

ADVANCED ENERGY INDUSTRIES INC
Form 10-K
February 25, 2016
Table of Contents

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

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

For the fiscal year ended December 31, 2015.

or

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

For the transition period from _____ to _____.

Commission file number: 000-26966

ADVANCED ENERGY INDUSTRIES, INC.

(Exact name of registrant as specified in its charter)

Delaware

84-0846841

(State or other jurisdiction of incorporation or organization)

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

1625 Sharp Point Drive, Fort Collins, CO

80525

(Address of principal executive offices)

(Zip Code)

Registrant's telephone number, including area code: (970) 221-4670

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

Title of each class

Name of each exchange on which registered

Common Stock, \$0.001 par value

NASDAQ Global Select Market

Securities registered pursuant to section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act:

Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act: Yes No

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

Yes No

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

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

Large accelerated filer Accelerated filer Non-accelerated filer

Smaller reporting company

(Do not check if a smaller reporting
company)

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

The aggregate market value of voting and non-voting common stock held by non-affiliates of the registrant was \$1,127,440,745 as of June 30, 2015, based upon the price at which such common stock was last sold on such date. For purposes of this disclosure, shares of common stock held by persons who hold more than 5% of the outstanding common stock and common stock held by executive officers and directors of the registrant have been excluded because such persons are deemed to be "affiliates" as that term is defined under the rules and regulations promulgated under the Securities Act of 1933. This determination is not necessarily conclusive for other purposes.

39,850,932

(Number of shares of Common Stock outstanding as of February 23, 2016)

DOCUMENTS INCORPORATED BY REFERENCE

Part III of this Annual Report on Form 10-K incorporates information by reference from the registrant's definitive proxy statement for its 2015 Annual Meeting of Stockholders, scheduled to be held on May 5, 2016. Except as expressly incorporated by reference, the registrant's definitive proxy statement shall not be deemed to be a part of this Annual Report on Form 10-K.

ADVANCED ENERGY INDUSTRIES, INC.
FORM 10-K
TABLE OF CONTENTS

	Page
<u>PART I</u>	<u>3</u>
<u>ITEM 1. BUSINESS</u>	<u>3</u>
<u>ITEM 1A. RISK FACTORS</u>	<u>10</u>
<u>ITEM 1B. UNRESOLVED STAFF COMMENTS</u>	<u>21</u>
<u>ITEM 2. PROPERTIES</u>	<u>22</u>
<u>ITEM 3. LEGAL PROCEEDINGS</u>	<u>22</u>
<u>ITEM 4. MINE SAFETY DISCLOSURES</u>	<u>22</u>
<u>PART II</u>	<u>23</u>
<u>ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES</u>	<u>23</u>
<u>ITEM 6. SELECTED FINANCIAL DATA</u>	<u>25</u>
<u>ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS</u>	<u>25</u>
<u>ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK</u>	<u>36</u>
<u>ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA</u>	<u>38</u>
<u>ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE</u>	<u>74</u>
<u>ITEM 9A. CONTROLS AND PROCEDURES</u>	<u>75</u>
<u>ITEM 9B. OTHER INFORMATION</u>	<u>75</u>
<u>PART III</u>	<u>76</u>
<u>ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT</u>	<u>76</u>
<u>ITEM 11. EXECUTIVE COMPENSATION</u>	<u>76</u>
<u>ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS</u>	<u>76</u>
<u>ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS</u>	<u>76</u>

<u>ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES</u>	<u>76</u>
<u>PART IV</u>	<u>77</u>
<u>ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES</u>	<u>77</u>
<u>SIGNATURES</u>	<u>82</u>
EX-21.1	
EX-23.1	
EX-31.1	
EX-31.2	
EX-32.1	
EX-32.2	

Table of Contents

PART I

Unless the context otherwise requires, as used in this Form 10-K, references to “Advanced Energy”, “the Company”, “we”, “us” or “our” refer to Advanced Energy Industries, Inc. and its consolidated subsidiaries.

ITEM 1. BUSINESS

Overview

Advanced Energy provides highly-engineered, mission-critical, precision power conversion, measurement and control solutions to our global customers. We do this by designing, manufacturing, selling and supporting our power conversion products and solutions that transform power into various usable forms in various applications ranging from manufacturing and industrial processes to instrumentation and test and measurement. The market for power conversion solutions is large with hundreds of suppliers and subsystem/component manufacturers. We focus on highly-engineered products that solve our customers’ toughest mission-critical applications.

Our process power products enable manufacturing processes that use thin films for various products, such as semiconductor devices, flat panel displays, thin film renewables, hard and industrial coatings and architectural glass. We also supply power control modules for controlling thermal processes, and thermal instrumentation products for advanced temperature measurement, both of which provide solutions for thin film semiconductor, thin film industrial, and heavy industry. Our remote plasma sources are used in the thin films processing industries and in gas abatement applications. Our high voltage products offer unique power solutions for semiconductor, analytical instrumentation, industrial x-ray, and medical imaging applications. Our network of global service support centers provides revenue as we offer repair services, conversions, upgrades, and refurbishments to companies using our products.

On January 27, 2014, we acquired the intellectual property related to AEG Power Solutions' Power Control Modules ("PCM"). PCM is comprised of the Thyro-Family of products and accessories and serves numerous power control applications in different industries ranging from materials' thermal processing through chemical processing, glass manufacturing and numerous other general industrial power applications. This acquisition broadens our product offerings and was added to our Precision Power portfolio.

On April 12, 2014, we acquired all outstanding common stock of HiTek Power Group ("HiTek"), a privately-held provider of high voltage power solutions. Based in the United Kingdom, HiTek offers a comprehensive portfolio of high voltage and custom built power conversion products, ranging from 100V to 500kV, designed to meet the demanding requirements of original equipment manufacturers ("OEM") worldwide. These products target applications including semiconductor wafer processing and metrology, scientific instrumentation, mass spectrometry, industrial printing, and analytical x-ray systems for industrial and analytical applications. HiTek's unique product architecture, encapsulation technology and control algorithms, combined with deep knowledge of its customer-specific applications, have made it a leading provider of critical, high-end, high voltage power solutions. We acquired HiTek to expand our product offerings in our Precision Power portfolio.

On August 4, 2014, we acquired all outstanding common stock of UltraVolt, Inc. ("UltraVolt"), a privately-held provider of high voltage power solutions. Based in Ronkonkoma, New York, UltraVolt offers a comprehensive portfolio of high voltage power supplies and modules ranging from benchtop and rack mount systems to microsize printed circuit board mount modules. Its standard DC-to-DC product line consists of over 1,500 models, which can be combined with accessories and options to create thousands of product configurations. Serving over 100 markets, UltraVolt's fixed-frequency, high voltage topology provides wide input and output operating ranges while retaining excellent stability and efficiencies. We acquired UltraVolt to expand our high voltage product offerings in our Precision Power portfolio. Note 2. Business Acquisitions in ITEM 8 "Financial Statements and Supplementary Data," describes the acquisitions of PCM, HiTek, and UltraVolt.

We incorporated in Colorado in 1981 and reincorporated in Delaware in 1995. Our executive offices are located at 1625 Sharp Point Drive, Fort Collins, Colorado 80525, and our telephone number is 970-407-4670.

Products and Services

Our products are designed to enable new process technologies, improve productivity, and lower the cost of ownership for our customers. We also provide repair and maintenance services for all of our products.

In 2014, we changed our organizational structure from two business units (formerly known as the Thin Films Business Unit and the Solar Energy Business Unit) to a single functional organization with various product lines organized as

reportable segments, Precision Power and Inverters. However, as of December 31, 2015, we have discontinued our Inverter production,

3

Table of Contents

engineering, and sales product line representing a strategic shift in our business. As such, all Inverter revenues, costs, assets and liabilities are reported in Discontinued Operations for all periods presented herein and we currently report as a single unit.

We principally serve OEMs and end customers in the semiconductor, flat panel display, high voltage, solar panel, and other industrial capital equipment markets. Our products are used in diverse markets, applications, and processes including the manufacture of capital equipment for semiconductor devices, thin film applications for thin film renewables and architectural glass, and for other thin film applications including flat panel displays, data storage, and industrial coatings. These markets can be cyclical in nature. Therefore, demand for our products and our financial results can change as demand for manufacturing equipment and repair and maintenance services change in response to consumer demand. Other factors, such as global economic and market conditions and technological advances in fabrication processes and renewable applications can also have an impact on our financial results, both positively and negatively.

Our thin film deposition power conversion systems include direct current ("DC"), pulsed DC low frequency, high voltage, and radio frequency ("RF") power supplies, matching networks, remote plasma sources for reactive gas applications and RF instrumentation. These power conversion systems refine, modify, and control the raw electrical power from a utility and convert it into power that may be customized and is predictable and repeatable. Our power conversion systems are primarily used by semiconductor, solar panel, and similar thin film manufacturers including flat panel display, data storage, industrial hard coating and ophthalmic optical coating equipment makers, and architectural glass manufacturers.

Our power control modules and thermal instrumentation products are used in the semiconductor industry, including adjacent thin film applications for solar PV and light emitting diode ("LED") industries, and heavy industries, for thermal control and temperature measurement solutions for applications in which time-temperature cycles affect material properties, productivity, and yield. These products are used in rapid thermal processing, chemical vapor deposition, crystal growing, and other semiconductor and solar applications requiring non-contact temperature measurement. They are also used in chemical processing, glass manufacturing and numerous other general industrial power applications.

Our global support services group offers in-warranty and out-of-warranty repair services in the regions in which we operate, providing us with preventive maintenance opportunities. Our customers continue to pursue low cost of ownership of their capital equipment and are increasingly sensitive to the significant costs of system downtime. They expect that suppliers offer comprehensive local repair service and customer support. To meet these market requirements, we maintain a worldwide support organization comprising of both direct and indirect activities through partnership with local distributors primarily in the United States ("U.S."), the People's Republic of China ("PRC"), Japan, South Korea, Taiwan, Germany, and Great Britain.

Effective with the conclusion of our inverter wind-down on December 31, 2015, we consider all inverter new product warranties historically sold to be discontinued operations. However, extended warranties historically sold and reflected as "Deferred Revenue" on our Consolidated Balance Sheets, represent future revenue and service costs to be incurred by our global services group and are reflected as continuing operations for historical periods and future periods. Please See Note 3. Discontinued Operations in PART II ITEM 8 "Financial Statements and Supplementary Data."

Markets

Our products compete in markets for high tech manufacturing capital equipment and renewable energy production. Our markets are not generally subject to seasonality; however, these markets are cyclical due to sudden changes in customers' manufacturing capacity requirements and spending, which depend in part on capacity utilization, demand for customers' products, inventory levels relative to demand, government incentives and subsidies, and access to affordable capital. For more information related to the markets in which we compete and the current environment in those markets, please see Business Environment and Trends in Item 7. Management's Discussion and Analysis.

SEMICONDUCTOR CAPITAL EQUIPMENT

Customers in the semiconductor capital equipment market incorporate our products into equipment that make integrated circuits. Our power conversion systems provide the energy to enable thin film processes, such as deposition

and etch, and high voltage applications such as ion implant. Our thermal instrumentation products measure the temperature of the processed substrate or the process chamber. Our remote plasma sources deliver ionized gases for reactive chemical processes used in cleaning, surface treatment, and gas abatement. Precise control over the energy delivered to plasma-based processes enables the production of integrated circuits with reduced feature sizes and increased speed and performance.

Table of Contents

SOLAR PANEL CAPITAL EQUIPMENT

We sell our products to OEMs and manufacturers of solar cells who use our products to produce thin films using silicon substrates, as well as glass or metal substrates. The majority of solar cell manufacturing currently uses a silicon wafer as the substrate and employs chemical vapor deposition ("CVD") thin film processing. The solar cell industry has developed processes for manufacturing solar cells on non-silicon substrates, such as glass and metal by using thin film processes that employ CVD tools. Our RF and DC power supply products are designed for use in these CVD and physical vapor deposition ("PVD") tools. Our products are used in leading thin film solar cell technologies, including amorphous and microcrystalline silicon, copper, indium, gallium, selenide, and cadmium telluride.

FLAT PANEL DISPLAY CAPITAL EQUIPMENT

Manufacturers of flat panel displays use thin film processes similar to those employed in manufacturing semiconductor integrated circuits. Flat panel display technology produces bright, sharp, large, color-rich images on flat screens for products ranging from hand-held devices to laptop and desktop computer monitors and flat TVs. This technology is used in manufacturing liquid crystal display, LED backlit, and 3-dimensional ("3D") television screens. The transition to larger panel sizes and higher display resolution is driving the need for tighter process controls to reduce manufacturing costs and defects. Increased focus on user experience and interface drives the use for new materials and device architecture such as organic light-emitting diode ("OLED") and active-matrix organic light-emitting diode ("AMOLED") and new technologies for touch screen. The emerging migration to flexible display drives the development of new materials and thin film technologies for encapsulation.

DATA STORAGE CAPITAL EQUIPMENT

Data storage equipment manufacturers use our products in their capital equipment which allows them to produce a variety of products, including optical disks, such as CDs, DVDs and Blu-ray, and magnetic storage, such as computer hard discs, including both magnetic media and thin film heads. These products use a PVD process to produce optical and magnetic thin film layers, as well as a protective-wear layer. In this market, the trend towards higher recording densities requires thinner and more precise films. The use of equipment incorporating optical and magnetic media to store digital data expands with the growth of the laptop, desktop and network server computer markets, and consumer electronics including audio, video, gaming, cell phone, and entertainment markets.

ARCHITECTURAL GLASS CAPITAL EQUIPMENT

Low Emissivity or Low-E architectural glass manufacturers use our power supplies in their production equipment. This glass is used in commercial and residential buildings to reduce energy absorption and loss through the use of thin films coated directly on the glass which reduces the energy absorbed in the building. The thin film deposition process employs PVD tools which use our DC and mid-frequency power products. This market is driven by end market demand for glass related to the residential and commercial construction industry.

INDUSTRIAL PRODUCTS CAPITAL EQUIPMENT

The thin film deposition processes are also used in the manufacturing process of products for a variety of industrial and consumer markets. Our process power solutions allow thin films to be applied to products in plasma-based processes to strengthen and harden surfaces on such diverse products as machine tools, automotive parts, and various other end products. The advanced thin film production processes allow precise control of various optical and physical properties, including color, transparency, and electrical and thermal conductivity. The improved adhesion and specular surfaces resulting from plasma-based processing make it the preferred method of applying thin films. The need for improved films properties for both hard coating and optical coating requires a precision power conversion technology which we achieved through the acquisition of Solvix products and technology.

Customers

Our products are sold worldwide to approximately 316 OEMs and integrators and directly to more than 1,771 end users. Our ten largest customers accounted for approximately 61.2% of our sales in 2015, 59.7% of our sales in 2014, and 61.6% of our sales in 2013. We expect that the sale of products to our largest customers will continue to account for a significant percentage of our sales for the foreseeable future.

Applied Materials Inc., our largest customer, accounted for 29.8% of our sales in 2015 and 2014, and 32.1% of our sales in 2013. Lam Research accounted for 20.3% of our sales in 2015, 19.9% of our sales in 2014, and 16.8% of our sales in 2013. No other customer accounted for greater than 10% of our sales in 2015, 2014, or 2013. The loss of

Applied Materials, Inc. or Lam Research as a customer could have a material adverse effect on our results of operations.

5

Table of Contents**Backlog**

Our backlog was approximately \$43.7 million at December 31, 2015, a 31.5% decrease from \$63.8 million at December 31, 2014. This decrease resulted primarily from the pause in investment in the semiconductor capital equipment markets in the fourth quarter of 2015. We expect overall growth in backlog as the semiconductor market rebounds in 2016. For more information related to our expectations for the markets we serve, please see Business Environment and Trends in Item 7. Management's Discussion and Analysis. Backlog orders are firm orders scheduled to be filled and shipped in the next 12 months and include our just-in-time supply agreements with major OEM's. Backlog orders are not necessarily an indicator of future sales levels because of variations in lead times and customer production demand pull systems. Customers may delay delivery of products or cancel orders prior to shipment, subject to possible cancellation penalties. Delays in delivery schedules and/or customer changes to backlog orders during any particular period could cause a decrease in sales and have a material adverse effect on our business and results of operations.

Marketing, Sales and Distribution

We sell our products through direct and indirect sales channels in North America, Europe, and Asia. Our sales operations are primarily located in the United States, the PRC, the United Kingdom, Germany, Japan, South Korea, India, Singapore, and Taiwan. In addition to a direct sales force, we have independent sales representatives and distributors that support our selling efforts. We maintain customer service offices at many of the locations listed above, as well as other sites near our customers' locations. We believe that customer service and technical support are important competitive factors and are essential to building and maintaining close, long-term relationships with our customers.

The following table presents our net sales by geographic region for the years ended December 31, 2015, 2014, and 2013. Sales are attributed to individual countries based on customer location.

Sales to external customers:	Years ended December 31,		
	2015	2014	2013
	(In thousands)		
United States	\$268,257	\$230,843	\$169,362
Canada	195	347	93
North America	268,452	231,190	169,455
People's Republic of China	12,687	12,903	27,420
Other Asian countries	61,839	56,938	62,706
Asia	74,526	69,841	90,126
Germany	46,719	43,343	31,651
United Kingdom	25,100	22,670	5,752
Other European Countries	14	289	2,397
Europe	71,833	66,302	39,800
Total sales	\$414,811	\$367,333	\$299,381

Total sales to all foreign countries totaled \$146.6 million, \$136.5 million, and \$130.0 million in the years ended December 31, 2015, 2014, and 2013, respectively.

See "Risk Factors" in Item 1A for a discussion of certain risks related to our foreign operations.

Manufacturing

The manufacturing of our Precision Power related products is performed in Shenzhen, PRC; Ronkonkoma, New York; and Littlehampton, United Kingdom. Manufacturing in these three locations, primarily the PRC, exposes us to risks, such as exchange controls and currency restrictions, changes in local economic conditions, changes in PRC laws and regulations, government actions, and unsettled political conditions. The thermal instrumentation product line is manufactured in Vancouver, Washington.

Manufacturing requires raw materials, including a wide variety of mechanical and electrical components, to be manufactured to our specifications. We use numerous companies, including contract manufacturers, to supply parts

for the

6

Table of Contents

manufacture and support of our products. Although we make reasonable efforts to assure that parts are available from multiple qualified suppliers.

Some key parts may be obtained from a sole supplier or a limited group of suppliers. We seek to reduce costs and to lower the risks of production and service interruptions, as well as shortages of key parts by:

selecting and qualifying alternate suppliers for key parts using rigorous technical and commercial evaluation of suppliers' products and business processes including testing their components' performance, quality, and reliability on our power conversion product at our customers' and their customer's processes. The qualification process for Precision Power, particularly as it pertains to semiconductor customers, follows semiconductor industry standard practices, such as "copy exact";

• monitoring the financial condition of key suppliers;

• maintaining appropriate inventories of key parts, including making last time purchases of key parts when notified by suppliers that they are ending the supply of those parts;

• qualifying new parts on a timely basis and in geographies that reduce costs without degradation in quality;

• locating certain manufacturing operations in areas that are closer to suppliers and customers; and

• competitively sourcing parts through electronic bidding tools to ensure the lowest total cost is achieved for the parts needed in our products.

Intellectual Property

We seek patent protection for inventions governing new products or technologies as part of our ongoing research and development. We currently hold 104 United States patents and 62 foreign-issued patents, and have 116 patent applications pending in the United States, Europe and Asia. A substantial majority of our patents relate to our Precision Power business. Generally, our efforts to obtain international patents have been concentrated in the industrialized countries within Europe and Asia because there are other manufacturers and developers of power conversion and control systems in those countries, as well as customers for those systems for which our intellectual property applies.

Litigation may, from time to time, be necessary to enforce patents issued to us, to protect trade secrets or know-how owned by us, to defend us against claimed infringement of the rights of others, or to determine the scope and validity of the proprietary rights of others. See "Risk Factors — We are highly dependent on our intellectual property" in Item 1A.

Competition

The markets we serve are highly competitive and characterized by rapid technological development and changing customer requirements. No single company dominates any of our markets. Significant competitive factors in our markets include product performance, compatibility with adjacent products, price, quality, reliability, and level of customer service and support.

We have seen an increase in global competition in the markets in which we compete, especially from Asian and European-based component suppliers. We encounter substantial competition from foreign and domestic companies for each of our product lines. Some of our competitors have greater financial and other resources than we do. In some cases, competitors are smaller than we are, but are well established in specific product niches. MKS Instruments, Inc. ("MKSI"), Comdel, Inc., Daihen Corporation, Kyosan Electric Mfg. Co., Ltd., Hüttinger Elektronik GmbH, Comet Holding AG, New Plasma Products (NPP), Entech, Plasmart (now a division of MKSI), and ADTech compete with our power conversion products for thin film processing. Spellman High Voltage, Crane, and Matsusada Precision offer products that compete with our high voltage products. Lumasense Technologies, CI Systems, BASF, and Laytec GmbH offer products that compete with our thermal instrumentation products. Eurotherm by Schneider Electric, Control Concepts Inc., CD Automation, and Spang Power Electronics offer products that compete with our power control modules.

Additionally, a focus on local content is causing new competitors to emerge around the world, with strong support from local governments, industry leaders, and investors.

Our ability to continue to compete successfully in these markets depends on our ability to make timely introductions of product enhancements and new products, to localize these development and production activities in key world regions, and to produce quality products. We expect our competitors will continue to improve the design and

performance of their products, and introduce new products with competitive performance characteristics. We believe that we currently compete effectively with respect to these factors, although we cannot assure that we will be able to compete effectively in the future.

7

Table of Contents

Research and Development

The market for our precision power conversion, thermal, and high voltage products is characterized by ongoing technological changes. We believe that continued and timely development of new highly differentiated products and enhancements to existing products to support end user and OEM requirements is necessary for us to maintain a competitive position in the markets we serve. Accordingly, we continue to devote a significant portion of our personnel and financial resources to research and development projects and seek to maintain close relationships with our key customers and other industry leaders in order to remain responsive to their product requirements now and in the future.

Research and development expenses were \$39.6 million in 2015, \$36.9 million in 2014, and \$35.4 million in 2013, representing 9.5% of our sales in 2015, 10.0% of our sales in 2014, and 11.8% of our sales in 2013.

Employees

As of December 31, 2015, we had a total of 1,382 employees. Our employees are not represented by unions, except for statutory organization rights applicable to our employees in the PRC, and we have never experienced an involuntary work stoppage. We believe that our continued success depends, in part, on our ability to attract and retain qualified personnel. We consider our relations with our employees to be good.

Effect of Environmental Laws

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

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

Website Access

Our website address is www.advancedenergy.com. We make available, free of charge on our website, our Annual Report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to these reports as soon as reasonably practicable after filing such reports with, or furnishing them to, the Securities and Exchange Commission ("SEC"). Such reports are also available at www.sec.gov. Information contained on our website is not incorporated by reference in, or otherwise part of, this Annual Report on Form 10-K nor any of our other filings with the SEC.

Special Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K includes or incorporates by reference "forward-looking statements" within the meanings of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements contained or incorporated by reference in this Annual Report on Form 10-K, other than statements of historical fact, are "forward-looking statements." For example, statements relating to our beliefs, expectations, plans, projections, forecasts, goals, and estimates are forward-looking statements, as are statements that specified actions, conditions, or circumstances will continue or change. Forward-looking statements involve risks and uncertainties. In some cases, forward-looking statements can be identified by the inclusion of words such as "believe," "expect," "plan," "anticipate," "estimate," "may," "might," "could," "should," "will," "continue," "intend," and similar words.

Some of the forward-looking statements in this Annual Report on Form 10-K are, or reflect, our expectations or projections relating to:

- our future revenues;
- our future sales, including backlog orders;
- unanticipated costs in fulfilling our warranty obligations for solar inverters;
- our future gross profit;
- our competition;
- market acceptance of, and demand for, our products;
- the fair value of our assets and financial instruments;

Table of Contents

research and development expenses;
selling, general, and administrative expenses;
sufficiency and availability of capital resources;
capital expenditures;
our share repurchase program;
our tax assets and liabilities;
our other commitments and contingent liabilities;
adequacy of our reserve for excess and obsolete inventory;
adequacy of our warranty reserves;
restructuring activities and expenses;
the integration of our acquisitions;
general global economic conditions; and
industry trends.

Our actual results could differ materially from those projected or assumed in our forward-looking statements because forward-looking statements by their nature are subject to risks and uncertainties. Factors that could contribute to these differences or prove our forward-looking statements, by hindsight, to be overly optimistic or unachievable include the factors described in “Risk Factors” in Item 1A. Other factors might also contribute to the differences between our forward-looking statements and our actual results. We assume no obligation to update any forward-looking statement or the reasons why our actual results might differ.

Executive Officers of the Registrant

Our executive officers, their positions and their ages as of December 31, 2015 are as follows:

Yuval Wasserman, 61, is our President & Chief Executive Officer and was appointed to the Board of Directors on October 1, 2014. Mr. Wasserman joined us in August 2007 as Senior Vice President, Sales, Marketing and Service. In October 2007, he was promoted to Executive Vice President, Sales, Marketing and Service. In April 2009, he was promoted to Executive Vice President and Chief Operating Officer of the Company and then in August 2011 he was promoted to President of the Thin Films Business Unit. Beginning in May 2002, Mr. Wasserman served as the President, and later as Chief Executive Officer, of Tevet Process Control Technologies, Inc., a semiconductor metrology company, until July 2007. Prior to that, he held senior executive and general management positions at Boxer Cross (a metrology company acquired by Applied Materials, Inc.), Fusion Systems (a plasma strip company that is a division of Axcelis Technologies, Inc.), and AG Associates (a semiconductor capital equipment company focused on rapid thermal processing). Mr. Wasserman started his career at National Semiconductor, Inc., where he held various process engineering and management positions. Mr. Wasserman joined the board of Synchroness, Inc., an outsourced engineering and product development company, in 2010. Mr. Wasserman is a National Association of Corporate Directors (NACD) Governance Fellow. Mr. Wasserman holds a BsC in chemical engineering from Ben Gurion University in Beer Sheva, Israel.

Thomas Liguori, 57, joined us in May 2015 as Executive Vice President and Chief Financial Officer. Prior to joining Advanced Energy, he served as Executive Vice President and Chief Financial Officer at Multi-Fineline Electronix, Inc. since 2008. Multi-Fineline Electronix, Inc. is one of the world’s largest producers of flexible printed circuits and flexible circuit assemblies. Prior to Multi-Fineline Electronix, Inc., Mr. Liguori served as Chief Financial Officer at Hypercom, Inc. from November 2005 to February 2008, where he designed and built the global finance and administration functions. From February 2005 to November 2005, Mr. Liguori served as Vice President, Finance and Chief Financial Officer at Iomega Corporation, a publicly traded provider of storage and network security solutions, and from April 2000 to February 2005, as Chief Financial Officer at Channell Commercial Corporation, a publicly traded designer and manufacturer of telecommunications equipment. Prior to that time, Mr. Liguori served as Chief Financial Officer of Dole Europe for Dole Food Company, serving as the top-ranking financial and IT executive in Dole’s operations in Europe, Africa and the Middle East, and as Vice President of Finance at Teledyne. Mr. Liguori began his career with Honeywell and served as a management consultant with Deloitte & Touche LLP. Mr. Liguori holds a Bachelor’s in Business Administration, Summa Cum Laude, from Boston University and completed a

Table of Contents

Master's in Business Administration in Finance, Summa Cum Laude, from Arizona State University. He is a Certified Management Accountant and a Certified Financial Manager.

Thomas O. McGimpsey, 54, joined us in April 2009 as Vice President and General Counsel and was promoted to Executive Vice President of Corporate Development and General Counsel in August 2011 and held the corporate development position until mid-2015. From February 2008 to April 2009, Mr. McGimpsey held the position of Vice President of Operations at First Data Corporation. During 2007, Mr. McGimpsey was a consultant and legal advisor to various companies. From July 2000 to January 2007, Mr. McGimpsey held various positions with McDATA Corporation such as Executive Vice President of Business Development & Chief Legal Officer, Senior Vice President & General Counsel and Vice President of Corporate Development. From February 1998 to its sale in June 2000, Mr. McGimpsey held the position of Director and Senior Corporate Attorney at US WEST, Inc. From 1991 to 1998, Mr. McGimpsey was in private practice at national law firms. From 1984 to 1988, Mr. McGimpsey was a Senior Engineer for Software Technology, Inc. In August 2014 Mr. McGimpsey was appointed to the board of directors of CPP, Inc., a private company with international operations that provides wind engineering and air quality consulting services. In July 2015, Mr. McGimpsey was appointed as a Commissioner to the Colorado Commission on Higher Education. Mr. McGimpsey is a National Association of Corporate Directors (NACD) Governance Fellow. Mr. McGimpsey received his Masters of Business Administration from Colorado State University (with honors), his Juris Doctor degree from the University of Colorado and his Bachelor of Science degree in Computer Science (with a minor in electrical systems) from Embry-Riddle Aeronautical University.

ITEM 1A. RISK FACTORS

An investment in our common stock involves a number of very significant risks. You should carefully consider the risks described below and the other information in this Annual Report before deciding whether to purchase shares of our common stock.

Our business, financial condition, results of operations, and cash flow, could be materially adversely affected by any of these risks. The value of shares of our common stock could decline due to any of these risks, and you may lose all or part of your investment.

This Annual Report also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks faced by us described below.

We generally have no long-term contracts with our customers requiring them to purchase any specified quantities from us.

Our sales are primarily made on a purchase order basis, and we generally have no long-term purchase commitments from our customers, which is typical in the industries we serve. As a result, we are limited in our ability to predict the level of future sales or commitments from our current customers, which may diminish our ability to allocate labor, materials, and equipment in the manufacturing process effectively. In addition, we may accumulate inventory in anticipation of sales that do not materialize, resulting in excess and obsolete inventory write-offs.

The industries in which we compete are subject to volatile and unpredictable cycles.

As a supplier to the global semiconductor, flat panel display, solar, and related industries, we are subject to business cycles, the timing, length, and volatility of which can be difficult to predict. These industries historically have been cyclical due to sudden changes in customers' manufacturing capacity requirements and spending, which depend in part on capacity utilization, demand for customers' products, inventory levels relative to demand, and access to affordable capital. These changes have affected the timing and amounts of customers' purchases and investments in technology, and continue to affect our orders, net sales, operating expenses, and net income. In addition, we may not be able to respond adequately or quickly to the declines in demand by reducing our costs. We may be required to record significant reserves for excess and obsolete inventory as demand for our products changes.

To meet rapidly changing demand in each of the industries we serve, we must effectively manage our resources and production capacity. During periods of decreasing demand for our products, we must be able to appropriately align our cost structure with prevailing market conditions, effectively manage our supply chain, and motivate and retain key employees. During periods of increasing demand, we must have sufficient manufacturing capacity and inventory to fulfill customer orders, effectively manage our supply chain, and attract, retain, and motivate a sufficient number of

qualified individuals. If we are not able to timely and appropriately adapt to changes in our business environment or to accurately assess where we are positioned within a business cycle, our business, financial condition, or results of operations may be materially and adversely affected.

Table of Contents

Cyclicality in the semiconductor equipment industry impacts our results of operations.

Our business is affected by the capital equipment expenditures of semiconductor manufacturers, which in turn is affected by the current and anticipated market demand for integrated circuits and products using integrated circuits.

The semiconductor industry is cyclical in nature and has experienced periodic and severe downturns and upturns.

Business conditions, therefore, historically have changed rapidly and unpredictably.

Fluctuating levels of investment by semiconductor manufacturers could continue to materially affect our revenues and operating results. Where appropriate, we will attempt to respond to these fluctuations with cost management programs aimed at aligning our expenditures with anticipated revenue streams, which sometimes result in restructuring charges. Even during periods of reduced revenues, we must continue to invest in research and development and maintain extensive ongoing worldwide customer service and support capabilities to remain competitive, which may have a temporary adverse effect on our results of operations. During periods of increased demand, we may have difficulty obtaining sufficient components and subassemblies or increasing production quickly enough to meet our customers' requirements.

Market pressures and increased low-cost competition may reduce or eliminate our profitability.

Our customers continually exert pressure on us to reduce our prices and extend payment terms. Given the nature of our customer base and the highly competitive markets in which we compete, we may be required to reduce our prices or extend payment terms to remain competitive. We have recently seen pricing pressure from our largest customers due in part to low-cost competition and market consolidation. We believe some of our Asian competitors benefit from local governmental funding incentives and purchasing preferences from end-user customers in their respective countries. Moreover, in order to be successful in the current competitive environment, we are required to accelerate our investment in research & development to meet time-to-market, performance and technology adoption cycle needs of our customers simply in order to compete for design wins, and if successful, receive potential purchase orders. Given such up-front investments we have to make and the competitive nature of our markets, we may not be able to reduce our expenses in an amount sufficient to offset potential margin declines or loss of business, and may not be able to meet customer product timeline expectations. The decrease in cash flow could materially and adversely impact our financial condition.

A significant portion of our sales and accounts receivable are concentrated among a few customers.

Our ten largest customers accounted for 61.2% of our sales for the year ended December 31, 2015 and 59.7% of our sales for the year ended December 31, 2014. During the year ended December 31, 2015, sales to Applied Materials, Inc. and LAM Research were \$123.5 million and \$84.2 million or 29.8% and 20.3%, respectively. During the year ended December 31, 2014 sales to Applied Materials, Inc., and LAM Research were \$109.3 million and \$73.0 million, or 29.8% and 19.9%, respectively. Our sales to Applied Materials, Inc. and LAM Research include precision power products used in semiconductor processing and solar, flat panel display, and architectural glass applications. No other customer accounted for 10% or more of our sales during these periods.

Our competitive position could be weakened if we are unable to convince end users to specify that our products be used in the equipment sold by our customers.

The end users in our markets may direct equipment manufacturers to use a specified supplier's product in their equipment at a particular facility. This occurs with frequency because our products are critical in manufacturing process control for thin-film applications. Our success, therefore, depends in part on our ability to have end users specify that our products be used at their facilities. In addition, we may encounter difficulties in changing established relationships of competitors that already have a large installed base of products within such facilities.

We must achieve design wins to retain our existing customers and to obtain new customers, although design wins achieved do not necessarily result in substantial sales.

The constantly changing nature of technology in the markets we serve causes equipment manufacturers to continually design new systems. We must work with these manufacturers early in their design cycles to modify our equipment or design new equipment to meet the requirements of their new systems. Manufacturers typically choose one or two vendors to provide the components for use with the early system shipments. Selection as one of these vendors is called a design win. It is critical that we achieve these design wins in order to retain existing customers and to obtain new customers.

We believe that equipment manufacturers often select their suppliers based on factors including long-term relationships and end user demand. Accordingly, we may have difficulty achieving design wins from equipment manufacturers who are not currently our customers. In addition, we must compete for design wins for new systems and products of our existing customers, including those with whom we have had long-term relationships. Our efforts to achieve design wins are time consuming,

Table of Contents

expensive, and may not be successful. If we are not successful in achieving design wins, or if we do achieve design wins but our customers' systems that utilize our products are not successful, our business, financial condition, and results of operations could be materially and adversely impacted.

Once a manufacturer chooses a component for use in a particular product, it is likely to retain that component for the life of that product. Our sales and growth could experience material and prolonged adverse effects if we fail to achieve design wins. However, design wins do not always result in substantial sales, as sales of our products are dependent upon our customers' sales of their products.

Our legacy inverter products may suffer higher than anticipated damage or warranty claims.

Our legacy inverter products (of which we discontinued the manufacture and sale in December 2015 and which are reflected as Discontinued Operations in this filing) contain components that may contain errors or defects and were sold with original product warranties ranging from one to ten years with an option to purchase additional warranty coverage for up to 20 years. If any of our products are defective or fail because of their design, we might be required to repair, redesign or recall those products, pay damages (including liquidated damages) or warranty claims, and we could suffer significant harm to our reputation. We accrue a warranty reserve for estimated costs to provide warranty services including the cost of technical support, product repairs, and product replacement for units that cannot be repaired. Our estimate of costs to fulfill our warranty obligations is based on historical experience and expectation of future conditions. To the extent we experience increased warranty claim activity or increased costs associated with servicing those claims, our warranty accrual will increase, resulting in additional expenses in the line "Loss from discontinued operations, net of tax" on our Consolidated Statement of Operations in future periods. We plan to continue supporting inverter customers with service maintenance and repair operations. This includes performing service to fulfill obligations under existing service maintenance contracts. There is no certainty that these can be performed profitably and could be adversely affected by higher than anticipated product failure rates, loss of critical service technician skills, an inability to obtain service parts, customer demands and disputes and cost of repair parts, among other factors. Please See Note 3. Discontinued Operations in ITEM 8 "Financial Statements and Supplementary Data."

Our products may suffer from defects or errors leading to damage or warranty claims.

Our products use complex system designs and components that may contain errors or defects, particularly when we incorporate new technology into our products or release new versions. If any of our products are defective or fail because of their design, we might be required to repair, redesign or recall those products, pay damages (including liquidated damages) or warranty claims, and we could suffer significant harm to our reputation. We accrue a warranty reserve for estimated costs to provide warranty services including the cost of technical support, product repairs, and product replacement for units that cannot be repaired. Our estimate of costs to fulfill our warranty obligations is based on historical experience and expectation of future conditions. To the extent we experience increased warranty claim activity or increased costs associated with servicing those claims, our warranty accrual will increase, resulting in decreased gross profit. In 2014 and 2015, we have experienced increased warranty costs for our legacy inverter product lines.

We maintain significant amounts of cash in international locations.

Given the global nature of our business, we have both domestic and international concentrations of cash and investments. The value of our cash, cash equivalents, and marketable securities can be negatively affected by liquidity, credit deterioration, financial results, economic risk, political risk, sovereign risk or other factors. As a result, we could incur a significant impairment of our cash, cash equivalents, and marketable securities, which could materially adversely affect our financial condition and results of operations. For example, our recently announced capital deployment strategy as described in the Liquidity section of Item 7. Management's Discussion and Analysis of Financial Conditions and Results of Operation of this Form 10-K, may require us to access debt markets and there can be no assurance that access to debt at favorable terms will exist.

Changes in tax laws, tax rates, or mix of earnings in tax jurisdictions in which we do business, could impact our future tax liabilities and related corporate profitability

We are subject to income taxes in the U.S. (federal and state) and numerous foreign jurisdictions. Tax laws, regulations, and administrative practices in various jurisdictions may be subject to significant change due to economic,

political, and other conditions, and significant judgment is required in evaluating and estimating our provision and accruals for these taxes. There are many transactions that occur during the ordinary course of business for which the ultimate tax determination is uncertain. Our effective tax rates could be adversely affected by earnings being lower than anticipated in jurisdictions where we have lower statutory rates and higher than anticipated in jurisdictions where we have higher statutory rates, losses incurred in jurisdictions for which we are not able to realize the related tax benefit, changes in foreign currency exchange rates, entry into new businesses and geographies and changes to our existing businesses, acquisitions (including integrations) and investments, changes in our

Table of Contents

deferred tax assets and liabilities and their valuation, and changes in the relevant tax, accounting, and other laws, regulations, administrative practices, principles, and interpretations, including fundamental changes to the tax laws applicable to corporate multinationals. The U.S., many countries in the European Union, and a number of other countries are actively considering changes in this regard.

For example, on Oct. 5, 2015, the Organisation for Economic Co-operation and Development (OECD) issued the final report on all 15 Base Erosion and Profit Shifting “BEPS” Action Plans. According to the OECD, the current rules have created opportunities for Base Erosion and Profit Shifting, and suggest new rules whereby profits are taxed where economic activities take place and value is created. OECD comments include new or reinforced international standards as well as concrete measures to help countries tackle BEPS. Among the highlights of the OECD Final Reports are the new transfer pricing approach and reinforced international standards on tax treaties, the setting of minimum standards on harmful tax practices, treaty abuse, country-by-country reporting and dispute resolution, action items requiring national legislation particularly in hybrid mismatches and interest restriction, and analytical reports with recommendations concerning digital economy and multilateral instruments. If countries in which we operate adopt the OECD recommendations as outlined in the BEPS Action Plans, it is uncertain to what extent the changes could impact the company

Difficulties with our enterprise resource planning (“ERP”) system and other parts of our global information technology system could harm our business and results of operation.

Like many multinational corporations, we maintain a global information technology system, including software products licensed from third parties. Any system, network or Internet failures, misuse by system users, the hacking into or disruption caused by unauthorized access or loss of license rights could disrupt our ability to timely and accurately manufacture and ship products or to report our financial information in compliance with the timelines mandated by the SEC. Any such failure, misuse, hacking, disruptions or loss would likely cause a diversion of management's attention from the underlying business and could harm our operations. In addition, a significant failure of our global information technology system could adversely affect our ability to complete an evaluation of our internal controls and attestation activities pursuant to Section 404 of the Sarbanes-Oxley Act of 2002.

If our network security measures are breached and unauthorized access is obtained to a customer's data or our data or our information technology systems, we may incur significant legal and financial exposure and liabilities.

As part of our day-to-day business, we store our data and certain data about our customers in our global information technology system. While our system is designed with access security, unauthorized access to our data, including any regarding our customers, could expose us to a risk of loss of this information, loss of business, litigation and possible liability. These security measures may be breached by intentional misconduct by computer hackers, as a result of third-party action, employee error, malfeasance or otherwise. Additionally, third parties may attempt to fraudulently induce employees or customers into disclosing sensitive information such as user names, passwords or other information in order to gain access to our customers' data or our data, including our intellectual property and other confidential business information, or our information technology systems. Because the techniques used to obtain unauthorized access, or to sabotage systems, change frequently and generally are not recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures. Any security breach could result in a loss of confidence by our customers, damage our reputation, disrupt our business, lead to legal liability and negatively impact our future sales.

We conduct manufacturing at only a few sites and our sites are not generally interchangeable.

Our power products for the semiconductor industry are manufactured in Shenzhen, PRC. Our high voltage products are manufactured in Ronkonkoma, New York and Littlehampton, United Kingdom. Our thermal instrumentation products that are used in the semiconductor industry are manufactured in Vancouver, Washington. Each facility is under operating lease and interruptions in operations could be caused by early termination of existing leases by landlords or failure by landlords to renew existing leases upon expiration, including the possibility that suitable operating locations may not be available in proximity to existing facilities which could result in labor or supply chain risks. For instance, our Shenzhen, PRC manufacturing facility currently has a lease which expires in July 2017 that we are actively working on and expect to extend. Each facility manufactures different products, and therefore, is not interchangeable. Natural or other uncontrollable occurrences at any of our manufacturing facilities could significantly

reduce our productivity at such site and could prevent us from meeting our customers' requirements in a timely manner, or at all. Our losses from any such occurrence could significantly affect our operations and results of operations for a prolonged period of time.

Our restructuring and other cost-reduction efforts have included transitioning manufacturing operations to our facility in Shenzhen from other manufacturing facilities, such as Fort Collins, Colorado and Littlehampton, UK, which renders us

Table of Contents

increasingly reliant upon our Shenzhen facility. A disruption in manufacturing at our Shenzhen facility, from whatever cause, could have a significantly adverse effect on our ability to fulfill customer orders, our ability to maintain customer relationships, our costs to manufacture our products and, as a result, our results of operations and financial condition.

Our results of operations could be affected by natural disasters and other events in the locations in which we or our customers or suppliers operate.

We have manufacturing and other operations in locations subject to natural occurrences such as severe weather and geological events including earthquakes or tsunamis that could disrupt operations. In addition, our suppliers and customers also have operations in such locations. A natural disaster, fire, explosion, or other event that results in a prolonged disruption to our operations, or the operations of our customers or suppliers, may materially adversely affect our business, results of operations, or financial condition.

Our operations in the People's Republic of China are subject to significant political and economic uncertainties over which we have little or no control and we may be unable to alter our business practice in time to avoid reductions in revenues.

A significant portion of our operations outside the United States are located in the PRC, which exposes us to risks, such as exchange controls and currency restrictions, changes in local economic conditions, changes in customs regulations, changes in tax policies, changes in PRC laws and regulations, possible expropriation or other PRC government actions, and unsettled political conditions. These factors may have a material adverse effect on our operations, business, results of operations, and financial condition. Please see "We are exposed to risks associated with worldwide financial markets and the global economy" risk factor above.

The PRC's economy differs from the economies of most developed countries in many respects, including with respect to the amount of government involvement, level of development, rate of growth, control of foreign exchange and allocation of resources. While the economy of the PRC has experienced significant growth in the past 20 years, growth has been uneven across different regions and amongst various economic sectors of the PRC. The PRC government has implemented various measures to encourage economic development and guide the allocation of resources. Strikes by workers and picketing in front of the factory gates of certain companies in Shenzhen have caused unrest among some workers seeking higher wages, which could impact our manufacturing facility in Shenzhen. While some of the government's measures may benefit the overall economy of the PRC, they may have a negative effect on us. For example, our financial condition and results of operations may be materially and adversely affected by government control over capital investments or changes in tax regulations that are applicable to us as well as work stoppages.

We transitioned a significant amount of our supply base to Asian suppliers.

We transitioned the purchasing of a substantial portion of components for our thin film products to Asian suppliers to lower our materials costs and shipping expenses. These components might require us to incur higher than anticipated testing or repair costs, which would have an adverse effect on our operating results. Customers who have strict and extensive qualification requirements might not accept our products if these lower-cost components do not meet their requirements. A delay or refusal by our customers to accept such products, as well as an inability of our suppliers to meet our purchasing requirements, might require us to purchase higher-priced components from our existing suppliers or might cause us to lose sales to these customers, either of which could lead to decreased revenue and gross margins and have an adverse effect on our results of operations.

Our evolving manufacturing footprint may increase our risk.

The nature of our manufacturing is evolving as we continue to grow by acquisition. Historically, our principal manufacturing location was in China; however, we have also added specialized manufacturing at our Littlehampton, UK and Ronkonkoma, NY facilities. From time to time we may migrate manufacturing of specific products between facilities or to third party manufacturers. If we do not successfully coordinate the timely manufacturing and distribution of our products during this time, we may have insufficient supply of products to meet customer demand, we could lose sales, we may experience a build-up in inventory, or we may incur additional costs.

Raw material, part, component, and subassembly shortages, exacerbated by our dependence on sole and limited source suppliers, could affect our ability to manufacture products and systems and could delay our shipments.

Our business depends on our ability to manufacture products that meet the rapidly changing demands of our customers. Our ability to timely manufacture our products depends in part on the timely delivery of raw materials, parts, components, and subassemblies from suppliers. We rely on sole and limited source suppliers for some of our raw materials, parts, components, and subassemblies that are critical to the manufacturing of our products.

Table of Contents

This reliance involves several risks, including the following:

- the inability to obtain an adequate supply of required parts, components, or subassemblies;
- supply shortages, if a sole or limited source provider ceases operations;
- the need to fund the operating losses of a sole or limited source provider;
- reduced control over pricing and timing of delivery of raw materials and parts, components, or subassemblies;
- the need to qualify alternative suppliers;
- suppliers that may provide parts, components or subassemblies that are defective, contain counterfeit goods or are otherwise misrepresented to us in terms of form, fit or function; and
- the inability of our suppliers to develop technologically advanced products to support our growth and development of new products.

Qualifying alternative suppliers could be time consuming and lead to delays in, or prevention of delivery of products to our customers, as well as increased costs. If we are unable to qualify additional suppliers and manage relationships with our existing and future suppliers successfully, if our suppliers experience financial difficulties including bankruptcy, or if our suppliers cannot meet our performance or quality specifications or timing requirements, we may experience shortages, delays, or increased costs of raw materials, parts, components, or subassemblies. This in turn could limit or prevent our ability to manufacture and ship our products, which could materially and adversely affect our relationships with our current and prospective customers and our business, financial condition, and results of operations. From time to time, our sole or limited source suppliers have given us notice that they are ending supply of critical parts, components, and subassemblies that are required for us to deliver product. In those cases, we have been required to make last time purchases of such supplies in advance of product demand from our customers. If we cannot qualify alternative suppliers before these end-of-life supplies are utilized in our products or legacy inverter warranty operations, we may be unable to deliver further product or legacy inverter warranty service to our customers. To mitigate the risk of not having a supply of critical parts, components, and subassemblies for our products, we proactively make additional purchases which we believe addresses such risk.

Our orders of raw materials, parts, components, and subassemblies are based on demand forecasts.

We place orders with many of our suppliers based on our customers' quarterly forecasts and our annual forecasts.

These forecasts are based on our customers' and our expectations as to demand for our products. As the quarter and the year progress, such demand can change rapidly or we may realize that our customers' expectations were overly optimistic or pessimistic, especially when industry or general economic conditions change. Orders with our suppliers cannot always be amended in response. In addition, in order to assure availability of certain components or to obtain priority pricing, we have entered into contracts with some of our suppliers that require us to purchase a specified amount of components and subassemblies each quarter, even if we are not able to use such components or subassemblies. Moreover, we have obligations to some of our customers to hold a minimum amount of finished goods in inventory, in order to fulfill just in time orders, regardless of whether the customers expect to place such orders. We currently have firm purchase commitments and agreements with various suppliers to ensure the availability of components. See Note 18. Commitments and Contingencies in ITEM 8 "Financial Statements and Supplementary Data" for more information on our commitments. If demand for our products does not continue at current levels, we might not be able to use all of the components that we are required to purchase under these commitments and agreements, and our reserves for excess and obsolete inventory may increase, which could have a material adverse effect on our results of operations. If demand for our products exceeds our customers' and our forecasts, we may not be able to timely obtain sufficient raw materials, parts, components, or subassemblies, on favorable terms or at all, to fulfill the excess demand.

We are exposed to risks associated with worldwide financial markets and the global economy.

Our business depends on the expansion of manufacturing capacity in our end markets and the installation base for the products we sell. In the past, severe tightening of credit markets, turmoil in the financial markets, and a weakening global economy have contributed to slowdowns in the industries in which we operate. Some of our key markets depend largely on consumer spending. Economic uncertainty, such as that recently experienced in the PRC, exacerbates negative trends in consumer spending and may cause our customers to push out, cancel, or refrain from placing equipment orders.

Difficulties in obtaining capital and uncertain market conditions may also lead to a reduction of our sales and greater instances of nonpayment. These conditions may similarly affect our key suppliers, which could affect their ability to deliver parts and result in delays for our products. Further, these conditions and uncertainty about future economic conditions could

15

Table of Contents

make it challenging for us to forecast our operating results and evaluate the risks that may affect our business, financial condition, and results of operations. As discussed in “Our orders of raw materials, parts, components, and subassemblies are based on demand forecasts,” a significant percentage of our expenses are relatively fixed and based, in part, on expectations of future net sales. If a sudden decrease in demand for our products from one or more customers were to occur, the inability to adjust spending quickly enough to compensate for any shortfall would magnify the adverse impact of a shortfall in net sales on our results of operations. Conversely, if market conditions were to unexpectedly recover and demand for our products were to increase suddenly, we might not be able to respond quickly enough, which could have a negative impact on our results of operations and customer relations.

We may not realize the expected results from the implementation of restructuring plans.

During the second quarters of 2013, 2014, and 2015, we implemented restructuring plans to align our cost structure with current industry conditions in our business. As part of these restructuring plans we reduced staff, exited excess office and warehouse space, relocated engineering and research and development resources closer to our customers, and transferred various operating activities, such as supply chain management, manufacturing, engineering and other activities, to our Shenzhen, China facility. This means we are even more dependent on our China-based operations. As with any restructuring initiative, there could be many unintended results and there are always risks that execution may not meet expectations in the future. If we are unable to effectively execute the initiatives under the plan or our customers' requirements change, we may not realize the expected results or could incur restructuring charges greater than anticipated, which could materially affect our financial condition and results of operations.

If we are unable to adjust our business strategy successfully for some of our product lines to reflect the increasing price sensitivity on the part of our customers, our business and financial condition could be harmed.

Our business strategy for many of our product lines has been focused on product performance and technology innovation to provide enhanced efficiencies and productivity. As a result of recent economic conditions and changes in various markets that we serve, our customers have experienced significant cost pressures. We have observed increased price sensitivity on the part of our customers. If competition against any of our product lines should come to focus solely on price rather than on product performance and technology innovation, we will need to adjust our business strategy and product offerings accordingly, and if we are unable to do so, our business, financial condition, and results of operations could be materially and adversely affected.

The markets we operate in are highly competitive.

We face substantial competition, primarily from established companies, some of which have greater financial, marketing, and technical resources than we do. We expect our competitors will continue to develop new products in direct competition with ours, improve the design and performance of their products, and introduce new products with enhanced performance characteristics. In order to remain competitive, we must improve and expand our products and product offerings. In addition, we may need to maintain a high level of investment in research and development and expand our sales and marketing efforts, particularly outside of the United States. We might not be able to make the technological advances and investments necessary to remain competitive. If we were unable to improve and expand our products and product offerings, our business, financial condition, and results of operations could be materially and adversely affected.

We are highly dependent on our intellectual property.

Our success depends significantly on our proprietary technology. We attempt to protect our intellectual property rights through patents and non-disclosure agreements; however, we might not be able to protect our technology, and competitors might be able to develop similar technology independently. In addition, the laws of some foreign countries might not afford our intellectual property the same protections as do the laws of the United States. Our intellectual property is not protected by patents in several countries in which we do business, and we have limited patent protection in other countries, including the PRC. The cost of applying for patents in foreign countries and translating the applications into foreign languages requires us to select carefully the inventions for which we apply for patent protection and the countries in which we seek such protection. Generally, our efforts to obtain international patents have been concentrated in the European Union and certain industrialized countries in Asia, including Korea, Japan, and Taiwan. If we are unable to protect our intellectual property successfully, our business, financial condition, and results of operations could be materially and adversely affected.

The PRC commercial law is relatively undeveloped compared to the commercial law in the United States. Limited protection of intellectual property is available under PRC law. Consequently, manufacturing our products in the PRC may subject us to an increased risk that unauthorized parties may attempt to copy our products or otherwise obtain or use our intellectual

Table of Contents

property. We cannot give assurance that we will be able to protect our intellectual property rights effectively or have adequate legal recourse in the event that we encounter infringements of our intellectual property in the PRC. Activities necessary to integrate acquisitions may result in costs in excess of current expectations or be less successful than anticipated.

In 2014 we acquired PCM, HiTek, and UltraVolt, and we may acquire other businesses in the future. The success of such transactions will depend on, among other things, our ability to integrate assets and personnel acquired in these transactions and to apply our internal controls process to these acquired businesses. The integration of acquisitions may require significant attention from our management, and the diversion of management's attention and resources could have a material adverse effect on our ability to manage our business. Furthermore, we may not realize the degree or timing of benefits we anticipated when we first entered into the acquisition transaction. If actual integration costs are higher than amounts originally anticipated, if we are unable to integrate the assets and personnel acquired in an acquisition as anticipated, or if we are unable to fully benefit from anticipated synergies, our business, financial condition, results of operations, and cash flows could be materially adversely affected.

Return on investments or interest rate declines on plan investments could result in additional unfunded pension obligations for the HiTek Power pension plan.

We currently have unfunded obligations in the HiTek Power pension plan. The extent of future contributions to the pension plan depends heavily on market factors such as the discount rate used to calculate our future obligations and the actual return on plan assets which enable future payments. We estimate future contributions to the plan using assumptions with respect to these and other items. While we are obligated to contribute \$1.0 million per year through 2024 and our management believes that these assumptions are appropriate, changes to those assumptions could have a significant effect on future contributions. Additionally, a material deterioration in the funded status of the plan could increase pension expenses and reduce our profitability. See Note 16. Retirement Plans in ITEM 8 "Financial Statements and Supplementary Data."

We must continually design and introduce new products into the markets we serve to respond to competition and rapid technological changes.

We operate in a highly competitive environment where innovation is critical, our future success depends on many factors, including the effective commercialization and customer acceptance of our products and services. The development, introduction and support of a broadening set of products is critical to our continued success. Our results of operations could be adversely affected if we do not continue to develop new products, improve and develop new applications for existing products, and differentiate our products from those of competitors resulting in their adoption by customers.

We are subject to risks inherent in international operations.

Sales to our customers outside the United States were approximately 35.3% and 37.2% of our total sales for the years ended December 31, 2015 and 2014. The recent acquisitions of the power controls modules, and high voltage product lines have increased our presence in international locations. India is becoming a focus of possible expansion for sales, research and development, and manufacturing. Our success producing goods internationally and competing in international markets is subject to our ability to manage various risks and difficulties, including, but not limited to:

- our ability to effectively manage our employees at remote locations who are operating in different business environments from the United States;
- our ability to develop and maintain relationships with suppliers and other local businesses;
- compliance with product safety requirements and standards that are different from those of the United States;
- variations and changes in laws applicable to our operations in different jurisdictions, including enforceability of intellectual property and contract rights;
- trade restrictions, political instability, disruptions in financial markets, and deterioration of economic conditions;
- customs regulations and the import and export of goods (including, but not limited to, any United States imposition of antidumping or countervailing duty orders, safeguards, remedies, or compensation with respect to our products or subcomponents of our products, particularly those produced in the PRC);
- the ability to provide sufficient levels of technical support in different locations;
- our ability to obtain business licenses that may be needed in international locations to support expanded operations;

Table of Contents

timely collecting accounts receivable from foreign customers including \$14.5 million in accounts receivable from foreign customers as of December 31, 2015; and

• changes in tariffs, taxes, and foreign currency exchange rates.

Our profitability and ability to implement our business strategies, maintain market share and compete successfully in international markets will be compromised if we are unable to manage these and other international risks successfully. Unfavorable currency exchange rate fluctuations may lead to lower operating margins, or may cause us to raise prices, which could result in reduced sales.

Currency exchange rate fluctuations could have an adverse effect on our sales and results of operations and we could experience losses with respect to forward exchange contracts into which we may enter. Unfavorable currency fluctuations could require us to increase prices to foreign customers, which could result in lower net sales by us to such customers. Alternatively, if we do not adjust the prices for our products in response to unfavorable currency fluctuations, our results of operations could be materially and adversely affected. In addition, most sales made by our foreign subsidiaries are denominated in the currency of the country in which these products are sold and the currency in which they receive payment for such sales could be less valuable at the time of receipt as a result of exchange rate fluctuations. For example, in the year ended December 31, 2015, the currency rate for the Euro declined 10.3%. Given recent acquisitions in Europe, our exposure to fluctuations in the value of the Euro is becoming more significant. From time to time, we enter into forward exchange contracts and local currency purchased options to reduce currency exposure arising from intercompany sales of inventory. However, we cannot be certain that our efforts will be adequate to protect us against significant currency fluctuations or that such efforts will not expose us to additional exchange rate risks, which could materially and adversely affect our results of operations.

Changes in the value of the Chinese yuan could impact the cost of our operation in Shenzhen, PRC and our sales growth in our PRC markets.

The PRC government is continually pressured by its trading partners to allow its currency to float in a manner similar to other major currencies. In August 2015, China's currency devalued by a cumulative 4.4% against the U.S. dollar, making Chinese exports cheaper and imports into China more expensive by that amount. The move suggests China is looking for ways to get its economy growing again. However, the move negatively impacts U.S. businesses that trade with China because it puts them at a cost disadvantage and the move will likely reignite criticism that the Chinese government keeps the currency artificially low to help its own manufacturers to the detriment of US based companies. Any change in the value of the Chinese yuan may impact our ability to control the cost of our products in the world market. Specifically, the decision by the PRC government to allow the yuan to begin to float against the United States dollar could significantly increase the labor and other costs incurred in the operation of our Shenzhen facility and the cost of raw materials, parts, components, and subassemblies that we source in the PRC, thereby having a material and adverse effect on our financial condition and results of operations.

We have been, and in the future may again be, involved in litigation. Litigation is costly and could result in further restrictions on our ability to conduct business or make use of market relationships we have developed, or an inability to prevent others from using technology.

Litigation may be necessary to enforce our commercial or property rights, to defend ourselves against claimed violations of such rights, or to protect our interests in regulatory, tax, customs, commercial, and other disputes or similar matters. Litigation often requires a substantial amount of our management's time and attention, as well as financial and other resources, including:

- substantial costs in the form of legal fees, fines, and royalty payments;
- restrictions on our ability to sell certain products or in certain markets;
- an inability to prevent others from using technology we have developed; and
- a need to redesign products or seek alternative marketing strategies.

Any of these events could have a significant adverse effect on our business, financial condition, and results of operations.

Funds associated with our marketable securities that we have traditionally held as short-term investments may not be liquid or readily available.

In the past, certain of our investments have been affected by external market conditions that impacted the liquidity of the investment. We do not currently have investments with reduced liquidity, but external market conditions that we cannot

18

Table of Contents

anticipate or mitigate may impact the liquidity of our marketable securities. Any changes in the liquidity associated with these investments may require us to borrow funds at terms that are not favorable or repatriate cash from international locations at a significant cost. We cannot be certain that we will be able to borrow funds or continue to repatriate cash on favorable terms, or at all. If we are unable to do so, our available cash may be reduced until those investments can be liquidated. The lack of available cash may prevent us from taking advantage of business opportunities that arise and may prevent us from executing some of our business plans, either of which could cause our business, financial condition or results of operations to be materially and adversely affected.

Our intangible assets may become impaired.

As of December 31, 2015, we have \$42.7 million of goodwill and \$34.1 million in intangible assets. We periodically review the estimated useful lives of our goodwill and identifiable intangible assets, taking into consideration any events or circumstances that might result in either a diminished fair value, or for intangible assets, a revised useful life. The events and circumstances include significant changes in the business climate, legal factors, operating performance indicators, and competition. Any impairment or revised useful life could have a material and adverse effect on our financial position and results of operations, and could harm the trading price of our common stock. We are subject to numerous governmental regulations.

We are subject to federal, state, local and foreign regulations, including environmental regulations and regulations relating to the design and operation of our products and control systems and regulations governing the import, export and customs duties related to our products. We might incur significant costs as we seek to ensure that our products meet safety and emissions standards, many of which vary across the states and countries in which our products are used. In the past, we have invested significant resources to redesign our products to comply with these directives. Compliance with future regulations, directives, and standards could require us to modify or redesign some products, make capital expenditures, or incur substantial costs. Also, we may incur significant costs in complying with the myriad of different import, export and customs regulations as we seek to sell our products internationally. If we do not comply with current or future regulations, directives, and standards:

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

If we were unable to comply with current or future regulations, directives and standards, our business, financial condition and results of operations could be materially and adversely affected.

Recently enacted financial reform legislation will result in new laws and regulations that may increase our costs of operations.

The Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Dodd-Frank Act") requires various federal agencies to adopt a broad range of new implementing rules and regulations, and to prepare numerous studies and reports for Congress. On August 22, 2012, under the Dodd-Frank Act, the SEC adopted new requirements for companies that use certain minerals and metals, known as conflict minerals, in their products, whether or not these products are manufactured by third parties. These requirements will require companies to perform due diligence, disclose and report whether or not such minerals originate from the Democratic Republic of Congo and adjoining countries. We will have to perform sufficient due diligence to determine whether such minerals are used in the manufacture of our products. However, the implementation of these new requirements could adversely affect the sourcing, availability and pricing of such minerals if they are found to be used in the manufacture of our products. In addition, we will incur additional costs to comply with the disclosure requirements, including costs related to determining the source of any of the relevant minerals and metals used in our products. Since our supply chain is complex, we may not be able to sufficiently verify the origins for these minerals and metals used in our products through the due diligence procedures that we implement, which may harm our reputation. In such event, we may also face difficulties in satisfying customers who require that all of the components of our products are certified as conflict mineral free.

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

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

Table of Contents

Our operating results are subject to fluctuations, and if we fail to meet the expectations of securities analysts or investors, our share price may decrease significantly.

Our annual and quarterly results may vary significantly depending on various factors, many of which are beyond our control. Because our operating expenses are based on anticipated revenue levels, our sales cycle for development work is relatively long, and a high percentage of our expenses are fixed for the short term, a small variation in the timing of recognition of revenue can cause significant variations in operating results from period to period. If our earnings do not meet the expectations of securities analysts or investors, the price of our stock could decline.

The loss of any of our key personnel could significantly harm our results of operations and competitive position.

Our success depends to a significant degree upon the continuing contributions of our key management, technical, marketing, and sales employees. There can be no assurance that we will be successful in retaining our key employees or that we can attract or retain additional skilled personnel as required. Failure to retain or attract key personnel could significantly harm our results of operations and competitive position. We must develop our personnel to provide succession plans capable of maintaining continuity in the midst of the inevitable unpredictability of personnel retention. While we have plans for key management succession and long-term compensation plans designed to retain our senior employees, if our succession plans do not operate effectively, our business could be adversely affected.

We have historically made acquisitions and divestitures. However, we may not find suitable acquisition candidates in the future and we may not be able to successfully integrate and manage acquired businesses. In either an acquisition or a divestiture, we may be required to make fundamental changes in our ERP, business processes and tools which could disrupt our core business and harm our financial condition.

In the past, we have made strategic acquisitions of other corporations and entities, as well as asset purchases, and we continue to evaluate potential strategic acquisitions of complementary companies, products, and technologies. We have also divested businesses. In the future, we could:

• issue stock that would dilute our current stockholders' percentage ownership;

• pay cash that would decrease our working capital;

• incur debt;

• assume liabilities; or

• incur expenses related to impairment of goodwill and amortization.

Acquisitions and divestitures also involve numerous risks, including:

• problems combining or separating the acquired/divested operations, systems, technologies, or products;

• an inability to realize expected sales forecasts, operating efficiencies or product integration benefits;

• difficulties in coordinating and integrating geographically separated personnel, organizations, systems, and facilities;

• difficulties integrating business cultures;

• unanticipated costs or liabilities;

• diversion of management's attention from our core business;

• adverse effects on existing business relationships with suppliers and customers;

• potential loss of key employees, particularly those of purchased organizations;

• incurring unforeseen obligations or liabilities in connection with either acquisitions or divestitures; and

the failure to complete acquisitions even after signing definitive agreements which, among other things, would result in the expensing of potentially significant professional fees and other charges in the period in which the acquisition or negotiations are terminated.

We cannot assure you that we will be able to successfully identify appropriate acquisition candidates, to integrate any businesses, products, technologies, or personnel that we might acquire in the future or achieve the anticipated benefits of such transactions, which may harm our business.

Table of Contents

Our existing credit facility contains restrictions that may limit our flexibility in operating our business.

In October 2012, we entered into a credit facility with Wells Fargo Bank, N.A. The credit facility contains various financial and negative operating covenants that limit our ability to engage in specified types of transactions. The financial covenant requires that we maintain a minimum fixed charge coverage ratio. The operating covenants limit our ability to, among other things:

- sell, transfer, lease or dispose of our assets;
- create, incur or assume additional indebtedness;
- encumber or permit liens on certain of our assets
- make restricted payments, including paying dividends on, repurchasing or making distributions with respect to our common stock;
- make specified investments (including loans and advances);
- consolidate, merge, sell or otherwise dispose of all or substantially all of our assets; and
- enter into certain transactions with our affiliates.

A breach of any of these covenants or a material adverse change to our business could result in a default under the credit agreement. Upon the occurrence of an event of default under our credit agreement, our lenders could elect to declare all amounts outstanding to be immediately due and payable and terminate all commitments to extend further credit. If we were unable to repay those amounts, the lenders could proceed against the collateral granted to them to secure such indebtedness. Please see Note 22. Credit Facility in ITEM 8 "Financial Statements and Supplementary Data" for more information on our credit facility.

Deterioration of economic conditions could negatively impact our business.

Our business may be adversely affected by changes in national or global economic conditions, including inflation, interest rates, availability of capital markets, consumer spending rates, energy availability and costs (including fuel surcharges) and the effects of governmental initiatives to manage economic conditions. Any such changes could adversely affect the demand for our products both in domestic and export markets, or the cost and availability of our needed raw materials and packaging materials, thereby negatively affecting our financial results.

A disruption in credit and other financial markets and deterioration of national and global economic conditions, could, among other things:

- negatively impact global demand for our products, which could result in a reduction of sales, operating income and cash flows;
- make it more difficult or costly for us to obtain financing for our operations or investments or to refinance our debt in the future;
- cause our lenders to depart from prior credit industry practice and make more difficult or expensive the granting of any technical or other waivers under our debt agreements to the extent we may seek them in the future;
- decrease the value of our investments; and
- impair the financial viability of our insurers.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

Table of Contents

ITEM 2. PROPERTIES

Information concerning our principal properties at December 31, 2015 is set forth below:

Location	Principal Activity	Ownership
Fort Collins, CO	Corporate headquarters, research and development, distribution, sales, and service	Leased
Villaz-St-Pierre, Switzerland	Research and development	Leased
San Jose, CA	Distribution, sales, and service, research and development	Leased
Vancouver, WA	Research and development, manufacturing, distribution, sales, and service	Leased
Georgetown, MA	Service	Leased
Toronto, Canada	Service	Leased
Shanghai, China	Distribution and sales	Leased
Shenzhen, China	Manufacturing, distribution, service, and research and development	Leased
Metzingen, Germany	Distribution, sales, and service	Leased
Warstein-Belecke, Germany	Research, distribution, sales, and service	Leased
Pune, India	Distribution and sales	Leased
Tokyo, Japan	Sales	Leased
Hwasung Kyunggi-do, South Korea	Distribution, sales, and service	Leased
Sungnam City, South Korea	Distribution, sales, service and research and development	Owned
Singapore	Sales and service	Leased
Taipei, Taiwan	Distribution, sales, and service	Leased
Littlehampton, United Kingdom	Manufacturing, distribution, service, and research and development	Leased
Ronkonkoma, New York	Manufacturing, distribution, service, and research and development	Leased

We consider the properties that we own or lease as adequate to meet our current and future requirements. We regularly assess the size, capability, and location of our global infrastructure and periodically make adjustments based on these assessments.

ITEM 3. LEGAL PROCEEDINGS

We are presently involved in disputes and legal actions arising in the normal course of our business. While we currently believe that the amount of any ultimate loss would not be material to our financial position, the outcome of these actions is inherently difficult to predict. In the event of an adverse outcome, the ultimate loss could have a material adverse effect on our financial position or reported results of operations. An unfavorable decision in patent litigation could require material changes in production processes and products or result in our inability to ship products or components found to have violated third-party patent rights. An unfavorable decision in a collection action against a customer we sold products to, or a claim or counterclaim from a customer related to alleged product failures, could also have a material adverse effect on our financial position or reported results of operations. We are engaged presently in such disputes and legal actions with customers for the inverter product line. We accrue loss contingencies in connection with our commitments and contingencies, including litigation, when it is probable that a loss has occurred and the amount of the loss can be reasonably estimated.

German Lawsuit against Jolaos related to Purchase Price Adjustment in Acquisition of Refusol

On April 8, 2013, our subsidiary AEI Holdings GmbH ("AEI Holdings") acquired all the outstanding shares of Refusol Holding GmbH ("Refusol") from Jolaos Verwaltungs GmbH ("Jolaos") pursuant to the terms of a Sale and Purchase Agreement (the "SPA"). Under the SPA, the preliminary base price paid for the shares of Refusol was subject to a post-closing balance sheet adjustment based on confirmation of the financial statements of Refusol effective as of the closing date. AEI Holdings and Jolaos are in disagreement on various accounting adjustments to the closing date financial statements of Refusol. After repeated unsuccessful attempts to have Jolaos submit the dispute to an independent German accounting firm as required under the SPA, in December 2013 AEI Holdings petitioned the

designated District Court in Stuttgart (Landgericht Stuttgart), Germany to review the dispute. Jolaos claimed that legal interpretations were required before the closing date financial statements could be submitted to an independent German accounting firm. AEI Holdings disagreed with Jolaos' contentions in the case. This matter was settled in the fourth quarter of 2015.

ITEM 4. MINE SAFETY DISCLOSURES

None.

22

Table of Contents

PART II

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

Principal Market and Price Range of Common Stock

Our common stock is listed on the NASDAQ Global Select Market under the symbol "AEIS." At February 23, 2016, the number of common stockholders of record was 384, and the closing sale price of our common stock on the NASDAQ Global Select Market on that day was \$29.14 per share.

The table below shows the range of high and low closing sale prices for our common stock as quoted (without retail markup or markdown and without commissions) on the NASDAQ Global Select Market:

	2015		2014	
	High	Low	High	Low
First Quarter	\$27.35	\$22.29	\$28.88	\$22.88
Second Quarter	29.39	24.31	25.86	16.87
Third Quarter	27.73	23.47	19.90	16.60
Fourth Quarter	29.88	26.14	24.19	16.72

Dividend Policy

We have not declared or paid any cash dividends on our capital stock in our history as a public company. We currently intend to retain all future earnings to finance our business or make stock repurchases and do not anticipate paying cash or other dividends on our common stock in the foreseeable future.

Share Repurchases

In May 2014, our Board of Directors authorized a program to repurchase up to \$25.0 million of our stock over a twelve-month period. Under this program, we repurchased and retired 1.4 million shares of our common stock for a total of \$25.0 million. As of June 30, 2014 we completed the share repurchase program. All shares repurchased were executed in the open market and no shares were repurchased from related parties. Repurchased shares were retired and assumed the status of authorized and unissued shares.

In September 2015, our Board of Directors authorized a program to repurchase up to \$150.0 million of our stock over a thirty-month period. Under this program, on November 6, 2015, we entered into an accelerated stock repurchase arrangement with Morgan Stanley & Co. LLC (the "Counterparty") pursuant to a Fixed Dollar Accelerated Share Repurchase Transaction (the "ASR Agreement") to purchase \$50.0 million of shares of our common stock. On November 9, 2015, we advanced \$50.0 million to the Counterparty. This transaction used \$39.6 million and we received 1.4 million shares of our common stock based on then-current market prices of the \$50.0 million advanced, representing 79% of the estimated shares to be repurchased under the ASR Agreement. The initial payment was recorded as a reduction to Stockholders' equity in our Consolidated Balance Sheets as of December 31, 2015. The total number of shares repurchased under the ASR Agreement is based on the average of the daily volume-weighted average prices of the common stock during the term of the Agreement, less a discount. At settlement, if the Counterparty pays less than the original amount advanced, they will be required to reimburse us. If the Counterparty pays more than the original advance, we will chose to reimburse the Counterparty with either cash or additional shares. Final settlement of the ASR Agreement is expected to occur in the second quarter of 2016.

The following table summarizes information with respect to the company's purchase of its common stock during the year ended December 31, 2015 (in thousands, except for average price per share):

Month	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Program	Approximate Value of Shares that May Yet Be Purchased Under the Program
November - ASR (1)	1,382	\$28.67	1,382	
Total	1,382		1,382	\$110,387

(1) Shares purchased in November 2015 does not include the final share delivery amount under the ASR Agreement.

Table of Contents

Performance Graph

The performance graph below shows the five-year cumulative total stockholder return on our common stock during the period from December 31, 2010 through December 31, 2015. This is compared with the cumulative total return of the NASDAQ Composite Index and the Philadelphia Semiconductor Index (PHLX) over the same period. The comparison assumes \$100 was invested on December 31, 2010 in Advanced Energy common stock and in each of the foregoing indices and assumes reinvestment of dividends, if any. Dollar amounts in the graph are rounded to the nearest whole dollar. The performance shown in the graph represents past performance and should not be considered an indication of future performance.

*\$100 invested on 12/31/10 in our stock or index, including reinvestment of dividends. Indices and our stock performance calculated on a calendar year-end basis.

	12/10	12/11	12/12	12/13	12/14	12/15
Advanced Energy Industries, Inc.	\$100.00	\$78.67	\$101.24	\$167.60	\$173.75	\$206.96
NASDAQ Composite	100.00	100.53	116.92	166.19	188.78	199.95
PHLX Semiconductor	100.00	103.93	114.90	152.42	194.30	180.02

Table of Contents

ITEM 6. SELECTED FINANCIAL DATA

The selected Consolidated Statements of Operations data and the related Consolidated Balance Sheets data were derived from our audited Consolidated Financial Statements. The information below is not necessarily indicative of results of future operations and should be read in conjunction with Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” of this Form 10-K in order to understand more fully the factors that may affect the comparability of the information presented below:

	Years Ended December 31,				
	2015	2014	2013	2012	2011
Consolidated Statements of Operations Data:	(In thousands, except per share data)				
Sales	\$414,811	\$367,333	\$299,381	\$228,287	\$301,473
Operating income	106,656	86,091	47,847	17,446	42,847
Income from continuing operations before income taxes	105,442	86,005	48,322	19,698	43,749
Income from continuing operations, net of income taxes	83,482	69,495	59,710	11,997	31,944
(Loss) income from discontinued operations, net of income taxes	(241,968)	(22,513)	(27,624)	8,584	4,370
Net (loss) income	(158,486)	46,982	32,086	20,581	36,314
Earnings per Share:					
Continuing Operations:					
Basic earnings per share	\$2.05	\$1.72	\$1.51	\$0.31	\$0.73
Diluted earnings per share	\$2.03	\$1.69	\$1.47	\$0.30	\$0.73
Discontinued Operations:					
Basic (loss) earnings per share	\$(5.94)	\$(0.56)	\$(0.70)	\$0.22	\$0.10
Diluted (loss) earnings per share	\$(5.94)	\$(0.56)	\$(0.70)	\$0.22	\$0.10
Net (Loss) Income:					
Basic (loss) earnings per share	\$(3.89)	\$1.16	\$0.81	\$0.53	\$0.84
Diluted (loss) earnings per share	\$(3.89)	\$1.14	\$0.79	\$0.52	\$0.83
Basic weighted-average common shares outstanding	40,746	40,420	39,597	38,879	43,465
Diluted weighted-average common shares outstanding	41,077	41,034	40,667	39,447	43,954
Consolidated Balance Sheets Data:					
Total assets	\$462,688	\$684,568	\$652,977	\$537,242	\$532,460

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

Certain statements set forth below under this caption constitute forward-looking statements. See “Business — Special Note Regarding Forward-Looking Statements” in ITEM 1 of this Annual Report on Form 10-K for additional factors relating to such statements, and see “Risk Factors” in Item 1A for a discussion of certain risks applicable to our business, financial condition and results of operations.

Overview

We design, manufacture, sell, and support power conversion products that transform power into various usable forms. Our products enable manufacturing processes that use thin film for various products, such as semiconductor devices, flat panel displays, thin film renewables, architectural glass, optical coating and consumer products decorative and functional coating. We also supply thermal instrumentation products for advanced temperature control in the thin film process for these same markets. Our power control modules provide power control solutions for industrial applications where heat treatment and processing are used such as glass manufacturing, metal fabrication and treatment, material and chemical processing. Our high voltage power supplies and modules are used in applications such as semiconductor ion implantation, scanning electron microscopy, chemical analysis such as mass spectrometry and various applications using X-ray technology and electron guns for both analytical and processing applications. Our network of global service support centers provides a recurring revenue opportunity as we offer repair services, conversions, upgrades, and refurbishments and used equipment to companies using our products.

As of December 31, 2015, we have discontinued our inverter engineering, manufacturing and sales of our inverter product line. As such, all inverter product revenues, costs, assets and liabilities are reported in "Loss from discontinued operations, net of income taxes" in all periods in our Consolidated Statements of Operations. As always, we enter 2016 looking to strengthen our position and grow revenue through new products, design wins, new applications and geographical growth, continuously emphasizing margin expansion, cash generation and cost improvement.

Table of Contents

CRITICAL ACCOUNTING ESTIMATES

The preparation of Consolidated Financial Statements and related disclosures in conformity with accounting principles generally accepted in the United States of America ("U.S. GAAP") requires management to make judgments, assumptions, and estimates that affect the amounts reported. Note 1. Operations and Summary of Significant Accounting Policies and Estimates in ITEM 8 "Financial Statements and Supplementary Data" describes the significant accounting policies used in the preparation of our Consolidated Financial Statements. The accounting positions described below are significantly affected by critical accounting estimates. Such accounting positions require significant judgments, assumptions, and estimates to be used in the preparation of the Consolidated Financial Statements, actual results could differ materially from the amounts reported based on variability in factors affecting these statements.

Revenue Recognition

We recognize revenue from product sales upon transfer of title and risk of loss to our customers provided that there is evidence of an arrangement, the sales price is fixed or determinable, and the collection of the related receivable is reasonably assured. In most transactions, we have no obligations to our customers after the date products are shipped, other than pursuant to warranty obligations. Shipping and handling fees billed to customers, if any, are recognized as revenue. The related shipping and handling costs are recognized in cost of sales.

We maintain a credit approval process and we make significant judgments in connection with assessing our customers' ability to pay at the time of shipment. Despite this assessment, from time to time, our customers are unable to meet their payment obligations. We continuously monitor our customers' credit worthiness, and use our judgment in establishing a provision for estimated credit losses based upon our historical experience and any specific customer collection issues that we have identified. While such credit losses have historically been within our expectations and the provisions established, a significant change in the liquidity or financial position of our customers could have a material adverse impact on the collectability of accounts receivable and our future operating results. Additionally, if our credit loss rates prove to be greater than we currently estimate, we record additional reserves for doubtful accounts.

Inventory

We value our inventory at the lower of cost (first-in, first-out method) or market. We regularly review inventory quantities on hand and record a provision to write-down excess and obsolete inventory to its estimated net realizable value, if less than cost, based primarily on our estimated forecast of product demand. Demand for our products can fluctuate significantly. Our industry is subject to technological change, new product development, and product technological obsolescence that could result in an increase in the amount of obsolete inventory quantities on hand. Therefore, any significant unanticipated changes in demand or technological developments in excess of our current estimates could have a significant impact on the value of our inventory and our reported operating results.

Warranty Costs

We provide for the estimated costs to fulfill customer warranty obligations upon the recognition of the related revenue. We offer warranty coverage for a majority of our Precision Power products for periods typically ranging from 12 to 24 months after shipment. We warranted our inverter products for five to ten years and provided the option to purchase additional warranty coverage up to 20 years. The warranty expense accrued related to our standard inverter product warranties is now considered part of our discontinued operations and is recorded as such on our Consolidated Balance Sheets. See Note 3. Discontinued Operations in ITEM 8 "Financial Statements and Supplementary Data" for more information on our discontinued operations and Note 14. Warranties in ITEM 8 "Financial Statements and Supplementary Data" for more information on our warranties from continuing operations. We estimate the anticipated costs of repairing our products under such warranties based on the historical costs of the repairs. The assumptions we use to estimate warranty accruals are reevaluated periodically, in light of actual experience, and when appropriate, the accruals are adjusted. Should product failure rates differ from our estimates, actual costs could vary significantly from our expectations.

Intangible Assets, Goodwill and Other Long-Lived Assets

As a result of our acquisitions, we recorded intangible assets and goodwill. Goodwill and indefinite-lived intangible assets are subject to annual impairment testing, as well as testing upon the occurrence of any event that indicates a

potential impairment. The annual impairment test can be performed using an assessment of qualitative factors in determining if it is more likely than not that goodwill is impaired. If this assessment indicates that it is more likely than not that goodwill is impaired, then the next step of impairment testing compares the fair value of a reporting unit to its carrying value. Goodwill would be impaired if the resulting implied fair value of goodwill was less than the recorded carrying value of the goodwill.

Finite-lived intangible assets and other long-lived assets are subject to an impairment test if there is an indicator of impairment. When we determine that the carrying value of intangibles or other long-lived assets may not be recoverable based

Table of Contents

upon the existence of one or more indicators of impairment, we use the projected undiscounted cash flow method to determine whether an impairment exists, and then measure the impairment using discounted cash flows and other fair value measurements. The carrying value and ultimate realization of these assets is dependent upon our estimates of future earnings and benefits that we expect to generate from their use. If our expectations of future results and cash flows are significantly diminished, intangible assets, long-lived assets, and goodwill may be impaired and the resulting charge to operations may be material. Additionally, the estimation of useful lives and expected cash flows require us to make significant judgments regarding future periods that are subject to some factors outside of our control. Changes in these estimates could result in significant revisions to our carrying value of these assets and may result in material charges to our results of operations.

In 2015, we performed an assessment of qualitative factors for our annual impairment test of the goodwill associated with our Precision Power business unit. The factors reviewed included macroeconomic conditions, industry and market conditions, cost factors, and overall financial performance of each business unit. This assessment resulted in the conclusion that there was no impairment of goodwill in our Precision Power business in 2015.

In June 2015 the Company completed its six-month long process of seeking strategic alternatives for its inverter business and no satisfactory offers were received for all or a part of the inverter business. On June 29, 2015, we announced our decision to wind down our solar inverter business to focus solely on our Precision Power business. The result of this assessment was the recording of various asset impairments including Goodwill and Intangibles which is reflected in the "Loss from discontinued operations, net of income taxes" on our Consolidated Statements of Operations, as we have discontinued our inverter products as of December 31, 2015. See Note 3. Discontinued Operations in ITEM 8 "Financial Statements and Supplementary Data."

Income Taxes

We are subject to income taxes in the United States and numerous foreign jurisdictions. Significant judgment is required in determining our provision for income taxes and income tax assets and liabilities, including evaluating uncertainties in the application of accounting principles and complex tax laws. We record a provision for income taxes for the anticipated tax consequences of the reported results of operations using the asset and liability method. Under this method, we recognize deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial reporting and tax bases of assets and liabilities, as well as for operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured using the tax rates that are expected to apply to taxable income for the years in which those tax assets and liabilities are expected to be realized or settled. We record a valuation allowance to reduce our deferred tax assets to the net amount that we believe is more likely than not to be realized. We recognize tax benefits from uncertain tax positions only if we believe that it is more likely than not that the tax position will be sustained on examination by the taxing authorities based on the technical merits of the position. Although we believe that we have adequately reserved for our uncertain tax positions, we can provide no assurance that the final tax outcome of these matters will not be materially different. We make adjustments to these reserves when facts and circumstances change, such as the closing of a tax audit or the refinement of an estimate. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will affect the provision for income taxes in the period in which such determination is made and could have a material impact on our financial condition and operating results. The provision for income taxes includes the effects of any reserves that we believe are appropriate, as well as the related net interest and penalties. For more details see Note. 4 Income Taxes in ITEM 8 "Financial Statements and Supplementary Data."

Business Environment and Trends

SEMICONDUCTORS

Investment in semiconductor capital equipment spending worldwide was essentially flat year over year in 2015. After entering into 2015 with a record first quarter sales to our semiconductor OEM customers that continued near this level through Q3, there was a decrease in investments in Q4. Even as the semi equipment industry experienced this pause, the trends of increased usage of mobility, connectivity and the cloud continue to increase demand for higher density memory, high speed logic devices and lower power consumption, which we expect to continue going forward. Capital spending across the industry should lend itself to next-generation technologies, such as 3D devices, 3D packaging and multi-patterning in logic and foundry.

The industry's transition to 3D devices is generating increasing demand for RF power supplies and accessories. The growing number of steps associated with the deposition and etch processes is driving an increase in the number of process chambers per fab and higher content of more advanced power solutions per chamber. As etching processes become more challenging due to increasing aspect ratios in advanced 3D devices, more advanced RF technology that includes pulsing and increased control and instrumentation is needed. We are capitalizing on these trends and providing a broader range of more complex combinations of RF power and frequencies and launching more capable matching networks to manage and control the delivered power.

INDUSTRIAL CAPITAL EQUIPMENT

In industrial applications, we remain focused on taking our products to new applications and world regions, increasing our penetration into Asia, Europe, and North America. We made gains across an array of industries ranging from defense to

Table of Contents

analytical equipment. We believe large area LCD demand will continue in 2016 with an improved outlook for larger and higher definition TVs. We believe our power conversion technologies for both AC and DC sputtering are well-positioned in these markets and we will benefit from increased demand as panels with thin film technologies improve efficiencies.

Throughout 2015, demand for our products used in many industrial thin film coating markets increased, particularly in industrial manufacturing areas for products such as automotive parts, machine tools, electro-magnetic interference films, aesthetic, optical and tribological coatings. We expect this demand to continue in 2016. AE will continue to strengthen its position in these markets through internal product development and potential acquisition of complimentary product lines. These complimentary products will also allow us to participate in emerging and established precision power conversion applications by delivering customers value through improved process control with more flexibility to address diverse application requirements.

Results of Operations

Our analysis presented below is organized to provide the information we believe will facilitate an understanding of our historical performance and relevant trends going forward. Our results of operations include the results of PCM, HiTek, and UltraVolt from their respective acquisition dates of: January 27, 2014, April 12, 2014, and August 4, 2014, through December 31, 2014 and the full year ended December 31, 2015. This discussion should be read in conjunction with our Consolidated Financial Statements, including the notes thereto, in Item 8 of this Annual Report on Form 10-K.

REPORTING IN FISCAL 2015

As of December 31, 2015, Advanced Energy is organized as a single business unit, as we discontinued our inverter products, manufacturing and sales as of December 31, 2015. See Note 3. Discontinued Operations in ITEM 8 "Financial Statements and Supplementary Data." All prior periods disclosed have been recast to reflect continuing operations. Results of discontinued operations are reflected in the "Loss from discontinued operations, net of income taxes" in our Consolidated Statements of Operations. We principally serve our OEM and end customers in the semiconductor, flat panel display, high voltage, solar panel, and other capital equipment markets.

The following table sets forth, for the periods indicated, certain data derived from our Consolidated Statements of Operations (in thousands):

	Years Ended December 31,		
	2015	2014	2013
Sales	\$414,811	\$367,333	\$299,381
Gross profit	216,870	188,060	145,593
Operating expenses	110,214	101,969	97,746
Operating income	106,656	86,091	47,847
Other income (expense)	(1,214)	(86)	475
Income from continuing operations before income taxes	105,442	86,005	48,322
Provision (benefit) for income taxes	21,960	16,510	(11,388)
Income from continuing operations, net of income taxes	\$83,482	\$69,495	\$59,710

The following table sets forth, for the periods indicated, the percentage of sales represented by certain items reflected in our Consolidated Statements of Operations:

	Years Ended December 31,			
	2015	2014	2013	
Sales	100.0	% 100.0	% 100.0	%
Gross profit	52.3	% 51.2	% 48.6	%
Operating expenses	26.5	% 27.7	% 32.7	%
Operating income	25.8	% 23.5	% 15.9	%
Other income (expense)	(0.3)	)% —	% 0.1	%
Income from continuing operations before income taxes	25.5	% 23.5	% 16.0	%
Provision (benefit) for income taxes	5.3	% 4.5	% (3.8))%
Income from continuing operations, net of income taxes	20.2	% 19.0	% 19.8	%

Table of Contents

SALES

The following tables summarize annual net sales, and percentages of net sales, by product line for each of the years ended 2015, 2014, and 2013 (in thousands):

	Years Ended December 31,			Increase		Percent Change			
	2015	2014	2013	2015 v. 2014	2014 v. 2013	2015 v. 2014	2014 v. 2013		
Semiconductor capital equipment market	\$266,465	\$234,223	\$176,230	\$32,242	\$57,993	13.8	%	32.9	%
Industrial capital equipment	84,217	78,585	70,575	5,632	8,010	7.2	%	11.3	%
Global Support	64,129	54,525	52,576	9,604	1,949	17.6	%	3.7	%
Total	\$414,811	\$367,333	\$299,381	\$47,478	\$67,952	12.9	%	22.7	%
				Years Ended December 31,					
				2015	2014	2013			
Semiconductor capital equipment market				64.2	% 63.8	% 58.9			
Industrial capital equipment				20.3	% 21.4	% 23.6			
Global Support				15.5	% 14.8	% 17.6			
Total				100.0	% 100.0	% 100.0			

2015 SALES COMPARED TO 2014

Total sales for the twelve months ended December 31, 2015 increased 12.9% to \$414.8 million from \$367.3 million for the twelve months ended December 31, 2014. The increase in sales was driven by strong semiconductor sales through the third quarter, coupled with the addition of a full year of sales from our high voltage lines acquired mid-year in 2014.

In 2015, sales in our thin film semiconductor market increased 13.8% to \$266.5 million, or 64.2% of sales, from \$234.2 million, or 63.8% of sales in 2014. This increase was driven by strong market conditions across the semiconductor market driven by our leadership in etch applications. As expected, we saw investment levels decrease in the fourth quarter in line with the rest of the market.

Sales to the industrial capital equipment markets increased 7.2% to \$84.2 million, or 20.3% of sales in 2015, from \$78.6 million, or 21.4% of sales in 2014. The markets that comprise our Industrial capital equipment markets include flat panel display, thin film renewables, data storage, architectural glass, and other industrial thin-film manufacturing equipment markets such as automotive parts and optical coatings. Our acquisitions of high voltage and power control module product lines were a primary driver of the increase in the Industrial market.

Global support revenue increased by 17.6% for 2015 to \$64.1 million, or 15.5% of total sales, as compared to \$54.5 million, or 14.8% of total sales in 2014. This increase in sales due to market share gains in break/fix repairs as key end users move back to AE and away from third party repairs. Additionally, our non-break/fix business saw the accelerated growth in upgrades and retrofits of older AE Legacy products experienced in 2014 continue into 2015.

2014 SALES COMPARED TO 2013

Total sales increased 22.7% to \$367.3 million in 2014 as compared to \$299.4 million in 2013. The increase in sales was driven by an increase in spending in the semiconductor market, with large capital investments being made for new production capacity. Additionally, the acquisitions of high voltage and power control module product lines in early to mid-2014 drove higher sales in the industrial business.

In 2014, sales in our thin film semiconductor market increased 32.9% to \$234.2 million, or 63.8% of sales, from \$176.2 million or 58.9% of sales in 2013. This increase was driven by a strong increase in capital investments in the second half of 2014 and our increasing presence in etch applications from design wins for our new RF pulsing technology products. Additionally, our high voltage product line acquisitions added to our semiconductor market sales.

Sales to the industrial capital equipment markets increased 11.3% to \$78.6 million, or 21.4% of sales in 2014, from \$70.6 million, or 23.6% of sales in 2013. The markets that comprise our Industrial capital equipment markets include flat panel display, thin film renewables, data storage, architectural glass, and other industrial thin-film manufacturing equipment markets such as automotive parts and optical coatings. Our acquisitions of high voltage and

power control module product lines were a primary driver of the increase in the Industrial market.

Table of Contents

Global support revenue increased by 3.7% for 2014 to \$54.5 million, or 14.8% of total sales, as compared to \$52.6 million, or 17.6% of total sales in 2013. Despite slight market share loss early in the year, the latter half of 2014 saw an increase in sales due to market share gains in break/fix repairs.

Applied Materials Inc., our largest customer, accounted for \$123.5 million or 29.8% of our sales in 2015; \$109.3 million, or 29.8% of our sales in 2014; and \$96.2 million, or 32.1%, of our sales in 2013. Our sales to Applied Materials Inc. included sales for the semiconductor capital equipment market, as well as the solar and flat panel display markets.

GROSS PROFIT

Our gross profit was \$216.9 million or 52.3% of revenue in 2015 compared to \$188.1 million or 51.2% of revenue in 2014. The increase was primarily driven by an increase in sales as we expand into new markets with higher margins and continue to drive design wins.

Gross profit was \$188.1 million, or 51.2% of revenue in 2014 and \$145.6 million, or 48.6% of revenue in 2013. The increase in terms of absolute dollars was a result of higher sales. Additionally, continuous improvement on manufacturing efficiencies is driving higher revenue.

OPERATING EXPENSE

The following table summarizes our operating expenses as a percentage of sales for the years ended 2015, 2014 and 2013 (in thousands):

	Years Ended December 31,								
	2015			2014			2013		
Research and development	\$39,551	9.5	%	\$36,915	10.0	%	\$35,383	11.8	%
Selling, general, and administrative	66,097	15.9	%	58,549	15.9	%	57,334	19.2	%
Amortization of intangible assets	4,368	1.1	%	4,998	1.4	%	850	0.3	%
Restructuring charges	198	—	%	1,507	0.4	%	4,179	1.4	%
Total operating expenses	\$110,214	26.5	%	\$101,969	27.7	%	\$97,746	32.7	%

We expect to continue to leverage our selling, general and administrative costs as revenues grow and expect to increase our investment in research and development.

In June 2015, we committed to a restructuring plan in relation to the wind down of our Inverter business which concluded December 31, 2015 and has been reflected as discontinued operation as of December 31, 2015. See Note 3. Discontinued Operations in ITEM 8 "Financial Statements and Supplementary Data." As a result of discontinued operations, amounts of general corporate overhead which had previously been reflected in our inverter segment have been included in the total operating expense in the table above in all periods presented.

In April 2014, we committed to a restructuring plan to take advantage of additional cost savings opportunities in connection with our acquisitions and realignment to a single organizational structure based on product line. The plan called for consolidating certain facilities and rebranding of products to allow us to use our resources more efficiently. This plan was completed in the fourth quarter of 2014.

In April 2013, we committed to a restructuring plan to take advantage of additional cost saving opportunities in connection with our acquisition of Refusol. The plan called for consolidating certain facilities, further centralizing our manufacturing and rationalizing certain products to most effectively meet customer needs. All activities under this restructuring plan were completed prior to December 31, 2013.

Research and Development

The markets we serve constantly present opportunities to develop products for new or emerging applications and require technological changes driving for higher performance, lower cost, and other attributes that will advance our customers' products. We believe that continued and timely development of new and differentiated products, as well as enhancements to existing products to support customer requirements, are critical for us to compete in the markets we serve. Accordingly, we devote significant personnel and financial resources to the development of new products and the enhancement of existing products, and we expect these investments to continue. All of our research and development costs have been expensed as incurred.

Research and development expenses for the twelve months ended December 31, 2015 increased \$2.6 million from the same period in 2014 and \$1.5 million in the twelve months ended December 31, 2014 as compared to the same period

in 2013.

30

Table of Contents

The increase is mainly due to the full year of costs from PCM, HiTek, and UltraVolt, in 2015, which were acquired throughout 2014. The acquisitions also drove the increase between the years ended December 31, 2014 and 2013.

Selling, General and Administrative

Our selling expenses support domestic and international sales and marketing activities that include personnel, trade shows, advertising, internal and third-party sales representative commissions, and other selling and marketing activities. Our general and administrative expenses support our worldwide corporate, legal, tax, financial, governance, administrative, information systems, and human resource functions in addition to our general management.

Selling general and administrative ("SG&A") expenses increased \$7.5 million in the twelve months ended December 31, 2015 as compared to the same period in 2014 primarily due to an increase in asset retirement obligations and bad debt expense, offset slightly by lower corporate spending.

SG&A expenses increased \$1.2 million in the twelve months ended December 31, 2014 as compared to the same period in 2013. The increase is due to the acquisitions of PCM, HiTek, and UltraVolt throughout 2014.

Amortization Expense

Amortization expense was \$4.4 million for the twelve months ended December 31, 2015, compared to \$5.0 million for the same period ending December 31, 2014 and \$0.9 million for the same period ending December 31, 2013. The decrease of \$0.6 million in 2015 is primarily due to the completion of the amortization of short-lived intangible assets acquired from PCM in 2014 coupled with the decrease in foreign exchange rates in Europe. The increase in amortization expense between 2013 and 2014 is due primarily to the acquisitions of PCM, HiTek, and UltraVolt, which added \$15.0 million, \$12.6 million, and \$10.9 million, respectively, of amortizable intangible assets.

Restructuring Charges

As a result of declines in certain markets that we serve, we initiated a plan in September 2011 to re-align our manufacturing and research and development activities to be closer to our customers and reduce production costs. These initiatives included headcount reductions, facilities closures, and asset impairments and were completed in the fourth quarter of 2012.

In April 2013, in connection with our acquisition of Refusol described in Note 2. Business Acquisitions in ITEM 8 "Financial Statements and Supplementary Data," we committed to a restructuring plan to take advantage of additional cost saving opportunities. These initiatives also included reductions in headcount, facility closures, and intangible asset impairments. This plan was substantially completed as of December 31, 2013.

In April 2014, we committed to a restructuring plan to take advantage of additional cost savings opportunities in connection with our acquisitions and realignment to a single organizational structure based on product line. The plan called for consolidating certain facilities and rebranding of products to allow us to use our resources more efficiently. This plan was completed as of December 31, 2014.

Other Income

Other income consists primarily of interest income and expense, foreign exchange gains and losses, and other miscellaneous items.

Interest (expense) income for the twelve month periods ending December 31, 2015, 2014, and 2013 was \$(0.9) million, \$(0.5) million, and \$0.4 million, respectively. The change between all periods was driven by reductions in interest income due to lower marketable securities held and lower interest rates in China.

Other (expense) income, net was \$(1.2) million in 2015, \$(0.1) million in 2014 and \$0.5 million in 2013. The change between 2015 and 2014 was driven by the decrease in foreign exchange rates coupled with a one-time settlement related to ending our relationship with a third-party service provider.

Provision for Income Taxes

We recorded a 2015 income tax expense of \$22.0 million or an effective tax rate of 20.8%. The effective rate differs from the federal statutory rate of 35% primarily due to the benefit of earnings in foreign jurisdictions which are subject to lower tax rates, federal research and development tax credit benefit, offset by a valuation allowance recorded on prior year foreign inverter business deferred tax assets.

We recorded a 2014 income tax expense of \$16.5 million or an effective tax rate of 19.2%. The effective rate differs from the federal statutory rate of 35% primarily due to the benefit of earnings in foreign jurisdictions which are subject to lower tax rates, and a benefit from the federal research and development tax credit.

Table of Contents

We recorded a 2013 income tax benefit of \$11.4 million or an effective tax rate of (23.6%). The effective rate differs from the federal statutory rate of 35% primarily due to the benefit of earnings in foreign jurisdictions which are subject to lower tax rates, federal tax credits, state income tax benefits, and a benefit from the domestic production activities deduction.

Our future effective income tax rate depends on various factors, such as changes in tax laws, regulations, accounting principles, or interpretations thereof, and the geographic composition of our pre-tax income. We carefully monitor these factors and adjust our effective income tax rate accordingly.

Discontinued Operations

In June 2015, the Company completed its six-month long process of seeking strategic alternatives for its inverter business and no satisfactory offers were received for all or a part of the inverter business. On June 29, 2015, we announced our decision to wind down our solar inverter business to focus solely on our Precision Power business. The result of this assessment was the recording of various asset impairments including Goodwill and Intangibles, as disclosed in previous filings, which are reflected in the "Loss from discontinued operations, net of income taxes" in our Consolidated Statements of Operations, as we have discontinued our inverter engineering, sales, and production as of December 31, 2015. See Note 3. Discontinued Operations in ITEM 8 "Financial Statements and Supplementary Data." This constituted a strategic shift as inverter engineering, manufacturing and sales constituted a separate reporting segment for the Company.

The significant items included in Loss from discontinued operations, net of income taxes:

	Year Ended December 31,		
	2015	2014	2013
Sales	\$95,856	\$215,763	\$247,623
Cost of sales	139,045	209,795	183,080
Total operating expenses (including restructuring)	232,262	51,637	97,767
Operating loss from discontinued operations	(275,451	) (45,669	) (33,224
Other expense	(55	) (658	) (814
Loss from discontinued operations before income taxes	(275,506	) (46,327	) (34,038
Provision for income taxes	(33,538	) (23,814	) (6,414
Loss from discontinued operations, net of income taxes	\$(241,968	) \$(22,513	) \$(27,624

Non-GAAP Results

To evaluate business performance against business objectives and for planning purposes, management uses non-GAAP results. We believe these measures will enhance investors' ability to review our business from the same perspective as management and facilitate comparisons of this period's results with prior periods. These non-GAAP measures are not in accordance with U.S. GAAP and may differ from non-GAAP methods of accounting and reporting used by other companies. The presentation of this additional information should not be considered a substitute for results prepared in accordance with U.S. GAAP.

Table of Contents

The non-GAAP results presented below exclude the impact of restructuring charges, stock-based compensation, amortization of intangible assets, acquisition-related costs, and nonrecurring executive severance (in thousands):

Reconciliation of Non-GAAP measure - operating expenses and operating income, excluding certain items	Years Ended December 31,		
	2015	2014	2013
Gross Profit from continuing operations, as reported			