VEECO INSTRUMENTS INC
Form 10-K
February 25, 2016
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

x **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2015

OR

o **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission file number 0-16244

VEECO INSTRUMENTS INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**11-2989601**
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)
Terminal Drive **Plainview, New York**	**11803**
(Address of Principal Executive Offices)	(Zip Code)

Registrant s telephone number, including area code:

(516) 677-0200

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

(Title of each class)	(Name of each exchange on which registered)
Common Stock, par value $0.01 per share	**The NASDAQ Stock 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 x No o

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 o No x

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

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 during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes x No   o

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 references in Part III of this Form 10-K or any amendment to this Form 10-K. x

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.

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

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Act). o Yes x No

The aggregate market value of the common stock held by non-affiliates of the registrant at June 26, 2015 (the last business day of the registrant s most recently completed second quarter) was $1,202,150,344 based on the closing price of $29.81 on the NASDAQ Stock Market on that date.

The number of shares of each of the registrant s classes of common stock outstanding on February 10, 2016 was 39,972,031 shares of common stock, par value $0.01 per share.

DOCUMENTS INCORPORATED BY REFERENCE

Certain portions of the definitive Proxy Statement to be used in connection with the Registrant s 2016 Annual Meeting of Stockholders are incorporated by reference into Part III of this Form 10-K.

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This Annual Report on Form 10-K (Form 10-K) contains certain forward-looking information relating to Veeco Instruments Inc. (together with its consolidated subsidiaries, Veeco, the Company, Registrant, we, our, or us, unless the context indicates otherwise) that is based on the l of, and assumptions made by, our management as well as information currently available to management. When used in this Form 10-K, the words believes, anticipates, expects, estimates, targets, plans, intends, will, and similar expressions relating to the future are intende forward-looking information. Discussions containing such forward-looking statements may be found in Part I. Items 1, 3, 7 and 7A hereof, as well as within this Form 10-K generally. This forward-looking information reflects our current views with respect to future events and is subject to certain risks, uncertainties, and assumptions, some of which are described under the caption Risk Factors in Part I, Item 1A, and elsewhere in this Form 10-K. Should one or more of these risks or uncertainties occur, or should our assumptions prove incorrect, actual results may vary materially from the forward-looking information described in this Form 10-K as believed, anticipated, expected, estimated, targeted, planned, or similarly identified. We do not undertake any obligation to update any forward-looking statements to reflect future events or circumstances after the date of such statements.

PART I

Item 1. Business

We create process equipment that enables technologies for a cleaner and more productive world. We design, develop, manufacture, market, and support thin film equipment to meet the demands of key global trends such as improving energy efficiency, enhancing mobility, and increasing connectivity. Our equipment is used to make electronic devices which enable these trends, including light emitting diodes (LEDs), micro-electromechanical systems (MEMS), wireless devices, power electronics, hard disk drives (HDDs), and semiconductors. We may also license our technology to our customers or partners.

We develop highly differentiated, best-in-class equipment for critical performance steps in thin film processing. Our products provide leading technology at low cost-of-ownership. Core competencies in advanced thin film technologies and decades of specialized process know-how help us stay at the forefront of these rapidly advancing industries.

Headquartered in Plainview, New York, we were organized as a Delaware corporation in 1989. We have sales and service operations across the Asia-Pacific region, Europe, and North America to address our customers needs.

Business Overview

We are focused on:

- Providing differentiated process equipment to address customers current production requirements and next generation product development roadmaps;

- Investing to win through focused research and development in markets that we believe provide significant growth opportunities or are at an inflection point in process equipment requirements, including LED, power semiconductor devices, and advanced packaging technologies;

- Leveraging our sales channel and local process applications support teams to build strong strategic relationships with technology leaders;

- Expanding our portfolio to improve the performance of our systems, including spare parts, upgrades, and consumables to drive growth, reduce our customers cost of ownership, and improve customer satisfaction;

- Cross-selling our product portfolio across our broad customer base and end markets to both maximize sales opportunities and diversify our business;

- Utilizing a combination of outsourced and internal manufacturing strategies to flex manufacturing capacity through industry investment cycles without compromising quality; and

- Pursuing partnerships and acquisitions to expand our product portfolio into adjacent markets and drive sales growth.

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Markets

Our systems are used in the creation of a broad range of microelectronic components, including LEDs, MEMS, radio frequency (RF) filters, power semiconductors, thin film magnetic heads (TFMHs), and compound semiconductor devices. Our customers who manufacture these devices invest in our systems to develop next generation products and deliver more efficient, cost effective, and advanced technological solutions. We operate in a cyclical business environment, and our customers buying patterns are dependent upon industry trends. Our products are sold into multiple markets, and the following discussion focuses on the trends that most influence our business within each of those markets.

Lighting, Display & Power Electronics

LED technology has existed for more than 50 years; however, commercial adoption of LEDs was limited to niche applications until the most recent decade. In the early 1990 s, researchers developed a process utilizing Gallium Nitride (GaN) that created a low cost LED to produce white light. With that breakthrough, the LED industry started, and the number of applications for LEDs began to expand. The first wave of LED growth occurred between 2003 and 2006 driven by mobile phones, which implemented the use of LED technology for display backlighting. The LED industry experienced its second period of rapid growth as LEDs were adopted for TV display backlighting. Starting in 2009, LED producers, particularly in South Korea and Taiwan, made significant investments in LED process equipment to capture share in these markets. Our metal organic chemical vapor deposition (MOCVD) technology is at the core of the manufacturing process for GaN-based LEDs. Over the next couple of years, our sales increased considerably driven in part by Chinese government subsidies for MOCVD equipment. Following this investment wave, there was an oversupply of MOCVD equipment, and our business went into a deep decline.

The adoption of LEDs for solid state lighting helped drive improvements in industry conditions in 2014. LED technology offered energy and cost savings opportunities in lighting, which played an important role in the global shift toward energy efficiency initiatives. LEDs are up to 80% more efficient than traditional incandescent bulbs and up to 25% more efficient than compact fluorescent bulbs. LED penetration into the lighting market is growing, and for the first time, LED unit demand for general lighting surpassed demand for display backlighting in 2015. While LED industry conditions softened in the second half of 2015, due largely to weak TV and LED display backlighting demand, we expect to benefit from the ongoing adoption of LED lighting over time.

MOCVD technology is equally important in the manufacturing of red, orange, and yellow (ROY) LEDs, which are used in signage and automotive lighting applications. For these LEDs, our K475 MOCVD platform is used to deposit highly uniform Arsenic Phosphide (AsP) films which create amber and red hues. While ROY LEDs are predicted to grow at a slower pace than LED units for general lighting, we expect to benefit from growth driven by increased adoption of LED technology for automobiles and outdoor display/signage applications. In addition to depositing the critical GaN layer with our MOCVD products, our Precision Surface Processing (PSP) products address multiple etch and clean steps required for the LED manufacturing process.

Our products are also crucial in the manufacturing of GaN-on-Silicon based power electronic devices. Global demand is increasing for advanced power electronics with greater energy efficiency, smaller footprints, higher operating temperatures, faster switching capabilities, and greater reliability. These devices support many needs, including more efficient IT servers, electrical motors, electric vehicles, wind turbines, and photovoltaic power inverters.

While silicon-based transistors are widely used in power electronic devices today, GaN-on-Silicon based power electronics developed on MOCVD tools can potentially deliver higher performance (e.g., smaller power supply form factors, higher efficiency, and faster switching speeds). These devices are ideal for applications such as IT servers, where heat generation is an ever-increasing problem as server banks become larger and where heat management and energy efficiency requirements continues to rise. In 2015, global industry leaders in power electronics continued to focus on research and development (R&D) programs to commercialize this new technology. Device manufacturers will likely begin to transition from development to production of these devices over the next couple of years; we can benefit from this transition as our customers invest in process equipment to support this production ramp-up.

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Advanced Packaging, MEMS & RF

Advanced Packaging includes a portfolio of wafer-level assembly technologies that enable the miniaturization and performance improvement of electronic products, such as smartphones, smartwatches, tablets, and laptops. Our PSP products have been gaining traction in the rapidly growing area of Advanced Packaging. Demand for higher performance, increased functionality, smaller form factor, and lower power consumption in mobile devices, consumer electronics, and high performance computing is driving the adoption of advanced packaging technology. Independent Device Manufacturers (IDMs) and Outsourced Semiconductor Assembly and Test (OSAT) companies are implementing multiple advanced packaging approaches including Fan-Out Wafer Level Packaging (FO-WLP) and Through Silicon Via (TSV) to enable stacked memory, 2.5D, and 3D packaging devices.

MEMS devices are used for an increasing number of applications, including accelerometers for automobile airbags, pressure sensors for medical uses, and gyroscopes for a variety of consumer products, such as gaming consoles and mobile devices. One of the fastest growing MEMS applications has been RF filters for mobile devices, driven by increasingly complex wireless standards and the exponential growth of mobile data. In order to address these growing demands, a high-end smartphone can have as many as 60 discrete RF filters, a figure that has more than doubled in recent years. These trends are positive for us, particularly for our PSP products as well as our ion beam etch and Molecular Beam Epitaxy (MBE) products, which are used to create Bulk Acoustic Wave (BAW) and Surface Acoustic Wave (SAW) RF filters.

Data Storage

The Data Storage market involves the storage of data in electromagnetic or other forms for use by a computer or device, including HDDs used in large capacity storage applications. While HDDs face significant competition from flash memory, we believe that HDDs will continue to provide the best value for mass storage and will remain at the forefront of large capacity storage applications. This is especially true for data center applications where large volumes of data storage are required to serve an increasingly mobile population. The HDD manufacturing industry continues to optimize its existing manufacturing capacity to address demand. While we have seen signs of capacity constraints in some process areas and have experienced incremental orders for our equipment in 2015, future orders are likely to be focused on implementation of new technologies as opposed to capacity expansion. Future demand for our data storage systems is unclear and orders are expected to fluctuate from quarter to quarter. Our process knowledge and magnetic materials expertise from the Data Storage market positions us well for certain front-end semiconductor and MEMS opportunities, as thin film magnetic manufacturing methods become increasingly used in these markets.

Scientific & Industrial

The Scientific and Industrial markets include advanced materials research and a broad range of manufacturing applications including laser diodes, infrared detectors, optical coatings, and extreme ultraviolet (EUV) photomasks.

Our MBE systems are used by scientific research organizations and universities to drive new discoveries in the areas of materials science. MBE enables precise epitaxial crystal growth for a wide variety of materials, which supports the development of new performance materials used for emerging technologies. MBE technology is also used in the manufacturing of products such as laser diodes and infrared sensors. Our tools create highly uniform Gallium-Arsenide (GaAs) or Indium-Phosphide (InPh) film layers, which are critical to the performance of these devices. Our PSP products are also used to manufacture infrared sensors.

Our Ion Beam Deposition (IBD) tools are used to produce high quality optical films for multiple applications including laser mirrors, optical filters and anti-reflective coatings. Our tools deposit thin layers of advanced materials on various substrates to alter how light is reflected and transmitted. Our ability to precisely deposit high quality films with extremely low particulate levels make our ion beam deposition technology ideal for manufacturing defect-free EUV photomask blanks. The front-end semiconductor industry is expected to adopt EUV lithography to meet future device requirements. Future growth will depend on overall EUV production readiness.

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System products

Metal Organic Chemical Vapor Deposition Systems

We are the world s leading supplier of MOCVD systems. MOCVD production systems are used to make GaN-based devices (such as blue and green LEDs) and AsP-based devices (such as ROY LEDs), which are used in television and computer backlighting, general illumination, large area signage, specialty illumination, power electronics, and many other applications. Introduced in 2014, our TurboDisc® EPIK 700 GaN MOCVD system combines the industry s highest productivity and best-in-class yields with low cost of ownership, further enabling lower manufacturing costs for LED general lighting applications. Our TurboDisc K475 AsP MOCVD systems are also used to make ROY LEDs and high-efficiency triple junction photovoltaic solar cells. Our Propel PowerGaN MOCVD System (Propel) enables the development of highly-efficient GaN-based power electronic devices that have the potential to accelerate the industry s transition from research and development to high volume production. The Propel system offers 200mm technology and incorporates single-wafer reactor technology for outstanding film uniformity, yield, and device performance.

Precision Surface Processing Systems

In December 2014, we acquired Solid State Equipment LLC, a leading innovator in single wafer wet etch, clean, and surface preparation equipment targeting high growth segments in advanced packaging, MEMS, LEDs, and compound semiconductor markets, which we renamed PSP. The two core platforms acquired are the WaferEtch and the WaferStorm . The WaferEtch platform provides highly uniform, selective etching with onboard end point detection for improved process control and yield. The flagship of the WaferEtch platform, the TSV Revealer , is specifically configured to address the requirements of TSV reveal, which is the process where the backside of a wafer is thinned to reveal the copper interconnects. The TSV Revealer offers a significant cost of ownership reduction compared with dry etch processing by replacing up to four separate process steps. The WaferStorm platform is based on PSP s unique soak and spray technology, which provides improved performance at a lower cost of ownership than conventional wet bench-only or spray-only approaches. This highly flexible platform targets solvent based cleaning applications that require a significant level of control.

Ion Beam Etch and Deposition Systems

Our NEXUS® IBD systems utilize ion beam technology to deposit precise layers of thin films. IBD systems deposit high purity thin film layers and provide maximum uniformity and repeatability. Our NEXUS Ion Beam Etch (IBE) systems utilize a charged particle beam consisting of ions to etch precise, complex features. The NEXUS systems may be included on our cluster system platform to allow either parallel or sequential deposition/etch processes. These systems are used primarily by data storage and telecommunications device manufacturers in the fabrication of discrete and integrated microelectronic devices.

We also provide a broad array of ion beam sources. These technologies are applicable in the HDD industry as well as for optical coatings and other end markets. Our SPECTOR® systems offer manufacturers improvements in target material utilization, optical endpoint control, and process time for cutting-edge optical interference coating applications.

Molecular Beam Epitaxy Systems

MBE is the process of precisely depositing epitaxially-aligned atomically-thin crystalline layers, or epilayers, of elemental materials onto a substrate in an ultra-high vacuum environment. We are the leading supplier of MBE systems worldwide. Our MBE systems, sources, and components are used to develop and manufacture critical epitaxial layers in a wide variety of applications such as solar cells, fiber lasers, infrared detectors, mobile phones, radar systems, and displays. For many compound semiconductors, MBE is the critical step of the fabrication process, ultimately determining device functionality and performance. We provide MBE systems and components for the production of wireless devices (e.g., power amplifiers, high electron mobility transistors, or hetero-junction bipolar transistors) and a broad array of research applications for new compound semiconductor materials. In 2013, we introduced the GENxplor R&D MBE System, the industry s first fully-integrated MBE system for the compound semiconductor research and development market. The GENxplor MBE system creates high quality epitaxial layers on substrates up to 3 in diameter and is ideal for cutting edge research on a wide variety of materials including gallium arsenide, nitrides, and oxides. Our GEN2000® and

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GEN200® production MBE systems continue to set standards for volume production of MBE-based compound semiconductor devices.

Other Deposition and Industrial Products

We make a broad array of deposition systems including Physical Vapor Deposition, Diamond Like Carbon Deposition, and Chemical Vapor Deposition Systems. In addition, our Optium® products generally are used in back-end applications in data storage fabrication facilities where TFMHs or sliders are fabricated. This equipment includes lapping tools, which enable precise material removal within three nanometers, which is necessary for advanced TFMHs. We also manufacture tools that slice and dice wafers into row bars and TFMHs.

Sales and Service

We sell our products and services worldwide primarily through various strategically located facilities in the United States, Europe, and the Asia-Pacific region. We believe that our customer service organization is a significant factor in our success. We provide service and support on a warranty, service contract, and an individual service-call basis. We believe that offering timely support creates stronger relationships with customers and provides us with a significant competitive advantage. Revenue from the sales of parts, upgrades, service, and support represented approximately 22%, 25%, and 29% of our net sales for the years ended December 31, 2015, 2014, and 2013, respectively. Parts and upgrade sales represented approximately 18%, 21%, and 23% of our net sales for those years, respectively, and service and support sales were 4%, 4%, and 6% respectively.

Customers

We sell our products to many of the world s LED, MEMS, OSAT, HDD and semiconductor manufacturers, as well as research centers and universities. We rely on certain principal customers for a significant portion of our sales. Sales to San an Optoelectronics Co. and KAISTAR Lighting (Xiamen) Co. each accounted for more than 10% of our total net sales for 2015; sales to HC SemiTek Corp. and Seoul Viosys Co. each accounted for more than 10% of our total net sales in 2014; sales to HC SemiTek Corp. accounted for more than 10% of our total net sales in 2013. If any principal customer discontinues its relationship with us or suffers economic difficulties, our business prospects, financial condition, and operating results could be materially and adversely affected.

Research and Development

Our research and development functions are continually focused on the timely creation of new products and enhancements to existing products, both of which are necessary to maintain our competitive position. We collaborate with our customers to align our technology and product roadmaps to customer requirements. Our research and development activities take place at our facilities in Fremont, California; St. Paul, Minnesota; Somerset, New Jersey; Plainview, New York; Poughkeepsie, New York; and Horsham, Pennsylvania.

Our research and development expenses were approximately $78.5 million, $81.2 million, and $81.4 million, or approximately 16%, 21%, and 25% of net sales for the years ended December 31, 2015, 2014, and 2013, respectively. These expenses consisted primarily of salaries, project materials, and other product development and enhancement costs.

Suppliers

We outsource a portion of our manufacturing to third parties, including the manufacture of all or substantially all of our MOCVD systems, ion beam and other data storage systems, and ion sources. We primarily rely on several suppliers for the manufacturing of these systems. In addition, certain of the components and sub-assemblies included in our products are obtained from a single source or a limited group of suppliers.

Backlog

Our backlog consists of orders for which we received a firm purchase order, a customer-confirmed shipment date within twelve months, and a deposit when required. Our backlog decreased to $186.0 million at December 31, 2015 from $286.7

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million at December 31, 2014. During 2015, we recorded backlog adjustments of approximately $7.7 million relating to orders that no longer met our bookings criteria.

Competition

In each of the markets that we serve, we face substantial competition from established competitors, some of which have greater financial, engineering, and marketing resources than us, as well as from smaller competitors. In addition, many of our products face competition from alternative technologies, some of which are more established than those used in our products. Significant factors for customer selection of our tools include system performance, accuracy, repeatability, ease of use, reliability, cost of ownership, and technical service and support. None of our competitors compete with us across all of our product lines.

Our competitors include: Aixtron; AMEC; Applied Materials; Canon Anelva; DCA Instruments; Grand Plastics Technology Corporation; LAM Research; Leybold Optics; Oerlikon; Orbotech; Oxford Instruments; Riber; Scientech; Taiyo Nippon Sanso; and Tang Optoelectronics Equipment Company (TOPEC).

Intellectual Property

Our success depends in part on our proprietary technology. Although we attempt to protect our intellectual property rights through patents, copyrights, trade secrets, and other measures, there can be no assurance that we will be able to protect our technology adequately or that competitors will not be able to develop similar technology independently. We have over 300 patents in the United States and other countries and have additional applications pending for new inventions.

We have patents and exclusive and non-exclusive licenses to patents owned by others covering certain of our products, which we believe provide us with a competitive advantage. We have a policy of seeking patents on inventions concerning new products and improvements as part of our ongoing research, development, and manufacturing activities. We believe that there is no single patent or exclusive or non-exclusive license to patents owned by others that is critical to our operations, as the success of our business depends primarily on the technical expertise, innovation, customer satisfaction, and experience of our employees.

We also rely upon trade secret protection for our confidential and proprietary information. There can be no assurance that others will not independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets or that we can meaningfully protect our trade secrets. In addition, we cannot be certain that we will not be sued by third parties alleging that we have infringed their patents or other intellectual property rights. If any third party sues us, our business, results of operations, or financial condition could be materially adversely affected.

Employees

At December 31, 2015 we had 783 employees, of which there were 200 in manufacturing and testing, 86 in sales and marketing, 147 in service and product support, 201 in engineering and research and development, and 149 in information technology, general administration, and finance. The success of our future operations depends on our ability to recruit and retain engineers, technicians, and other highly skilled professionals who are in considerable demand. We feel that we have adequate programs in place to attract, motivate, and retain our employees. We monitor industry practices to make sure that our compensation and employee benefits remain competitive. However, there can be no assurance that we will be successful in recruiting or retaining key personnel. We believe that our employee relations are good.

Financial Information About Segments and Geographic Areas

We operate as a single reportable segment and report our financial results in four geographic regions: the United States; China; Europe, Middle East, and Africa (EMEA); and the Rest of World (ROW). Refer to Note 18, Segment Reporting and Geographic Information, in the Notes to the Consolidated Financial Statements for financial data pertaining to our geographic operations.

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Available Information

Our corporate website address is www.veeco.com. All filings we make with the Securities and Exchange Commission (SEC), including our Annual Report on Form 10-K, our Quarterly Reports on Form 10-Q, our Current Reports on Form 8-K, our proxy statements and any amendments thereto filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, are available for free in the Investor Relations section of our website as soon as reasonably practicable after they are filed with or furnished to the SEC. Our SEC filings are available to be read or copied at the SEC s Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Information about the operation of the Public Reference Room can be obtained by calling the SEC at 1-800-SEC-0330. Our filings can also be obtained for free on the SEC s website at www.sec.gov. The reference to our website address does not constitute inclusion or incorporation by reference of the information contained on our website in this Form 10-K or other filings with the SEC, and the information contained on our website is not part of this document.

Item 1A. Risk Factors

Key Risk Factors That May Impact Future Results

Stockholders should consider carefully the risk factors described below. Any of these factors, many of which are beyond our control, could materially adversely affect our business, financial condition, operating results, cash flow, and stock price.

Unfavorable market conditions may adversely affect our operating results.

Conditions of the markets in which we operate are volatile and have deteriorated significantly in many of the countries and regions in which we do business and may remain or become further depressed in the future. We have experienced and may continue to experience customer rescheduling and, to a lesser extent, cancellations of orders for our products. Adverse market conditions relative to our products could result in:

- reduced demand for our products;
- rescheduling and cancellations of orders for our products, resulting in negative backlog adjustments;
- increased price competition leading to lower margin for our products;
- increased competition from sellers of used equipment or lower-priced alternatives to our products;

- increased inventory obsolescence;

- increased uncollectable amounts due from our customers resulting in increased reserves for doubtful accounts and write-offs of accounts receivable;

- disruptions in our supply chain as we reduce our purchasing volumes and limit our contract manufacturing operations; and

- higher operating costs as a percentage of revenues.

If the markets in which we participate fail to experience a recovery or experience a further downturn, this could have a further negative impact on our sales and revenue generation, margins and operating expenses, and profitability.

A reduction or elimination of foreign government subsidies and economic incentives may adversely affect the future order rate for our MOCVD equipment.

We generate a significant portion of our revenue in China. In recent years, the Chinese government has provided various incentives to encourage development of the LED industry, including subsidizing a significant portion of the purchase cost of MOCVD equipment. These subsidies have enabled and encouraged certain customers in this region to purchase more of our MOCVD equipment than these customers might have purchased without these subsidies. The availability of these subsidies has varied over time and may end at some point in the future. A reduction or elimination of these incentives may result in a reduction in future orders for our MOCVD equipment in this region, which could materially and adversely affect our business, financial condition, and results of operations. In addition, in an effort to promote Chinese competition, the Chinese government could impose restrictions on the receipt of these subsidies, including requirements that the purchased equipment be sourced locally.

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A related risk is that many customers use or had planned to use Chinese government subsidies, in addition to other incentives from the Chinese government, to build new manufacturing facilities or to expand existing manufacturing facilities. Delays in the start-up of these facilities or the cancellation of construction plans altogether, together with other related issues pertaining to customer readiness, could adversely impact the timing of our revenue recognition, could result in order cancellations, a reduction in order backlog, and could have other negative effects on our business, financial condition, and results of operations.

The cyclicality of the industries we serve directly affects our business.

Our business depends in large part upon the capital expenditures of manufacturers in the LED, mobile communication, data storage, and other device markets. We are subject to the business cycles of these industries, the timing, length, and volatility of which are difficult to predict. These industries have historically been highly cyclical and have experienced significant economic downturns in the last decade. As a capital equipment provider, our revenue depends in large part on the spending patterns of these customers, who often delay expenditures or cancel or reschedule orders in reaction to variations in their businesses or general economic conditions. In downturns, we must be able to quickly and effectively align our costs with prevailing market conditions, as well as motivate and retain key employees. However, because a portion of our costs are fixed, our ability to reduce expenses quickly in response to revenue shortfalls may be limited. Downturns in one or more of these industries have had and will likely have a material adverse effect on our business, financial condition, and operating results. Alternatively, during periods of rapid growth, we must be able to acquire and/or develop sufficient manufacturing capacity to meet customer demand and attract, hire, assimilate, and retain a sufficient number of qualified people. We cannot give assurances that our net sales and operating results will not be adversely affected if our customers experience economic downturns or slowdowns in their businesses.

We operate in industries characterized by rapid technological change.

Each of the industries in which we operate is subject to rapid technological change. Our ability to remain competitive depends on our ability to enhance existing products and develop and manufacture new products in a timely and cost effective manner and to accurately predict technology transitions. Because new product development commitments must be made well in advance of sales, we must anticipate the future demand for products when selecting which development programs to fund and pursue. Our financial results depend to a great extent on the successful introduction of several new products, many of which require achieving increasingly stringent technical specifications. We cannot be certain that we will be successful in selecting, developing, manufacturing, and marketing new products or new technologies or in enhancing existing products. Our performance may be adversely affected if we are unable to accurately predict evolving market trends and related customer needs and to effectively allocate our resources among new and existing products and technologies.

We are also exposed to potential risks associated with unexpected product performance issues. Our product designs and manufacturing processes are complex and could contain unexpected product defects, especially when products are first introduced. Unexpected product performance issues could result in significant costs and damages, including increased service and warranty expenses, the need to provide product replacements or modifications, reimbursement for damages caused by our products, product recalls, related litigation, and product write-offs and disposal costs. These costs could be substantial and our reputation could be harmed, resulting in reduced demand for our products and could have a negative effect on our business, financial condition, and results of operations.

We have a concentrated customer base, located primarily in a limited number of regions, which operate in highly concentrated industries.

Our customer base continues to be highly concentrated. Orders from a relatively limited number of customers have accounted for, and likely will continue to account for, a substantial portion of our net sales, which may lead customers to demand pricing and other terms less favorable to us. Our five largest customers accounted for 55% of our total net sales in 2015. Customer consolidation activity involving some of our largest customers could result in an even greater concentration of our sales in the future. Management changes at key customer accounts could result in a loss of future sales due to vendor preferences or other reasons and may introduce new challenges in managing customer relationships.

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If a principal customer discontinues its relationship with us or suffers economic setbacks, our business, financial condition, and operating results could be materially and adversely affected. Our ability to increase sales in the future will depend in part upon our ability to obtain orders from new customers. We cannot be certain that we will be able to do so. In addition, because a relatively small number of large manufacturers, many of whom are our customers, dominate the industries in which they operate, it may be especially difficult for us to replace these customers if we lose their business. A significant portion of orders in our backlog are orders from our principal customers.

In addition, a substantial investment is required by customers to install and integrate capital equipment into a production line. As a result, once a manufacturer has selected a particular vendor s capital equipment, we believe that the manufacturer generally relies upon that equipment for the specific production line application and frequently will attempt to consolidate its other capital equipment requirements with the same vendor. Accordingly, if a customer selects a competitor s product over ours, we could experience difficulty selling to that customer for a significant period of time.

Furthermore, we do not have long-term contracts with our customers. As a result, our agreements with our customers do not provide any assurance of future sales, and we are exposed to competitive price pressure on each new order we attempt to obtain. Our failure to obtain new sales orders from new or existing customers would have a negative impact on our results of operations.

Our customer base is also highly concentrated in terms of geography, and the majority of our sales are to customers located in a limited number of countries. In 2015, 51% of our total net sales were to customers located in China. Dependence upon sales emanating from a limited number of regions increases our risk of exposure to local difficulties and challenges, such as those associated with regional economic downturns, political instability, fluctuating currency exchange rates, natural disasters, social unrest, pandemics, terrorism, or acts of war. Our reliance upon customer demand arising primarily from a limited number of countries could materially adversely impact our future results of operations.

We face significant competition.

We face significant competition throughout the world, which may increase as certain markets in which we operate continue to evolve. Some of our competitors have greater financial, engineering, manufacturing, and marketing resources than us. Other competitors are located in regions with lower labor costs and other reduced costs of operation. In addition, our ability to compete in foreign countries against local manufacturers may be hampered by nationalism, social attitudes, laws, regulations, and policies within such countries that favor local companies over U.S. companies or that are otherwise designed to promote the development and growth of local competitors. Furthermore, we face competition from smaller emerging equipment companies whose strategy is to provide a portion of the products and services we offer, with a focused approach on innovative technology for specialized markets. New product introductions or enhancements by us or our competitors could cause a decline in sales or loss of market acceptance of our existing or prior generation products. Increased competitive pressure could also lead to intensified price competition resulting in lower margins. Our failure to compete successfully with these other companies would seriously harm our business.

To remain competitive, we may enter into strategic alliances with customers, suppliers, and other third parties to explore new market opportunities and possible technological advancements. These alliances may require significant investments of capital and other resources and often involve the exchange of sensitive confidential information. The success of these alliances may depend on factors over which we have limited control and will likely require ongoing cooperation and good faith efforts from our strategic partners. Strategic alliances are inherently subject to significant risks, and the inability to effectively manage these risks could materially and adversely affect our business and operating results.

The timing of our orders, shipments, and revenue recognition may cause our quarterly operating results to fluctuate significantly.

We derive a substantial portion of our net sales in any fiscal period from the sale of a relatively small number of high-priced systems. As a result, the timing of recognition of revenue for a single transaction could have a material effect on our sales and operating results for a particular fiscal period. As is typical in our industry, orders, shipments, and customer acceptances often occur during the last few weeks of a quarter. As a result, a delay of only a week or two can impact which period revenue is reported in and can cause volatility in our revenue for a given reporting period. Our quarterly

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results have fluctuated significantly in the past, and we expect this trend to continue. If our orders, shipments, net sales, or operating results in a particular quarter do not meet expectations, our stock price may be adversely affected.

Our sales cycle is long and unpredictable.

Historically, we have experienced long and unpredictable sales cycles (the period between our initial contact with a potential customer and the time when we recognize revenue from that customer). Our sales cycle can exceed twelve months. The timing of an order often depends on the capital expenditure budget cycle of our customers, which is completely out of our control. In addition, the time it takes us to build a product to customer specifications typically ranges from three to six months. When coupled with the fluctuating amount of time required for shipment, installation, and final acceptance, our sales cycles often vary widely, and variations in length of this period can cause further fluctuations in our operating results. As a result of our lengthy sales cycle, we may incur significant research, development, selling, general, and/or administrative expenses before we generate revenues for these products. We may never generate the anticipated revenues if a customer cancels or changes plans. Variations in the length of our sales cycle could also cause our sales and, therefore, our cash flow and results of operations to fluctuate widely from period to period.

Our backlog is subject to customer cancellation or modification which could result in decreased sales, increased inventory obsolescence, and/or liabilities to our suppliers for products no longer needed.

Customer purchase orders may be cancelled or rescheduled by the customer, sometimes with limited or no penalties, which may result in increased and/or unrecoverable costs for the Company. We adjust our backlog for such cancellations, contract modifications, and delivery delays that result in a delivery period in excess of one year, among other items. A downturn in one or more of our businesses could result in increases in order cancellations and/or postponements.

We write-off excess and obsolete inventory based on historical trends, future usage forecasts, and other factors including the consideration of the amount of backlog we have on hand. If our backlog is canceled or modified, our estimates of future product demand may prove to be inaccurate, in which case we may have understated the write-off required for excess and obsolete inventory. In the future, if we determine that our inventory is overvalued, we will be required to recognize such costs in our financial statements at the time of such determination. In addition, we place orders with our suppliers based on our customers orders. If our customers cancel their orders with us, we may not be able to cancel our orders with our suppliers or may be required to take a charge for these cancelled commitments to our suppliers. Any such charges could be material to our results of operations and financial condition.

Our failure to estimate customer demand accurately could result in inventory obsolescence, liabilities to our suppliers for products no longer needed, and/or manufacturing interruptions or delays which could affect our ability to meet customer demand.

Our business depends on our ability to accurately forecast and supply 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. Uncertain worldwide economic conditions and market instabilities make it difficult for us (and our customers and our suppliers) to accurately forecast future product demand. 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 overestimate the demand for our products, excess inventory could result, which could be subject to heavy price discounting, which could become obsolete, and/or which could subject us to liabilities to our suppliers for products no longer needed. Similarly, we may be harmed in the event that our competitors overestimate the demand for their products and engage in heavy price discounting practices as a result. In addition, the volatility of demand for capital equipment increases capital, technical, and other risks for companies in our supply chain.

Furthermore, some key parts may be subject to long lead-times and/or obtainable only from a single supplier or limited group of suppliers, and some sourcing or subassembly is provided by suppliers located in countries other than the United States. We may 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:

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- the failure or inability of suppliers to timely deliver quality parts;
- volatility in the availability and cost of materials;
- difficulties or delays in obtaining required import or export approvals;
- information technology or infrastructure failures;
- natural disasters (such as earthquakes, tsunamis, floods, or storms); or
- other causes (such as regional economic downturns, pandemics, political instability, terrorism, or acts of war) that could result in delayed deliveries, manufacturing inefficiencies, increased costs, or order cancellations.

In addition, in the event of an unanticipated increase in demand for our products, our need to rapidly increase our business and manufacturing capacity may be limited by working capital constraints of our suppliers and may exacerbate any interruptions in our manufacturing operations and supply chain and the associated effect on our working capital. Any or all of these factors could materially and adversely affect our business, financial condition, and results of operations.

Our failure to successfully manage our outsourcing activities or failure of our outsourcing partners to perform as anticipated could adversely affect our results of operations and our ability to adapt to fluctuating order volumes.

To better align our costs with market conditions, increase the percentage of variable costs relative to total costs, and to increase productivity and operational efficiency, we have outsourced certain functions to third parties, including the manufacture of substantially all of our MOCVD systems, ion beam and other data storage systems, and ion sources. We rely heavily on our outsourcing partners to perform their contracted functions to allow us the flexibility to adapt to changing market conditions, including periods of significantly diminished order volumes. If our outsourcing partners do not perform as required, or if our outsourcing model does not allow us to realize the intended cost savings and flexibility, our results of operations (and those of our third party providers) may be adversely affected. Disputes and possibly litigation involving third party providers could result, and we could suffer damage to our reputation. Dependence on contract manufacturing and outsourcing may also adversely affect our ability to bring new products to market. Although we attempt to select reputable providers, it is possible that one or more of these providers could fail to perform as we expect. In addition, the role of third party providers has required and will continue to require us to implement changes to our existing operations and adopt new procedures and processes for retaining and managing these providers in order to realize operational efficiencies, assure quality, and protect our intellectual property. If we do not effectively manage our outsourcing strategy or if third party providers do not perform as anticipated, we may not realize the benefits of productivity improvements, and we may experience operational difficulties, increased costs, manufacturing and/or installation interruptions or delays, inefficiencies in the structure and/or operation of our supply chain, loss of intellectual property rights, quality issues, increased product time-to-market and/or inefficient allocation of human resources, any or all of which could materially and adversely affect our business, financial condition, and results of operations.

We rely on a limited number of suppliers, some of whom are our sole source for particular components.

We currently outsource certain functions to third parties, including the manufacture of substantially all of our MOCVD systems, ion beam and other data storage systems, and ion sources. We rely on a small number of suppliers for the manufacturing of these systems. While we maintain some level of internal manufacturing capability for these systems, the failure of our suppliers to meet their contractual obligations under our supply arrangements and our inability to make alternative arrangements or resume the manufacture of these systems ourselves could have a material adverse effect on our relationships with our customers and/or our business, financial condition, and results of operations.

In addition, certain of the components and sub-assemblies included in our products are obtained from a single source or a limited group of suppliers. Our inability to develop alternative sources, if necessary, could result in a prolonged interruption in supply or a significant increase in the price of one or more components, which could adversely affect our business, financial condition, and results of operations.

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Our inability to attract, retain, and motivate employees could have a material adverse effect on our business.

Our success depends upon our ability to attract, retain, and motivate employees, including those in executive, managerial, engineering, and marketing positions, as well as highly skilled and qualified technical personnel and personnel to implement and monitor our financial and managerial controls and reporting systems. Attracting, retaining, and motivating such qualified personnel may be difficult due to challenging industry conditions, competition for such personnel by other technology companies, consolidations and relocations of operations, and workforce reductions. We have entered into employment agreements with certain key personnel but our inability to attract, retain, and motivate key personnel could have a material adverse effect on our business, financial condition, and results of operations.

Our acquisition strategy subjects us to risks associated with evaluating and pursuing these opportunities and integrating these businesses.

We have completed several significant acquisitions in the past, and we will consider acquisitions of, or investments in, other businesses in the future. Acquisitions involve numerous risks, many of which are unpredictable and beyond our control, including, but not limited to:

- difficulties and increased costs in integrating the personnel, operations, technologies, and products of acquired companies;
- diversion of management s attention while evaluating, pursuing, and integrating the business to be acquired;
- the inability to complete proposed transactions as anticipated, resulting in obligations to pay professional and other expenses, including any applicable termination fees;
- potential loss of key employees of acquired companies, especially if a relocation or change in responsibilities is involved;
- difficulties in managing geographically dispersed operations in a cost-effective manner;
- the unattainability of expected synergies;
- unknown, underestimated, and/or undisclosed commitments or liabilities;

- increased amortization expense relating to intangible assets; and

- other adverse effects on our business, including the potential impairment and write-down of amounts capitalized as intangible assets and goodwill as part of the acquisition, as a result of technological advancements or worse-than-expected performance by the acquired company.

Our inability to effectively manage these risks could materially and adversely affect our business, financial condition, and results of operations. In addition, if we issue equity securities to pay for an acquisition, the ownership percentage of our then-current shareholders would be reduced and the value of the shares held by these shareholders could be diluted, which could adversely affect the price of our stock. If we use cash to pay for an acquisition, the payment could significantly reduce the cash that would be available to fund our operations or other purposes.

Timing of market adoption of LED technology for general lighting is uncertain.

Our future business prospects depend largely on the market adoption of products that incorporate our technologies. Potential barriers to such adoption include higher initial costs and customer familiarity with, and substantial investment and know-how in, existing technologies. These barriers apply to the adoption of LED technology for general illumination applications, including residential, commercial, and street lighting markets. While the use of LED technology for general lighting has grown in recent years, challenges remain and widespread adoption (and the related demand for our products) may not occur at currently projected rates. Furthermore, the adoption of, or changes in, government policies that discourage the use of traditional lighting technologies may impact LED adoption.

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Our sales to manufacturers are highly dependent on sales of consumer electronics applications, which can experience significant volatility due to seasonal and other factors and materially adversely impact our future results of operations.

The demand for LEDs, HDDs, and our other products is highly dependent on sales of consumer electronics, such as televisions and computer monitors, computers, tablets, digital video recorders, camcorders, MP3/4 players, smartphones, cell phones, and other mobile devices. Manufacturers of LEDs are among our largest customers and account for a substantial portion of our revenue. Factors that could influence the levels of spending on consumer electronic products include consumer confidence, access to credit, volatility in fuel and other energy costs, conditions in the residential real estate and mortgage markets, labor and healthcare costs, and other macroeconomic factors affecting consumer spending behavior. These and other economic factors have had and could continue to have a material adverse effect on the demand for our customers products and, in turn, on our customers demand for our products and services impacting our financial condition and results of operations. Furthermore, manufacturers of LEDs have in the past overestimated their potential for market share growth. If this growth is overestimated, we may experience cancellations of orders in backlog, rescheduling of customer deliveries, obsolete inventory, and/or liabilities to our suppliers for products no longer needed.

In addition, the demand for some of our customers products can be even more volatile and unpredictable due to the possibility of competing technologies, such as flash memory as an alternative to HDDs. Unpredictable fluctuations in demand for our customers products or rapid shifts in demand from our customers products to alternative technologies could materially adversely impact our future results of operations.

Our operating results have been, and may continue to be, adversely affected by tightening credit markets.

As a global company with worldwide operations, we are subject to volatility and adverse consequences associated with economic downturns in different parts of the world. In the event of a downturn, many of our customers may delay or further reduce their purchases of our products and services. If negative conditions in the credit markets prevent our customers from obtaining credit or necessary financing, product orders in these channels may decrease, which could result in lower revenue. In addition, we may experience cancellations of orders in backlog, rescheduling of customer deliveries, and pricing pressures. If our suppliers face challenges in obtaining credit, in selling their products, or otherwise in operating their businesses, they may become unable to continue to offer the materials we use to manufacture our products, which could impair our operations.

In addition, we finance some of our sales through trade credit. In addition to ongoing credit evaluations of our customers financial condition, we seek to mitigate our credit risk by obtaining deposits and/or letters of credit on certain of our sales arrangements. We could suffer significant losses if a customer whose accounts receivable we have not secured fails or is otherwise unable to pay us, or if financial institutions providing letters of credit become insolvent. A significant loss in collections on our accounts receivable would have a negative impact on our financial condition and results of operations.

We are exposed to the risks of operating a global business, including the need to obtain export licenses for certain of our shipments and political risks in the countries we operate.

Most of our sales are to customers located outside of the United States. We expect sales from non-U.S. markets to continue to represent a significant portion of our sales in the future. Our non-U.S. sales and operations are subject to risks inherent in conducting business outside the

United States, many of which are outside our control, including:

- difficulties in managing a global enterprise, including staffing, managing distributors and representatives, and repatriating cash in a tax efficient manner;

- regional economic downturns, varying foreign government support, and unstable political environments;

- political and social attitudes, laws, rules, regulations, and policies within countries that favor local companies over U.S. companies, including government-supported efforts to promote the development and growth of local competitors;

- pressures from foreign customers and foreign governments for us to increase our operations and sourcing in the foreign country;

- longer sales cycles and difficulty in collecting accounts receivable;

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- multiple, conflicting, and changing governmental laws and regulations, including varying labor laws, tax regulations, import/export controls, and other trade barriers;

- reliance on various information systems and information technology to conduct our business, which may be vulnerable to cyber-attacks by third parties or breached due to employee error, misuse or other causes that could result in business disruptions, loss of or damage to intellectual property, transaction errors, processing inefficiencies, or other adverse consequences should our security practices and procedures prove ineffective; and

- different customs and ways of doing business.

These challenges, many of which are associated with sales into the Asia-Pacific region, may continue and recur again in the future, which could have a material adverse effect on our business. In addition, political instability, terrorism, acts of war, tsunamis, or epidemics in regions where we operate may adversely affect or disrupt our business and results of operations.

Furthermore, products which are either manufactured in the United States or based on U.S. technology are subject to the U.S. Export Administration Regulations (EAR) when exported to and re-exported from international jurisdictions, in addition to the local jurisdiction s export regulations applicable to individual shipments. Currently, our MOCVD deposition systems and certain of our other products are controlled for export under the EAR. Licenses or proper license exceptions may be required for the shipment of our products to certain countries. Obtaining an export license requires cooperation from the customer and customer-facility readiness and can add time to the order fulfillment process. While we have generally been successful in obtaining export licenses in a timely manner, there can be no assurance that this will continue or that an export license can be obtained in each instance where it is required. If an export license is required but cannot be obtained, then we will not be permitted to export the product to the customer. The administrative processing, potential delay, and risk of ultimately not obtaining an export license pose a particular disadvantage to us relative to our non-U.S. competitors who are not required to comply with U.S. export controls. Non-compliance with the EAR or other applicable export regulations could result in a wide range of penalties including the denial of export privileges, fines, criminal penalties, and the seizure of commodities. In the event that any export regulatory body determines that any of our shipments violate applicable export regulations, we could be fined significant sums and/or our export capabilities could be restricted, which could have a material adverse impact on our business.

We may be exposed to liabilities under the Foreign Corrupt Practices Act and any determination that we violated these or similar laws could have a material adverse effect on our business.

We are subject to the Foreign Corrupt Practices Act (FCPA) and other laws that prohibit improper payments or offers of payments to foreign government officials, as defined by the statute, for the purpose of obtaining or retaining business. In addition, many of our customers have policies limiting or prohibiting us from providing certain types or amounts of entertainment, meals, or gifts to their employees. It is our policy to implement safeguards to discourage these practices by our employees and representatives. However, our safeguards may prove to be ineffective and our employees, consultants, sales agents, or distributors may engage in conduct for which we may be held responsible. In addition, we may acquire a company that has engaged in unlawful conduct in the past, and be held responsible for this conduct through successor liability principles. Violations of the FCPA or similar laws or similar customer policies may result in severe criminal or civil sanctions or the loss of supplier privileges to a customer, and we may be subject to other liabilities, which could negatively affect our business, financial condition, and results of operations.

We are subject to internal control evaluations and attestation requirements of Section 404 of the Sarbanes-Oxley Act and any delays or difficulty in satisfying these requirements or negative reports concerning our internal controls could adversely affect our future results of operations and our stock price.

Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, we must include in our Annual Report on Form 10-K a report by management on the effectiveness of our internal control over financial reporting. Ongoing compliance with this requirement is complex, costly, time-consuming, and is subject to significant judgment. If our internal controls are ineffective or if our management does not timely assess the adequacy of such internal controls, our ability to file timely and accurate periodic reports may be impeded. Any delays in filing may cause us to face the following risks and concerns, among others:

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- concern on the part of our customers, partners, investors, and employees about our financial condition and filing delay status, including the potential loss of business opportunities;
- significant time and expense required to complete delayed filings and the distraction of our senior management team and board of directors as we work to complete delayed filings;
- investigations by the SEC and other regulatory authorities of the Company and/or our management;
- limitations on our ability to raise capital;
- suspension or termination of our stock listing on The NASDAQ Stock Market and the removal of our stock as a component of certain stock market indices; and
- general reputational harm.

Any or all of the foregoing could result in the commencement of stockholder lawsuits against the Company. Any such litigation, as well as any proceedings that could arise as a result of a filing delay and the circumstances which gave rise to it, may be time consuming and expensive, may divert management attention from the conduct of our business, could have a material adverse effect on our business, financial condition, and results of operations, and may expose us to costly indemnification obligations to current or former officers, directors, or other personnel, regardless of the outcome of such matters, which may not be adequately covered by insurance.

Changes in accounting pronouncements or taxation rules or practices may adversely affect our financial results.

Changes in accounting pronouncements or taxation rules or practices can have a significant effect on our reported results. New accounting pronouncements or taxation rules and varying interpretations of accounting pronouncements or taxation practices have occurred and may occur in the future. New rules, changes to existing rules, or the questioning of our current or past practices, such as those associated with our transfer pricing, may adversely affect our reported financial results.

Our income taxes can change.

We are subject to income tax on a jurisdictional or legal entity basis and significant judgment is required in certain instances to allocate our taxable income to a jurisdiction and to determine the related income tax expense and benefits. Losses in one jurisdiction generally may not be used to offset profits in other jurisdictions. As a result, changes in the mix of our earnings (or losses) between jurisdictions, among other factors, could alter our overall effective income tax rate, possibly resulting in significant tax rate increases.

We are regularly audited by various tax authorities. Income tax audit assessments or changes in tax laws, regulations or other interpretations may result in increased tax provisions which could materially affect our operating results in the period or periods in which such determinations are made or changes occur.

In addition, our effective tax rate could increase if we determine that it is no longer more likely than not that we are able to utilize our remaining net deferred tax assets, if we are unable to generate sufficient future taxable income in certain jurisdictions, or if we are otherwise required to increase our valuation allowances against our deferred tax assets.

We may be required to take additional impairment charges on assets.

We are required to assess goodwill and indefinite-lived intangible assets annually for impairment, or on an interim basis, whenever certain events occur or circumstances change, such as an adverse change in business climate or a decline in the overall industry, that would more likely than not reduce the fair value below its carrying amount. We are also required to test our long-lived assets, including acquired intangible assets and property, plant, and equipment, for recoverability and impairment whenever there are indicators of impairment, such as an adverse change in business climate.

As part of our long-term strategy, we may pursue future acquisitions of other companies or assets which could potentially increase our assets. Adverse changes in business conditions could materially impact our estimates of future operations and result in impairment charges to these assets. In the future, a significant decline in the market price of our common stock

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could indicate a decline in the fair value of our reporting unit such that goodwill becomes impaired. If our assets were impaired, our financial condition and results of operations could be materially and adversely affected.

The price of our common shares is volatile and could decline significantly.

The stock market in general and the market for technology stocks in particular has experienced volatility. If these industry-based market fluctuations continue, the trading price of our common shares could decline significantly independent of the overall market, and shareholders could lose all or a substantial part of their investment. The market price of our common shares could fluctuate significantly in response to several factors, including, among others:

- difficult macroeconomic conditions, unfavorable geopolitical events, and general stock market uncertainties, such as those occasioned by a global liquidity crisis and a failure of large financial institutions;
- receipt of large orders or cancellations of orders for our products;
- issues associated with the performance and reliability of our products;
- actual or anticipated variations in our results of operations;
- announcements of financial developments or technological innovations;
- our failure to meet the performance estimates of investment research analysts;
- changes in recommendations and/or financial estimates by investment research analysts;
- strategic transactions, such as acquisitions, divestitures, or spin-offs; and
- the occurrence of major catastrophic events.

Significant price and value fluctuations have occurred with respect to our publicly traded securities and technology companies generally. The price of our common shares is likely to be volatile in the future. In the past, securities class action litigation often has been brought against a company following periods of volatility in the market price of its securities. If similar litigation were pursued against us, it could result in substantial costs and a diversion of management s attention and resources, which could materially and adversely affect our financial condition, results of operations, and liquidity.

The enforcement and protection of our intellectual property rights may be expensive and/or divert our limited resources.

Our success depends in part upon the protection of our intellectual property rights. We rely primarily on patent, copyright, trademark, and trade secret laws, as well as nondisclosure and confidentiality agreements and other methods, to protect our proprietary information, technologies, and processes. We own various U.S. and international patents and have additional pending patent applications relating to certain of our products and technologies. The process of seeking patent protection is lengthy and expensive, and we cannot be certain that pending or future applications will actually result in issued patents or that issued patents will be of sufficient scope or strength to provide meaningful protection or commercial advantage. In addition, our intellectual property rights may be circumvented, invalidated, or rendered obsolete by the rapid pace of technological change, or through efforts by others to reverse engineer our products or design around patents that we own. Given these limitations, our success will depend in part upon our ability to innovate ahead of our competitors.

Furthermore, policing unauthorized use of our products and technologies is difficult and time consuming, and the laws of other countries may less effectively protect our proprietary rights than U.S. laws. Our outsourcing strategy requires that we share certain portions of our technology with our outsourcing partners, which poses additional risks of infringement and trade secret misappropriation. Infringement of our rights by a third party, possibly for purposes of developing and selling competing products, could result in uncompensated lost market and revenue opportunities. Similar exposure could result in the event that former employees seek to compete with us through their unauthorized use of our intellectual property and proprietary information. We cannot be certain that the steps we have taken will prevent the misappropriation or unauthorized use of our proprietary information and technologies, particularly in foreign countries where the laws may not protect our proprietary intellectual property rights as fully or as readily as U.S. laws. Further, we cannot be certain that

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the laws and policies of any country, including the United States, with respect to intellectual property enforcement or licensing will not be changed in a way detrimental to the sale or use of our products or technology.

We may need to litigate to enforce our intellectual property rights, protect our trade secrets, or determine the validity and scope of proprietary rights of others. As a result of any such litigation, we could lose our ability to enforce one or more patents, incur substantial unexpected costs, and jeopardize relationships with current or prospective customers or suppliers. Any action we take to enforce our intellectual property rights could be costly and could absorb significant management time and attention, which, in turn, could negatively impact our operating results. In addition, failure to protect our trademark rights could impair our brand identity.

We may be subject to claims of intellectual property infringement by others.

From time to time we have received communications from other parties asserting the existence of patent or other rights which they believe cover certain of our products. We also periodically receive notice from customers who believe that we are required to indemnify them for damages they may incur related to infringement claims made against these customers by third parties. Our customary practice is to evaluate such assertions and to consider the available alternatives, including whether to seek a license, if appropriate. However, we cannot ensure that licenses can be obtained or, if obtained, will be on acceptable terms or that costly litigation or other administrative proceedings will not occur. If we are not able to resolve a claim, negotiate a settlement of the matter, obtain necessary licenses on commercially reasonable terms, and/or successfully prosecute or defend our position, our business, financial condition, and results of operations could be materially and adversely affected.

We are subject to foreign currency exchange risks.

We are exposed to foreign currency exchange rate risks that are inherent in our anticipated sales, sales commitments, and assets and liabilities that are denominated in currencies other than the U.S. dollar. Although we attempt to mitigate our exposure to fluctuations in currency exchange rates, hedging activities may not always be available or adequate to mitigate the impact of our exchange rate exposure. Failure to sufficiently hedge or otherwise manage foreign currency risks properly could materially and adversely affect our financial condition, results of operations, and liquidity.

If we are subject to cyber-attacks we could incur substantial costs and, if such attacks are successful, we could incur significant liabilities, reputational harm, and disruption to our operations.

We manage, store, and transmit proprietary information and sensitive data relating to our operations. We may be subject to breaches of the information technology systems we use for these purposes. Experienced computer programmers and hackers may be able to penetrate our network security and misappropriate and/or compromise our confidential information (and/or third party confidential information), create system disruptions, or cause shutdowns. Computer programmers and hackers also may be able to develop and deploy viruses, worms, and other malicious software programs that attack our systems or our products, or that otherwise exploit any security vulnerabilities.

The costs to address the foregoing security problems and security vulnerabilities before or after a cyber-incident could be significant. Our remediation efforts may not be successful and could result in interruptions, delays, or cessation of service, and loss of existing or potential customers, impeding our sales, manufacturing, distribution, or other critical functions. In addition, breaches of our security measures and the unapproved dissemination of proprietary information or sensitive data about us, our customers or other third parties, could expose us, our customers, or other third parties to a risk of loss or misuse of this information, result in litigation and potential liability for us, damage our reputation, or otherwise harm our business.

We have adopted certain measures that may have anti-takeover effects which may make an acquisition of our Company by another company more difficult.

We have adopted, and may in the future adopt, certain measures that may have the effect of delaying, deferring, or preventing a takeover or other change in control of our Company, any of which a holder of our common stock might not consider to be in the holder s best interest. These measures include:

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- blank check preferred stock;
- a classified board of directors; and
- certain other certificate of incorporation and bylaws provisions.

Our board of directors has the authority to issue up to 500,000 shares of preferred stock and to fix the rights (including voting rights), preferences, and privileges of these shares (blank check preferred). Such preferred stock may have rights, including economic rights, senior to our common stock. As a result, the issuance of the preferred stock could have a material adverse effect on the price of our common stock and could make it more difficult for a third party to acquire a majority of our outstanding common stock.

Our board of directors is divided into three classes with each class serving a staggered three-year term. The existence of a classified board makes it more difficult for our shareholders to change the composition (and therefore the policies) of our board of directors in a relatively short period of time.

We have adopted certain certificate of incorporation and bylaws provisions which have anti-takeover effects. These include: (a) requiring certain actions to be taken at a meeting of shareholders rather than by written consent, (b) requiring a super-majority of shareholders to approve certain amendments to our bylaws, (c) limiting the maximum number of directors, and (d) providing that directors may be removed only for cause. These measures and those described above may have the effect of delaying, deferring, or preventing a takeover or other change in control of our Company that a holder of our common stock might consider to be in the holder s best interest.

In addition, we are subject to the provisions of Section 203 of the General Corporation Law of the State of Delaware, which prohibits a Delaware corporation from engaging in any business combination, including mergers and asset sales, with an interested stockholder (generally, a 15% or greater stockholder) for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. The operation of Section 203 may have anti-takeover effects, which could delay, defer, or prevent a takeover attempt that a holder of our common stock might consider to be in the holder s best interest.

Despite the above measures, an activist shareholder could undertake action to implement governance, strategic, or other changes to the Company which a holder of our common stock might not consider to be in the holder s best interest. Such activities could interfere with our ability to execute our strategic plans, be costly and time consuming, disrupt our operations, and divert the attention of management and our employees.

We are subject to risks of non-compliance with environmental, health, and safety regulations.

We are subject to environmental, health, and safety regulations in connection with our business operations, including but not limited to regulations related to the development, manufacture and use of our products, recycling and disposal of related materials, and the operation and use of our facilities and real property. Failure or inability to comply with existing or future environmental and safety regulations, which vary from jurisdiction to jurisdiction, could result in significant remediation liabilities, the imposition of fines, and/or the suspension or termination of research, development, or use of certain of our products, each of which could have a material adverse effect on our business, financial condition, and results of operations. In addition, some of our operations involve the storage, handling, and use of hazardous materials that may pose a risk of fire, explosion, or environmental release. Such events could result from acts of terrorism, natural disasters, or operational failures and may result in injury or loss of life to our employees and others, local environmental contamination, and property damage. These events might cause a temporary shutdown of an affected facility, or portion thereof, and we could be subject to penalties or claims as a result. Each of these events could have a material adverse effect on our business, financial condition, and results of operations.

Regulations related to conflict minerals will force us to incur additional expenses, may make our supply chain more complex, and may result in damage to our relationships with customers.

Under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, or the Dodd-Frank Act, the SEC adopted requirements for companies that manufacture products that contain certain minerals and

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metals, known as conflict minerals. These rules require public companies to perform diligence and to report annually to the SEC whether such minerals originate from the Democratic Republic of Congo and adjoining countries. The implementation of these requirements could adversely affect the sourcing, availability, and pricing of minerals we use in the manufacture of our products. In addition, we have incurred and will continue to incur additional costs to comply with the disclosure requirements, including costs related to determining the source of any of the relevant minerals used in our products. Given the complexity of our supply chain, we may not be able to ascertain the origins of these minerals used in our products through the due diligence procedures that we implement, which may harm our reputation. We may also face difficulties in satisfying customers who may require that our products be certified as conflict mineral free, which could harm our relationships with these customers and lead to a loss of revenue. These requirements could limit the pool of suppliers that can provide conflict-free minerals, and we may be unable to obtain conflict-free minerals at competitive prices, which could increase our costs and adversely affect our manufacturing operations and our profitability.

We have significant operations in locations which could be materially and adversely impacted in the event of a natural disaster, an act of terrorism or other significant disruption.

Our operations in the United States, the Asia-Pacific region, and in other areas could be subject to natural disasters or other significant disruptions, including earthquakes, tsunamis, fires, hurricanes, floods, water shortages, other extreme weather conditions, medical epidemics, power shortages and blackouts, telecommunications failures, and other natural and manmade disasters or disruptions. In the event of such a natural disaster or other disruption, we could experience disruptions or interruptions to our operations or the operations of our suppliers, distributors, resellers or customers, destruction of facilities, and/or loss of life, all of which could materially increase our costs and expenses and materially and adversely affect our business, financial condition, and results of operations. In addition, various regions of the world in which we do business are subject to the threat of terrorism and acts of war. Any act of terrorism or war that affects the economy or the industries in which we operate could result in significant harm to us, including the loss of life and property, manufacturing and transportation delays, disruptions in our supply chain, the need to comply with enhanced security measures, and other increased costs.

Item 1B. Unresolved Staff Comments

None.

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Item 2. Properties

Our corporate headquarters and principal research and development, manufacturing, and sales and service facilities are:

Owned Facilities Location	Approximate Size (sq. ft.)	Mortgaged	Use
Plainview, NY	80,000	No	Corporate Headquarters; R&D; Manufacturing; Sales & Service
Somerset, NJ	80,000	No	R&D; Manufacturing; Sales & Service
Somerset, NJ	38,000	No	R&D; Sales & Service
St. Paul, MN (1)	43,000	Yes	R&D; Manufacturing; Sales & Service
St. Paul, MN (1)	75,000	Yes	Assets held for sale
Yongin-city, South Korea	56,000	No	Sales & Service
Hyeongok-ri, South Korea	15,000	No	Building for sale

(1) We consolidated our business into one building, leaving the adjacent building held for sale.

Leased Facilities Location	Approximate Size (sq. ft.)	Lease Expires	Use
Horsham, PA	48,900	2024	R&D; Manufacturing; Sales & Service
Somerset, NJ	14,000	2016	Warehouse
Poughkeepsie, NY	9,400	2017	R&D and Manufacturing
Kingston, NY	44,000	2018	Manufacturing
Fremont, CA	17,100	2018	R&D; Manufacturing; Sales & Service
Shanghai, China	9,900	2017	Sales & Service
Hsinchu City, Taiwan	13,000	2020	Sales & Service

We lease a small office in Edina, Minnesota for sales and service. Our foreign sales and service subsidiaries lease office space in Germany, Malaysia, Philippines, Singapore, South Korea, Thailand, and United Kingdom. Our facilities are adequate to meet our current needs.

Item 3. Legal Proceedings

Veeco and certain other parties were named as defendants in a lawsuit filed on April 25, 2013 in the Superior Court of California, County of Sonoma. The plaintiff in the lawsuit, Patrick Colbus, sought unspecified damages and asserted claims that he suffered burns and other injuries while cleaning a molecular beam epitaxy system alleged to have been manufactured by Veeco. The lawsuit alleged, among other things, that the molecular beam epitaxy system was defective and that Veeco failed to adequately warn of the potential risks of the system. During the first quarter of 2016, the parties agreed to settle the lawsuit, without any admission of wrongdoing. The settlement amount is expected to be fully covered by our insurance and, as a result, is not expected to have a material impact on our financial condition or results of operations.

We are involved in various other legal proceedings arising in the normal course of our business. We do not believe that the ultimate resolution of these matters will have a material adverse effect on our consolidated financial position, results of operations, or cash flows.

Item 4. Mine Safety Disclosures

Not Applicable.

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PART II

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

Our common stock is quoted on The NASDAQ Stock Market under the symbol VECO. The 2015 and 2014 high and low closing bid prices by quarter are as follows:

	2015		2014	
	High	Low	High	Low
First Quarter	$ 35.12	$ 29.12	$ 43.30	$ 32.18
Second Quarter	31.89	28.25	43.63	30.75
Third Quarter	28.88	20.41	37.26	33.22
Fourth Quarter	21.83	18.02	37.72	30.61

On February 10, 2016, the closing bid price for our common stock on The NASDAQ Stock Market was $17.52 and we had 90 shareholders of record.

We have not paid dividends on our common stock. The Board of Directors will determine future dividend policy based on our consolidated results of operations, financial condition, capital requirements, and other circumstances.

Issuer Purchases of Equity Securities

Share repurchase activity during the three months ended December 31, 2015 is as follows:

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs
		(in thousands, except average price paid per share)		
September 28, 2015 October 25, 2015		$		$ 100,000
October 26, 2015 November 29, 2015	314	19.19	314	93,979
November 30, 2015 December 31, 2015	155	20.66	155	90,778

On October 28, 2015, our Board of Directors authorized a program to repurchase up to $100 million of our common stock to be completed through October 28, 2017. At December 31, 2015, $9.2 million of the $100 million had been utilized. Repurchases are expected to be made from time to time on the open market or in privately negotiated transactions in accordance with applicable federal securities laws. The timing and amount of future repurchases, if any, will depend upon market conditions, SEC regulations, and other factors. The repurchases would be funded using available cash balances and cash generated from operations. The program does not obligate us to acquire any particular amount of common stock and may be modified or suspended at any time at our discretion.

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Stock Performance Graph

ASSUMES $100 INVESTED ON DEC. 31, 2010

ASSUMES DIVIDENDS REINVESTED

FISCAL YEAR ENDING DEC. 31

	2010	2011	2012	2013	2014	2015
Veeco Instruments Inc.	100.00	48.42	68.65	76.61	81.19	47.86
S&P Smallcap 600	100.00	101.02	117.51	166.05	175.61	172.14
RDG MidCap Technology	100.00	82.95	88.61	129.62	124.14	111.39

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Item 6. Selected Financial Data

The information set forth below should be read in conjunction with the Results of Operations section included in Item 7, Management s Discussion and Analysis of Financial Condition and Results of Operations.

[redacted]

Statement of Operations Data (1):					
Net sales	$ 477,038	$ 392,873	$ 331,749	$ 516,020	$ 979,135
Operating income (loss)	(23,232)	(79,209)	(71,812)	37,212	276,259
Income (loss) from continuing operations, net of tax	(31,978)	(66,940)	(42,263)	26,529	190,502
Basic income (loss) per common share from continuing operations	(0.80)	(1.70)	(1.09)	0.69	4.80
Diluted income (loss) per common share from continuing operations	(0.80)	(1.70)	(1.09)	0.68	4.63

(1) Information presented excludes the results of our discontinued operations.

[redacted]

Balance Sheet Data:					
Cash and cash equivalents	$ 269,232	$ 270,811	$ 210,799	$ 384,557	$ 217,922
Short-term investments	116,050	120,572	281,538	192,234	273,591
Working capital	379,904	387,254	485,452	632,197	587,076
Total assets	890,789	929,455	947,969	937,304	936,063
Long-term debt (less current installments)	1,193	1,533	1,847	2,138	2,406
Total equity	714,615	738,932	780,230	811,212	760,520

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

Executive Summary

We design, manufacture, and market thin film process equipment aligned to meet the demands of key global trends such as energy conservation, mobility, and the internet of things. Our equipment is primarily used to make components for electronic devices including LEDs, displays, power electronics, wireless devices, smartphones, MEMS, and HDDs. We develop highly differentiated equipment for critical performance steps in thin film processing. Our products provide leading technology at low cost-of-ownership and high volume productivity. Core competencies in advanced thin film technologies, patent protection, and decades of specialized process know-how help us stay at the forefront of these rapidly advancing markets.

Our portfolio of technology solutions sell into four key market areas: Lighting, Display & Power Electronics; Advanced Packaging, MEMS & RF; Scientific & Industrial; and Data Storage.

A majority of our sales in Lighting, Display & Power Electronics were derived from customers who manufacture LEDs. Demand for LED manufacturing equipment fluctuates quarter-to-quarter depending on various factors, including but not limited to macroeconomic conditions, customer utilization rates, demand for TVs and smartphones, and the rate of LED adoption for general lighting. Demand increased in 2014 and through the first half of 2015, supported by ongoing adoption of LED lighting for commercial and residential purposes. However, weak economic conditions in China and steep declines in LED demand for TV display backlighting resulted in LED unit oversupply through the second half of 2015. Accordingly, customers delayed their LED investment plans which adversely impacted our bookings, and we expect this will continue to negatively impact demand for our MOCVD equipment into 2016. While we have limited visibility to determine when demand for LED units will improve, industry analysts project LED lighting adoption will continue, and we believe this will require additional capacity purchases over the next several years as macroeconomic conditions improve. Our MOCVD architecture has been developed to support the most significant industry trends,

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including developing mid-power LEDs, utilizing larger wafer sizes, and optimizing cost-of-ownership. Our latest generation MOCVD system, the TurboDisc® EPIK 700, continues to perform well against our expectations.

Sales into the Advanced Packaging, MEMS & RF market were driven primarily by increasing content of RF filters and MEMS sensors for mobile devices and automobiles. These trends are particularly positive for our PSP products, which represented a majority of sales for this market in 2015. PSP has continued to perform ahead of our expectations since we acquired the business in December 2014. PSP provides single wafer wet etch, clean, and surface preparation equipment addressing multiple high growth markets, including advanced packaging, MEMS, and RF devices. We continue to build positive momentum in advanced packaging and received production orders for FO-WLP from a semiconductor foundry customer. We expect to benefit as additional customers invest in FO-WLP technologies over the near to mid-term. We also expanded our customer engagements for 3D TSV applications, which represent future growth opportunities for us.

In 2015, we grew sales in the Scientific & Industrial market primarily as a result of growth in sales of our PSP products. We continue to meet ongoing demand for our SPECTOR ion beam deposition products which are used by optical coating suppliers to manufacture a variety of products including laser mirrors, optical fibers, and anti-reflective coatings. We also continued to win a sizable proportion of the MBE research opportunities, supported by our GENXplor R&D product. Our systems enable universities and research consortia to conduct advanced materials research. The diverse customer base represented by the Industrial & Scientific markets support ongoing demand for our products; however, sales can be highly variable quarter-to-quarter.

The mature Data Storage market is facing softening demand for personal computers in the near term and a shift from HDDs to solid state drives in the longer term. Accordingly, HDD industry customers are not expected to make significant investments in new capacity. This is consistent with recent experience that investments are being made to support technology buys on an as-needed basis. Orders are expected to continue to fluctuate quarter-to-quarter.

Results of Operations

Years Ended December 31, 2015 and 2014

The following table presents revenue and expense line items reported in our Consolidated Statements of Operations for 2015 and 2014 and the period-over-period dollar and percentage changes for those line items. Our results of operations are reported as one business segment, represented by our single operating segment.

	For the year ended December 31,				Change	
	2015		2014		Period to Period	
			(dollars in thousands)			
Net sales	$ 477,038	100.0%	$ 392,873	100.0%	$ 84,165	21.4%
Cost of sales	299,797	62.8%	257,991	65.7%	41,806	16.2%
Gross profit	177,241	37.2%	134,882	34.3%	42,359	31.4%
Operating expenses, net:						
Selling, general, and administrative	90,188	18.9%	89,760	22.8%	428	0.5%

Research and development		78,543	16.5%		81,171	20.7%		(2,628)	(3.2)%
Amortization		27,634	5.8%		13,146	3.3%		14,488	110.2%
Restructuring		4,679	1.0%		4,394	1.1%		285	6.5%
Asset impairment		126	0.0%		58,170	14.8%		(58,044)	*
Changes in contingent consideration			0.0%		(29,368)	(7.5)%		29,368	*
Other, net		(697)	(0.1)%		(3,182)	(0.8)%		2,485	78.1%
Total operating expenses, net		200,473	42.0%		214,091	54.5%		(13,618)	(6.4)%
Operating income (loss)		(23,232)	(4.9)%		(79,209)	(20.2)%		55,977	70.7%
Interest income, net		586	0.1%		855	0.2%		(269)	(31.5)%
Income (loss) before income taxes		(22,646)	(4.7)%		(78,354)	(19.9)%		55,708	71.1%
Income tax expense (benefit)		9,332	2.0%		(11,414)	(2.9)%		20,746	*
Net income (loss)	$	(31,978)	(6.7)%	$	(66,940)	(17.0)%	$	34,962	52.2%

* Not meaningful

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Net Sales

The following is an analysis of sales by market and by region:

	For the year ended December 31,				Change			
	2015			2014			Period to Period	
				(dollars in thousands)				
Market Analysis								
Lighting, Display & Power Electronics	$ 291,133	61.0%	$	278,551	70.9%	$	12,582	4.5%
Advanced Packaging, MEMS & RF	61,935	13.0%		11,449	2.9%		50,486	441.0%
Scientific & Industrial	64,297	13.5%		44,429	11.3%		19,868	44.7%
Data Storage	59,673	12.5%		58,444	14.9%		1,229	2.1%
Total Sales	$ 477,038	100.0%	$	392,873	100.0%	$	84,165	21.4%
Regional Analysis								
United States	$ 86,627	18.2%	$	44,060	11.2%	$	42,567	96.6%
China	242,442	50.8%		159,063	40.5%		83,379	52.4%
EMEA	64,019	13.4%		35,644	9.1%		28,375	79.6%
Rest of World	83,950	17.6%		154,106	39.2%		(70,156)	(45.5)%
Total Sales	$ 477,038	100.0%	$	392,873	100.0%	$	84,165	21.4%

Total sales increased in 2015 from 2014 primarily due to an increase in the Advanced Packaging, MEMS & RF market which was primarily attributed to the PSP business acquired in December 2014. Sales increases were also realized in the other three markets. Pricing was not a significant driver of the change in total sales. By region, sales increased in China, EMEA, and the United States, partially offset by declines in Rest of World, principally in South Korea. We believe there will continue to be year-to-year variations in the geographic distribution of sales in the future.

Between 2015 and 2014, orders decreased $125.6 million, or 25%, to $384.4 million. The decrease is primarily attributable to a 57% decrease in orders in the Lighting, Display & Power Electronics as well as a 31% decrease in Data Storage. The pronounced decline in orders and the corresponding drawdown on backlog is driven by weakness in the LED market, which is due to lower demand for LED TV display backlighting and an economic slowdown in China. As a result, LED manufacturers delayed their MOCVD equipment investments, which impacted our full year orders in the Lighting, Display & Power Electronics market. The uncertainty around LED unit demand and the Chinese economy has reduced our ability to forecast near-term orders within the Lighting, Display & Power Electronics market. We also expect Data Storage demand to be weak as customers continue to only make select technology purchases.

One of the performance measures we use as a leading indicator of the business is the book-to-bill ratio. The ratio is defined as orders recorded in a given period divided by revenue recognized in the same period. A ratio greater than one indicates we are adding orders faster than we are recognizing revenue. In 2015, the ratio was 0.8, a reduction compared to 2014, when it was 1.3. Our backlog at December 31, 2015 was $186.0 million, which was lower than the ending backlog at December 31, 2014 of $286.7 million. During the year ended December 31, 2015, we recorded backlog adjustments of approximately $7.7 million relating to orders that no longer met our bookings criteria. For certain sales arrangements, we require a deposit for a portion of the sales price prior to manufacturing a system for a customer. At December 31, 2015 and 2014, we had customer deposits of $28.2 million and $73.0 million, respectively.

Gross Profit

Gross margins increased from the prior year primarily due to our acquisition of PSP in 2015, which contributed to an increase in sales volume and an improved product mix, as well as negatively impacting 2014 gross margin for an inventory fair value step-up that was recorded in connection with the purchase accounting. Products sold into our Scientific & Industrial markets improved margins as well. Finally, $4.6 million of customer deposits were forfeited and recognized into revenue and gross profit in 2015, favorably impacting gross margin.

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Selling, general, and administrative

Selling, general, and administrative expenses remained relatively consistent in 2015 as compared to 2014. Increases related to a full year of expenses associated with our PSP business which was acquired in December of 2014 were offset by decreases in third party professional fees and personnel related expenses.

Research and development

We focus our research and development on areas we anticipate to be high-growth. Research and development expenses decreased due to reductions in personnel-related expenses largely related to the 2015 restructuring, which included closing the Hyeongok-ri, South Korea facility and reducing the workforce, including 23 employees whose positions were eliminated. We also continue to selectively fund product development activities, which has resulted in reductions in spending for project materials, and, in 2015, we received a small amount of research and development funding from a collaborative arrangement. These reductions were partially offset by an increase in spending as a result of a full year of expenses associated with our PSP business.

Amortization expense

The increase in amortization expense is related to the $79.8 million in amortizable intangible assets acquired as part of our acquisition of PSP in December 2014.

Restructuring expense

In 2015, we announced the closing of our Hyeongok-ri, South Korea facility and reduced the workforce, including 23 employees whose positions were eliminated, resulting in additional restructuring costs. And in an effort to better align our cost structure with the recently observed weakness in the LED market, we reduced spending primarily through the reduction of 16 employees and 12 temporary staff toward the end of 2015. During 2014, we announced the closing of our Ft. Collins, Colorado and Camarillo, California facilities. Business activities formally conducted at these sites have been transferred to our Plainview, New York facility.

Asset impairment

Limited asset impairment charges were observed in 2015. During 2014, based on a combination of factors, including our determination that incumbent deposition technology for flexible OLED display encapsulation had progressed to satisfy current market requirements, we believed that there were sufficient indicators that required an interim asset impairment analysis on our Atomic Layer Deposition (ALD) business. As a result of our analysis, we recorded non-cash impairment charges of $28.0 million related to goodwill and $25.9 million related to other long-lived assets, including $17.4 million related to customer relationships, $4.8 million related to in-process research and development, and $3.6 million related to certain tangible assets. In addition, during 2014, we recognized $4.3 million of asset impairments on tangible assets held for sale, including certain lab tools and a vacant building and land.

Changes in Contingent Consideration

Included in our agreement to acquire ALD in the fourth quarter of 2013 were performance milestones that could trigger contingent payments to the original selling shareholders. During the year ended December 31, 2013, the first milestone was achieved, and we paid the former shareholders $5.0 million and increased the estimated fair value of the remaining contingent payments by $0.8 million. During 2014, we determined that all of the remaining performance milestones were not met, reversed the fair value of the liability, and recorded a non-cash gain of $29.4 million.

Other, net

During 2014, we completed our plan to liquidate our subsidiary in Japan, since we moved to a distributor model to serve our customers in that region. As a result of the liquidation, we reclassified a cumulative translation gain of $3.1 million from Other Comprehensive Income to Other, net on the Consolidated Statements of Operations.

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Income Taxes

The 2015 income tax expense is comprised of two components: (i) $1.8 million related primarily to U.S. tax amortization of the Company s indefinite-lived intangible assets that is not available to offset existing deferred tax assets and related valuation allowance and state and local income taxes and (ii) $7.5 million in tax expense relating to our profitable foreign operations. The 2014 income tax benefit included $13.4 million in tax benefits relating to our domestic operations offset by $2.0 million in tax expense relating to our foreign operations. Our 2015 effective tax rate is different than the statutory rate primarily due to our inability to recognize our U.S. deferred tax assets on a more-likely-than-not basis with respect to current year pre-tax U.S. operating losses. Our 2014 effective tax rate is lower than the statutory rate primarily related to a $4.9 million tax benefit associated with our successful negotiation of an incentive tax rate in one of our foreign subsidiaries, a $2.3 million reversal of uncertain tax positions as a result of concluding the 2010 IRS examination, and the recognition of only a portion of our U.S. deferred tax assets on a more-likely-than-not basis with respect to current year pre-tax operating losses. We maintain a valuation allowance on our U.S. deferred tax assets.

Years Ended December 31, 2014 and 2013

The following table presents revenue and expense line items reported in our Consolidated Statements of Operations for fiscal 2014 and 2013 and the period-over-period dollar and percentage changes for those line items. Our results of operations are reported as one business segment.

	For the year ended December 31,				Change	
	2014		2013		Period to Period	
			(dollars in thousands)			
Net sales	$ 392,873	100.0%	$ 331,749	100.0%	$ 61,124	18.4%
Cost of sales	257,991	65.7%	228,607	68.9%	29,384	12.9%
Gross profit	134,882	34.3%	103,142	31.1%		