendency of the acquisition could result in the loss of key employees, higher than expected costs, diversion of management attention, the disruption of our ongoing businesses or inconsistencies in standards, controls, procedures and policies that adversely affect the combined company's ability to maintain relationships with customers, vendors and employees or to achieve the anticipated benefits and cost savings of the acquisition.

Our obligations under the merger agreement are not subject to any financing condition. In connection with the proposed acquisition, we entered into a debt commitment letter with Barclays Bank PLC, Deutsche Bank Securities Inc. and Deutsche Bank AG New York Branch (the "Commitment Parties") to obtain credit facilities in the aggregate principal amount of up to $800 million to finance, in part, the acquisition and a $50 million asset-based revolving credit facility for working capital purposes, as needed. The obligations of the Commitment Parties under the commitment letter are subject to certain conditions. We can provide no assurance that the Commitment Parties will ultimately provide the financing as contemplated by the commitment letter or that the terms of any indebtedness we incur will not be less favorable to us than we expect.

We will incur transaction fees, including legal, regulatory and other costs associated with closing the transaction, as well as expenses related to formulating and implementing integration plans, including facilities and systems consolidation costs and employment-related costs. Although we expect that the elimination of duplicative costs, as well as the realization of other efficiencies related to the integration of the businesses, should allow us to offset transaction and integration-related costs over time, this net benefit may not be achieved in the near term, or at all.

The success of the Newport acquisition, if completed, will depend, in part on our ability to realize the anticipated business opportunities and growth prospects from combining our business with that of Newport. We may never realize these business opportunities and growth prospects. We might experience increased competition that limits our ability to expand our business. Integrating operations will be complex and will require significant efforts and expenditures on the part of both us and Newport. Combining our businesses could make it more difficult to maintain relationships with customers, employees or suppliers. If we are unable to successfully or timely integrate the operations of Newport's business into our business, we may be unable to realize the revenue growth, synergies and other anticipated benefits resulting from the acquisition and our business could be adversely affected.

Risk relating to the increased indebtedness we will incur in connection with the acquisition of Newport.

The indebtedness we expect to incur in connection with the acquisition of Newport could have the effect, among other things, of reducing our flexibility to respond to changing business and economic conditions and increasing interest expense. We will also incur various costs and expenses associated with our indebtedness. The amount of cash required to pay interest on our increased indebtedness levels following completion of the acquisition, and thus the demands on our cash resources, will be greater than the amount of cash flows required to service our indebtedness prior to the transaction. The increased levels of indebtedness following completion of the acquisition could also reduce funds available for working capital, capital expenditures, acquisitions and other general corporate purposes and may create competitive disadvantages relative to other companies with lower debt levels. If we do not achieve the expected benefits and cost savings from the acquisition, or if the financial performance of the combined company does not meet current expectations, then our ability to service our indebtedness may be adversely impacted.

Certain indebtedness to be incurred in connection with the acquisition may bear interest at variable interest rates. If interest rates increase, variable rate debt will create higher debt service requirements, which could adversely affect our cash flows. In addition, our credit ratings affect the cost and availability of future borrowings and, accordingly, our cost of capital. Our ratings reflect each rating organization's opinion of our financial strength, operating performance and ability to meet our debt obligations. In connection with the debt financing, it is anticipated that we will seek ratings of its indebtedness from one or more nationally recognized statistical rating organizations. There can be no assurance that we will achieve a particular rating or maintain a particular rating in the future. Moreover, we may be required to raise substantial additional financing to fund working capital, capital expenditures, acquisitions or other general corporate requirements. Our ability to arrange additional financing or refinancing will depend on, among other factors, our financial position and performance, as well as prevailing market conditions and other factors beyond our control. There can be no assurance that we will be able to obtain additional financing or refinancing on terms acceptable to us or at all.

In addition, while we expect that the indebtedness will not affect our ability to pay quarterly dividends in the future, the terms of the definitive agreements that will govern the indebtedness could negatively impact our ability to do so in certain circumstances.

An inability to convince semiconductor device manufacturers to specify the use of our products to our customers that are semiconductor capital equipment manufacturers would weaken our competitive position.

The markets for our products are highly competitive. Our competitive success often depends upon factors outside of our control. For example, in some cases, particularly with respect to mass flow controllers, semiconductor device manufacturers may direct semiconductor capital equipment manufacturers to use a specified supplier's product in their equipment. Accordingly, for such products, our success will depend in part on our ability to have semiconductor device manufacturers specify that our products be used at their semiconductor fabrication facilities. In addition, we may encounter difficulties in changing established relationships of competitors that already have a large installed base of products within such semiconductor fabrication facilities.

If our products are not designed into successive generations of our customers' products, we will lose significant net revenues during the lifespan of those products.

New products designed by capital equipment manufacturers typically have a lifespan of five to ten years. Our success depends on our products being designed into new generations of equipment. We must develop products that are technologically advanced so that they are positioned to be chosen for use in each successive generation of capital equipment. If customers do not choose our products, our net revenues may be reduced during the lifespan of our customers' products. In addition, we must make a significant capital investment to develop products for our customers well before our products are introduced and before we can be sure that we will recover our capital investment through sales to the customers in significant volume. We are thus also at risk during the development phase that our products may fail to meet our customers' technical or cost requirements and may be replaced by a competitive product or alternative technology solution. If that happens, we may be unable to recover our development costs.

The semiconductor industry is subject to rapid demand shifts which are difficult to predict. As a result, our inability to expand our manufacturing capacity or reduce our fixed costs in response to these rapid shifts may cause a reduction in our market share.

Our ability to increase sales of certain products depends in part upon our ability to expand our manufacturing capacity for such products in a timely manner. If we are unable to expand our manufacturing capacity on a timely basis or to manage such expansion effectively, our customers could implement our competitors' products and, as a result, our market share could be reduced. Because the semiconductor industry is subject to rapid demand shifts, which are difficult to foresee, we may not be able to increase capacity quickly enough to respond to a rapid increase in demand. Additionally, capacity expansion could increase our fixed operating expenses and if sales levels do not increase to offset the additional expense levels associated with any such expansion, our business, financial condition and results of operations could be materially adversely affected.

Manufacturing interruptions or delays could affect our ability to meet customer demand and lead to higher costs, while the failure to estimate customer demand accurately could result in excess or obsolete inventory.

Our business depends on its timely supply of equipment, services and related products that meet the rapidly changing technical and volume requirements of our customers, which depends in part on the timely delivery of parts, components and subassemblies (collectively, “parts”) from suppliers, including contract manufacturers. Cyclical industry conditions and the volatility of demand for manufacturing equipment increase capital, technical, operational and other risks for us and for companies throughout our supply chain. We may also experience significant interruptions of our manufacturing operations, delays in our ability to deliver products or services, increased costs or customer order cancellations as a result of:

- volatility in the availability and cost of materials, including rare earth elements;
- information technology or infrastructure failures; and
- natural disasters or other events beyond our control (such as earthquakes, floods or storms, regional economic downturns, pandemics, social unrest, political instability, terrorism, or acts of war), particularly where we conduct manufacturing.

In addition, if we need to rapidly increase our business and manufacturing capacity to meet increases in demand or expedited shipment schedules, this may exacerbate any interruptions in our manufacturing operations and supply chain and the associated effect on our working capital. Moreover, if actual demand for our products is different than expected, we may purchase more/fewer parts than necessary or incur costs for canceling, postponing or expediting delivery of parts. If we purchase inventory in anticipation of customer demand that does not materialize, or if our customers reduce or delay orders, we may incur excess inventory charges. Any or all of these factors could materially and adversely affect our business, financial condition and results of operations.

A material amount of our assets represents goodwill and intangible assets, and our net income would be reduced if our goodwill or intangible assets become impaired.

As of December 31, 2015, our goodwill and intangible assets, net, represented approximately $243.7 million, or 19.1% of our total assets. Goodwill is generated in our acquisitions when the cost of an acquisition exceeds the fair value of the net tangible and identifiable intangible assets we acquire. Goodwill is subject to an impairment analysis at least annually based on the fair value of the reporting unit. Intangible assets relate primarily to the developed technologies, customer relationships and patents and trademarks acquired by us as part of our acquisitions of other companies and are subject to an impairment analysis whenever events or changes in circumstances exist that indicate that the carrying value of the intangible asset might not be recoverable. We will continue to monitor and evaluate the carrying value of goodwill and intangible assets. If market and economic conditions or business performance deteriorate, the likelihood that we would record an impairment charge would increase, which impairment charge could materially and adversely affect our results of operations.

We operate in a highly competitive industry.

The market for our products is highly competitive. Principal competitive factors include:

- historical customer relationships;
- product quality, performance and price;
- breadth of product line;
- manufacturing capabilities; and
- customer service and support.

Although we believe that we compete favorably with respect to these factors, we may not be able to continue to do so. We encounter substantial competition in most of our product lines. Certain of our competitors may have greater financial and other resources than we have. In some cases, competitors are smaller than we are, but well established in specific product niches. We may encounter difficulties in changing established relationships of competitors with a large installed base of products at such customers’ fabrication facilities. In addition, our competitors can be expected to continue to improve the design and performance of their products. Competitors may develop products that offer price, performance or technological features superior to those of our products. If our competitors develop superior products, we may lose existing customers and market share. Also, technological advances in our served markets may cause one or more of our portfolio of products to be displaced over time.

We have significant foreign operations, and outsource certain operations offshore, both of which pose significant risks.

We have significant international sales, service, engineering and manufacturing operations in Europe, Israel and Asia, and have outsourced a portion of our manufacturing and service to a subcontractor in Mexico. In the future, we may expand the level of manufacturing and certain other operations that we perform offshore in order to take advantage of cost efficiencies available to us in those countries. However, we may not achieve the significant cost savings or other benefits that we would anticipate from moving manufacturing and other operations to a lower cost region. These foreign operations expose us to operational and political risks that may harm our business, including:

- political and economic instability;
- fluctuations in the value of currencies, particularly in Asia and Europe;
- changes in labor conditions and difficulties in staffing and managing foreign operations, including, but not limited to, the formation of labor unions;
- reduced or less certain protection for intellectual property rights;
- greater difficulty in collecting accounts receivable and longer payment cycles;
- burdens and costs of compliance with a variety of foreign laws;
- unexpected changes in foreign regulations;
- increases in duties and taxation;
- costs associated with compliance programs for import and export regulations;
- changes in export duties and limitations on imports or exports;
- imposition of restrictions on currency conversion or the transfer of funds;
- costs associated with the repatriation of our overseas earnings; and
- expropriation of private enterprises.

If any of these risks materialize, our operating results may be adversely affected.

We are subject to international trade compliance regulations, and violations of those regulations could result in fines or trade restrictions, which could have a material adverse effect on us.

We are subject to trade compliance laws in both the United States and other jurisdictions where we operate. Certain of our products require export licenses in order to be shipped into certain countries. While we have implemented policies and procedures to comply with these laws, there can be no assurance that our employees, contractors, suppliers or agents will not violate such laws or our policies. For example, as a result of a 2012 U.S. government investigation, a former employee of our Shanghai office and a third party not affiliated with us were imprisoned for export violations relating to the sale of certain of our products. We were not a target of the government's investigation and we cooperated fully with the government's investigation. In addition, although we conducted our own internal investigation, and although we took corrective human resources actions and have, since 2012, implemented additional export compliance procedures, we cannot be certain these efforts will be sufficient to avoid similar situations in the future. Violations of trade compliance laws could result in the imposition of fines, suspension of our ability to export certain of our products, and damage to our reputation. The imposition of fines or the termination or significant limitation on our ability to export certain of our products could have a material adverse effect on our business, results of operations and financial condition.

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

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

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

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

Key personnel may be difficult to attract and retain.

Our success depends to a large extent upon the efforts and abilities of a number of key employees and officers, particularly those with expertise in the semiconductor manufacturing and similar industrial manufacturing industries. The loss of key employees or officers could have a material adverse effect on our business, financial condition and results of operations. We believe that our future success will depend in part on our ability to attract and retain highly skilled technical, financial, managerial and sales and marketing personnel. We cannot be certain that we will be successful in attracting and retaining such personnel.

A breach of our operational or security systems could negatively affect our business and results of operations.

We rely on various information technology networks and systems, some of which are managed by third parties, to process, transmit and store electronic information, including confidential data, and to carry out and support a variety of business activities, including manufacturing, research and development, supply chain management, sales and accounting. A failure in or a breach of our operational or security systems or infrastructure, or those of our suppliers and other service providers, including as a result of cyber-attacks, could disrupt our business, result in the disclosure or misuse of proprietary or confidential information, damage our reputation, cause losses and increase our costs.

Our proprietary technology is important to the continued success of our business. Our failure to protect this proprietary technology may significantly impair our competitive position.

As of December 31, 2015, we owned 376 U.S. patents and 696 foreign patents, which expire at various dates through 2035. As of December 31, 2015, we had 77 pending U.S. patent applications. Although we seek to protect our intellectual property rights through patents, copyrights, trade secrets and other measures, we cannot be certain that:

- we will be able to protect our technology adequately;
- competitors will not be able to develop similar technology independently;
- any of our pending patent applications will be issued;
- domestic and international intellectual property laws will protect our intellectual property rights; or
- third parties will not assert that our products infringe patent, copyright or trade secrets of such parties.

Protection of our intellectual property rights may result in costly litigation.

Litigation may be necessary in order to enforce our patents, copyrights or other intellectual property rights, to protect our trade secrets, to determine the validity and scope of the proprietary rights of others or to defend against claims of infringement. We are, from time to time, involved in lawsuits enforcing or defending our intellectual property rights. Such litigation could result in substantial costs and diversion of resources and could have a material adverse effect on our business, financial condition, results of operations, or cash flows.

We may need to expend significant time and expense to protect our intellectual property regardless of the validity or successful outcome of such intellectual property claims. If we lose any litigation, we may be required to seek licenses from others, pay royalties, change, stop manufacturing or stop selling some of our products.

The market price of our common stock has fluctuated and may continue to fluctuate for reasons over which we have no control.

The stock market has from time to time experienced, and is likely to continue to experience, extreme price and volume fluctuations. Prices of securities of technology companies have been especially volatile and have often fluctuated for reasons that are unrelated to the operating performance of the companies. Historically, the market price of shares of our common stock has fluctuated greatly and could continue to fluctuate due to a variety of factors. In the past, companies that have experienced volatility in the market price of their stock have been the objects of securities class action litigation. If we were the object of securities class action litigation, it could result in substantial costs and a diversion of our management's attention and resources.

We may not pay dividends on our common stock.

Holders of our common stock are only entitled to receive such dividends when and if they are declared by our board of directors. Although we have declared cash dividends on our common stock since 2011, we are not required to do so and we may reduce or eliminate our cash dividend in the future. This could adversely affect the market price of our common stock.

Our dependence on sole, limited source suppliers, and international suppliers, could affect our ability to manufacture products and systems.

We rely on sole, limited source suppliers and international suppliers for a few of our components and subassemblies that are critical to the manufacturing of our products. This reliance involves several risks, including the following:

- the potential inability to obtain an adequate supply of required components;

- reduced control over pricing and timing of delivery of components; and
- the potential inability of our suppliers to develop technologically advanced products to support our growth and development of new systems.

We believe we could obtain and qualify alternative sources for most sole, limited source and international supplier parts; however, the transition time may be long if we were required to obtain alternative sources. Seeking alternative sources for these parts could require us to redesign our systems, resulting in increased costs and likely shipping delays. In such an event, any inability to redesign our systems could result in further costs and shipping delays. These increased costs would decrease our profit margins if we could not pass the costs to our customers. Further, shipping delays could damage our relationships with current and potential customers and have a material adverse effect on our business and results of operations.

We are subject to governmental regulations. If we fail to comply with these regulations, our business could be harmed.

We are subject to federal, state, local and foreign regulations, including environmental regulations and regulations relating to the design, composition and operation of our products. We must ensure that the affected products meet a variety of standards, many of which vary across the countries in which our systems are used. For example, the European Union has published directives specifically relating to power supplies. In addition, the European Union has issued directives relating to the regulation of recycling and hazardous substances, which are applicable to certain of our products, and to which some customers may voluntarily elect to adhere. China has adopted, and certain other Asian countries have indicated an intention to adopt, similar regulations. We must comply with any applicable regulation in order to ship affected products into countries that adopt these types of regulations. We believe we are in compliance with current applicable regulations, directives and standards and that we have obtained all necessary permits, approvals and authorizations to conduct our business. However, compliance with future regulations, directives and standards, or customer demands beyond such requirements, could require us to modify or redesign certain systems, make capital expenditures or incur substantial costs. If we do not comply with current or future regulations, directives and standards:

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

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

The Dodd-Frank Wall Street Reform and Consumer Protection Act imposes disclosure requirements regarding the use in our products of “conflict minerals” mined from the Democratic Republic of Congo and adjoining countries, whether or not the components of our products are manufactured by us or third parties. In addition, several of our customers have requested that we disclose to them our use of numerous hazardous materials in our products. Our supply chain is very complex and the implementation of these requirements could adversely affect the sourcing, availability and pricing of minerals used in the manufacture of our products. In addition, there are additional costs associated with complying with the disclosure requirements and customer requests, such as costs related to our due diligence to determine the source of any “conflict minerals” or the identity of any hazardous materials used in our products. We face the additional challenge that many of our suppliers, both domestic and foreign, are not obligated by the new “conflict minerals” law to investigate their own supply chain. Despite our due diligence efforts, we may be unable to verify the origin of all “conflict minerals” used in our products and/or the use of one or more hazardous materials in our products. As a result, we may be unable to certify that our products are “conflict-free” and/or free of certain hazardous materials. If we are unable to meet our customer requirements, customers may discontinue purchasing from us, which could adversely impact our business, financial condition or operating results.

Some provisions of our restated articles of organization, as amended, our amended and restated by-laws and Massachusetts law could discourage potential acquisition proposals and could delay or prevent a change in control.

Anti-takeover provisions could diminish the opportunities for stockholders to participate in tender offers, including tender offers at a price above the then current market price of our common stock. Such provisions may also inhibit increases in the market price of our common stock that could result from takeover attempts. For example, while we have no present plans to issue any preferred stock, our board of directors, without further stockholder approval, may issue preferred stock that could have the effect of delaying, deterring or preventing a change in control of us. The issuance of preferred stock could adversely affect the voting power of the holders of our common stock, including the loss of voting control to others. In addition, our amended and restated by-laws provide for a classified board of directors consisting of three classes. Our classified board could also have the effect of delaying, deterring or preventing a change in control of our Company.

Changes in financial accounting standards may adversely affect our reported results of operations.

A change in accounting standards or practices could have a significant effect on our reported results (such as the new revenue recognition rules which are scheduled to go into effect in 2018) and may even affect our reporting of transactions completed before the change was effective. New accounting pronouncements and varying interpretations of existing accounting pronouncements have occurred and may occur in the future. Such changes may adversely affect our reported financial results or may impact our related business practice.

Item 1B. ***Unresolved Staff Comments***

None.

Item 2. *Properties*

The following table provides information concerning MKS' principal and certain other owned and leased facilities as of December 31, 2015:

Location	Sq. Ft.	Activity	Reportable Segment	Lease Expires
Akishima, Japan	26,500	Manufacturing, Customer Support and Service	Asia Region Sales & Global Service	September 11, 2018
Andover, Massachusetts	118,000	Manufacturing, Research & Development and Corporate Headquarters	Advanced Manufacturing Capital Equipment & Other	(1)
Austin, Texas	20,880	Manufacturing, Sales, Customer Support, Service and Research & Development	Advanced Manufacturing Capital Equipment, Global Service & Other	June 30, 2020
Berlin, Germany	19,700	Manufacturing, Customer Support, Service and Research & Development	Advanced Manufacturing Capital Equipment & Global Service	December 31, 2018
Boulder, Colorado	86,000	Manufacturing, Customer Support, Service and Research & Development	Advanced Manufacturing Capital Equipment & Global Service	(2)
Carmiel, Israel	11,800	Manufacturing and Research & Development	Advanced Manufacturing Capital Equipment	December 31, 2017
Cheshire, United Kingdom	16,000	Manufacturing, Sales, Customer Support and Service	Global Service & Other	November 6, 2018
Daejeon, Korea	21,400	Manufacturing and Research & Development	Advanced Manufacturing Capital Equipment	(4)
Filderstadt, Germany	9,300	Sales and Service	Global Service and Other	July 31, 2020
Hellebaek, Denmark	7,900	Manufacturing and Research & Development	Advanced Manufacturing Capital Equipment	December 1, 2016
Gyeonggi, Korea	45,600	Sales, Customer Support and Service	Asia Region Sales & Global Service	(5)
Lawrence, Massachusetts	40,000	Manufacturing	Advanced Manufacturing Capital Equipment and Other	(3)
Lod, Israel	7,600	Customer Support and Research & Development	Advanced Manufacturing Capital Equipment	December 31, 2016
Longmont, Colorado	60,900	Manufacturing, Customer Support, Service and Research & Development	Advanced Manufacturing Capital Equipment & Global Service	February 29, 2020
Malmo, Sweden	5,900	Sales, Customer Support and Research & Development	Global Service & Other	May 31, 2121
Methuen, Massachusetts	85,000	Manufacturing, Customer Support, Service and Research & Development	Advanced Manufacturing Capital Equipment, Global Service & Other	(3)
Munich, Germany	19,900	Sales, Customer Support, Service and Research & Development	Global Service & Other	(6)
Nogales, Mexico	101,600	Manufacturing and Service	Advanced Manufacturing Capital Equipment & Global Service	August 31, 2022

Location	Sq. Ft.	Activity	Reportable Segment	Lease Expires
Reggio Emilia, Italy	10,000	Manufacturing, Customer Support, Service and Research & Development	Advanced Manufacturing Capital Equipment & Global Service	August 31, 2019
Rochester, New York	156,000	Manufacturing, Sales, Customer Support, Service and Research & Development	Advanced Manufacturing Capital Equipment & Global Service	(3)
San Jose, California	20,400	Sales, Customer Support and Service	Advanced Manufacturing Capital Equipment, Global Service & Other	January 31, 2018
Shanghai, China	18,700	Sales, Customer Support and Service	Asia Region Sales & Global Service	February 28, 2017
Shenzhen, China	242,000	Manufacturing	Advanced Manufacturing Capital Equipment	August 31, 2017
Shropshire, United Kingdom	25,000	Manufacturing	Other	June 23, 2022
Singapore	10,100	Sales, Customer Support and Service	Asia Region Sales & Global Service	November 30, 2016
Taiwan	27,900	Sales, Customer Support and Service	Asia Region Sales & Global Service	February 28, 2018
Tokyo, Japan	4,300	Sales and Customer Support	Asia Region Sales & Global Service	August 31, 2017
Umea, Sweden	7,500	Sales, Customer Support and Research & Development	Global Service & Other	(7)
Wilmington, Massachusetts	118,000	Manufacturing, Sales, Customer Support, Service and Research & Development	Advanced Manufacturing Capital Equipment & Global Service	(3)

(1) MKS owns one facility with 82,000 square feet of space used for manufacturing and research and development and leases 36,000 square feet of space used for its corporate headquarters with a lease that expires on May 31, 2018.

(2) MKS leases one facility which has 39,000 square feet of space and the lease expires on May 31, 2020. MKS also owns a second and third facility with 27,000 and 20,000 square feet of space, respectively.

(3) This facility is owned by MKS.

(4) MKS owns 18,100 square feet of space and leases 3,300 square feet of space with an expiration date of March 1, 2016.

(5) MKS leases 36,500 square feet of space with an expiration date of May 2, 2020. MKS leases 9,100 square feet of space with an expiration date of January 31, 2017.

(6) MKS owns 14,800 square feet of space and leases 1,600 square feet of space with an expiration date of August 31, 2016 and 3,500 square feet of space with an expiration date of December 31, 2016.

(7) MKS leases two facilities, one of which has 3,300 square feet of space with an expiration date of June 30, 2016, and the other of which has 4,200 square feet of space with an expiration date of August 31, 2016.

In addition to manufacturing and other operations conducted at the foregoing leased or owned facilities, MKS provides worldwide sales, customer support and services from various other leased facilities throughout the world not listed in the table above. See "Business—Sales, Marketing, Service and Support."

Item 3. *Legal Proceedings*

We are subject to various legal proceedings and claims, which have arisen in the ordinary course of business. In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on our results of operations, financial condition or cash flows.

Item 4. *Mine Safety Disclosures*

Not applicable.

PART II

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

Price Range of Common Stock

Our common stock is traded on the NASDAQ Global Select Market under the symbol MKSI. On February 19, 2016, the closing price of our common stock, as reported on the NASDAQ Global Select Market, was $33.53 per share. The following table sets forth for the periods indicated the high and low sales prices per share of our common stock as reported by the NASDAQ Global Select Market.

	2015		2014	
	High	Low	High	Low
First Quarter	$36.97	$32.94	$32.50	$28.52
Second Quarter	39.65	32.73	31.33	26.80
Third Quarter	38.51	31.62	34.89	30.87
Fourth Quarter	38.25	29.00	37.83	30.52

On February 19, 2016, we had approximately 105 stockholders of record.

Dividend Policy and Cash Dividends

Holders of our common stock are entitled to receive dividends when and if they are declared by our board of directors. During 2015, our board of directors declared a cash dividend of $0.165 per share during the first quarter of 2015 and a cash dividend of $0.17 per share during each of the second, third and fourth quarters of 2015, which totaled $36.0 million or $0.675 per share. During 2014, our board of directors declared one quarterly dividend of $0.16 per share and three quarterly dividends of $0.165 per share, which totaled $34.9 million or $0.655 per share.

Future dividend declarations, if any, as well as the record and payment dates for such dividends, are subject to the final determination of our board of directors. The board of directors intends to declare and pay cash dividends on our common stock based on the financial conditions and results of operations of the Company, although it has no obligation to do so.

On February 8, 2016, our board of directors declared a quarterly cash dividend of $0.17 per share to be paid on March 11, 2016 to shareholders of record as of February 29, 2016.

Purchase of Equity Shares

On July 25, 2011, our board of directors approved and on July 27, 2011, we publicly announced, a share repurchase program for the repurchase of up to an aggregate of $200 million of our outstanding common stock from time to time in open market purchases, privately negotiated transactions or through other appropriate means (the "Program"). The timing and quantity of any shares repurchased will depend upon a variety of factors, including business conditions, stock market conditions and business development activities, including, but not limited to, merger and acquisition opportunities. These repurchases may be commenced, suspended or discontinued at any time without prior notice. During the twelve months ended December 31, 2015, we repurchased approximately 369,000 shares of our common stock for $13.3 million at an average price of $36.01 per share.

The following table sets forth certain information with respect to repurchases of our common stock during the three months ended December 31, 2015.

ISSUER PURCHASES OF EQUITY SECURITIES

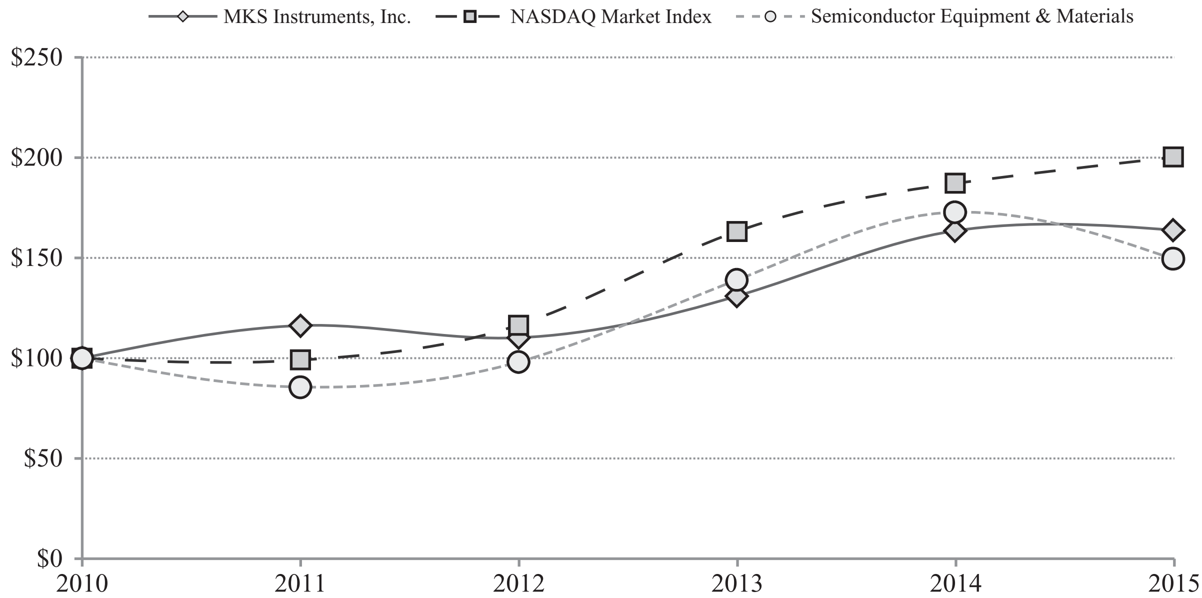
Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs(1)	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs(1) (in thousands)
October 1—October 31, 2015	42,974	$33.98	42,974	$152,484
November 1—November 30, 2015	39,060	35.60	39,060	151,094
December 1—December 31, 2015	42,966	36.71	42,966	149,517
Total	125,000	$35.42	125,000	

(1) We have repurchased approximately 1,725,000 shares of our common stock for approximately $50.5 million pursuant to the Program since its adoption.

Comparative Stock Performance

The following graph compares the cumulative total shareholder return (assuming reinvestment of dividends) from investing $100 on December 31, 2010, and plotted at the last trading day of each of the fiscal years ended December 31, 2011, 2012, 2013, 2014 and 2015, in each of MKS' common stock; an industry group index of semiconductor equipment/material manufacturers (the "Morningstar Semiconductor Equipment & Materials Industry Group"), compiled by Morningstar, Inc.; and the NASDAQ Market Index of companies. The stock price performance on the graph below is not necessarily indicative of future price performance. Our common stock is listed on the NASDAQ Global Select Market under the ticker symbol MKSI.

Performance Graph



	2010	2011	2012	2013	2014	2015
MKS Instruments, Inc.	$100.00	$116.22	$110.22	$130.93	$163.53	$163.93
NASDAQ Market Index	$100.00	$ 99.17	$116.48	$163.21	$187.27	$200.31
Morningstar Semiconductor Equipment & Materials Industry Group	$100.00	$ 85.56	$ 98.15	$139.06	$172.80	$149.65

Item 6. ***Selected Financial Data***

Selected Consolidated Financial Data

	Years Ended December 31,				
	2015	2014	2013	2012	2011
	(in thousands, except per share data)				
Statement of Operations Data					
Net revenues	$ 813,524	$ 780,869	$ 669,420	$ 643,508	$ 822,517
Gross profit	362,872	337,766	266,574	269,479	374,988
Income from operations(1)	156,612	135,142	58,387	74,223	184,925
Net income(2)	$ 122,297	$ 115,778	$ 35,776	$ 48,029	$ 129,731
Basic net income per share	$ 2.30	$ 2.17	$ 0.67	$ 0.91	$ 2.49
Diluted net income per share	$ 2.28	$ 2.16	$ 0.67	$ 0.90	$ 2.45
Cash dividends paid per common share	$ 0.675	$ 0.655	$ 0.64	$ 0.62	$ 0.60
Balance Sheet Data					
Cash and cash equivalents	$ 227,574	$ 305,437	$ 288,902	$ 287,588	$ 312,916
Short-term investments(3)	430,663	286,795	361,120	339,811	260,476
Working capital(3)	848,527	791,665	811,214	801,029	796,343
Total assets	1,273,347	1,224,044	1,213,018	1,152,562	1,133,935
Short-term obligations	—	—	—	—	1,932
Other liabilities	21,482	38,595	63,073	61,095	47,492
Stockholders' equity	$1,160,881	$1,081,822	$1,021,523	$1,012,156	$ 990,012

(1) Income from operations for 2015 includes $2.1 million of restructuring charges. Income from operations for 2014 includes $2.5 million of restructuring charges and $0.5 million of acquisition related costs from our acquisition of Granville-Phillips in May 2014. Income from operations for 2013 includes $2.6 million of costs and other benefits related to the retirement of the Company's Chief Executive Officer in the fourth quarter of 2013, $1.4 million of restructuring charges and $1.1 million from an insurance reimbursement related to a 2012 litigation settlement. Income from operations for 2012 includes $5.3 million for payment of a litigation settlement and $1.3 million of acquisition related costs from our acquisition of Plasmart, Inc. in 2012.

(2) Net income for 2015 includes charges, net of tax, of $1.4 million of restructuring costs. Net income for 2015 also includes $7.7 million in tax credits for reserve releases related to the settlement of tax audits. Net income for 2014 includes charges, net of tax, of $1.5 million of restructuring costs and $0.3 million of acquisition related costs. Net income for 2014 also includes $14.6 million in tax credits for reserve releases related to the settlement of tax audits and the expiration of the statute of limitations. Net income for 2013 includes charges, net of tax, of $1.6 million of costs and other benefits related to the retirement of the Company's Chief Executive Officer and $0.9 million of restructuring costs and a benefit, net of tax, of $0.7 million from an insurance reimbursement related to a 2012 litigation settlement. Net income for 2012 includes charges, net of tax, of $3.3 million for a litigation settlement and $0.8 million of acquisition related costs.

(3) Effective December 31, 2015, the Company changed the method of classification of its investments previously classified as long-term investments to short-term investments within current assets. For the years ended December 31, 2014, 2013, 2012 and 2011, short-term investments have been re-classified to include investments with contractual maturities greater than one year from the date of purchase as management had the ability and intent, if necessary, to liquidate any of its cash equivalents and investments in order to meet the Company's liquidity needs in the next twelve months. Accordingly, working capital includes investments with contractual maturities greater than one year from the date of purchase.

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

Overview

We are a global provider of instruments, subsystems and process control solutions that measure, control, power, monitor and analyze critical parameters of advanced manufacturing processes to improve process performance and productivity. We also provide services relating to the maintenance and repair of our products, software maintenance, installation services and training.

Our products are derived from our core competencies in pressure measurement and control, materials delivery, gas composition analysis, control and information technology, power and reactive gas generation and vacuum technology. Our products are used in diverse markets, applications and processes. Our primary served markets are manufacturers of capital equipment for semiconductor devices, and for other thin film applications including flat panel displays, solar cells light emitting diodes ("LEDs"), data storage media, and other advanced coatings. We also leverage our technology in other markets with advanced manufacturing applications including medical equipment, pharmaceutical manufacturing, energy generation and environmental monitoring.

We have a diverse base of customers that includes manufacturers of semiconductor capital equipment and semiconductor devices; thin film capital equipment used in the manufacture of flat panel displays; LEDs, solar cells, data storage media and other coating applications; and general industrial, medical, energy generation, environmental monitoring and manufacturing companies, and university, government and industrial research laboratories. During the years 2015, 2014 and 2013, approximately 69%, 70% and 68% of our net revenues, respectively, were from sales to semiconductor capital equipment manufacturers and semiconductor device manufacturers. We expect that sales to semiconductor capital equipment manufacturers and semiconductor device manufacturers will continue to account for a substantial portion of our sales.

Effective January 1, 2015, we changed the structure of our reportable segments based upon how the information is provided to our Chief Operating Decision Maker. Our four reportable segments prior to the change in structure were: Advanced Manufacturing Capital Equipment, Analytical Solutions Group, Europe Region Sales & Service and Asia Region Sales & Service. Our current structure still reflects four reportable segments, however the composition of the segments has changed.

Our current reportable segments are Advanced Manufacturing Capital Equipment, Global Service, Asia Region Sales and Other. The primary change to the segment structure was to separate worldwide service from product sales and create a separate reportable segment known as Global Service. Product sales in the Advanced Manufacturing Capital Equipment segment remained with that segment. Asia product sales became a separate reportable segment. The product sales from the operating segments that made up the Analytical Solutions Group and Europe Region Sales were combined into the Other segment and are not reported separately as they are individually immaterial and collectively remain below the separate segment guidelines. We report corporate expenses and certain intercompany pricing transactions in a Corporate and Eliminations reconciling column.

The Advanced Manufacturing Capital Equipment segment includes the development, manufacture and sales of instruments, control and vacuum products, and power and reactive gas products, all of which are utilized in semiconductor processing and other similar advanced manufacturing processes. Sales in this segment include both external sales and intercompany product sales, which are recorded at transfer prices in accordance with applicable tax requirements. The Global Service segment includes the worldwide servicing of instruments, control and vacuum products, power and reactive gas products and certain other product groups, all of which are utilized in semiconductor processing and other similar advanced manufacturing processes. The Asia Region Sales segment mainly includes sales of products that are re-sold from the Advanced Manufacturing Capital Equipment and Other segments into Asia regions. The Other segment includes operating segments that are not required to be reported separately as reportable segments and includes sales of products that are re-sold from the Advanced Manufacturing Capital Equipment into Europe regions as well as sales from other operating segments.

We group our products into three groups of products, based upon the similarity of the product function, type of product and manufacturing processes. These three groups of products are: Instruments, Control and Vacuum Products; Power and Reactive Gas Products; and Analytical Solutions Products.

Net revenues to semiconductor capital equipment manufacture and semiconductor device manufacture customers increased by 3% in 2015 compared to 2014, after increasing by 19% in 2014 compared to 2013. We had sequential revenue increases in each quarter since the third quarter of 2014 and into the second quarter of 2015. Semiconductor revenues increased from $126 million in the third quarter of 2014 to $154 million in the second quarter of 2015. In the third and fourth quarters of 2015, there was a pause in spending and we saw a decrease in semiconductor revenues to $143 million and $114 million, respectively. The semiconductor capital equipment industry is subject to rapid demand shifts, which are difficult to predict, and we are uncertain as to the timing or extent of future demand or any future weakness in the semiconductor capital equipment industry.

Our net revenues from other advanced markets, which exclude semiconductor capital equipment and semiconductor device product applications, increased 6% in 2015 compared to 2014 and increased 12% in 2014 compared to 2013. We saw eight consecutive quarters of growth in our other advanced markets starting in the quarter ended December 31, 2013 through the third quarter of 2015. In the fourth quarter of 2015, revenue for our other advanced markets decreased by 12% compared to the third quarter of 2015. Revenues from customers in other advanced markets are made up of many different markets including general industrial, solar, film, medical, analysis metrology and other markets. The increase in net revenues from other advanced markets in 2015 compared to the prior year is primarily attributed to increases in the solar, data storage and analysis metrology markets, partially offset by decreases in the general industrial and LED markets. Approximately 31% of our net revenues for 2015 were to other advanced markets and we anticipate that these markets will grow and could represent a larger portion of our revenue.

A significant portion of our net revenues is in international markets. During the years 2015, 2014 and 2013, international net revenues accounted for approximately 44%, 43% and 46% of our total net revenues, respectively. A significant portion of our international net revenues were sales in Korea and Japan. We expect that international net revenues will continue to represent a significant percentage of our total net revenues.

On March 17, 2015, we acquired Precisive, LLC (“Precisive”) for $12.1 million net of cash acquired of $0.4 million. Precisive is an innovative developer of optical analyzers based on Tunable Filter Spectroscopy, which provide real-time gas analysis in the natural gas and hydrocarbon processing industries, including refineries, hydrocarbon processing plants, gas-to-power machines, biogas processes and fuel gas transportation and metering, while delivering customers a lower total cost of ownership.

On May 30, 2014, we acquired Granville-Phillips (“GP”), a division of Brooks Automation, Inc., for $87 million. GP is a leading global provider of vacuum measurement and control instruments to the semiconductor, thin film and general industrial markets. The acquisition reflects our strategy to grow our semiconductor business, while diversifying into other high growth markets.

On March 12, 2013, we acquired Alter S.r.l. (“Alter”), located in Reggio Emilia, Italy. Alter develops advanced microwave power generators, components and systems for industrial microwave heating, microwave plasma coating and semiconductor applications. The purchase price, net of cash acquired and after final debt and working capital post-closing adjustments, was $2.4 million.

Recent Events

On February 23, 2016, we announced that we had entered into a definitive agreement to acquire Newport, a worldwide leader in photonics solutions. Pursuant to the merger agreement, and subject to the terms and conditions contained therein, at the closing of the acquisition, we will acquire all of the outstanding shares of Newport for a purchase price of approximately $980 million in cash. We intend to fund the transaction with a combination of available cash on hand and up to $800 million in committed debt financing. In addition, we entered into a commitment letter to obtain a $50 million asset-based revolving credit facility for working capital purposes, as needed. The parties' obligations to consummate the acquisition are subject to customary closing conditions, including required approvals for the transaction from governmental authorities and approval from Newport's shareholders. Our obligations under the merger agreement are not subject to any financing condition.

Critical Accounting Policies and Estimates

Management's Discussion and Analysis of Financial Condition and Results of Operations discusses our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. On an on-going basis, we evaluate our estimates and judgments, including those related to revenue recognition, allowance for doubtful accounts, inventory, warranty costs, stock-based compensation expense, intangible assets, goodwill and other long-lived assets, in-process research and development and income taxes. We base our estimates and judgments 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 the following critical accounting policies affect the most significant judgments, assumptions and estimates we use in preparing our consolidated financial statements:

Revenue Recognition and Allowance for Doubtful Accounts. Revenue from product sales is recorded upon transfer of title and risk of loss to the customer provided that there is evidence of an arrangement, the sales price is fixed or determinable, and collection of the related receivable is reasonably assured. In most transactions, we have no obligations to our customers after the date products are shipped other than pursuant to warranty obligations. We do not frequently enter into arrangements with multiple deliverables; however, for those revenue arrangements with multiple deliverables, we allocate revenue to each element based upon its relative selling price using vendor-specific objective evidence ("VSOE"), or third-party evidence ("TPE") or based upon the relative selling price using estimated prices if VSOE or TPE does not exist. We then recognize revenue on each deliverable in accordance with our policies for product and service revenue recognition. We defer the fair value of any undelivered elements until the undelivered element is delivered. Fair value is the price charged when the element is sold separately. Shipping and handling fees billed to customers, if any, are recognized as revenue. The related shipping and handling costs are recognized in cost of sales.

We monitor and track the amount of product returns, provide for sales return allowances and reduce revenue at the time of shipment for the estimated amount of such future returns, based on historical experience. While product returns have historically been within our expectations and the provisions established, there is no assurance that we will continue to experience the same return rates that we have in the past. Any significant increase in product return rates could have a material adverse impact on our operating results for the period or periods in which such returns materialize.

While we maintain a credit approval process, significant judgments are made by management in connection with assessing our customers' ability to pay at the time of shipment. Despite this assessment, from time to time, our customers are unable to meet their payment obligations. We continuously monitor our customers' credit worthiness, and use our judgment in establishing a provision for estimated credit losses based upon our historical experience and any specific customer collection issues that we have identified. While such credit losses have historically been within our expectations and the provisions established, there is no assurance that we will continue to experience the same credit loss rates that we have in the past. A significant change in the liquidity or financial position of our customers could have a material adverse impact on the collectability of accounts receivable and our future operating results.

Inventory. We value our inventory at the lower of cost (first-in, first-out method) or market. We regularly review inventory quantities on hand and record a provision to write-down excess and obsolete inventory to its estimated net realizable value, if less than cost, based primarily on our estimated forecast of product demand. Once our inventory value is written-down and a new cost basis has been established, the inventory value is not increased due to demand increases. Demand for our products can fluctuate significantly. A significant increase in the demand for our products could result in a short-term increase in the cost of inventory purchases as a result of supply shortages or a decrease in the cost of inventory purchases as a result of volume discounts, while a significant decrease in demand could result in an increase in the charges for excess inventory quantities on hand. In addition, our industry is subject to technological change, new product development and product technological obsolescence that could result in an increase in the amount of obsolete inventory quantities on hand. Therefore, any significant unanticipated changes in demand or technological developments could have a significant impact on the value of our inventory and our reported operating results. For 2015, 2014 and 2013, our total charges for excess and obsolete inventory totaled $13.6 million, $12.1 million and $21.7 million, respectively. Included in our total charges for excess and obsolete inventory in 2013 is $6.4 million of special charges for obsolete inventory related to a unique product in a solar application as a result of slowing market conditions, which provided uncertainty as to the net realizable value of this inventory.

Warranty Costs. We provide for the estimated costs to fulfill customer warranty obligations upon the recognition of the related revenue. We provide warranty coverage for our products ranging from 12 to 36 months, with the majority of our products ranging from 12 to 24 months. We estimate the anticipated costs of repairing our products under such warranties based on the historical costs of the repairs and any known specific product issues. The assumptions we use to estimate warranty accruals are re-evaluated periodically in light of actual experience and, when appropriate, the accruals are adjusted. Our determination of the appropriate level of warranty accrual is based upon estimates. Should product failure rates differ from our estimates, actual costs could vary significantly from our expectations.

Stock-Based Compensation Expense. We record compensation expense for all share-based payment awards to employees and directors based upon the estimated fair market value of the underlying instrument. Accordingly, share-based compensation cost is measured at the grant date, based upon the fair value of the award.

We typically issue restricted stock units ("RSUs") as stock-based compensation. We also provide employees the opportunity to purchase shares through an Employee Stock Purchase Plan ("ESPP"). For RSUs, the fair value is the stock price on the date of grant. For shares issued under our ESPP, we have estimated the fair value on the date of grant using the Black Scholes pricing model, which is affected by our stock price as well as assumptions regarding a number of complex and subjective variables. These variables include our expected stock price volatility over the term of the awards, expected life, risk free interest rate and expected dividends. Management determined that blended volatility, a combination of historical and implied volatility, is more reflective of market conditions and a better indicator of expected volatility than historical or implied volatility alone. We are also required to estimate forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from those estimates.

Certain RSUs involve stock to be issued upon the achievement of performance conditions (performance shares) under our stock incentive plans. Such performance shares become available subject to time-based vesting conditions if, and to the extent that, financial or operational performance criteria for the applicable period are achieved. Accordingly, the number of performance shares earned will vary based on the level of achievement of financial or operational performance objectives for the applicable period. Until such time that our performance can ultimately be determined, each quarter we estimate the number of performance shares to be earned based on an evaluation of the probability of achieving the performance objectives. Such estimates are revised, if necessary, in subsequent periods when the underlying factors change our evaluation of the probability of achieving the performance objectives. Accordingly, share-based compensation expense associated with performance shares may differ significantly from the amount recorded in the current period.

The assumptions used in calculating the fair value of share-based payment awards represents management's best estimates, but these estimates involve inherent uncertainties and the application of management's judgment. As a result, if factors change and we use different assumptions, our stock-based compensation expense could be materially different in the future.

Intangible Assets, Goodwill and Other Long-Lived Assets. As a result of our acquisitions, we have identified intangible assets and generated significant goodwill. Definite-lived intangible assets are valued based on estimates of future cash flows and amortized over their estimated useful life. Goodwill and indefinite-lived intangible assets are subject to annual impairment testing as well as testing upon the occurrence of any event that indicates a potential impairment. Intangible assets and other long-lived assets are also subject to an impairment test if there is an indicator of impairment. The carrying value and ultimate realization of these assets is dependent upon estimates of future earnings and benefits that we expect to generate from their use. If our expectations of future results and cash flows are significantly diminished, intangible assets and goodwill may be impaired and the resulting charge to operations may be material. When we determine that the carrying value of intangibles or other long-lived assets may not be recoverable based upon the existence of one or more indicators of impairment, we use the projected undiscounted cash flow method to determine whether an impairment exists, and then measure the impairment using discounted cash flows. To measure impairment for goodwill, we compare the fair value of our reporting units by measuring discounted cash flows to the book value of the reporting units. Goodwill would be impaired if the resulting implied fair value was less than the recorded book value of the goodwill.

The estimation of useful lives and expected cash flows require us to make significant judgments regarding future periods that are subject to some factors outside of our control. Changes in these estimates can result in significant revisions to the carrying value of these assets and may result in material charges to the results of operations.

We have elected to perform our annual goodwill impairment test as of October 31 of each year, or more often if events or circumstances indicate that there may be impairment. Goodwill is the amount by which the cost of acquired net assets exceeded the fair value of those net assets on the date of acquisition. We allocate goodwill to reporting units at the time of acquisition or when there is a change in the reporting structure and base that allocation on which reporting units will benefit from the acquired assets and liabilities. In 2015, we reallocated our goodwill based upon a change in our reporting structure. There was no goodwill impairment as a result of this change in reporting units. Reporting units are defined as operating segments or one level below an operating segment, referred to as a component. The estimated fair value of our reporting units was based on discounted cash flow models derived from internal earnings and internal and external market forecasts. Determining fair value requires the exercise of significant judgment, including judgments about appropriate discount rates, perpetual growth rates and the amount and timing of expected future cash flows. Discount rates are based on a weighted average cost of capital ("WACC"), which represents the average rate a business must pay its providers of debt and equity. The WACC used to test goodwill is derived from a group of comparable companies. Assumptions in estimating future cash flows are subject to a high degree of judgment and complexity. We make every effort to forecast these future cash flows as accurately as possible with the information available at the time the forecast is developed.

We have the option of first assessing qualitative factors to determine whether it is necessary to perform the current two-step impairment test or we can perform the two-step impairment test without performing the qualitative assessment. For the reporting units that did not experience any significant adverse changes in their business or reporting structures or any other adverse changes, and the reporting unit's fair value substantially exceeded its carrying value from when the previous Step 1 analysis was performed, we performed the qualitative "Step 0" assessment. In performing the qualitative Step 0 assessment, we considered certain events and circumstances specific to the reporting unit and to the entity as a whole, such as macroeconomic conditions, industry and market considerations, overall financial performance and cost factors when evaluating whether it is more likely than not that the fair value of the reporting unit is less than its carrying amount. For the remaining reporting units that did not meet these criteria we performed the two-step goodwill impairment test. Under the two-step goodwill impairment test, we compared the fair value of each reporting unit to its respective carrying amount, including goodwill. If the carrying value of the reporting unit exceeds the fair value, the second step of the goodwill impairment test must be completed to measure the amount of impairment loss, if any. The second step compares the implied fair value of goodwill with the carrying value of goodwill. The implied fair value is determined by allocating the fair value of the reporting unit to all of the assets and liabilities of that unit, the excess of the fair value over amounts assigned to its assets and liabilities is the implied fair value of goodwill. If the implied fair value of goodwill is less than the carrying value of goodwill, an impairment loss is recognized equal to the difference.

As of October 31, 2015, we performed our annual impairment assessment of goodwill and determined that it is more likely than not that the fair values of the reporting units exceed their carrying amount. We will continue to monitor and evaluate the carrying value of goodwill. If market and economic conditions or business performance deteriorate, this could increase the likelihood of us recording an impairment charge. However, management believes it is not reasonably likely that an impairment will occur at any of its reporting units over the next twelve months.

In-Process Research and Development. We value tangible and intangible assets acquired through our business acquisitions, including in-process research and development ("IPR&D"), at fair value. We determine IPR&D through established valuation techniques for various projects for the development of new products and technologies and capitalize IPR&D as an intangible asset. If the projects are completed, the intangible asset will be amortized to earnings over the expected life of the completed product. If the R&D projects are abandoned, we will write-off the related intangible asset.

The value of IPR&D is determined using the income approach, which discounts expected future cash flows from projects under development to their net present value. Each project is analyzed and estimates and judgments are made to determine the technological innovations included in the utilization of core technology, the complexity, cost, time to complete development, any alternative future use or current technological feasibility and the stage of completion.

Income Taxes. We evaluate the realizability of our net deferred tax assets and assess the need for a valuation allowance on a quarterly basis. The future benefit to be derived from our deferred tax assets is dependent upon our ability to generate sufficient future taxable income in each jurisdiction of the right type to realize the assets. We record a valuation allowance to reduce our net deferred tax assets to the amount that may be more likely than not to be realized. To the extent we established a valuation allowance an expense is recorded within the provision for income taxes line in the consolidated statements of operations and comprehensive income. In future periods, if we were to determine that it was more likely than not that we would not be able to realize the recorded amount of our remaining net deferred tax assets, an adjustment to the valuation allowance would be recorded as an increase to income tax expense in the period such determination was made.

Accounting for income taxes requires a two-step approach to recognize and measure uncertain tax positions. The first step is to evaluate the tax position for recognition by determining if, based on the technical merits, it is more likely than not that the position will be sustained upon audit, including resolutions of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50% likely of being realized upon ultimate settlement. We re-evaluate these uncertain tax positions on a quarterly basis. This evaluation is based on factors including, but not limited to, changes in facts or circumstances, changes in tax law, effectively settled issues under audit and new audit activity. Any change in these factors could result in the recognition of a tax benefit or an additional charge to the tax provision.

Results of Operations

The following table sets forth, for the periods indicated, the percentage of total net revenues of certain line items included in our consolidated statements of operations and comprehensive income data:

	Years Ended December 31,		
	2015	2014	2013
Net revenues:			
Product	85.7%	86.3%	84.9%
Service	14.3	13.7	15.1
Total net revenues	100.0%	100.0%	100.0%
Cost of revenues:			
Product	45.9	47.9	50.4
Service	9.5	8.8	9.8
Total cost of revenues	55.4%	56.7%	60.2%
Gross profit	44.6%	43.3%	39.8%
Research and development	8.4	8.1	9.5
Selling, general and administrative	15.9	16.9	21.2
Insurance reimbursement	—	—	(0.1)
Acquisition costs	—	0.1	—
Restructuring	0.2	0.3	0.2
Amortization of intangible assets	0.8	0.6	0.3
Income from operations	19.3%	17.3%	8.7%
Interest income, net	0.3	0.1	0.1
Income before income taxes	19.6%	17.4%	8.8%
Provision for income taxes	4.6	2.6	3.5
Net income	15.0%	14.8%	5.3%

Year Ended December 31, 2015 Compared to 2014 and 2013

Net Revenues

	Years Ended December 31,			% Change	% Change
(Dollars in millions)	2015	2014	2013	in 2015	in 2014
Product	$697.1	$673.8	$568.3	3.5%	18.6%
Service	116.4	107.1	101.1	8.8	5.9
Total net revenues	$813.5	$780.9	$669.4	4.2%	16.7%

Product revenues increased $23.3 million during 2015 compared to 2014. Product revenues related to our semiconductor capital equipment manufacturer and semiconductor device manufacturer customers increased by $9.4 million in 2015 compared to 2014, mainly as a result of volume increases. Our product revenues for all other markets which exclude semiconductor capital equipment and semiconductor device product applications, increased by $13.9 million in 2015 compared to 2014. The increase in our non-semiconductor markets was primarily attributed to volume increases of $13.2 million in our solar market and $12.3 million in our data storage market. These increases were partially offset by a decrease of $11.8 million in our general industrial markets.

Product revenues increased $105.5 million during 2014 compared to 2013. Product revenues related to our semiconductor capital equipment manufacturer and semiconductor device manufacturer customers increased by $83.5 million in 2014 compared to 2013, mainly the result of volume increases. Product revenues for all other markets, which exclude semiconductor capital equipment and semiconductor device product applications, increased by $22.0 million. The increase in our non-semiconductor markets was primarily attributed to volume increases of $15.4 million in our general industrial markets.

Service revenues consisted mainly of fees for services related to the repair of our products, software license and maintenance, installation services and training. Service revenues increased $9.3 million during 2015 compared to 2014. This increase was primarily attributed to increases in the semiconductor markets, which increased $8.1 million. Service revenues, which increased $6.0 million during 2014 compared to 2013 was primarily attributed to increases in the semiconductor markets.

Total international net revenues, including product and service, were $355.2 million for 2015 or 43.7% of net revenues, compared to $332.4 million for 2014, or 42.6% of net revenues, and $305.5 million, or 45.6% of net revenues for 2013. The majority of our foreign revenues are from sales to customers in Korea and Japan.

The following table sets forth our net revenues by reportable segment:

Net Revenues

(Dollars in millions)	Years Ended December 31, 2015	2014	2013	% Change in 2015	% Change in 2014
Advanced Manufacturing Capital Equipment	$ 662.9	$ 620.3	$ 509.0	6.9%	21.9%
Global Service	116.4	107.0	101.1	8.8	5.9
Asia Region Sales	203.2	183.1	159.8	11.0	14.6
Other	79.5	82.7	73.2	(3.9)	12.9
Corporate and Eliminations	(248.5)	(212.2)	(173.7)	(17.1)	(22.2)
Total net revenues	$ 813.5	$ 780.9	$ 669.4	4.2%	16.6%

Net revenues for the Advanced Manufacturing Capital Equipment segment increased by 6.9% in 2015 compared to 2014 and 21.9% in 2014 compared to 2013. Net revenues for the Asia Region Sales segment increased by 11.0% in 2015 compared to 2014 and 14.6% in 2014 compared to 2013. These increases for the Advance Manufacturing Capital Equipment and Asia Region Sales segments are primarily attributed to net revenues from semiconductor capital equipment manufacture customers and semiconductor device manufacture customers, which increased by 3.2% in 2015 compared to 2014 and increased by 17.2% in 2014 compared to 2013. The increase in 2015 in the Asia Region Sales segment was also the result of increased sales to the solar market.

Net revenues for the Global Service segment increased by 8.8% in 2015 compared to 2014 and 5.9% in 2014 compared to 2013. These increases in the Global Service segment are primarily attributed to net revenues from semiconductor capital equipment manufacture and semiconductor device manufacture customers.

Net revenues in our Other segment decreased by 3.9% in 2015 compared to 2014 and increased by 12.9% in 2014 compared to 2013. This segment, which has operations mainly in Europe, is not impacted as much by the semiconductor capital equipment market. The decrease of 3.9% in 2015 compared to 2014 is primarily attributed to the negative impact of foreign exchange rates, partially offset by a 6.4% increase in our other advanced markets, which exclude semiconductor capital equipment manufacture and semiconductor device manufacture customers. The increase of 12.9% in 2014 compared to 2013 is primarily attributed to an increase of 8.0% in 2014 compared to 2013 in our other advanced markets which exclude semiconductor capital equipment manufacture and semiconductor device manufacture customers.

The following is gross profit as a percentage of net revenues by product and service:

Gross Profit

(As a percentage of net revenues)	Years Ended December 31, 2015	2014	2013	% Points Change in 2015	% Points Change in 2014
Product	46.4%	44.5%	40.6%	1.9%	3.9%
Service	34.0	35.6	35.3	(1.6)	0.3
Total gross profit percentage	44.6%	43.3%	39.8%	1.3%	3.5%

Gross profit on product revenues increased by 1.9 percentage points during 2015 compared to 2014. The increase was primarily due to an increase of 1.2 percentage points due to favorable product mix and 0.9 percentage points due to higher revenue volumes.

Gross profit on product revenues increased by 3.9 percentage points during 2014 compared to 2013. The increase was primarily due to an increase of 2.8 percentage points due to higher revenue volumes and 1.4 percentage points due to lower excess and obsolete inventory charges.

Cost of service revenues consists primarily of costs for providing services for repair and training which includes salaries, related expenses and other overhead costs. Service gross profit for 2015 decreased by 1.6 percentage points primarily due to a decrease of 2.3 percentage points due to unfavorable product mix. Service gross profit for 2014 was relatively flat compared to 2013.

The following is gross profit as a percentage of net revenues by reportable segment:

Gross Profit

(As a percentage of net revenues)	Years Ended December 31, 2015	2014	2013	% Points Change in 2015	% Points Change in 2014
Advanced Manufacturing Capital Equipment	43.2%	41.0%	36.4%	2.2%	4.6%
Global Service	34.0	35.6	35.3	(1.6)	0.3
Asia Region Sales	13.5	14.9	16.8	(1.4)	(1.9)
Other	30.0	33.7	35.4	(3.7)	(1.7)
Corporate, Eliminations	5.7	4.6	4.0	1.1	0.6
Total net revenues	44.6%	43.3%	39.8%	1.3%	3.5%

Gross profit for the Advanced Manufacturing Capital Equipment segment increased 2.2 percentage points in 2015 compared to 2014. The increase was primarily due to favorable product mix and higher revenue volumes. Gross profit for the Advanced Manufacturing Capital Equipment segment increased 4.6 percentage points in 2014 compared to 2013. The increase was primarily due to higher revenue volumes, lower excess and obsolete inventory charges and favorable product mix.

Gross profit for the Asia Region Sales segment decreased 1.4 percentage points in 2015 compared to 2014 and decreased 1.9 percentage points in 2014 compared to 2013. The decrease of 1.4 percentage points in 2015 compared to 2014 was primarily due to the unfavorable impact of foreign exchange, partially offset by favorable product mix. The decrease of 1.9 percentage points in 2014 compared to 2013 was primarily due to unfavorable impact of foreign exchange and unfavorable product mix.

Gross profit for the Other segment decreased 3.7 percentage points in 2015 compared to 2014 and decreased 1.7 percentage points in 2014 compared to 2013. The decrease of 3.7 percentage points in 2015 compared to

2014 was primarily due to unfavorable product mix. The decrease of 1.7 percentage points in 2014 compared to 2013 was primarily due to unfavorable product mix, partially offset by lower material costs.

Research and Development

(Dollars in millions)	Years Ended December 31, 2015	2014	2013	% Change in 2015	% Change in 2014
Research and development expenses	$68.3	$62.9	$63.6	8.6%	(1.1)%

Research and development expenses increased $5.4 million during 2015 compared to 2014. The increase was primarily attributed to an increase of $2.4 million in compensation related costs, primarily due to strategic headcount additions, including variable compensation and fringe benefits and an increase of $1.6 million in project materials.

Research and development expenses decreased $0.7 million during 2014 compared to 2013. The decrease was primarily attributed to a decrease of $0.7 million in consulting and professional fees and a decrease of $0.5 million in project materials, partially offset by an increase of $0.5 million in compensation-related costs, including variable compensation and fringe benefits.

Our research and development is primarily focused on developing and improving our instruments, components, subsystems and process control solutions to improve process performance and productivity.

We have thousands of products and our research and development efforts primarily consist of a large number of projects related to these products, none of which is individually material to us. Current projects typically have durations of 3 to 30 months depending upon whether the product is an enhancement of existing technology or a new product. Our current initiatives include projects to enhance the performance characteristics of older products, to develop new products and to integrate various technologies into subsystems. These projects support in large part, the transition in the semiconductor industry to smaller integrated circuit geometries and in the flat panel display and solar markets to larger substrate sizes, which require more advanced process control technology. Research and development expenses consist primarily of salaries and related expenses for personnel engaged in research and development, fees paid to consultants, material costs for prototypes and other expenses related to the design, development, testing and enhancement of our products.

We believe that the continued investment in research and development and ongoing development of new products are essential to the expansion of our markets, and we expect to continue to make significant investment in research and development activities. We are subject to risks if products are not developed in a timely manner, due to rapidly changing customer requirements and competitive threats from other companies and technologies. Our success primarily depends on our products being designed into new generations of equipment for the semiconductor industry and other advanced technology markets. We develop products that are technologically advanced so that they are positioned to be chosen for use in each successive generation of semiconductor capital equipment. If our products are not chosen to be designed into our customers' products, our net revenues may be reduced during the lifespan of those products.

Selling, General and Administrative

(Dollars in millions)	Years Ended December 31, 2015	2014	2013	% Change in 2015	% Change in 2014
Selling, general and administrative expenses	$129.1	$131.8	$142.0	(2.1)%	(7.2)%

Selling, general and administrative expenses decreased $2.7 million during 2015 compared to 2014. The decrease was primarily attributed to a $2.0 million decrease in consulting and professional fees and a $1.1 million related to favorable foreign exchange. These decreases were partially offset by a $1.0 million increase in compensation related costs, including variable compensation and fringe benefits.

Selling, general and administrative expenses decreased $10.2 million during 2014 compared to 2013. The decrease was primarily attributed to a $7.1 million decrease in compensation-related costs primarily related to headcount reductions, variable compensation and lower fringe benefits, a $2.6 million decrease due to executive retirement costs recorded in the fourth quarter of 2013 as a result of the retirement of our Chief Executive Officer in December 2013 and a $1.2 million decrease related to favorable foreign exchange. These decreases were partially offset by a $1.3 million increase in volume-related commission expenses.

Insurance Reimbursement

	Years Ended December 31,			% Change	% Change
(Dollars in millions)	**2015**	**2014**	**2013**	**in 2015**	**in 2014**
Insurance reimbursement	$—	$—	$(1.1)	—%	100.0%

In 2013, we recovered $1.1 million from our insurance company relating to a 2012 litigation settlement with certain former shareholders.

Acquisition Costs

	Years Ended December 31,			% Change	% Change
(Dollars in millions)	**2015**	**2014**	**2013**	**in 2015**	**in 2014**
Acquisition costs	$—	$0.5	$0.2	(94.0)%	191.4%

We incurred $30 thousand of acquisition costs in 2015, which was comprised primarily of legal fees related to our March 2015 acquisition of Precisive. We incurred $0.5 million of legal and filing fees in 2014 related to our June 2014 acquisition of GP. We incurred $0.2 million of legal fees in 2013 related to our March 2013 acquisition of Alter.

Restructuring

	Years Ended December 31,			% Change	% Change
(Dollars in millions)	**2015**	**2014**	**2013**	**in 2015**	**in 2014**
Restructuring	$2.1	$2.5	$1.4	(15.8)%	80.7%

During 2015, we recorded $2.1 million of restructuring charges primarily related to severance costs associated with a reduction in workforce of 266 people, primarily related to the outsourcing of a non-core foreign manufacturing process and the consolidation of certain foreign manufacturing locations. These restructuring activities were substantially complete by December 31, 2015.

During 2014, we recorded $2.5 million of restructuring charges primarily for severance-related costs related to a reduction in workforce of approximately 131 people throughout our company. This restructuring was substantially complete at December 31, 2014.

During 2013, we recorded $1.4 million of restructuring charges primarily related to the consolidation of certain facilities and a small reduction in headcount. The majority of these costs were related to severance expenses and the consolidation and headcount reduction were substantially completed by December 31, 2013.

Amortization of Intangible Assets

(Dollars in millions)	Years Ended December 31, 2015	2014	2013	% Change in 2015	% Change in 2014
Amortization of intangible assets	$6.8	$4.9	$2.1	36.8%	131.2%

Amortization increased $1.9 million during 2015 compared to 2014 and was primarily attributable to increases in amortization expense from the intangible assets acquired through our acquisition of Precisive in 2015 and our acquisition of GP in 2014.

Amortization increased $2.8 million during 2014 compared to 2013. This increase was primarily attributable to an increase of $3.2 million of amortization related to intangible assets from our acquisition of GP in 2014. This increase was offset by intangible assets that became fully amortized during the year.

Interest Income, Net

(Dollars in millions)	Years Ended December 31, 2015	2014	2013	% Change in 2015	% Change in 2014
Interest income, net	$2.9	$1.3	$0.9	128.2%	36.9%

Net interest income for 2015 increased $1.6 million compared to 2014 and net interest income for 2014 increased $0.4 million compared to 2013. These increases were attributable to a change in the mix of our investment portfolio as well as larger average investment balances.

Provision for Income Taxes

(Dollars in millions)	Years Ended December 31, 2015	2014	2013	% Change in 2015	% Change in 2014
Provision for income taxes	$37.2	$20.6	$23.5	80.3%	(12.4)%

The provision for income taxes in each of 2015, 2014 and 2013 are comprised of U.S. federal, state and foreign income taxes.

Our effective tax rate for the years 2015, 2014 and 2013 was 23.3%, 15.1%, and 39.7%, respectively. The effective tax rate in 2015, and related income tax expense, was lower than the U.S. statutory tax rate primarily due to the release of income tax reserves related to the effective settlement of a U.S. tax audit. The 2015 effective tax rate also benefited from foreign earnings taxed at lower rates, the deduction for domestic production activities, and the research credit offset by state income taxes.

The effective tax rate in 2014, and related income tax expense, was lower than the U.S. statutory tax rate primarily due to the release of income tax reserves related to the effective settlement of various foreign and U.S. tax audits. The effective tax rate for 2014 also benefited from a release of income tax reserves related to the expiration of the statute of limitations for a previously open tax year, a benefit resulting from foreign tax credits recognized on the payment of a dividend from a foreign subsidiary and a benefit from a change in tax election resulting in the recording of a deferred tax asset for previously unavailable foreign net operating losses. The 2014 effective tax rate also benefited from foreign earnings taxed at lower rates, the deduction for domestic production activities, and a research credit offset by state income taxes.

The effective tax rate in 2013, and related income tax expense, was higher than the U.S. statutory tax rate primarily due to a decision to pay currently, at a substantially reduced rate, taxes on certain accumulated earnings of our Israeli subsidiary relating to calendar year periods 2002-2011 covered under an Israeli tax holiday that expired on December 31, 2011. This additional charge was partially offset by additional U.S. tax incentives realized, and earnings of our international subsidiaries taxed at rates lower than the U.S. statutory rate. Additionally, certain tax incentives realized by us were reinstated under The American Taxpayer Relief Act of 2012 that was signed into law on January 2, 2013.

Our effective tax rate has been impacted on a year to year basis by the expiration and extension of certain U.S. tax benefits. These tax benefits were extended in 2013 retroactively to 2012. This retroactive reinstatement resulted in a reduction to our 2013 effective tax rate of approximately 4%. The tax benefits expired again as of December 31, 2014 but were reinstated in December 2015. The net impact of these tax benefits, exclusive of the retroactive reinstatement, was approximately 1%, 1% and 2% for 2015, 2014 and 2013, respectively. As part of the 2015 extension, some of the tax benefits, including the research credit, were made permanent.

At December 31, 2015, the total amount of gross unrecognized tax benefits, which excludes interest and penalties, was approximately \$4.3 million. At December 31, 2014, our total amount of gross unrecognized tax benefits, which excludes interest and penalties, was approximately \$19.6 million. The net decrease at December 31, 2015 from December 31, 2014 was primarily attributable to current year releases in reserves for existing uncertain tax positions. At December 31, 2015, excluding interest and penalties, there were \$4.3 million of net unrecognized tax benefits that, if recognized, would impact our annual effective tax rate. We accrue interest and, if applicable, penalties for any uncertain tax positions. Interest and penalties were classified as a component of income tax expense. At December 31, 2015, 2014 and 2013, we had accrued interest on unrecognized tax benefits of approximately \$0.2 million, \$0.6 million and \$2.2 million, respectively.

Over the next 12 months it is reasonably possible that we may recognize approximately \$0.9 million of previously net unrecognized tax benefits, excluding interest and penalties, related to state and foreign tax positions as a result of the expiration of statutes of limitation. We are subject to examination by U.S. federal, state and foreign tax authorities. The United States Internal Revenue Service commenced an examination of our U.S. federal tax filings for tax years 2011 through 2013 during the quarter ended March 31, 2015. This audit was effectively settled in the fourth quarter upon our acceptance of the income tax examination changes. As part of the audit, we consented to extend the U.S. statute of limitations for tax year 2011 until September 30, 2016.

We also effectively settled another U.S. federal income tax examination, for tax years 2007 through 2009, during the fourth quarter of 2014 upon receipt of an audit approval letter from the Joint Committee on Taxation. The statute of limitations for tax years 2007 through 2009 expired on December 31, 2015.

The U.S. statute of limitations remains open for tax years 2011 through present. The statute of limitations for our tax filings in other jurisdictions varies between fiscal years 2008 through present.

On a quarterly basis, we evaluate both positive and negative evidence that affect the realizability of net deferred tax assets and assess the need for a valuation allowance. The future benefit to be derived from our deferred tax assets is dependent upon our ability to generate sufficient future taxable income in each jurisdiction of the right type to realize the assets. During 2015, we decreased our valuation allowance by \$20.6 million, primarily related to the expiration of U.S. capital loss carry-forwards. During 2014, we decreased our valuation allowance by \$0.3 million, primarily related to the effective settlement of a foreign tax audit. In 2013, we decreased our valuation allowance by \$0.4 million, primarily related to the expiration of U.S. capital loss carry-forwards.

In 2015, we recorded a net benefit to income tax expense of \$7.3 million, excluding interest and penalties, primarily due to reserve releases related to the effective settlement of a U.S. income tax audit. In 2014, we recorded a net benefit to income tax expense of \$13.4 million, excluding interest and penalties, due to reserve releases related to the effective settlement of various U.S. and foreign audits along with the expiration of the statute of limitations related to a previously open tax year.

Our future effective income tax rate depends on various factors, such as tax legislation and the geographic composition of our pre-tax income. We monitor these factors and timely adjust our effective tax rate accordingly. Additionally, the effective tax rate could be adversely affected by changes in the valuation of deferred tax assets and liabilities. In particular, the carrying value of deferred tax assets, which are predominantly in the United States, is dependent on our ability to generate sufficient future taxable income in the United States. While we believe we have adequately provided for all tax positions, amounts asserted by taxing authorities could materially differ from our accrued positions as a result of uncertain and complex application of tax regulations. Additionally, the recognition and measurement of certain tax benefits include estimates and judgment by management and inherently includes subjectivity. Accordingly, we may record additional provisions due to U.S. federal, state, and foreign tax-related matters in the future as we revise estimates or settle or otherwise resolve the underlying matters.

Liquidity and Capital Resources

Cash, cash equivalents and short-term marketable investments totaled $658.2 million at December 31, 2015, an increase of $66.0 million compared to $592.2 million at December 31, 2014. This increase was mainly attributed to net income and non-cash charges, partially offset by increases in working capital, dividend payments to common stockholders, repurchases of common stock, the acquisition of Precisive, and purchases of property, plant and equipment. The primary driver in our current and anticipated future cash flows is and will continue to be cash generated from operations, consisting mainly of our net income, excluding non-cash changes and changes in operating assets and liabilities. In periods when our sales are growing, higher sales to customers will result in increased trade receivables, and inventories will generally increase as we build products for future sales. This may result in lower cash generated from operations. Conversely, in periods when our sales are declining, our trade accounts receivable and inventory balances will generally decrease, resulting in increased cash from operations.

Net cash provided by operating activities was $138.3 million for 2015 and resulted mainly from net income of $122.3 million, which included non-cash net charges of $48.9 million, partially offset by an increase in working capital of $32.2 million. The increase in working capital consisted primarily of an increase in inventories of $14.5 million, a decrease in accounts payable of $10.6 million, a decrease in income taxes of $8.5 million, a decrease in other current and non-current liabilities of $2.8 million and an increase in other current and non-current assets of $1.5 million. These increases are partially offset by an increase in accrued compensation of $3.3 million and a decrease in trade accounts receivable of $2.3 million.

Net cash provided by operating activities was $101.9 million for 2014 and resulted mainly from net income of $115.8 million, which included non-cash net charges of $49.9 million, partially offset by an increase in working capital of $63.4 million. The increase in working capital consisted primarily of a decrease in income taxes of $32.7 million, an increase in inventories of $20.9 million, mainly related to an increase in business levels, a decrease in accrued compensation of $13.6 million, mainly related to a payment made to our former CEO who retired in 2013 and a decrease in accounts payable of $5.5 million. These increases are partially offset by a decrease in trade accounts receivable of $6.1 million, mainly due to better collections and a decrease in the number of days of sales outstanding in receivables and an increase in other current and non-current liabilities of $3.5 million.

Net cash used in investing activities was $167.4 million for 2015 and resulted primarily from $9.9 million of cash primarily used for the acquisition of Precisive, $12.4 million used for the purchase of production-related equipment, and $145.1 million from net purchases of investments. Net cash used in investing activities was $24.8 million for 2014 and resulted primarily from $87.0 million used for the acquisition of GP and $13.2 million used for the purchase of production-related equipment, partially offset by $73.7 million from net maturities and sales of investments.

Net cash used in financing activities was $47.1 million for 2015 and consisted primarily of $36.0 million in dividend payments made to common stockholders and $13.3 million for the repurchase of common stock. Net cash used in financing activities was $52.7 million for 2014 and consisted primarily of $34.9 million in dividend payments made to common stockholders and $20.8 million for the repurchase of common stock.

Our Japanese subsidiary has lines of credit and short-term borrowing arrangements with two financial institutions, which generally expire and are renewed at three month intervals. These lines of credit provided for aggregate borrowings as of December 31, 2015 of up to an equivalent of $19.1 million U.S. dollars. There were no borrowings outstanding under these arrangements at December 31, 2015 and December 31, 2014.

We have provided financial guarantees for certain unsecured borrowings and have standby letters of credit, some of which do not have fixed expiration dates. At December 31, 2015, our maximum exposure as a result of these financial guarantees and standby letters of credit was approximately $1.5 million.

On July 25, 2011, our board of directors approved a share repurchase program for the repurchase of up to an aggregate of $200 million of our common stock from time to time in open market purchases, privately negotiated transactions or through other appropriate means. The timing and quantity of any shares repurchased will depend upon a variety of factors, including business conditions, stock market conditions and business development activities, including, but not limited to, merger and acquisition opportunities. These repurchases may be commenced, suspended or discontinued at any time without prior notice. During 2015, we repurchased approximately 369,000 shares of our common stock for $13.3 million at an average price of $36.01 per share. During 2014, we repurchased approximately 728,000 shares of our common stock for $20.8 million at an average price of $28.59 per share.

Holders of our common stock are entitled to receive dividends when and if they are declared by our board of directors. For the year ended December 31, 2015, we paid cash dividends of $36.0 million in aggregate, or $0.675 per share. Future dividend declarations, if any, as well as the record and payment dates for such dividends, are subject to the final determination of our board of directors.

On February 8, 2016, our board of directors declared a quarterly cash dividend of $0.17 per share to be paid on March 11, 2016 to shareholders of record as of February 29, 2016.

Our total cash and cash equivalents and short-term marketable investments at December 31, 2015 consisted of $328.4 million held in the United States and $329.8 million held by our foreign subsidiaries, substantially all of which would be subject to tax in the United States if returned to the United States. We believe that our current cash and investments position and available borrowing capacity, together with the cash anticipated to be generated from our operations, will be sufficient to satisfy our estimated working capital, planned capital expenditure requirements, and any future cash dividends declared by our board of directors or share repurchases through at least the next 12 months and the foreseeable future.

Future payments due under debt, lease and purchase commitment obligations as of December 31, 2015 are as follows:

	Payment Due By Period					
Contractual Obligations (In thousands)	**Total**	**Less than 1 Year**	**1-3 years**	**3-5 years**	**After 5 years**	**Other (1)**
Operating lease obligations	$ 27,629	$ 7,315	$11,786	$ 6,262	$ 2,266	$ —
Purchase obligations(2)	121,820	100,558	8,625	8,397	4,240	—
Other long-term liabilities reflected on the Balance Sheet under U.S. GAAP(3)	21,482	—	—	8,445	8,554	4,483
Total	$170,931	$107,873	$20,411	$23,104	$15,060	$4,483

(1) This balance relates to our reserve for uncertain tax positions.
(2) As of December 31, 2015, we have entered into purchase commitments for certain inventory components and other equipment and services used in our normal operations. The majority of these purchase commitments covered by these arrangements are for periods of less than one year and aggregate to approximately $121.8 million.
(3) The majority of this balance relates to accrued compensation for certain executives related to supplemental retirement benefits.

Derivatives

We enter into derivative instruments for risk management purposes only, including derivatives designated as hedging instruments and those utilized as economic hedges. We operate internationally, and in the normal course of business, are exposed to fluctuations in interest rates and foreign exchange rates. These fluctuations can increase the costs of financing, investing and operating the business. We have used derivative instruments, such as forward contracts, to manage certain foreign currency exposure.

By nature, all financial instruments involve market and credit risks. We enter into derivative instruments with major investment grade financial institutions and no collateral is required. We have policies to monitor the credit risk of these counterparties. While there can be no assurance, we do not anticipate any material non-performance by any of these counterparties.

We hedge a portion of our forecasted foreign currency denominated intercompany sales of inventory, over a maximum period of eighteen months, using forward foreign exchange contracts accounted for as cash-flow hedges related to Japanese, South Korean, British, Euro and Taiwanese currencies. To the extent these derivatives are effective in offsetting the variability of the hedged cash flows, and otherwise meet the hedge accounting criteria, changes in the derivatives' fair value are not included in current earnings but are included in accumulated other comprehensive income in stockholders' equity. These changes in fair value will subsequently be reclassified into earnings, as applicable, when the forecasted transaction occurs. To the extent that a previously designated hedging transaction is no longer an effective hedge, any ineffectiveness measured in the hedging relationship is recorded currently in earnings in the period it occurs. The cash flows resulting from forward exchange contracts are classified in the consolidated statements of cash flows as part of cash flows from operating activities. We do not enter into derivative instruments for trading or speculative purposes.

To the extent that hedge accounting criteria is not met, the foreign currency forward contracts are considered economic hedges and changes in the fair value of these contracts are recorded immediately in earnings in the period in which they occur. These include hedges that are used to reduce exchange rate risks arising from the change in fair value of certain foreign currency denominated assets and liabilities (i.e., payables, receivables) and other economic hedges where the hedge accounting criteria were not met.

We had forward exchange contracts with notional amounts totaling $90.0 million outstanding at December 31, 2015 of which $34.8 million were outstanding to exchange Korean Won to U.S. dollars. We had forward exchange contracts with notional amounts totaling $28.6 million outstanding at December 31, 2014 of which $12.5 million were outstanding to exchange Korean Won to U.S. dollars.

As of December 31, 2015, the unrealized gain that will be reclassified from accumulated other comprehensive income to earnings over the next twelve months is immaterial. The ineffective portions of the derivatives are recorded in selling, general and administrative costs and were immaterial in 2015, 2014 and 2013.

We hedge certain intercompany accounts receivable and intercompany loans with forward exchange contracts. Typically, as these derivatives hedge existing amounts that are denominated in foreign currencies, the derivatives do not qualify for hedge accounting. The net foreign exchange loss on these derivatives was immaterial in each of 2015, 2014 and 2013.

Realized and unrealized gains and losses on forward exchange contracts that do not qualify for hedge accounting are recognized currently in earnings. The cash flows resulting from forward exchange contracts are classified in our consolidated statements of cash flows as part of cash flows from operating activities. We do not hold or issue derivative financial instruments for trading purposes.

Gains and losses on forward exchange contracts that qualify for hedge accounting are classified in cost of products in 2015, 2014 and 2013 and totaled a gain of \$3.5 million, a loss of \$0.2 million and a gain of \$1.1 million, respectively.

Off-Balance Sheet Arrangements

We do not have any financial partnerships with unconsolidated entities, such as entities often referred to as structured finance, special purpose entities or variable interest entities which are often established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes. Accordingly, we are not exposed to any financing, liquidity, market or credit risk that could arise if we had such relationships.

Recently Issued Accounting Pronouncements

In November 2015, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2015-17, "Income Taxes (Topic 740): Balance Sheet Classification of Deferred Taxes." Current generally accepted accounting principles require an entity to separate deferred income tax liabilities and assets into current and noncurrent amounts in a classified statement of financial position. The new amendments in this ASU require that deferred tax liabilities and assets be classified as noncurrent in a classified statement of financial position. The provisions of this ASU are effective for annual periods beginning after December 15, 2016, and for annual and interim periods thereafter. Early application is permitted. We prospectively adopted this ASU during the fourth quarter of 2015. Adoption of this ASU did not have a material impact on our financial position and results of operations.

In September 2015, the FASB issued ASU 2015-16, "Business Combinations (Topic 805)—Simplifying the Accounting for Measurement-Period Adjustments." The new standard requires that an acquirer recognize adjustments to provisional amounts that are identified during the measurement period in the reporting period in which the adjustments are identified, including the cumulative effect of the change in the provisional amount as if the accounting had been completed at the acquisition date. This ASU is effective for reporting periods beginning after December 15, 2015. Adoption of this ASU could have a material impact on our financial position and results of operations.

In July 2015, the FASB issued ASU 2015-11, "Inventory (Topic 330)—Simplifying the Measurement of Inventory." The amendments in this ASU apply to all inventory that is measured using first-in, first-out or average cost. The new standard requires that an entity measure inventory within the scope of this update at the lower of cost and net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. The amendments in this ASU are effective for fiscal years beginning after December 15, 2016, including interim periods within those fiscal years. Adoption of this ASU is not expected to have a material impact on our financial position and results of operations.

In August 2014, the FASB issued ASU 2014-15, "Presentation of Financial Statements—Going Concern (Subtopic 205-40): Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern." Under the new guidance, management will be required to assess an entity's ability to continue as a going concern, and to provide related footnote disclosures in certain circumstances. The provisions of this ASU are effective for annual periods beginning after December 15, 2016, and for annual and interim periods thereafter. This ASU is not expected to have an impact on our financial statements or disclosures.

In May 2014 the FASB issued ASU 2014-09, “Revenue from Contracts with Customers (Topic 606),” which supersedes all existing revenue recognition requirements, including most industry-specific guidance. This standard requires a company to recognize revenue when it transfers goods and services to customers in an amount that reflects the consideration that the company expects to be entitled to in exchange for those goods or services. The ASU also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and assets recognized from costs incurred to obtain or fulfill a contract. This pronouncement is effective for annual reporting periods beginning after December 15, 2017, including interim periods within that reporting period. The two permitted transition methods under the new standard are the full retrospective method, in which case the standard would be applied to each prior reporting period presented, or the modified retrospective method, in which case the cumulative effect of applying the standard would be recognized at the date of initial application. We have not yet selected a transition method. We are currently evaluating the requirements of ASU 2014-09 and have not yet determined its impact on our consolidated financial statements.

Item 7A. *Quantitative and Qualitative Disclosures about Market Risk*

Market Risk and Sensitivity Analysis

Our primary exposures to market risks include fluctuations in interest rates on our investment portfolio, as well as fluctuations in foreign currency exchange rates.

Foreign Exchange Rate Risk

We mainly enter into forward exchange contracts to reduce currency exposure arising from intercompany sales of inventory. We also enter into forward exchange contracts to reduce foreign exchange risks arising from the change in fair value of certain foreign currency denominated assets and liabilities.

We had forward exchange contracts with notional amounts totaling $90.0 million outstanding and a net fair value asset of $1.2 million at December 31, 2015. We had forward exchange contracts with notional amounts totaling $28.6 million outstanding and a net fair value asset of $2.0 million at December 31, 2014. The potential fair value loss for a hypothetical 10% adverse change in the currency exchange rate on our forward exchange contracts at December 31, 2015 and 2014 would be immaterial.

Interest Rate Risk

The fair value of our cash and investment portfolio at December 31, 2015 and 2014 approximated its carrying value. Interest rate risk was estimated as the potential decrease in fair value resulting from a hypothetical 10% increase in interest rates for securities contained in the investment portfolio. The resulting hypothetical fair value was not materially different from the year-end carrying values.

From time to time, we have outstanding lines of credit and short-term borrowings with variable interest rates, primarily denominated in Japanese yen. There were no borrowings outstanding under these arrangements at December 31, 2015 or December 31, 2014.

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

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of
MKS Instruments, Inc.:

In our opinion, the consolidated financial statements listed in the index appearing under Item 15(a)(1) present fairly, in all material respects, the financial position of MKS Instruments, Inc. and its subsidiaries at December 31, 2015 and December 31, 2014, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2015 in conformity with accounting principles generally accepted in the United States of America. In addition, in our opinion, the financial statement schedule listed in the index appearing under Item 15(a)(2) presents fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2015, based on criteria established in Internal Control—Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for these financial statements and financial statement schedule, for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on these financial statements, on the financial statement schedule, and on the Company's internal control over financial reporting based on our integrated 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 audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As discussed in Note 2 to the consolidated financial statements, the Company changed its method of classification of its investments.

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

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

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
February 26, 2016

MKS Instruments, Inc.

Consolidated Balance Sheets

	December 31, 2015	December 31, 2014
	(in thousands, except share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 227,574	$ 305,437
Short-term investments	430,663	286,795
Trade accounts receivable, net of allowance for doubtful accounts of $1,760 and $2,250 at December 31, 2015 and 2014, respectively	101,883	106,362
Inventories	152,631	155,169
Deferred income taxes	—	14,017
Other current assets	26,760	27,512
Total current assets	939,511	895,292
Property, plant and equipment, net	68,856	72,776
Goodwill	199,703	192,381
Intangible assets, net	44,027	46,389
Other assets	21,250	17,206
Total assets	$1,273,347	$1,224,044
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 23,177	$ 34,166
Accrued compensation	28,424	26,970
Income taxes payable	4,024	6,702
Other current liabilities	35,359	35,789
Total current liabilities	90,984	103,627
Other liabilities	21,482	38,595
Commitments and contingencies (Note 23)		
Stockholders' equity:		
Preferred stock, $0.01 par value, 2,000,000 shares authorized; none issued and outstanding	—	—
Common stock, no par value, 200,000,000 shares authorized; 53,199,720 and 53,154,666 shares issued and outstanding at December 31, 2015 and 2014, respectively	113	113
Additional paid-in capital	744,725	734,732
Retained earnings	427,214	349,061
Accumulated other comprehensive loss	(11,171)	(2,084)
Total stockholders' equity	1,160,881	1,081,822
Total liabilities and stockholders' equity	$1,273,347	$1,224,044

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

MKS Instruments, Inc.

Consolidated Statements of Operations and Comprehensive Income

	Years Ended December 31,		
	2015	2014	2013
	(in thousands, except per share data)		
Net revenues:			
Products	$697,104	$673,819	$568,317
Services	116,420	107,050	101,103
Total net revenues	813,524	780,869	669,420
Cost of revenues:			
Cost of products	373,764	374,200	337,464
Cost of services	76,888	68,903	65,382
Total cost of revenues (exclusive of amortization shown separately below)	450,652	443,103	402,846
Gross profit	362,872	337,766	266,574
Research and development	68,305	62,888	63,570
Selling, general and administrative	129,087	131,828	142,014
Insurance reimbursement	—	—	(1,071)
Acquisition costs	30	499	171
Restructuring	2,074	2,464	1,364
Amortization of intangible assets	6,764	4,945	2,139
Income from operations	156,612	135,142	58,387
Interest income	2,999	1,323	999
Interest expense	143	72	85
Income before income taxes	159,468	136,393	59,301
Provision for income taxes	37,171	20,615	23,525
Net income	$122,297	$115,778	$ 35,776
Other comprehensive income:			
Changes in value of financial instruments designated as cash flow hedges, net of tax (benefit) expense(1)	$ (469)	$ 1,210	$ 62
Foreign currency translation adjustments, net of tax of $0 for 2015, 2014 and 2013	(8,301)	(14,707)	(3,604)
Unrealized loss on investments, net of tax benefit(2)	(317)	(460)	(40)
Total comprehensive income	$113,210	$101,821	$ 32,194
Net income per share:			
Basic	$ 2.30	$ 2.17	$ 0.67
Diluted	$ 2.28	$ 2.16	$ 0.67
Cash dividends paid per common share	$ 0.675	$ 0.655	$ 0.64
Weighted average common shares outstanding:			
Basic	53,282	53,232	53,061
Diluted	53,560	53,515	53,481

(1) Tax (benefit) expense was $(85), $144 and $551 for the years ended December 31, 2015, 2014 and 2013, respectively.

(2) Tax benefit was $(58), $(55), and $(355) for the years ended December 31, 2015, 2014 and 2013, respectively.

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

MKS Instruments, Inc.

Consolidated Statements of Stockholders' Equity

(in thousands, except share data)	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income/(Loss)	Total Stockholders' Equity
Balance at December 31, 2012	52,748,849	$113	$718,005	$278,583	$ 15,455	$1,012,156
Net issuance under stock-based plans	721,601		(464)			(464)
Stock-based compensation			13,992			13,992
Tax effect from stock-based plans			495			495
Stock repurchase	(107,000)		(1,457)	(1,418)		(2,875)
Cash dividend				(33,975)		(33,975)
Comprehensive income (net of tax):						
Net income				35,776		35,776
Other comprehensive loss					(3,582)	(3,582)
Balance at December 31, 2013	53,363,450	$113	$730,571	$278,966	$ 11,873	$1,021,523
Net issuance under stock-based plans	519,128		2,492			2,492
Stock-based compensation			11,315			11,315
Tax effect from stock-based plans			331			331
Stock repurchase	(727,912)		(9,977)	(10,832)		(20,809)
Cash dividend				(34,851)		(34,851)
Comprehensive income (net of tax):						
Net income				115,778		115,778
Other comprehensive loss					(13,957)	(13,957)
Balance at December 31, 2014	53,154,666	$113	$734,732	$349,061	$ (2,084)	$1,081,822
Net issuance under stock-based plans	414,187		1,262			1,262
Stock-based compensation			13,013			13,013
Tax effect from stock-based plans			837			837
Stock repurchase	(369,133)		(5,119)	(8,175)		(13,294)
Cash dividend				(35,969)		(35,969)
Comprehensive income (net of tax):						
Net income				122,297		122,297
Other comprehensive loss					(9,087)	(9,087)
Balance at December 31, 2015	53,199,720	$113	$744,725	$427,214	$(11,171)	$1,160,881

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

MKS Instruments, Inc.

Consolidated Statements of Cash Flows

	Years Ended December 31,		
	2015	2014	2013
		(in thousands)	
Cash flows from operating activities:			
Net income	$ 122,297	$ 115,778	$ 35,776
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	22,103	20,514	17,102
Stock-based compensation	13,013	11,315	13,992
Provision for excess and obsolete inventory	13,602	12,131	21,671
Provision for doubtful accounts	(255)	668	631
Deferred income taxes	410	5,264	(3,089)
Excess tax benefits from stock-based compensation	(904)	(447)	(935)
Other	275	139	200
Changes in operating assets and liabilities:			
Trade accounts receivable	2,334	6,103	(36,153)
Inventories	(14,501)	(20,910)	(29,797)
Income taxes	(8,462)	(32,744)	24,441
Other current and non-current assets	(1,526)	(325)	1,355
Accrued compensation	3,335	(13,563)	13,677
Other current and non-current liabilities	(2,797)	3,469	(5,956)
Accounts payable	(10,629)	(5,478)	23,172
Net cash provided by operating activities	138,295	101,914	76,087
Cash flows from investing activities:			
Acquisition of business, net of cash acquired	(9,910)	(86,950)	(2,326)
Purchases of investments	(385,999)	(360,813)	(550,076)
Maturities of investments	179,285	249,359	417,566
Sales of investments	61,659	185,186	110,928
Purchases of property, plant and equipment	(12,414)	(13,183)	(12,410)
Other	8	1,593	(216)
Net cash used in investing activities	(167,371)	(24,808)	(36,534)
Cash flows from financing activities:			
Proceeds from short-term borrowings	—	—	6
Payments on short-term borrowings	—	—	(776)
Repurchases of common stock	(13,294)	(20,809)	(2,875)
Net proceeds related to employee stock awards	1,262	2,492	(464)
Dividend payments	(35,969)	(34,851)	(33,975)
Excess tax benefit from stock-based compensation	904	447	935
Net cash used in financing activities	(47,097)	(52,721)	(37,149)
Effect of exchange rate changes on cash and cash equivalents	(1,690)	(7,850)	(1,090)
(Decrease) increase in cash and cash equivalents	(77,863)	16,535	1,314
Cash and cash equivalents at beginning of year	305,437	288,902	287,588
Cash and cash equivalents at end of year	$ 227,574	$ 305,437	$ 288,902
Supplemental disclosure of cash flow information:			
Cash paid during the period for:			
Interest	$ 34	$ 44	$ 60
Income taxes	$ 43,239	$ 47,948	$ 11,878

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

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(in thousands, except share and per share data)

1) Business Description

MKS Instruments, Inc. ("MKS" or the "Company") was founded in 1961 and is a global provider of instruments, subsystems and process control solutions that measure, control, power, monitor and analyze critical parameters of advanced manufacturing processes to improve process performance and productivity of advanced manufacturing processes. MKS groups its products into three product groups based upon the similarity of the product function, type of product and manufacturing processes. These three groups of products are: Instruments, Control and Vacuum Products; Power and Reactive Gas Products; and Analytical Solutions Products. MKS' products are derived from its core competencies in pressure measurement and control, materials delivery, gas composition analysis, control and information technology, power and reactive gas generation and vacuum technology.

The Company has four reportable segments: Advanced Manufacturing Capital Equipment, Global Service, Asia Region Sales and Other.

2) Basis of Presentation

The consolidated financial statements include the accounts of MKS Instruments, Inc. and its wholly owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

Use of Estimates

The consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"). The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. On an on-going basis, management evaluates its estimates and judgments, including those related to revenue recognition and allowance for doubtful accounts, inventory valuation, warranty costs, stock-based compensation, intangible assets, goodwill, other long-lived assets, in process research and development and other acquisition expenses and income taxes. Management bases its estimates and judgments 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.

Reclassifications

Certain prior year amounts have been reclassified to be consistent with current year classifications.

Management has the ability, if necessary, to liquidate any of its investments in order to meet the Company's liquidity needs in the next 12 months. Accordingly, those investments with contractual maturities greater than one year from the date of purchase are classified as short-term on the accompanying balance sheets. This election has resulted in investments with contractual maturities greater than one year from the date of purchase previously presented as long-term investments to be re-classified to short-term investments for the period ended December 31, 2014.

(in thousands, except share and per share data)

The table below reflects the adjustment in the balance sheet line items for the period ended December 31, 2014.

	December 31, 2014		
	As previously reported	Adjustment	As adjusted
Short-term investments	$129,594	$ 157,201	$286,795
Long-term investments	$157,201	$(157,201)	$ —

The footnotes that were affected by the adjustment for the period ended December 31, 2014 are discussed as follows:

Note 5—The fair value of short-term investments consists of the following:

	December 31, 2014		
Available-for-sale investments:	As previously reported	Adjustment	As adjusted
Time deposits and certificates of deposit	$ 20,900	$ 48	$ 20,948
Bankers acceptance drafts	82	—	82
Asset-backed securities	—	75,674	75,674
Corporate obligations	24,020	64,669	88,689
Municipal bonds	2,099	1,254	3,353
U.S. agency obligations	82,493	15,556	98,049
	$129,594	$157,201	$286,795

Short-term investments within the tables that reflect the gross unrealized gains and (losses) aggregated by investment category for available-for-sale investments as of December 31, 2014 (Note 5) and assets and liabilities of the Company measured at fair value on a recurring basis as of December 31, 2014 (Note 6) include all investments, including those investments that were presented as long-term investments as of December 31, 2014, to be consistent with the 2015 presentation.

3) Summary of Significant Accounting Policies

Revenue Recognition and Accounts Receivable Allowances

Revenue from product sales is recorded upon transfer of title and risk of loss to the customer provided that there is evidence of an arrangement, the sales price is fixed or determinable, and collection of the related receivable is reasonably assured. In most transactions, the Company has no obligations to customers after the date products are shipped other than pursuant to warranty obligations. In some instances, the Company provides installation, training, support and services to customers after the product has been shipped. The Company does not frequently enter into arrangements with multiple deliverables; however, for those revenue arrangements with multiple deliverables, the Company allocates revenue to each element based upon its relative selling price using vendor-specific objective evidence ("VSOE"), or third-party evidence ("TPE") or based upon the relative selling price using estimated prices if VSOE or TPE does not exist. The Company then recognizes revenue on each deliverable in accordance with its policies for product and service revenue recognition. The Company provides for the estimated costs to fulfill customer warranty obligations upon the recognition of the related revenue. Shipping and handling fees, if any, billed to customers are recognized as revenue. The related shipping and handling costs are recognized in cost of revenues. Accounts receivable allowances include sales returns and bad debt allowances. The Company monitors and tracks the amount of product returns and reduces revenue at the time of shipment for the estimated amount of such future returns, based on historical experience. The Company makes estimates evaluating its allowance for doubtful accounts. The Company continuously monitors collections and payments from its customers and maintains a provision for estimated credit losses based upon its historical experience and any specific customer collection issues that it has identified.

Research and Development

Research and development costs are expensed as incurred and consist mainly of compensation-related expenses and project materials. The Company's research and development efforts include numerous projects, which generally have a duration of 3 to 30 months. Acquired in-process research and development ("IPR&D") expenses, which are capitalized at fair value as an intangible asset until the related project is completed, are then amortized over the estimated useful life of the product. The Company monitors projects and, if they are abandoned, the Company immediately writes them off.

Advertising Costs

Advertising costs are expensed as incurred and were immaterial in 2015, 2014 and 2013.

Stock-Based Compensation

The accounting for share-based compensation expense requires the measurement and recognition of compensation expense for all share-based payment awards made to employees and directors based on estimated fair values. For restricted stock units ("RSUs"), the fair value is the fair value on the date of grant that normally vest over a three year period. The Company also provides employees the opportunity to purchase shares through an employee stock purchase plan. For shares issued under its employee stock purchase plan, the Company has estimated the fair value on the date of grant using the Black Scholes pricing model, which is affected by the Company's stock price as well as assumptions regarding a number of complex and subjective variables. These variables include the Company's expected stock price volatility over the term of the awards, expected life, risk free interest rate and expected dividends. The Company is also required to estimate forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from those estimates.

Management determined that blended volatility, a combination of historical and implied volatility, is more reflective of market conditions and a better indicator of expected volatility than historical or implied volatility alone. The assumptions used in calculating the fair value of share-based payment awards represent management's best estimates, but these estimates involve inherent uncertainties and the application of management judgment. As a result, if factors change and the Company uses different assumptions, its stock-based compensation expense could be materially different in the future.

Accumulated Other Comprehensive Income

For foreign subsidiaries where the functional currency is the local currency, assets and liabilities are translated into U.S. dollars at the current exchange rate on the balance sheet date. Revenue and expenses are translated at average rates of exchange prevailing during the year. Translation adjustments resulting from this process are recorded to Accumulated Other Comprehensive Income ("OCI"). Unrealized gains and losses on securities classified as available-for-sale are included in OCI in consolidated stockholders' equity. For derivative instruments designated as cash-flow hedges, the effective portion of the derivative's gain (loss) is initially reported as a component of OCI and is subsequently recognized in earnings when the hedged exposure is recognized in earnings.

Net Income Per Share

Basic net income per share is based on the weighted average number of common shares outstanding, and diluted net income per share is based on the weighted average number of common shares outstanding and all potential dilutive common equivalent shares outstanding. The dilutive effect of options is determined under the treasury stock method using the average market price for the period. Common equivalent shares are included in the per share calculations when the effect of their inclusion would be dilutive.

Cash and Cash Equivalents and Investments

All highly liquid investments with a maturity date of three months or less at the date of purchase are considered to be cash equivalents. The appropriate classification of investments in securities is determined at the time of purchase. Debt securities that the Company does not have the intent and ability to hold to maturity are classified as "available-for-sale" and are carried at fair value.

Effective December 31, 2015, the Company changed the method of classification of its investments previously classified as long-term investments to short-term investments within current assets and the balances for the prior year have been reclassified to conform to the current year's presentation. This new method classifies these securities as current or long-term based on the nature of the securities and the availability for use in current operations while the prior classification was based on the maturity dates of the investments. The Company believes this method is preferable because it is more reflective of the Company's assessment of its overall liquidity position.

The Company reviews its investment portfolio on a quarterly basis to identify and evaluate individual investments that have indications of possible impairment. The factors considered in determining whether a loss is other-than-temporary include: the length of time and extent to which fair market value has been below the cost basis, the financial condition and near-term prospects of the issuer, credit quality, and the Company's ability to hold the investment for a period of time sufficient to allow for any anticipated recovery in fair value.

Concentrations of Credit Risk

The Company's significant concentrations of credit risk consist principally of cash and cash equivalents, investments, forward exchange contracts and trade accounts receivable. The Company maintains cash and cash equivalents with financial institutions including some banks with which it had borrowings. The Company maintains investments primarily in U.S. Treasury and government agency securities and corporate debt securities. The Company enters into forward currency contracts with high credit-quality financial institutions in order to minimize credit risk exposure. The Company's customers are primarily concentrated in the semiconductor industry, and a limited number of customers account for a significant portion of the Company's revenues. The Company regularly monitors the creditworthiness of its customers and believes it has adequately provided for potential credit loss exposures. Credit is extended for all customers based primarily on financial condition, and collateral is not required.

The Company had one customer comprising 18%, 19% and 17% of net revenues for 2015, 2014 and 2013, respectively, and another customer comprising 13%, 13% and 12% of net revenues for 2015, 2014, and 2013, respectively. During the years 2015, 2014 and 2013, approximately 69%, 70% and 68% of the Company's net revenues, respectively, were from sales to semiconductor capital equipment manufacturers and semiconductor device manufacturers. There were two customers comprising 10% or more of the Company's accounts receivable balance as of December 31, 2015.

Inventories

Inventories are stated at the lower of cost or market, cost being determined using a standard costing system which approximates cost based on a first-in, first-out method. The Company regularly reviews inventory quantities on hand and records a provision to write-down excess and obsolete inventory to its estimated net realizable value, if less than cost, based primarily on its estimated forecast of product demand.

Property, Plant and Equipment

Property, plant and equipment are stated at cost. Expenditures for major renewals and betterments that extend the useful lives of property, plant and equipment are capitalized. Expenditures for maintenance and repairs are charged to expense as incurred. When assets are sold or otherwise disposed of, the cost and related accumulated depreciation are eliminated from the accounts and any resulting gain or loss is recognized in earnings.

Depreciation is provided on the straight-line method over the estimated useful lives of twenty to thirty-one and one-half years for buildings and three to seven years for machinery and equipment, furniture and fixtures and office equipment, which includes enterprise resource planning software. Leasehold improvements are amortized over the shorter of the lease term or the estimated useful life of the leased asset.

Intangible Assets

Intangible assets resulting from the acquisitions of businesses are estimated by management based on the fair value of assets acquired. These include acquired customer lists, technology, patents, trade names, covenants not to compete and IPR&D. Intangible assets are amortized from two to ten years on a straight-line basis which represents the estimated periods of benefit and the expected pattern of consumption.

Goodwill

Goodwill is the amount by which the cost of acquired net assets exceeded the fair value of those net assets on the date of acquisition. The Company allocates goodwill to reporting units at the time of acquisition or when there is a change in the reporting structure and bases that allocation on which reporting units will benefit from the acquired assets and liabilities. Reporting units are defined as operating segments or one level below an operating segment, referred to as a component. In 2015, the Company reallocated its goodwill based upon a change in its reporting structure. There was no goodwill impairment as a result of this change in reporting units. The Company assesses goodwill for impairment on an annual basis as of October 31 or more frequently when events and circumstances occur indicating that the recorded goodwill may be impaired.

The estimated fair value of the Company's reporting units were based on discounted cash flow models derived from internal earnings and internal and external market forecasts. Determining fair value requires the exercise of significant judgment, including judgments about appropriate discount rates, perpetual growth rates and the amount and timing of expected future cash flows. Discount rates are based on a weighted average cost of capital ("WACC"), which represents the average rate a business must pay its providers of debt and equity. The

WACC used to test goodwill is derived from a group of comparable companies. Assumptions in estimating future cash flows are subject to a high degree of judgment and complexity. The Company makes every effort to forecast these future cash flows as accurately as possible with the information available at the time the forecast is developed.

The Company has the option of first assessing qualitative factors to determine whether it is necessary to perform the current two-step impairment test or the Company can perform the two-step impairment test without performing the qualitative assessment. For the reporting units that did not experience any significant adverse changes in their business or reporting structures or any other adverse changes, and the reporting unit's fair value substantially exceeded its amount from the prior year assessment, the Company performed the qualitative "Step 0" assessment. In performing the qualitative Step 0 assessment, the Company considered certain events and circumstances specific to the reporting unit and to the entity as a whole, such as macroeconomic conditions, industry and market considerations, overall financial performance and cost factors when evaluating whether it is more likely than not that the fair value of the reporting unit is less than its carrying amount. For the remaining reporting units that did not meet these criteria, the Company performed the two-step goodwill impairment test. Under the two-step goodwill impairment test, the Company compared the fair value of each reporting unit to its respective carrying amount, including goodwill. If the fair value of the reporting unit exceeds the fair value, the second step of the goodwill impairment test must be completed to measure the amount of impairment loss, if any. The second step compares the implied fair value of goodwill with the carrying value of goodwill. The implied fair value is determined by allocating the fair value of the reporting unit to all of the assets and liabilities of that unit, the excess of the fair value of the amounts assigned to its assets and liabilities it the implied fair value of goodwill. If the implied fair value of goodwill is less than the carrying amount of goodwill, an impairment loss is recognized equal to the difference.

As of October 31, 2015, the Company performed its annual impairment assessment of goodwill and determined that it is more likely than not that the fair values of the reporting units exceed their carrying amount.

Impairment of Long-Lived Assets

The Company evaluates the recoverability of its long-lived assets whenever events and changes in circumstances indicate that the carrying amount of an asset may not be fully recoverable. This periodic review may result in an adjustment of estimated depreciable lives or asset impairment. When indicators of impairment are present, the carrying values of the asset are evaluated in relation to their operating performance and future undiscounted cash flows of the underlying business. If the future undiscounted cash flows are less than their carrying value, impairment exists. The impairment is measured as the difference between the carrying value and the fair value of the underlying asset. Fair values are based on estimates of market prices and assumptions concerning the amount and timing of estimated future cash flows and assumed discount rates, reflecting varying degrees of perceived risk.

Foreign Exchange

The functional currency of the majority of the Company's foreign subsidiaries is the applicable local currency. For those subsidiaries, assets and liabilities are translated to U.S. dollars at year-end exchange rates. Income and expense accounts are translated at the average exchange rates prevailing during the year. The resulting translation adjustments are included in accumulated other comprehensive income (loss) in consolidated stockholders' equity. Foreign exchange transaction gains and losses, which arise from transaction activity, are reflected in selling, general and administrative expenses in the statement of operations.

Net foreign exchange gains and losses resulting from re-measurement are included in selling general and administrative expense and were a loss of $1,388, a loss of $314 and a loss of $1,937, respectively, for the years ended December 31, 2015, 2014 and 2013. These amounts do not reflect the corresponding gain (loss) from foreign exchange contracts. See Note 7 "Derivatives" regarding foreign exchange contracts.

Income Taxes

The Company records income taxes using the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax bases, and also for operating loss and tax credit carry-forwards. On a quarterly basis, the Company evaluates both the positive and negative evidence that affects the realizability of net deferred tax assets and assesses the need for a valuation allowance. The future benefit to be derived from its deferred tax assets is dependent upon its ability to generate sufficient future taxable income in each jurisdiction of the right type to realize the assets. The Company records a valuation allowance to reduce its net deferred tax assets to the amount that is more likely than not to be realized. To the extent the Company establishes a valuation allowance an expense will be recorded as a component of the provision for income taxes on the statement of operations. During 2013, the Company decreased its valuation allowance by $395 primarily related to the expiration of U.S. capital loss carry-forwards. As a result, the valuation allowance was $27,102 at December 31, 2013. During 2014, the Company decreased its valuation allowance by $339 primarily related to the effective settlement of a foreign tax audit. As a result, the valuation allowance was $26,763 at December 31, 2014. During 2015, the Company decreased its valuation allowance by $20,636 primarily related to the expiration of U.S. capital loss carry-forwards. As a result, the valuation allowance was $6,127 at December 31, 2015.

Accounting for income taxes requires a two-step approach to recognize and measure uncertain tax positions. The first step is to evaluate the tax position for recognition by determining if, based on the technical merits, it is more likely than not that the position will be sustained upon audit, including resolutions of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50% likely of being realized upon ultimate settlement. The Company re-evaluates these uncertain tax positions on a quarterly basis. This evaluation is based on factors including, but not limited to, changes in facts or circumstances, changes in tax law, effectively settled issues under audit and new audit activity. Any change in these factors could result in the recognition of a tax benefit or an additional charge to the tax provision.

4) Recently Issued Accounting Pronouncements

In November 2015, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2015-17, "Income Taxes (Topic 740): Balance Sheet Classification of Deferred Taxes." Current generally accepted accounting principles require an entity to separate deferred income tax liabilities and assets into current and noncurrent amounts in a classified statement of financial position. The new amendments in this ASU require that deferred tax liabilities and assets be classified as noncurrent in a classified statement of financial position. The provisions of this ASU are effective for annual periods beginning after December 15, 2016, and for annual and interim periods thereafter. Early application is permitted. The Company prospectively adopted this ASU during the fourth quarter of 2015. Adoption of this ASU did not have a material impact on the Company's financial position and results of operations.

In September 2015, the FASB issued ASU 2015-16, "Business Combinations (Topic 805)—Simplifying the Accounting for Measurement-Period Adjustments." The new standard requires that an acquirer recognize adjustments to provisional amounts that are identified during the measurement period in the reporting period in which the adjustments are identified, including the cumulative effect of the change in the provisional amount as if the accounting had been completed at the acquisition date. This ASU is effective for reporting periods beginning after December 15, 2015. Adoption of this ASU could have a material impact on the Company's financial position and results of operations.

(in thousands, except share and per share data)

In July 2015, the FASB issued ASU 2015-11, "Inventory (Topic 330)—Simplifying the Measurement of Inventory." The amendments in this ASU apply to all inventory that is measured using first-in, first-out or average cost. The new standard requires that an entity measure inventory within the scope of this update at the lower of cost and net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. The amendments in this ASU are effective for fiscal years beginning after December 15, 2016, including interim periods within those fiscal years. Adoption of this ASU is not expected to have a material impact on the Company's financial position and results of operations.

In August 2014, the FASB issued ASU 2014-15, "Presentation of Financial Statements—Going Concern (Subtopic 205-40): Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern." Under the new guidance, management will be required to assess an entity's ability to continue as a going concern, and to provide related footnote disclosures in certain circumstances. The provisions of this ASU are effective for annual periods beginning after December 15, 2016, and for annual and interim periods thereafter. This ASU is not expected to have an impact on the Company's financial statements or disclosures.

In May 2014, the FASB issued ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)," which supersedes all existing revenue recognition requirements, including most industry-specific guidance. This standard requires a company to recognize revenue when it transfers goods and services to customers in an amount that reflects the consideration that the company expects to be entitled to in exchange for those goods or services. The ASU also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and assets recognized from costs incurred to obtain or fulfill a contract. This pronouncement is effective for annual reporting periods beginning after December 15, 2017, including interim periods within that reporting period. The two permitted transition methods under the new standard are the full retrospective method, in which case the standard would be applied to each prior reporting period presented, or the modified retrospective method, in which case the cumulative effect of applying the standard would be recognized at the date of initial application. The Company has not yet selected a transition method. The Company is currently evaluating the requirements of ASU 2014-09 and we have not yet determined its impact on the Company's consolidated financial statements.

5) Investments

The fair value of investments classified as short-term consists of the following:

	Years Ended December 31,	
Available-for-sale investments:	**2015**	**2014**
Time deposits and certificates of deposit	$ 11,892	$ 20,948
Bankers acceptance drafts	728	82
Asset-backed securities	124,997	75,674
Corporate obligations	165,109	88,689
Municipal bonds	8,355	3,353
U.S. agency obligations	119,582	98,049
	$430,663	$286,795

(in thousands, except share and per share data)

The following table shows the gross unrealized gains and (losses) aggregated by investment category for available-for-sale investments:

As of December 31, 2015:	Cost	Gross Unrealized Gains	Gross Unrealized (Losses)	Estimated Fair Value
Short-term investments:				
Available-for-sale investments:				
Time deposits and certificates of deposit	$ 11,893	$—	$ (1)	$ 11,892
Bankers acceptance drafts	728	—	—	728
Asset-backed securities	125,271	—	(274)	124,997
Corporate obligations	165,445	5	(341)	165,109
Municipal bonds	8,346	13	(4)	8,355
U.S. agency obligations	119,699	3	(120)	119,582
	$431,382	$21	$(740)	$430,663

As of December 31, 2014:	Cost	Gross Unrealized Gains	Gross Unrealized (Losses)	Estimated Fair Value
Short-term investments:				
Available-for-sale investments:				
Time deposits and certificates of deposit	$ 20,949	$—	$ (1)	$ 20,948
Bankers acceptance drafts	82	—	—	82
Asset-backed securities	75,778	5	(109)	75,674
Corporate obligations	88,871	3	(185)	88,689
Municipal bonds	3,357	—	(4)	3,353
U.S. agency obligations	98,051	16	(18)	98,049
	$287,088	$24	$(317)	$286,795

The table above, which shows the gross unrealized gains and (losses) aggregated by investment category for available-for-sale investments as of December 31, 2014, reflects the inclusion of investments with contractual maturities greater than one year from the date of purchase within short-term investments.

Management has the ability, if necessary, to liquidate any of its investments in order to meet the Company's liquidity needs in the next 12 months. Accordingly, those investments with contractual maturities greater than one year from the date of purchase are classified as short-term on the accompanying balance sheets.

Interest income is accrued as earned. Dividend income is recognized as income on the date the stock trades "ex-dividend." The cost of marketable securities sold is determined by the specific identification method and realized gains or losses are reflected in income and was not material in 2015, 2014 and 2013.

6) Fair Value Measurements

In accordance with the provisions of fair value accounting, a fair value measurement assumes that the transaction to sell an asset or transfer a liability occurs in the principal market for the asset or liability or, in the absence of a principal market, the most advantageous market for the asset or liability and defines fair value based upon an exit price model.

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

Level 1	Quoted prices in active markets for identical assets or liabilities as of the reporting date. Active markets are those in which transactions for the asset or liability occur in sufficient frequency and volume to provide pricing information on an ongoing basis.
Level 2	Observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities. Level 2 assets and liabilities include debt securities with quoted prices that are traded less frequently than exchange-traded instruments or securities or derivative contracts that are valued using a pricing model with inputs that are observable in the market or can be derived principally from or corroborated by observable market data.
Level 3	Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. Level 3 assets and liabilities include financial instruments whose value is determined using pricing models, discounted cash flow methodologies, or similar techniques, as well as instruments for which the determination of fair value requires significant management judgment or estimation.

In certain cases, the inputs used to measure fair value may fall into different levels of the fair value hierarchy. In such cases, the Company categorizes such assets and liabilities based on the lowest level input that is significant to the fair value measurement in its entirety. The Company's assessment of the significance of a particular input to the fair value measurement in its entirety requires judgment and considers factors specific to the asset.

(in thousands, except share and per share data)

Assets and liabilities of the Company measured at fair value on a recurring basis as of December 31, 2015, are summarized as follows:

		Fair Value Measurements at Reporting Date Using		
Description	December 31, 2015	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents:				
Money market funds	$106,099	$106,099	$ —	$—
Bankers acceptance drafts	11	—	11	—
Corporate obligations	330	—	330	—
Available-for-sale investments:				
Time deposits and certificates of deposit	11,892	—	11,892	—
Bankers acceptance drafts	728	—	728	—
Asset-backed securities	124,997	—	124,997	—
Corporate obligations	165,109	—	165,109	—
Municipal bonds	8,355	—	8,355	—
U.S. agency obligations	119,582	—	119,582	—
Derivatives—currency forward contracts	1,486	—	1,486	—
Total assets	$538,589	$106,099	$432,490	$—
Liabilities:				
Derivatives—currency forward contracts	$ 263	$ —	$ 263	$—
Reported as follows:				
Assets:				
Cash and cash equivalents(1)	$106,440	$106,099	$ 341	$—
Short-term investments	430,663	—	430,663	—
Other current assets	1,486	—	1,486	—
	$538,589	$106,099	$432,490	$—
Liabilities:				
Other current liabilities	$ 263	$ —	$ 263	$—

(1) The cash and cash equivalent amounts presented in the table above do not include cash of $110,118 and non-negotiable time deposits of $11,016 as of December 31, 2015.

(in thousands, except share and per share data)

Assets and liabilities of the Company measured at fair value on a recurring basis as of December 31, 2014, are summarized as follows:

		Fair Value Measurements at Reporting Date Using		
Description	December 31, 2014	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents:				
Money market funds	$129,092	$129,092	$ —	$—
Bankers acceptance drafts	131	—	131	—
Corporate obligations	700	—	700	—
Available-for-sale investments:				
Time deposits and certificates of deposit	20,948	—	20,948	—
Bankers acceptance drafts	82	—	82	—
Asset-backed securities	75,674	—	75,674	—
Corporate obligations	88,689	—	88,689	—
Municipal bonds	3,353	—	3,353	—
U.S. agency obligations	98,049	—	98,049	—
Derivatives—currency forward contracts	2,110	—	2,110	—
Total assets	$418,828	$129,092	$289,736	$—
Liabilities:				
Derivatives—currency forward contracts	$ —	$ —	$ —	$—
Reported as follows:				
Assets:				
Cash and cash equivalents(1)	$129,923	$129,092	$ 831	$—
Short-term investments(2)	286,795	—	286,795	—
Other current assets	2,110	—	2,110	—
	$418,828	$129,092	$289,736	$—
Liabilities:				
Other current liabilities	$ —	$ —	$ —	$—

(1) The cash and cash equivalent amounts presented in the table above do not include cash of $167,517 and non-negotiable time deposits of $7,997 as of December 31, 2014.

(2) Short-term investments as of December 31, 2014 includes investments with contractual maturities greater than one year from the date of purchase within short-term investments as management has the ability, if necessary, to liquidate any of its investments in order to meet the Company's liquidity needs in the next 12 months.

Money Market Funds

Money market funds are cash and cash equivalents, and are classified within Level 1 of the fair value hierarchy.

Available-For-Sale Investments

As of December 31, 2015, available-for-sale investments consisted of time deposits and drafts denominated in the Euro currency, certificates of deposit, bankers acceptance drafts, asset-backed securities (which include auto loans, credit card receivables and equipment trust receivables), corporate obligations, municipal bonds and U.S. agency obligations.

The Company measures its debt and equity investments at fair value. The Company's available-for-sale investments are classified within Level 1 and Level 2 of the fair value hierarchy.

Derivatives

As a result of the Company's global operating activities, the Company is exposed to market risks from changes in foreign currency exchange rates, which may adversely affect its operating results and financial position. When deemed appropriate, the Company minimizes its risks from foreign currency exchange rate fluctuations through the use of derivative financial instruments. The principal market in which the Company executes its foreign currency contracts is the institutional market in an over-the-counter environment with a relatively high level of price transparency. The market participants usually are large commercial banks. The forward foreign currency exchange contracts are valued using broker quotations, or market transactions and are classified within Level 2 of the fair value hierarchy.

7) Derivatives

The Company enters into derivative instruments for risk management purposes only, including derivatives designated as hedging instruments and those utilized as economic hedges. The Company operates internationally and, in the normal course of business, is exposed to fluctuations in interest rates and foreign exchange rates. These fluctuations can increase the costs of financing, investing and operating the business. The Company has used derivative instruments, such as forward contracts, to manage certain foreign currency exposure.

By nature, all financial instruments involve market and credit risks. The Company enters into derivative instruments with major investment grade financial institutions and no collateral is required. The Company has policies to monitor the credit risk of these counterparties. While there can be no assurance, the Company does not anticipate any material non-performance by any of these counterparties.

The Company hedges a portion of its forecasted foreign currency denominated intercompany sales of inventory, over a maximum period of eighteen months, using forward foreign exchange contracts accounted for as cash-flow hedges related to Japanese, South Korean, British, Euro and Taiwanese currencies. To the extent these derivatives are effective in off-setting the variability of the hedged cash flows, and otherwise meet the hedge accounting criteria, changes in the derivatives' fair value are not included in current earnings but are included in OCI in stockholders' equity. These changes in fair value will subsequently be reclassified into earnings, as applicable, when the forecasted transaction occurs. To the extent that a previously designated hedging transaction is no longer an effective hedge, any ineffectiveness measured in the hedging relationship is recorded currently in earnings in the period it occurs. The cash flows resulting from forward exchange contracts are classified in the consolidated statements of cash flows as part of cash flows from operating activities. The Company does not enter into derivative instruments for trading or speculative purposes.

To the extent the hedge accounting criteria is not met, the related foreign currency forward contracts are considered as economic hedges and changes in the fair value of these contracts are recorded immediately in earnings in the period in which they occur. These include hedges that are used to reduce exchange rate risks arising from the change in fair value of certain foreign currency denominated assets and liabilities (i.e., payables, receivables) and other economic hedges where the hedge accounting criteria were not met.

(in thousands, except share and per share data)

As of December 31, 2015 and 2014, the Company had outstanding forward foreign exchange contracts with gross notional values of $89,989 and $28,650, respectively. The following tables provide a summary of the primary net hedging positions and corresponding fair values held as of December 31, 2015 and 2014:

	December 31, 2015	
Currency Hedged (Buy/Sell)	Gross Notional Value	Fair Value (1)
U.S. Dollar/Japanese Yen	$26,848	$ (136)
U.S. Dollar/South Korean Won	34,777	915
U.S. Dollar/Euro	10,987	19
U.S. Dollar/U.K. Pound Sterling	4,587	61
U.S. Dollar/Taiwan Dollar	12,790	364
Total	$89,989	$1,223

	December 31, 2014	
Currency Hedged (Buy/Sell)	Gross Notional Value	Fair Value (1)
U.S. Dollar/Japanese Yen	$ 8,035	$1,107
U.S. Dollar/South Korean Won	12,512	372
U.S. Dollar/Euro	2,060	185
U.S. Dollar/U.K. Pound Sterling	1,308	70
U.S. Dollar/Taiwan Dollar	4,735	232
Total	$28,650	$1,966

(1) Represents the receivable (payable) amount included in the consolidated balance sheet.

The following table provides a summary of the fair value amounts of the Company's derivative instruments:

	Years Ended December 31,	
Derivatives Designated as Hedging Instruments	2015	2014
Derivative assets:		
Forward exchange contracts	$1,486	$1,966
Derivative liabilities:		
Forward exchange contracts	(263)	—
Total net derivative asset designated as hedging instruments (1)	$1,223	$1,966

(1) The derivative asset of $1,486 and derivative liability of $(263) are classified in other current assets and other current liabilities in the consolidated balance sheet as of December 31, 2015. The derivative asset of $1,966 is classified in other current assets in the consolidated balance sheet as of December 31, 2014. These foreign exchange contracts are subject to a master netting agreement with one financial institution. However, the Company has elected to record these contracts on a gross basis in the balance sheet.

The net amount of existing gains as of December 31, 2015 that is expected to be reclassified from OCI into earnings within the next twelve months is immaterial.

(in thousands, except share and per share data)

The following table provides a summary of the (losses) gains on derivatives designated as hedging instruments:

Derivatives Designated as Cash Flow Hedging Instruments	Years Ended December 31, 2015	2014	2013
Forward exchange contracts:			
Net loss recognized in OCI (1)	$(3,748)	$(984)	$ (48)
Net gain (loss) reclassified from OCI into income (2)	$ 3,520	$(160)	$1,086

(1) Net change in the fair value of the effective portion classified in OCI.
(2) Effective portion classified as cost of products in 2015, 2014 and 2013.

The following table provides a summary of the (losses) gains on derivatives not designated as hedging instruments:

Derivatives Not Designated as Hedging Instruments	Years Ended December 31, 2015	2014	2013
Forward exchange contracts:			
Net (loss) gain recognized in income (1)	$(40)	$101	$(215)

(1) The Company enters into foreign exchange contracts to hedge against changes in the balance sheet, including accounts receivable and intercompany loans, for certain subsidiaries. These derivatives are not designated as hedging instruments.

8) Inventories

Inventories consist of the following:

	Years Ended December 31, 2015	2014
Raw material	$ 78,352	$ 81,121
Work-in-process	23,297	26,604
Finished goods	50,982	47,444
	$152,631	$155,169

Inventory-related excess and obsolete charges of $13,602, $12,131 and $21,671 were recorded in cost of products for the years ended December 31, 2015, 2014 and 2013, respectively. Included in excess and obsolete charges for 2013 was $6,423 of special charges for obsolete inventory related to a unique product in a solar application as a result of slowing market conditions, which provided uncertainty as to the net realizable value of this inventory.

(in thousands, except share and per share data)

9) Property, Plant and Equipment

Property, plant and equipment consist of the following:

	Years Ended December 31,	
	2015	2014
Land	$ 8,535	$ 8,650
Buildings	68,881	66,885
Machinery and equipment	119,739	122,720
Furniture and fixtures, office equipment and software	61,490	59,972
Leasehold improvements	21,303	21,353
Construction in progress	4,171	3,647
	284,119	283,227
Less: accumulated depreciation	215,263	210,451
	$ 68,856	$ 72,776

Depreciation of property, plant and equipment totaled $15,339, $15,569 and $14,964 for the years ended 2015, 2014 and 2013, respectively.

10) Acquisitions

Precisive, LLC

On March 17, 2015, the Company acquired Precisive, LLC ("Precisive") for $12,085, net of cash acquired of $435. The purchase price includes a deferred payment amount of $2,600 to cover any potential indemnification claims, which amount will be paid to the sellers after 15 months assuming there are no indemnification claims. Precisive is an innovative developer of optical analyzers based on Tunable Filter Spectroscopy, which provide real-time gas analysis in the natural gas and hydrocarbon processing industries, including refineries, hydrocarbon processing plants, gas-to-power machines, biogas processes and fuel gas transportation and metering, while delivering customers a lower total cost of ownership.

The following table summarizes the estimated fair value of the assets acquired and liabilities assumed at the date of acquisition:

Current assets	$ 693
Non-current assets	18
Intangible assets	5,110
Goodwill	7,042
Total assets acquired	12,863
Total current liabilities assumed	(343)
Fair value of assets acquired and liabilities assumed	12,520
Less cash acquired	(435)
Total purchase price, net of cash acquired	$12,085

(in thousands, except share and per share data)

Substantially all of the purchase price was deductible for tax purposes. The following table reflects the allocation of the acquired intangible assets and related estimates of useful lives. These acquired intangibles will be amortized on a straight-line basis, which approximates the pattern of use.

Order backlog	$ 50	18 months
Customer relationships	1,430	8 years
Exclusive patent license	2,600	10 years
Trade names	210	10 years
Developed technology	820	10 years
	$5,110	

The fair value of the acquired intangibles was determined using the income approach. This acquisition resulted in a purchase price that exceeded the estimated fair value of tangible and intangible assets, the excess amount of which was allocated to goodwill. The Company believes the amount of goodwill relative to identifiable intangible assets relates to several factors including: (1) potential buyer-specific synergies related to market opportunities for a combined product offering; (2) potential to leverage the Company's sales force and intellectual property to attract new customers and revenue; and (3) potential to strengthen and expand into new but complementary markets, including targeting new applications such as natural gas processing, hydrocarbon processing and other oil and gas segments.

The results of this acquisition were included in the Company's consolidated operations beginning on March 17, 2015. The pro forma consolidated statements reflecting the operating results of Precisive, had it been acquired January 1, 2014, would not differ materially from the operating results of the Company as reported for the year ended December 31, 2015. Precisive is included in the Company's Instruments, Control and Vacuum Products group and the Advanced Manufacturing Capital Equipment reportable segment.

Granville-Phillips

On May 30, 2014, the Company acquired Granville-Phillips ("GP"), a division of Brooks Automation, Inc., for $86,950. GP is a leading global provider of vacuum measurement and control instruments to the semiconductor, thin film and general industrial markets. The Company believes that the amount of goodwill relative to identifiable intangible assets relates to several factors, including: a well-regarded leader in indirect vacuum gauges, a premium brand, an excellent reputation for quality, reliability and performance and an assembled workforce. The acquisition reflects the Company's strategy to grow our semiconductor business, while diversifying into other high growth advanced markets.

The following table summarizes the estimated fair value of the assets acquired and liabilities assumed at the date of acquisition:

Inventory	$ 5,198
Property and equipment	299
Other assets	191
Intangible assets	38,850
Goodwill	42,587
Warranty liability	(175)
Total purchase price	$86,950

(in thousands, except share and per share data)

Substantially all of the purchase price was deductible for tax purposes. The following table reflects the allocation of the acquired intangible assets and related estimates of useful lives. These acquired intangibles are being amortized on a straight-line basis.

Customer relationships	$21,250	7 years
Trademark and trade names	1,900	12 years
Developed technology	15,700	9-12 years
	$38,850	

This transaction resulted in an amount of purchase price that exceeded the estimated fair value of tangible and intangible assets, which was allocated to goodwill. The Company believes that the amount of goodwill relative to identifiable intangible assets relates to several factors including: (1) potential buyer-specific synergies related to market opportunities for a combined product offering; (2) potential to leverage the Company's sales force and intellectual property to attract new customers and revenue and (3) potential to strengthen the Company's position in the vacuum gauge market.

The results of this acquisition were included in the Company's consolidated operations beginning on May 30, 2014. The pro forma consolidated statements reflecting the operating results of GP, had it been acquired as of January 1, 2013, would not differ materially from the operating results of the Company as reported for the year ended December 31, 2014. GP is included in the Company's Instruments, Control and Vacuum Products group and the Advanced Manufacturing Capital Equipment reportable segment.

Alter S.r.l

On March 12, 2013, the Company acquired Alter S.r.l. ("Alter"), located in Reggio Emilia, Italy. The aggregate purchase price, net of cash acquired and after final debt and working capital adjustments was $2,426. Total cash paid as of June 30, 2013, net of cash acquired of $21 was $2,058. Alter develops advanced microwave power generators, components and systems for industrial microwave heating, microwave plasma coating and semiconductor applications. This acquisition strengthened the Company's existing microwave plasma expertise and product portfolio, and extended its opportunity into high growth, non-plasma microwave applications for industrial processes, food and beverage manufacturing and other markets.

The following table summarizes the estimated fair value of the assets acquired and liabilities assumed at the date of the acquisition:

Current assets	$1,053
Property and equipment	211
Intangible assets	2,806
Goodwill	381
Other assets	67
Total assets acquired	4,518
Debt (Note 15)	770
Deferred taxes and other liabilities	1,301
Total liabilities assumed	2,071
Total purchase price	2,447
Cash acquired	(21)
Total purchase price, net of cash acquired	$2,426

(in thousands, except share and per share data)

The intangible assets associated with the acquisition are not deductible for tax purposes. The following table reflects the allocation of the acquired intangible assets and related estimates of useful lives. These acquired intangibles will be amortized on a straight-line basis.

Current developed technology	$2,208	9 year useful life
Trademarks and trade names	598	3 year useful life
	$2,806	

The results of this acquisition were included in the Company's consolidated operations beginning on March 12, 2013. The pro forma consolidated statements reflecting the operating results of Alter, had it been acquired as of January 1, 2012, would not differ materially from the operating results of the Company as reported for the year ended December 31, 2013. Alter is included in the Company's Power and Reactive Gas Products group and the Advanced Manufacturing Capital Equipment reportable segment.

11) Goodwill and Intangible Assets

Goodwill

The changes in the carrying amount of goodwill and accumulated impairment losses were as follows:

	2015			2014		
	Gross Carrying Amount	Accumulated Impairment Loss	Net	Gross Carrying Amount	Accumulated Impairment Loss	Net
Beginning balance at January 1	$331,795	$(139,414)	$192,381	$290,323	$(139,414)	$150,909
Acquired goodwill(1)	8,017	—	8,017	41,993	—	41,993
Foreign currency translation	(695)	—	(695)	(521)	—	(521)
Ending balance at December 31	$339,117	$(139,414)	$199,703	$331,795	$(139,414)	$192,381

(1) During 2015, the Company recorded $7,042 of goodwill related to the acquisition of Precisive. During the second quarter of 2015, the Company recorded a purchase accounting adjustment of $975 primarily related to an inventory valuation adjustment related to the acquisition of GP. During 2014, the Company recorded $41,612 of goodwill related to the acquisition of GP and recorded a purchase accounting adjustment of $381 related to the 2013 purchase of Alter S.r.l.

Intangible Assets

The Company is required to test certain long-lived assets when indicators of impairment are present. For the purposes of the impairment test, long-lived assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. There were no intangible asset impairment charges in 2015, 2014 or 2013.

Components of the Company's acquired intangible assets are comprised of the following:

As of December 31, 2015	Gross	Accumulated Amortization	Foreign Currency Translation	Net
Completed technology(1)	$101,200	$ (82,330)	$(272)	$18,598
Customer relationships(1)	37,251	(16,345)	10	20,916
Patents, trademarks, trade names and other(1)	30,396	(25,888)	5	4,513
	$168,847	$(124,563)	$(257)	$44,027

(in thousands, except share and per share data)

(1) During 2015, the Company recorded $5,110 of separately identified intangible assets related to the acquisition of Precisive, of which $820 was completed technology, $1,430 was customer relationships and $2,860 was patents, trademarks, trade names and other.

As of December 31, 2014	Gross	Accumulated Amortization	Foreign Currency Translation	Net
Completed technology(1)	$100,380	$ (79,875)	$135	$20,640
Customer relationships(1)	35,821	(12,634)	280	23,467
Patents, trademarks, trade names and other(1)	27,536	(25,290)	36	2,282
	$163,737	$(117,799)	$451	$46,389

(1) During 2014, the Company recorded $38,850 of separately identified intangible assets related to the acquisition of GP, of which $15,700 was completed technology, $21,250 was customer relationships and $1,900 was patents, trademarks, trade names and other.

Aggregate amortization expense related to acquired intangible assets for the years 2015, 2014 and 2013 was $6,764, $4,945 and $2,139, respectively. Aggregate amortization expense related to acquired intangible assets for future years is:

Year	Amount
2016	$ 6,644
2017	6,561
2018	6,546
2019	6,504
2020	6,450
Thereafter	11,322

12) Other Assets

	Years Ended December 31,	
	2015	2014
Other Current Assets:		
Income tax receivable	$ 8,682	$10,322
Prepaid income tax	4,755	4,698
VAT tax receivable	3,264	3,417
Other	10,059	9,075
Total other current assets	$26,760	$27,512
Other Assets:		
Deferred tax assets, net	$19,252	$ 7,202
Long-term income tax receivable	—	8,092
Other	1,998	1,912
Total other assets	$21,250	$17,206

(in thousands, except share and per share data)

13) Other Liabilities

	Years Ended December 31,	
	2015	2014
Other Current Liabilities:		
Product warranties	$ 5,205	$ 6,266
Deferred revenue	7,189	8,283
Other	22,965	21,240
Total other current liabilities	$35,359	$35,789
Other Liabilities:		
Long-term income tax payable	$ 4,483	$20,203
Accrued compensation	13,395	12,068
Other	3,604	6,324
Total other liabilities	$21,482	$38,595

14) Product Warranties

The Company provides for the estimated costs to fulfill customer warranty obligations upon the recognition of the related revenue. While the Company engages in extensive product quality programs and processes, including actively monitoring and evaluating the quality of its component suppliers, the Company's warranty obligation is affected by shipment volume, product failure rates, utilization levels, material usage and supplier warranties on parts delivered to the Company. Should actual product failure rates, utilization levels, material usage, or supplier warranties on parts differ from the Company's estimates, revisions to the estimated warranty liability would be required. The product warranty liability is included in other current liabilities in the consolidated balance sheets.

Product warranty activities were as follows:

	Years Ended December 31,	
	2015	2014
Beginning balance	$ 6,266	$ 6,956
Provisions for product warranties	4,343	2,713
Direct charges to warranty liability	(5,296)	(3,271)
Foreign currency translation	(108)	(132)
Ending balance	$ 5,205	$ 6,266

15) Debt

Credit Agreements and Short-Term Borrowings

The Company's Japanese subsidiary has lines of credit and short-term borrowing arrangements with two financial institutions which generally expire and are renewed at three month intervals. The lines of credit provided for aggregate borrowings as of December 31, 2015 of up to an equivalent of $19,082 U.S. dollars. One of the borrowing arrangements has an interest rate based on the Tokyo Interbank Offer Rate at the time of borrowing and the other has an interest rate based on the Japanese Short-term Prime Lending Rate. There were no borrowings outstanding under these arrangements at December 31, 2015 and 2014.

(in thousands, except share and per share data)

16) Income Taxes

A reconciliation of the Company's effective tax rate to the U.S. federal statutory rate is as follows:

	Years Ended December 31,		
	2015	2014	2013
U.S. Federal income tax statutory rate	35.0%	35.0%	35.0%
Federal tax credits	(1.2)	(1.0)	(1.8)
State income taxes, net of federal benefit	1.3	2.0	1.3
Effect of foreign operations taxed at various rates	(6.4)	(7.3)	0.3
Qualified production activity tax benefit	(1.6)	(1.8)	(1.4)
Deferred tax asset valuation allowance	—	(0.5)	(0.7)
Release of income tax reserves (including interest)	(4.8)	(10.7)	—
Foreign dividends, net of foreign tax credits	0.7	(1.0)	—
Income tax charges on accumulated foreign earnings	—	—	10.9
Tax benefit related to reinstatement of tax incentives	—	—	(4.0)
Other	0.3	0.4	0.1
	23.3%	15.1%	39.7%

The components of income from continuing operations before income taxes and the related provision for income taxes consist of the following:

	Years Ended December 31,		
	2015	2014	2013
Income from continuing operations before income taxes:			
United States	$ 90,401	$ 86,015	$29,546
Foreign	69,067	50,378	29,755
	$159,468	$136,393	$59,301
Current taxes:			
United States	$ 15,813	$ 8,361	$11,338
State	2,927	1,124	1,159
Foreign	18,021	5,866	14,117
	36,761	15,351	26,614
Deferred taxes:			
United States	(862)	8,908	(1,730)
State and Foreign	1,272	(3,644)	(1,359)
	410	5,264	(3,089)
Provision for income taxes	$ 37,171	$ 20,615	$23,525

(in thousands, except share and per share data)

The significant components of the deferred tax assets and deferred tax liabilities are as follows:

	Years Ended December 31,	
	2015	2014
Deferred tax assets:		
Loss carry-forwards and credits	$ 8,531	$ 30,523
Inventory and warranty reserves	15,404	15,015
Accounts receivable and other accruals	2,343	2,885
Stock-based compensation	3,713	3,255
Executive supplemental retirement benefits	3,947	3,321
Other	—	283
Total deferred tax assets	$ 33,938	$ 55,282
Deferred tax liabilities:		
Acquired intangible assets	(9,434)	(9,205)
Depreciation and amortization	(1,724)	(2,609)
Other	(57)	—
Total deferred tax liabilities	(11,215)	(11,814)
Valuation allowance	(6,127)	(26,763)
Net deferred tax assets	$ 16,596	$ 16,705

As of December 31, 2015, the Company had gross Massachusetts research and other tax credit carry-forwards of $8,933. These credit carry-forwards will expire at various dates through 2029. The Company also had gross net operating loss carry-forwards from various state and foreign jurisdictions of $7,784. Included in the total carry-forward are $5,000 of losses that can be carried forward indefinitely while the remaining losses of $2,784 begin to expire in 2021.

Although the Company believes that its tax positions are consistent with applicable U.S. federal, state and international laws, it maintains certain tax reserves at December 31, 2015 in the event its tax positions were to be challenged by the applicable tax authority and additional tax assessed on audit.

A reconciliation of the beginning and ending amount of gross unrecognized tax benefits is as follows:

	Years Ended December 31,		
	2015	2014	2013
Balance at beginning of year	$ 19,610	$ 47,684	$40,674
Decreases for prior years	(26)	(13)	—
Increases for the current year	322	550	7,308
Reductions related to settlements with taxing authorities	(15,370)	(18,235)	—
Reductions related to expiration of statute of limitations	(204)	(10,376)	(298)
Balance at end of year	$ 4,332	$ 19,610	$47,684

As of December 31, 2015, the total amount of gross unrecognized tax benefits, which excludes interest and penalties, was $4,332. As of December 31, 2014, the total amount of gross unrecognized tax benefits, which excludes interest and penalties, was $19,610. The net decrease from December 31, 2014 was primarily attributable to current year releases in reserves for existing uncertain tax positions. At December 31, 2015, excluding interest and penalties, there are $4,326 of net unrecognized tax benefits that, if recognized, would impact the Company's annual effective tax rate. In 2015, the Company recorded a net benefit to income tax expense of $7,304, excluding interest and penalties, due to the release of income tax reserves related to the effective settlement of a U.S. income tax audit.

The Company accrues interest and, if applicable, penalties for any uncertain tax positions. Interest and penalties are classified as a component of income tax expense. At December 31, 2015, 2014 and 2013, the Company had accrued interest on unrecognized tax benefits of approximately $157, $578 and $2,159, respectively.

Over the next 12 months it is reasonably possible that the Company may recognize approximately $923 of previously net unrecognized tax benefits, excluding interest and penalties, related to state and foreign tax positions as a result of the expiration of statutes of limitation. The Company is subject to examination by U.S. federal, state and foreign tax authorities. The United States Internal Revenue Service commenced an examination of our U.S. federal tax filings for tax years 2011 through 2013 during the quarter ended March 31, 2015. This audit was effectively settled in the fourth quarter upon the Company's acceptance of the income tax examination changes. As part of the audit, the Company consented to extend the U.S. statute of limitations for tax year 2011 until September 30, 2016.

The Company also effectively settled another U.S. federal income tax examination, for tax years 2007 through 2009, during the fourth quarter of 2014 upon receipt of an audit approval letter from the Joint Committee on Taxation. The statute of limitations for tax years 2007 through 2009 expired on December 31, 2015.

The U.S. statute of limitations remains open for tax years 2011 through present. The statute of limitations for tax filings in other jurisdictions varies between fiscal years 2008 through present.

On a quarterly basis, the Company evaluates both positive and negative evidence that affects the realizability of net deferred tax assets and assesses the need for a valuation allowance. The future benefit to be derived from its deferred tax assets is dependent upon its ability to generate sufficient future taxable income to realize the assets. During 2015, the Company decreased its valuation allowance by $20,636, primarily related the expiration of U.S. capital loss carry-forwards. During 2014, the Company decreased its valuation allowance by $339, primarily related to the effective settlement of a foreign tax audit. During 2013, the Company decreased its valuation allowance by $395, primarily related to the expiration of U.S. capital loss carry-forwards.

Through December 31, 2015, the Company has not provided deferred income taxes on the undistributed earnings of its foreign subsidiaries because such earnings are intended to be permanently reinvested outside of the United States. Determination of the potential deferred income tax liability on these undistributed earnings is not practicable because such liability, if any, is dependent on circumstances existing and tax planning choices available when remittance occurs. At December 31, 2015, the Company had approximately $450,000 of undistributed earnings in its foreign subsidiaries which are considered to be indefinitely reinvested.

The Company's Israeli subsidiary elected to be treated under a preferential Israeli tax regime under which a reduced tax rate of 7% applied for 2013, increased to 9% for 2014, and remained 9% for 2015 for a portion of its taxable income. The Company's other operations in Israel are also taxed at a preferential rate under the tax regime at 16%. The Company's Israeli subsidiary effectively settled an examination for tax years 2009 through 2011 during the quarter ended March 31, 2014.

17) Stockholders' Equity

Stock Repurchase

On July 25, 2011, the Company's board of directors approved a share repurchase program for the repurchase of up to an aggregate of $200,000 of its outstanding common stock from time to time in open market purchases, privately negotiated transactions or through other appropriate means. The timing and quantity of any shares repurchased will depend upon a variety of factors, including business conditions, stock market conditions and business development activities, including, but not limited to, merger and acquisition opportunities. These repurchases may be commenced, suspended or discontinued at any time without prior notice.

During 2015, the Company repurchased 369,133 shares of its common stock for $13,294 at an average price of $36.01 per share. During 2014, the Company repurchased 727,912 shares of its common stock for $20,809 at an average price of $28.59 per share.

Dividends

Holders of the Company's common stock are entitled to receive dividends when and if they are declared by the Company's board of directors. During 2015, the Company's board of directors declared a cash dividend of $0.165 per share during the first quarter of 2015 and a cash dividend of $0.17 per share during the second, third and fourth quarters of 2015, which totaled $35,969. During 2014, the Company's board of directors declared a cash dividend of $0.16 per share during the first quarter of 2014 and a cash dividend of $0.165 per share during the second, third and fourth quarters of 2014, which totaled $34,851.

Future dividend declarations, if any, as well as the record and payment dates for such dividends, are subject to the final determination of the Company's board of directors.

On February 8, 2016, the Company's board of directors declared a quarterly cash dividend of $0.17 per share to be paid on March 11, 2016 to shareholders of record as of February 29, 2016.

18) Stock-Based Compensation

Employee Stock Purchase Plans

The Company's Fourth Restated 1999 Employee Stock Purchase Plan (the "Purchase Plan") authorized the issuance of up to an aggregate of 1,950,000 shares of common stock to participating employees. Offerings under the Purchase Plan commenced on June 1 and December 1 and terminated, respectively, on November 30 and May 31. Under the Purchase Plan, eligible employees purchased shares of common stock through payroll deductions of up to 10% of their compensation or up to an annual maximum amount of $21,250. The price at which an employee's purchase option was exercised was the lower of (1) 85% of the closing price of the common stock on the NASDAQ Global Select Market on the day that each offering commenced, or (2) 85% of the closing price on the day that each offering terminated. During 2014, the Company issued 69,474 shares of common stock to employees who participated in the Purchase Plan at an exercise price of $24.52 per share. As of June 1, 2014, the Purchase Plan was replaced by the 2014 Employee Stock Purchase Plan (the "2014 ESPP Plan").

The Company's Third Amended and Restated International Employee Stock Purchase Plan (the "Foreign Purchase Plan") authorized the issuance of up to an aggregate of 400,000 shares of common stock to participating employees. Offerings under the Foreign Purchase Plan commenced on June 1 and December 1 and terminated, respectively, on November 30 and May 31. Under the Foreign Purchase Plan, eligible employees purchased shares of common stock through payroll deductions of up to 10% of their compensation or up to an annual maximum amount of $21,250. The price at which an employee's purchase option was exercised was the lower of (1) 85% of the closing price of the common stock on the NASDAQ Global Select Market on the day that each offering commenced, or (2) 85% of the closing price on the day that each offering terminated. During 2014, the Company issued 20,053 shares of common stock to employees who participated in the Foreign Purchase Plan at an exercise price of $24.52 per share. As of June 1, 2014, the Foreign Purchase Plan was replaced by the 2014 ESPP Plan.

The 2014 ESPP Plan was adopted by the Board of Directors on February 10, 2014 and approved by the Company's stockholders on May 5, 2014. The 2014 ESPP Plan authorizes the issuance of up to an aggregate of 2,500,000 shares of common stock to participating employees. Offerings under the 2014 ESPP Plan commence on June 1 and December 1 and terminate, respectively, on November 30 and May 31. Under the 2014 ESPP Plan, eligible employees may purchase shares of common stock through payroll deductions of up to 10% of their compensation or up to an annual maximum amount of $21,250. The price at which an employee's purchase option is exercised is the lower of (1) 85% of the closing price of the common stock on the NASDAQ Global Select Market on the day that each offering commences, or (2) 85% of the closing price on the day that each offering terminates. During 2015 and 2014, the Company issued 140,531 and 82,481 shares, respectively, of common stock to employees who participated in the 2014 ESPP Plan at exercise prices of $30.74 and $31.34 per share in 2015 and $24.33 per share in 2014. As of December 31, 2015, there were 2,276,988 shares reserved for future issuance under the 2014 ESPP Plan.

Equity Incentive Plans

The Company has granted options to employees under the 2004 Stock Incentive Plan (the "2004 Plan") and the Second Restated 1995 Stock Incentive Plan (the "1995 Plan"), and to directors under the 1997 Director Stock Plan (the "1997 Director Plan"); the Company has also granted restricted stock units ("RSUs") to employees and directors under the 2004 Plan and the 2014 Stock Incentive Plan (the "2014 Plan" and together with the 2004 Plan, the 1995 Plan, and the 1997 Director Plan, the "Plans"). The Plans are administered by the Compensation Committee of the Company's Board of Directors.

The Plans are intended to attract and retain employees and to provide an incentive for them to assist the Company to achieve long-range performance goals and to enable them to participate in the long-term growth of the Company. Employees may be granted RSUs, options to purchase shares of the Company's stock and other equity incentives under the Plans.

The Company's 2014 Plan was adopted by the Board of Directors on February 10, 2014 and approved by the Company's stockholders on May 5, 2014. Up to 18,000,000 shares of common stock (subject to adjustment in the event of stock splits and other similar events) may be issued pursuant to awards granted under the 2014 Plan. The Company may grant options, RSUs, restricted stock appreciation rights and other stock-based awards to employees, officers, directors, consultants and advisors under the 2014 Plan. Any full-value awards granted under the 2014 Plan will be counted against the shares reserved for issuance under the 2014 Plan as 2.4 shares for each share of common stock subject to such award and any award granted under the 2014 Plan that is not a full-value award (including, without limitation, any option or SAR) will be counted against the shares reserved for issuance under the plan as one share for each one share of common stock subject to such award. "Full-value award" means any RSU, or other stock-based award with a per share price or per unit purchase price lower than 100% of fair market value on the date of grant. To the extent a share that was subject to an award that counted as one share is returned to the 2014 Plan, each applicable share reserve will be credited with one share. To the extent that a share that was subject to an award that counts as 2.4 shares is returned to the 2014 Plan, each applicable share reserve will be credited with 2.4 shares. As of December 31, 2015, there were 16,953,488 shares reserved for future issuance under the 2014 Plan.

(in thousands, except share and per share data)

The Company's 2004 Plan expired in March 2014 and no further awards may be granted under the 2004 Plan, although there are still outstanding RSUs which may vest under the 2004 Plan. The Company's 1995 Plan expired in November 2005 and no further awards may be granted under the 1995 Plan. The Company's 1997 Director Plan expired in February 2007 and no further awards may be granted under the 1997 Director Plan.

Stock options were granted at an exercise price equal to 100% of the fair value of the Company's common stock on the date of grant. Generally, stock options granted to employees under the 1995 Plan and the 2004 Plan from 2001 to 2006, vested 25% after one year and 6.25% per quarter thereafter, and expired 10 years after the grant date. Options granted to directors generally vested at the earliest of (1) one day prior to the next annual meeting, (2) 13 months from the date of grant, or (3) the effective date of an acquisition. There were no remaining outstanding stock options as of December 31, 2015 under any of the Plans. RSUs granted to employees in 2015, 2014 and 2013 generally vest 33.3% per year on the anniversary of the date of grant. RSUs granted to employees who are at least 60 years old and have a minimum of 10 Years of Service (as defined in the applicable RSU agreement) are expensed immediately. RSUs granted to directors generally vest at the earliest of (1) one day prior to the next annual meeting, (2) 13 months from date of grant, or (3) the effective date of an acquisition. Certain RSUs are subject to performance conditions ("performance shares") under the Company's 2004 Plan and 2014 Plan. Such performance shares are available, subject to time-based vesting conditions, if, and to the extent that, financial or operational performance criteria for the applicable period are achieved. Accordingly, the number of performance shares earned will vary based on the level of achievement of financial or operational performance objectives for the applicable period.

The following table presents the activity for RSUs under the Plans:

	Year Ended December 31, 2015	
	Non-vested RSUs	Weighted Average Grant Date Fair Value
Non-vested RSUs — beginning of period	716,714	$28.67
Granted	394,952	$32.89
Vested	(351,601)	$28.59
Forfeited or expired	(26,903)	$29.84
Non-vested RSUs — end of period	733,162	$30.94

(in thousands, except share and per share data)

The following table presents the activity for options under the Plans:

	Year Ended December 31, 2015	
	Options	Weighted Average Exercise Price
Outstanding — beginning of period	30,224	$19.67
Exercised	(30,100)	$19.68
Forfeited or expired	(124)	$18.16
Outstanding — end of period	—	$ —
Exercisable at end of period	—	$ —

There were no options outstanding or exercisable under the Plans at December 31, 2015.

The total cash received from employees as a result of employee stock option exercises during the years 2015 and 2014 was approximately $592 and $1,605, respectively. In connection with these exercises, the tax benefit realized by the Company for the years 2015 and 2014 was approximately $21 and $175, respectively.

The Company settles employee stock option exercises and restricted stock unit vesting with newly issued common shares.

Stock-Based Compensation Expense

The Company recognized the full impact of its share-based payment plans in the consolidated statements of operations and comprehensive income for the years 2015, 2014 and 2013. As of December 31, 2015 and 2014, the Company capitalized $471 of such cost on its consolidated balance sheet. The following table reflects the effect of recording stock-based compensation for the years 2015, 2014 and 2013:

	Years Ended December 31,		
Stock-based compensation expense by type of award:	2015	2014	2013
Restricted stock units	$11,885	$10,203	$12,982
Employee stock purchase plan	1,128	1,112	1,010
Total stock-based compensation	13,013	11,315	13,992
Tax effect on stock-based compensation	(836)	(331)	(495)
Net effect on net income	$12,177	$10,984	$13,497
Effect on net earnings per share:			
Basic	$ 0.23	$ 0.21	$ 0.25
Diluted	$ 0.23	$ 0.21	$ 0.25

(in thousands, except share and per share data)

The pre-tax effect within the consolidated statements of operations and comprehensive income of recording stock-based compensation for the years 2015, 2014 and 2013 was as follows:

	Years Ended December 31,		
	2015	2014	2013
Cost of revenues	$ 1,814	$ 1,960	$ 2,038
Research and development expense	1,590	1,659	1,902
Selling, general and administrative expense	9,609	7,696	10,052
Total pre-tax stock-based compensation expense	$13,013	$11,315	$13,992

Valuation Assumptions

The Company determines the fair value of restricted stock units based on the closing market price of the Company's common stock on the date of the award, and estimates the fair value of stock options and employee stock purchase plan rights using the Black-Scholes valuation model. Such values are recognized as expense on a straight-line basis over the requisite service periods, net of estimated forfeitures except for retirement eligible employees in which the Company expenses the fair value of the grant in the period the grant is issued. The estimation of stock-based awards that will ultimately vest requires significant judgment. The Company considers many factors when estimating expected forfeitures, including types of awards and historical experience. Actual results, and future changes in estimates, may differ substantially from the Company's current estimates.

The Company did not grant options during 2015, 2014 and 2013. The total intrinsic value of options exercised during 2015, 2014 and 2013 was approximately $494, $958 and $684, respectively.

The weighted average fair value per share of employee stock purchase plan rights granted in 2015, 2014 and 2013 was $8.16, $6.37 and $5.76, respectively. The fair value of the employees' purchase plan rights was estimated using the Black-Scholes option-pricing model with the following weighted average assumptions:

	Years Ended December 31,		
Employee stock purchase plan rights:	2015	2014	2013
Expected life (years)	0.5	0.5	0.5
Risk-free interest rate	0.1%	0.1%	0.1%
Expected volatility	26.4%	26.4%	27.7%
Expected annual dividends per share	$0.675	$0.655	$0.64

Expected volatilities for 2015, 2014 and 2013 are based on a combination of implied and historical volatilities of the Company's common stock; the expected life represents the weighted average period of time that options granted are expected to be outstanding giving consideration to vesting schedules and the Company's historical exercise patterns; and the risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant for periods corresponding with the expected life of the option.

The total intrinsic value of options exercised and the total fair value of RSUs vested during 2015, 2014 and 2013 was approximately $12,868, $12,106 and $19,221, respectively. As of December 31, 2015, the unrecognized compensation cost related to restricted stock units was approximately $11,585 and will be recognized over an estimated weighted average amortization period of 0.82 years.

(in thousands, except share and per share data)

19) Employee Benefit Plans

The Company has a 401(k) profit-sharing plan for U.S. employees meeting certain requirements in which eligible employees may contribute between 1% and 50% of their annual compensation to this plan, and, with respect to employees who are age 50 and older, certain specified additional amounts, limited by an annual maximum amount determined by the Internal Revenue Service. The Company, at its discretion, may provide a matching contribution of 50% of each participant's contributions up to 6% of eligible salary. At the discretion of the board of directors, the Company may also make additional contributions for the benefit of all eligible employees. The Company's contributions were $2,667, $2,484 and $2,334 for 2015, 2014 and 2013, respectively.

The Company has one foreign defined benefit plan which is frozen for Company contributions. The total accrual and projected benefit obligation is not material for this plan.

The Company maintains a bonus plan which provides cash awards to key employees, at the discretion of the compensation committee of the board of directors, based upon operating results and employee performance. In addition, the Company's foreign locations also have various bonus plans based upon local operating results and employee performance. The total bonus expense was $14,599, $14,434 and $16,006 for 2015, 2014 and 2013, respectively.

The Company provides supplemental retirement benefits for one of its current executive officers and a number of former retired executives. The total cost of these benefits was $1,704, $2,258 and $4,988 for 2015, 2014 and 2013, respectively. The accumulated benefit obligation was $10,645 and $8,941 at December 31, 2015 and 2014, respectively, which was included in other long-term liabilities.

20) Net Income Per Share

Basic earnings per share ("EPS"), is computed by dividing income available to common stockholders by the weighted-average number of common shares outstanding during the period. The computation of diluted EPS is similar to the computation of basic EPS except that the denominator is increased to include the number of additional common shares that would have been outstanding (using the treasury stock method), if securities containing potentially dilutive common shares (stock options and restricted stock units) had been converted to such common shares, and if such assumed conversion is dilutive.

The following is a reconciliation of basic to diluted net income per share:

	Years Ended December 31,		
Numerator:	**2015**	**2014**	**2013**
Net income	$ 122,297	$ 115,778	$ 35,776
Denominator:			
Shares used in net income per common share — basic	53,282,000	53,232,000	53,061,000
Effect of dilutive securities:			
Stock options, restricted stock and employee stock purchase plan	278,000	283,000	420,000
Shares used in net income per common share — diluted	53,560,000	53,515,000	53,481,000
Net income per common share:			
Basic	$ 2.30	$ 2.17	$ 0.67
Diluted	$ 2.28	$ 2.16	$ 0.67

As of December 31, 2015, restricted stock units relating to an aggregate of approximately 733,000 shares were outstanding. There were no stock options outstanding as of December 31, 2015. As of December 31, 2014 and 2013, stock options and restricted stock units relating to an aggregate of approximately 747,000 and 868,000 shares, respectively, were outstanding. In 2015, 2014 and 2013, the potential dilutive effect of 0, 600 and 83,000 weighted average shares, respectively, of stock options were excluded from the computation of diluted weighted-average shares outstanding as the shares would have an anti-dilutive effect on EPS.

21) Business Segment, Geographic Area, Product and Significant Customer Information

The Company develops, manufactures, sells and services products that measure, control, power, monitor and analyze critical parameters of advanced manufacturing processes. The Company's Chief Operating Decision Maker ("CODM") utilizes consolidated financial information to make decisions about allocating resources and assessing performance for the entire Company. In addition, certain disaggregated financial information is also provided to the CODM, which is used in the decision making process to assess performance. Based upon the information provided to the CODM, the Company has determined it has four reportable segments.

Effective January 1, 2015, the Company changed the structure of its reportable segments based upon a change in the information that is provided to the Company's CODM. The Company's four reportable segments prior to the change in structure were: Advanced Manufacturing Capital Equipment, Analytical Solutions Group, Europe Region Sales & Service and Asia Region Sales & Service. The Company's current structure still reflects four reportable segments, however, the composition of the segments has changed.

The Company's current reportable segments are Advanced Manufacturing Capital Equipment, Global Service, Asia Region Sales and Other. The primary change to the segment structure was to separate worldwide service from product sales and create a separate reportable segment known as Global Service. Product sales in the Advanced Manufacturing Capital Equipment segment remained with that segment. Asia product sales became a separate reportable segment. The product sales from the operating segments that made up the Analytical Solutions Group and Europe Region were included in the Other segment and are not reported separately as they are individually immaterial and collectively below the separate segment reporting guidelines. The Company has reported corporate expenses and certain intercompany pricing transactions in a Corporate and Eliminations reconciling column. Due to these changes, the results presented under segment reporting for the twelve months ended December 31, 2014 and 2013 reflect the current segments to conform to the current period segment reporting presentation with no impact to the consolidated results of operations.

The Advanced Manufacturing Capital Equipment segment includes the development, manufacturing and sales of instruments, control and vacuum products, power and reactive gas products, all of which are utilized in semiconductor processing and other similar advanced manufacturing processes. Sales in this segment include both external sales and intercompany product sales, which are recorded at transfer prices in accordance with applicable tax requirements.

The Global Service segment includes the worldwide servicing of instruments, control and vacuum products, power and reactive gas products, and certain other product groups, all of which are utilized in semiconductor processing and other similar advanced manufacturing processes.

The Asia Region Sales segment mainly resells products from the Advanced Manufacturing Capital Equipment and Other segments into Asia regions.

(in thousands, except share and per share data)

The Other segment includes operating segments that are not required to be reported separately as a reportable segment and includes sales of products that are re-sold from the Advanced Manufacturing Capital Equipment into Europe regions as well as sales from other operating segments.

MKS derives the segment results directly from the manner in which results are reported in its management reporting system. The accounting policies MKS uses to derive reportable segment results are substantially the same as those used for external reporting purposes except that a substantial portion of the sales of the Advanced Manufacturing Capital Equipment and Other segments are intercompany sales to the regions at tax-based transfer prices and certain significant costs, including stock-based compensation and management incentive compensation, are not allocated to the segments and are included in Corporate and Eliminations. The CODM reviews several metrics of each operating segment, including net revenues and gross profit (loss).

The Company does not maintain balance sheets for the majority of its operating segments and, as such, amounts have not been allocated to the reportable segments. The Company does not disclose external or intersegment revenues separately by reportable segment as this information is not presented to the CODM for decision making purposes.

The following is net revenues by reportable segment:

	Years Ended December 31,		
	2015	2014	2013
Advanced Manufacturing Capital Equipment	$ 662,911	$ 620,303	$ 509,008
Global Service	116,420	107,050	101,103
Asia Region Sales(1)	203,231	183,056	159,781
Other	79,523	82,709	73,235
Corporate, Eliminations	(248,561)	(212,249)	(173,707)
	$ 813,524	$ 780,869	$ 669,420

(in thousands, except share and per share data)

The following is a reconciliation of segment gross profit to consolidated net income:

	Years Ended December 31,		
	2015	2014	2013
Gross profit by reportable segment:			
Advanced Manufacturing Capital Equipment	$286,149	$254,292	$185,105
Global Service	39,532	38,147	35,721
Asia Region Sales(1)	27,494	27,184	26,874
Other	23,869	27,896	25,894
Corporate and Eliminations	(14,172)	(9,753)	(7,020)
Total gross profit by reportable segment	362,872	337,766	266,574
Operating expenses:			
Research and development	68,305	62,888	63,570
Selling, general and administrative	129,087	131,828	142,014
Insurance reimbursement	—	—	(1,071)
Acquisition costs	30	499	171
Restructuring	2,074	2,464	1,364
Amortization of intangible assets	6,764	4,945	2,139
Income from operations	156,612	135,142	58,387
Net interest income	2,856	1,251	914
Income before income taxes	159,468	136,393	59,301
Provision for income taxes	37,171	20,615	23,525
Net income	$122,297	$115,778	$ 35,776

(1) The Asia Region Sales segment does not represent total geographical Asia financial information. This sales operation only represents the sales from the resale of Advanced Manufacturing Capital Equipment and Other segment products in its respective region. The Advanced Manufacturing Capital Equipment and Other segments both have sales in this region as well. Accordingly, total geographical sales include sales from multiple reportable segments.

The following is capital expenditures by reportable segment for the years ended December 31, 2015, 2014 and 2013:

	Advanced Manufacturing Capital Equipment	Global Service	Asia Region Sales	Other	Corporate and Eliminations	Total
December 31, 2015:						
Capital expenditures	$7,958	$ 839	$451	$ 526	$2,640	$12,414
December 31, 2014:						
Capital expenditures	$8,081	$1,032	$525	$1,632	$1,913	$13,183
December 31, 2013:						
Capital expenditures	$8,139	$ 955	$628	$ 627	$2,061	$12,410

(in thousands, except share and per share data)

The following is depreciation and amortization expense by reportable segment for the years ended December 31, 2015, 2014 and 2013:

	Advanced Manufacturing Capital Equipment	Global Service	Asia Region Sales	Other	Corporate and Eliminations	Total
December 31, 2015:						
Depreciation and amortization	$17,009	$1,005	$353	$1,114	$2,622	$22,103
December 31, 2014:						
Depreciation and amortization	$15,171	$1,097	$477	$1,204	$2,565	$20,514
December 31, 2013:						
Depreciation and amortization	$11,848	$1,103	$398	$1,265	$2,488	$17,102

Total income tax expense is impracticable to present by reportable segment because the necessary information is not available or used by the CODM.

Information about the Company's operations in different geographic regions is presented in the tables below. Net revenues to unaffiliated customers are based on the location in which the sale originated. Transfers between geographic areas are at negotiated transfer prices and have been eliminated from consolidated net revenues.

	Years Ended December 31,		
Net revenues:	**2015**	**2014**	**2013**
United States	$458,313	$448,452	$363,948
Korea	106,909	97,323	75,401
Japan	62,879	61,092	56,978
Europe	79,927	80,659	77,910
Asia (excluding Korea and Japan)	105,496	93,343	95,183
	$813,524	$780,869	$669,420

	Years Ended December 31,	
Long-lived assets:(1)	**2015**	**2014**
United States	$56,594	$57,701
Europe	5,783	6,099
Asia	8,952	10,887
	$71,329	$74,687

(1) Long-lived assets include property, plant and equipment, net and certain other assets, excluding long-term tax-related accounts.

(in thousands, except share and per share data)

Goodwill associated with each of our reportable segments is as follows:

	December 31, 2015	December 31, 2014
Reportable segment:		
Advanced Manufacturing Capital Equipment	$174,344	$166,946
Global Service	19,826	19,728
Asia Region Sales	—	—
Other	6,228	6,228
Foreign currency translation	(695)	(521)
Total goodwill	$199,703	$192,381

Worldwide Product Information

Because the reportable segment information above does not reflect worldwide sales of the Company's products, the Company groups its products into three groups of similar products based upon the similarity of product function. Worldwide net revenue for each group of products is as follows:

	Years Ended December 31,		
	2015	2014	2013
Instruments, Control and Vacuum Products	$402,345	$383,863	$341,375
Power and Reactive Gas Products	350,469	335,271	273,357
Analytical Solutions Products	60,710	61,735	54,688
	$813,524	$780,869	$669,420

Sales of Instruments, Control and Vacuum Products and Power and Reactive Gas Products are included in the Company's Advanced Manufacturing Capital Equipment, Asia Region Sales, Global Service and Other segments because the products are sold through these segments. Sales of the Analytical Solutions Products are included in the Asia Region Sales, Global Service and Other segments because the products are sold through these segments.

Major Customers

The Company had two customers with net revenues greater than 10% of total net revenues in the periods shown as follows:

	Years Ended December 31,		
	2015	2014	2013
Applied Materials, Inc.	17.8%	19.1%	17.0%
Lam Research Corporation	13.4%	12.9%	12.3%

Net revenues for each of our reportable segments include revenues from each of the two customers, which represent net revenues greater than 10% of total net revenues.

22) Restructurings

During 2015, the Company recorded restructuring charges of $2,074. The restructuring charges were primarily for severance associated with the reduction in workforce of approximately 266 people throughout the Company as a result of the outsourcing of an international manufacturing operation and the consolidation of certain other foreign manufacturing locations. These restructuring charges primarily impacted our Advanced Manufacturing Capital Equipment and Other segments and was substantially complete at December 31, 2015.

(in thousands, except share and per share data)

The activity related to the Company's restructuring accrual is shown below:

	2015	2014
Balance at January 1	$ 92	$ —
Charged to expense	2,074	2,464
Payments	(1,359)	(2,372)
Balance at December 31	$ 807	$ 92

During 2014, the Company recorded restructuring charges of $2,464. The restructuring charges were primarily for severance associated with the reduction in workforce of approximately 131 people throughout the Company. These restructuring charges impacted each of our reportable segments. This restructuring was substantially complete at December 31, 2014.

During the first quarter of 2014, the Company re-classified certain assets from property, plant and equipment to current assets classified as held for sale, as these assets met the criteria for classification as held for sale. These assets relate to the Company closing one of its facilities in Colorado, as part of restructuring activities announced during the third quarter of 2013. The Company sold this building during the third quarter of 2014 for $1,316, net of commissions, and recorded an immaterial loss.

During 2013, the Company initiated restructuring plans to consolidate a sales office and an engineering facility into other MKS facilities. The plans included a reduction in headcount. The Company recorded restructuring charges of $1,364 during 2013. The restructuring charges were primarily for severance and other charges associated with the reductions in workforce. The restructuring was substantially complete at December 31, 2013.

23) Commitments and Contingencies

The Company is subject to various legal proceedings and claims, which have arisen in the ordinary course of business. In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on the Company's results of operations, financial condition or cash flows.

The Company leases certain of its facilities and machinery and equipment under operating leases expiring in various years through 2022. Generally, the facility leases require the Company to pay maintenance, insurance and real estate taxes. Rental expense under operating leases totaled $7,845, $6,909 and $7,896 for 2015, 2014 and 2013, respectively.

Minimum lease payments under operating leases are as follows:

Year ending December 31,	Operating Leases
2016	$ 7,315
2017	6,659
2018	5,127
2019	3,749
2020	2,513
Thereafter	2,266
Total minimum lease payments	$27,629

As of December 31, 2015, the Company has entered into purchase commitments for certain inventory components and other equipment and services used in its normal operations. The majority of these purchase commitments covered by these arrangements are for periods of less than one year and aggregate to approximately $121,820.

To the extent permitted by Massachusetts law, the Company's Restated Articles of Organization, as amended, require the Company to indemnify any of its current or former officers or directors or any person who has served or is serving in any capacity with respect to any of the Company's employee benefit plans. The Company believes that the estimated exposure for these indemnification obligations is currently not material. Accordingly, the Company has no material liabilities recorded for these requirements as of December 31, 2015.

The Company also enters into agreements in the ordinary course of business which include indemnification provisions. Pursuant to these agreements, the Company indemnifies, holds harmless and agrees to reimburse the indemnified party, generally its customers, for losses suffered or incurred by the indemnified party in connection with certain patent or other intellectual property infringement claims, and, in some instances, other claims, by any third party with respect to the Company's products. The term of these indemnification obligations is generally perpetual after execution of the agreement. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is, in some instances, not contractually limited. The Company has never incurred costs to defend lawsuits or settle claims related to these indemnification obligations. As a result, the Company believes the estimated fair value of these obligations is minimal. Accordingly, the Company has no liabilities recorded for these obligations as of December 31, 2015.

As part of past acquisitions and divestitures of businesses or assets, the Company has provided a variety of indemnifications to the sellers and purchasers for certain events or occurrences that took place prior to the date of the acquisition or divestiture. Typically, certain of the indemnifications expire after a defined period of time following the transaction, but certain indemnifications may survive indefinitely. The maximum potential amount of future payments the Company could be required to make for such obligations is undeterminable at this time. Other than obligations recorded as liabilities at the time of the acquisitions, historically the Company has not made significant payments for these indemnifications. Accordingly, no material liabilities have been recorded for these obligations.

In conjunction with certain asset sales, the Company may provide routine indemnifications whose terms range in duration and often are not explicitly defined. Where appropriate, an obligation for such indemnification is recorded as a liability. Because the amounts of liability under these types of indemnifications are not explicitly stated, the overall maximum amount of the obligation under such indemnifications cannot be reasonably estimated. Other than obligations recorded as liabilities at the time of the asset sale, historically the Company has not made significant payments for these indemnifications.

24) Subsequent Event - Announcement of the Acquisition of Newport Corporation

On February 23, 2016, the Company announced that it had signed a definitive merger agreement to acquire Newport Corporation ("Newport"), a worldwide leader in photonics solutions. Pursuant to the merger agreement, the Company agreed to pay $23.00 per share in cash for all of the outstanding shares of Newport, for total cash consideration of approximately $980,000. The Company intends to fund the transaction with a combination of available cash on hand and up to $800,000 in committed debt financing. In addition, the Company entered into a commitment letter to obtain a $50,000 asset-based revolving credit facility for working capital purposes, as needed. The acquisition is expected to close in the second quarter of 2016, subject to customary closing conditions.

MKS Instruments, Inc.
Supplemental Financial Data

	Quarter Ended			
	March 31	June 30	Sept. 30,	Dec. 31
	(Table in thousands, except per share data) (Unaudited)			
2015				
Statement of Operations Data				
Net revenues	$213,839	$217,966	$209,332	$172,387
Gross profit	97,046	98,798	94,229	72,799
Income from operations	47,010	46,034	41,363	22,205
Net income	$ 33,786	$ 33,220	$ 29,769	$ 25,522
Net income per share:				
Basic	$ 0.63	$ 0.62	$ 0.56	$ 0.48
Diluted	$ 0.63	$ 0.62	$ 0.56	$ 0.48
Cash dividends paid per common share	$ 0.165	$ 0.17	$ 0.17	$ 0.17
2014				
Statement of Operations Data				
Net revenues	$206,353	$184,697	$186,798	$203,021
Gross profit	89,372	79,635	79,325	89,434
Income from operations	37,778	30,660	28,150	38,554
Net income	$ 31,245	$ 21,224	$ 29,117	$ 34,192
Net income per share:				
Basic	$ 0.58	$ 0.40	$ 0.55	$ 0.64
Diluted	$ 0.58	$ 0.40	$ 0.55	$ 0.64
Cash dividends paid per common share	$ 0.16	$ 0.165	$ 0.165	$ 0.165

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

None.

Item 9A. ***Controls and Procedures***

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2015. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), 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 principal executive and principal financial officers, or persons performing similar functions as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of December 31, 2015, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms and is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer as appropriate to allow timely decisions regarding required disclosure.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) promulgated under the Exchange Act as a process designed by, or under the supervision of, the Company's Chief Executive Officer and Chief Financial Officer or persons performing similar functions and effected by the Company's board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles and includes those policies and procedures that:

- 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 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
- 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. 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.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2015. In making this assessment, our management used the 2013 published criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control — Integrated Framework.*

Based on our assessment, management concluded that, as of December 31, 2015, our internal control over financial reporting was effective based on those criteria.

Our internal controls over financial reporting as of December 31, 2015 have been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their attestation report which appears in Item 8 of this Annual Report on Form 10-K.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during our fourth fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. ***Other Information***

None.

PART III

Item 10. ***Directors, Executive Officers and Corporate Governance***

The information required by this item will be set forth under the captions "Election of Directors," "Directors," "Corporate Governance," "Executive Officers," "Corporate Governance — Code of Ethics" and "Compensation Governance — Audit Committee Financial Expert" in our definitive proxy statement for the 2016 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission no later than 120 days after the end of our fiscal year, and is incorporated herein by reference.

We are also required under Item 405 of Regulation S-K to provide information concerning delinquent filers of reports under Section 16 of the Securities and Exchange Act of 1934, as amended. This information will be set forth under the caption "Section 16(a) Beneficial Ownership Reporting Compliance" in our definitive proxy statement for the 2016 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission no later than 120 days after the end of our fiscal year, and is incorporated herein by reference.

Item 11. ***Executive Compensation***

The information required by this item will be set forth under the captions "Executive Officers," "Executive Compensation — Compensation Discussion and Analysis," "Corporate Governance — Compensation Committee Interlocks and Insider Participation," "Compensation Committee Report" and "Director Compensation" in our definitive proxy statement for the 2016 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission no later than 120 days after the end of our fiscal year, and is incorporated herein by reference.

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

The information required by Item 403 of Regulation S-K will be set forth under the caption "Security Ownership of Certain Beneficial Owners and Management" in our definitive proxy statement for the 2016 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission no later than 120 days after the end of our fiscal year, and is incorporated herein by reference.

The information required by Item 201(d) of Regulation S-K will be set forth under the caption "Executive Compensation — Equity Compensation Plan Information" in our definitive proxy statement for the 2016 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission no later than 120 days after the end of our fiscal year, and is incorporated herein by reference.

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

The information required by this item will be set forth under the captions "Corporate Governance — Board Independence" and "Director Compensation — Transactions with Related Persons" in our definitive proxy statement for the 2016 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission no later than 120 days after the end of our fiscal year, and is incorporated herein by reference.

Item 14. ***Principal Accountant Fees and Services***

The information required by this item will be set forth under the caption "Independent Registered Public Accounting Firm" in our definitive proxy statement for the 2016 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission no later than 120 days after the end of our fiscal year, and is incorporated herein by reference.

PART IV

Item 15. ***Exhibits and Financial Statement Schedules***

(a) The following documents are filed as a part of this Report:

1. *Financial Statements*. The following Consolidated Financial Statements are included under Item 8 of this Annual Report on Form 10-K.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Financial Statements:

Report of Independent Registered Public Accounting Firm 46

Consolidated Balance Sheets at December 31, 2015 and 2014 47

Consolidated Statements of Operations and Comprehensive Income for the years ended December 31, 2015, 2014 and 2013 48

Consolidated Statements of Stockholders' Equity for the years ended December 31, 2015, 2014 and 2013 . . 49

Consolidated Statements of Cash Flows for the years ended December 31, 2015, 2014 and 2013 50

Notes to Consolidated Financial Statements 51

2. *Financial Statement Schedules.* The following consolidated financial statement schedule is included in this Annual Report on Form 10-K:

Schedule II — Valuation and Qualifying Accounts

Schedules other than those listed above have been omitted since they are either not required or information is otherwise included.

3. *Exhibits.* The following exhibits are filed as part of this Annual Report on Form 10-K.

Exhibit No.	Title
+3.1(1)	Restated Articles of Organization of the Registrant
+3.2(2)	Articles of Amendment to Articles of Organization, as filed with the Secretary of State of Massachusetts on May 18, 2001
+3.3(3)	Articles of Amendment to Articles of Organization, as filed with the Secretary of State of Massachusetts on May 16, 2002
+3.4(4)	Amended and Restated By-Laws of the Registrant
+4.1(5)	Specimen certificate representing the common stock
+10.1(6)*	2004 Stock Incentive Plan, as amended (the "2004 Plan")
+10.2(4)*	2014 Stock Incentive Plan
+10.3(4)*	2014 Employee Stock Purchase Plan
+10.4(4)*	Form of Restricted Stock Unit Agreement for Non-Employee Directors under the 2014 Stock Incentive Plan

Exhibit No.	Title
+10.5(6)*	Form of Time-Based Restricted Stock Unit Agreement and Form of Performance-Based Restricted Stock Unit Agreement under the 2004 Plan (grants from 2011 to 2013)
+10.6(7)*	Form of Restricted Stock Unit Agreement under the 2004 Plan (grants in 2013)
+10.7(8)*	Form of Restricted Stock Unit Agreement under the 2004 Plan (grants in 2014)
+10.8(11)*	Form of Restricted Stock Unit Agreement for employees under the 2014 Stock Incentive Plan
+10.9(13)*	162(m) Executive Cash Incentive Plan
10.10*	Form of Bonus Award Agreement under 162(m) Executive Cash Incentive Plan
+10.11(9)*	Employment Agreement, dated as of July 1, 2005, between John Bertucci and the Registrant
+10.12(10)*	Employment Agreement, dated October 22, 2013, between Gerald G. Colella and the Registrant
+10.13(8)*	Employment Agreement, dated February 24, 2014, between Seth Bagshaw and the Registrant
+10.14(8)*	Employment Agreement, dated February 24, 2014, between John Abrams and the Registrant
+10.15(8)*	Employment Agreement, dated February 24, 2014, between John T.C. Lee and the Registrant
+10.16(8)*	Employment Agreement, dated February 24, 2014, between Brian Quirk and the Registrant
†+10.17(12)	Global Supply Agreement, dated April 21, 2005, by and between the Registrant and Applied Materials, Inc.
†+10.18(14)	Amendments, dated October 25, 2012, October 4, 2013, April 16, 2014, July 31, 2014, August 29, 2014, September 15, 2014 and October 3, 2014, to Global Supply Agreement, dated April 21, 2005 by and between the Registrant and Applied Materials, Inc.
18.1	PricewaterhouseCooopers LLP Preferability Letter
21.1	Subsidiaries of the Registrant
23.1	Consent of PricewaterhouseCoopers LLP
31.1	Certification of Principal Executive Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) of the Securities Exchange Act of 1934.
31.2	Certification of Principal Financial Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) of the Securities Exchange Act of 1934.
32.1	Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	XBRL Instance Document.
101.SCH	XBRL Taxonomy Extension Schema Document.
101.CAL	XBRL Taxonomy Calculation Linkbase.
101.LAB	XBRL Taxonomy Labels Linkbase Document.
101.PRE	XBRL Taxonomy Presentation Linkbase Document.
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.

\+ Previously filed

* Management contract or compensatory plan arrangement.

† Confidential Treatment has been requested as to certain portions of this Exhibit. Such portions have been omitted and filed separately with the Securities and Exchange Commission.

The following materials from MKS Instrument, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2015, are formatted in XBRL (Extensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Operations and Comprehensive Income, (iii) the Consolidated Statements of Stockholders' Equity, (iv) the Consolidated Statements of Cash Flows, (v) Notes to the Consolidated Financial Statements.

(1) Incorporated by reference to the Registration Statement on Form S-4 (File No. 333-49738) filed with the Securities and Exchange Commission on November 13, 2000.

(2) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2001.

(3) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2002.

(4) Incorporated by reference to the Current Report on Form 8-K filed with the Securities and Exchange Commission on May 6, 2014.

(5) Incorporated by reference to the Registration Statement on Form S-1 filed with the Securities and Exchange Commission on March 2, 1999.

(6) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2010.

(7) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2012.

(8) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2013.

(9) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on July 5, 2005.

(10) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on October 24, 2013.

(11) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on November 5, 2014.

(12) Incorporated by reference to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on April 27, 2005.

(13) Incorporated by reference to the Current Report on Form 8-K filed with the Securities and Exchange Commission on May 4, 2015.

(14) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2014.

(b) Exhibits

MKS hereby files as exhibits to our Annual Report on Form 10-K those exhibits listed in Item 15(a) above.

(c) Financial Statement Schedules

MKS INSTRUMENTS, INC.
SCHEDULE II—VALUATION AND QUALIFYING ACCOUNTS

Description	Balance at Beginning of Year	Additions: Charged to Costs and Expenses	Additions: Charged to Other Accounts	Deductions & Write-offs	Balance at End of Year
		(in thousands)			
Allowance for doubtful accounts:					
Years ended December 31,					
2015	$2,250	$(255)	$ 21	$(256)	$1,760
2014	$1,924	$ 668	$ 12	$(354)	$2,250
2013	$2,078	$ 631	$(62)	$(723)	$1,924

Description	Balance at Beginning of Year	Additions: Charged to Costs and Expenses	Additions: Charged to Other Accounts	Deductions & Write-offs	Balance at End of Year
		(in thousands)			
Allowance for sales returns:					
Years ended December 31,					
2015	$730	$2,500	$ (3)	$(2,626)	$601
2014	$827	$2,223	$ —	$(2,320)	$730
2013	$801	$1,933	$(36)	$(1,871)	$827

Description	Balance at Beginning of Year	Additions: Charged to Costs and Expenses	Additions: Charged to Other Accounts	Deductions	Balance at End of Year
		(in thousands)			
Valuation allowance on deferred tax asset:					
Years ended December 31,					
2015	$26,763	$ —	$113	$(20,749)	$ 6,127
2014	$27,102	$ —	$ —	$ (339)	$26,763
2013	$27,497	$ —	$ —	$ (395)	$27,102

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this annual report on Form 10-K for the fiscal year ended December 31, 2015, to be signed on its behalf by the undersigned, thereunto duly authorized on the 26th day of February 2016.

MKS INSTRUMENTS, INC.

By: /s/ Gerald G. Colella

Gerald G. Colella
Chief Executive Officer, President and Director
(Principal Executive Officer)

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 date indicated.

SIGNATURES	TITLE	DATE
/s/ John R. Bertucci John R. Bertucci	Chairman of the Board of Directors	February 13, 2016
/s/ Gerald G. Colella Gerald G. Colella	Chief Executive Officer, President and Director	February 26, 2016
/s/ Seth H. Bagshaw Seth H. Bagshaw	Vice President, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	February 26, 2016
/s/ Cristina H. Amon Cristina H. Amon	Director	February 11, 2016
/s/ Robert R. Anderson Robert R. Anderson	Director	February 16, 2016
/s/ Gregory R. Beecher Gregory R. Beecher	Director	February 12, 2016
/s/ Richard S. Chute Richard S. Chute	Director	February 16, 2016
/s/ Peter R. Hanley Peter R. Hanley	Director	February 16, 2016
/s/ Elizabeth A. Mora Elizabeth A. Mora	Director	February 13, 2016

BOARD OF DIRECTORS

John R. Bertucci
Chairman
MKS Instruments, Inc.

Dr. Cristina H. Amon
Dean
Faculty of Applied Science and Engineering
Alumni Chair Professor of Bioengineering and Professor, Department of Mechanical and Industrial Engineering
University of Toronto

Robert R. Anderson
Former Chief Financial Officer and Chief Operating Officer
KLA Instruments Corp.

Gregory R. Beecher
Vice President and Chief Financial Officer
Teradyne, Inc.

Richard S. Chute, Esq.

Gerald G. Colella
Chief Executive Officer and President
MKS Instruments, Inc.

Dr. Peter R. Hanley
Former President
Novellus Systems, Inc.

Elizabeth A. Mora
Chief Financial Officer
The Charles Stark Draper Laboratory

MANAGEMENT

Gerald G. Colella
Chief Executive Officer and President

John R. Abrams
Senior Vice President
Global Sales and Service

Seth H. Bagshaw
Vice President, Chief Financial Officer and Treasurer

Kathleen F. Burke
Vice President, General Counsel and Assistant Secretary

John F. Ippolito
Vice President
Corporate Development

Catherine M. Langtry
Vice President
Global Human Resources

John T. C. Lee
Senior Vice President
Business Units

Brian C. Quirk
Senior Vice President
Global Operations

Eric S. Snyder
Vice President
Quality and Reliability

SHAREHOLDER CONTACTS

Corporate Headquarters
MKS Instruments, Inc.
2 Tech Drive, Suite 201
Andover, MA 01810
Telephone: 978.645.5500

Outside Counsel
Wilmer Cutler Pickering Hale and Dorr LLP
Boston, MA

Independent Auditors
PricewaterhouseCoopers LLP
Boston, MA

Stock Listing
NASDAQ Global Select Market
Symbol: MKSI

Transfer Agent
American Stock Transfer & Trust Company, LLC
6201 15th Avenue
Brooklyn, NY 11219
Telephone: 718.921.8200
Fax: 718.765.8717
www.amstock.com

Shareholders may also direct inquiries to:
Seth H. Bagshaw
Vice President, Chief Financial Officer and Treasurer
MKS Instruments, Inc.
2 Tech Drive, Suite 201
Andover, MA 01810
Telephone: 978.645.5500
www.mksinst.com

Annual Meeting of Shareholders
Monday, May 2, 2016, 10:00 a.m.
MKS Instruments, Inc.
2 Tech Drive, Suite 201
Andover, MA 01810

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