ADVANCED ENERGY®

2013 ANNUAL REPORT

Dear Stockholders,

2013 validated the potential earnings power of the AE engine that we put in place over the last two years. Through a combination of centralized manufacturing, distributed R&D and a variety of distribution channels, we believe we have created an extremely effective business model. Our strategy to improve margins, accelerate revenues and better utilize our cash is producing results. By extending our technological leadership and expanding into new applications and geographies, we grew and diversified our revenues this year and drove a significant improvement in profitability even as we introduced a multitude of new products and integrated a sizable acquisition. In total, we saw top line growth of 21% to $547 million in 2013, while GAAP income from continuing operations excluding restructuring charges increased 150% to $62.3 million or $1.53 per share on a non-GAAP basis. With new levels of operational excellence established and a cost-conscious environment instilled, we have taken roughly $80 million of costs out of the business since the fourth quarter of 2011. Over that period, we have also generated more than $145 million in cash while completing 3 strategic acquisitions and repurchasing $75 million of shares outstanding. We are making great strides as a company and remain committed to executing on our strategy to profitably grow our business in 2014 and return value to our shareholders.

Accelerating profitable revenue growth was at the heart of our strategy in 2013. We opened up new avenues for growth both organically and inorganically. In 2013 alone, we released more new Thin Films products than in the last two years combined as we established R&D centers close to our customers, focused our teams on targeted applications and quickened the pace of our product development. The introduction of advanced, new technologies such as RF pulsing led to an increased market presence with existing applications and a larger available market through new applications such as advanced etch and deposition processes for next-generation devices. In inverters, our internally-developed, industry-leading 1 megawatt inverter and our 3-phase string inverter, acquired earlier in the year, have strengthened our position in both commercial and utility applications with high performance, higher margin products. Clearly, the R&D engine we have established is generating important new products that are increasing our reach and positioning us well for future opportunities.

By diversifying our product lines, we are gaining access to new applications and lessening the impact of industry cyclicality. During the year, we entered areas such as gas abatement and low-e glass, which are poised to grow beyond their initial applications. We are also making inroads in newer industrial hard coating applications ranging from eye glasses to car headlights. With the recent addition of precision power control offerings such as our acquisition of Thin Films Power Control Modules, we are broadening our focus to include thermal processing, glass manufacturing and more. Together with our significant and growing presence in a variety of semiconductor applications, we are compiling a differentiated portfolio of products, all of which are contributing to our strong earnings per share growth.

Finally, we are targeting important geographies where we see the potential to expand our total available market. In territories such as India, Japan and Eastern Europe, we are capitalizing on our established brand, R&D and distribution channels to broaden the opportunities for our traditional products and introduce new offerings.

These advances would not have been possible just a few years ago. Our approach to low-cost manufacturing and accelerated product development has enabled us to create an exceptionally efficient and differentiated global business model. Our never-ending drive to lower costs and optimize our supply chain is allowing us to improve margins, invest in new technologies and diversify our product offerings. With this powerful platform now in place thanks to the diligence of our employees, we believe we have the potential to increase profits substantially as revenues grow towards industry peaks, while also maintaining healthy profit levels in cyclical troughs.

Entering 2014, we continue to strive for operational excellence in everything we do in order to drive margin expansion, grow revenues and increase cash generation. We are excited at the many opportunities we see ahead with our distinctive portfolio of power products in existing and new applications and geographies, all of which should move us ever closer to our new aspirational goals laid out at our analyst day in November 2013. We look forward to reporting on our progress throughout the year.

Garry Rogerson
Chief Executive Officer

Special Note Regarding Forward-Looking Statements. This Letter to Stockholders includes “forward-looking statements” within the meaning 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 in this Letter to Stockholders other than statements that are historical fact, are “forward-looking statements” and are subject to known and unknown risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statements. Such risks and uncertainties include, but are not limited to: (a) the effects of global macroeconomic conditions upon demand for our products; (b) the volatility and cyclicality of the industries the company serves, particularly the semiconductor industry; (c) the volatility and seasonality of renewable energy projects and solar inverter sales; (d) risks related to the acquisition of Solvix, REFUsol and recently the Power Control Modules product line from AEG Power Solutions GmbH (the “POC Modules”) (collectively, the “Acquisitions”) including the successful integration of the operations of such Acquisitions, the retention of key employees of such Acquisitions, expectations surrounding the benefits of the Acquisitions’ products, the total available market and expected sales of such products, and product cost expectations surrounding the fabless manufacturing models for REFUsol and the POC Modules; (e) with regard to the renewable energy market, the continuation of feed-in-tariffs and other incentives in Europe and elsewhere for solar inverters, including the RPS (renewable portfolio standards) and the timing and availability of grant programs in North America and Europe; (f) renewable energy project delays resulting from solar panel price declines and increased competition in the solar inverter equipment market, (g) the timing of orders received from customers, (h) the company's ability to realize benefits from cost improvement efforts including avoided costs, any restructuring plans and any inorganic growth, (i) the ability to obtain materials and manufacture products; and (j) unanticipated changes to management's estimates, reserves or allowances. These and other risks are described in Advanced Energy's Form 10-K, Forms 10-Q and other reports and statements filed with the Securities and Exchange Commission. These reports and statements are available on the SEC's website at www.sec.gov. Copies may also be obtained from Advanced Energy's website at www.advancedenergy.com or by contacting Advanced Energy's investor relations at 970-407-6555. Forward-looking statements are made and based on information available to the company on the date of this Letter to Stockholders. As stated previously, aspirational goals and targets should not be interpreted in any respect as guidance. The company assumes no obligation to update any forward-looking statement or the reasons why our actual results might differ.

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, 2013

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 ☐ (Do not check if a smaller reporting company)	Smaller reporting company ☐

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

The aggregate market value of voting and non-voting common stock held by non-affiliates of the registrant was $644,615,835 as of June 30, 2013, 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.

41,021,691
(Number of shares of Common Stock outstanding as of February 27, 2014)

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 2014 Annual Meeting of Stockholders, scheduled to be held on May 7, 2014. 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

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

We design, manufacture, sell, and support power conversion products that transform power into various usable forms. Our 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 thermal instrumentation products for advanced temperature control in the thin-film and other thermal processes for these same markets as well as Remote Plasma Sources that are used in the thin films processing industries and in gas abatement applications. Our solar inverter products support renewable power generation solutions for primarily commercial, and utility-scale solar projects and installations. Our network of global service support centers provides a recurring revenue opportunity as we offer repair services, conversions, upgrades, and refurbishments to companies using our products. We also offer a wide variety of operations and maintenance service plans that can be tailored for individual photovoltaic ("PV") sites of all sizes.

On October 15, 2010, we sold our gas flow control business, which includes the Aera® mass flow control and related product lines, to Hitachi Metals Ltd. Accordingly, the results of operations from our gas flow control business have been excluded from our discussions relating to continuing operations.

On November 8, 2012, we acquired Solvix SA ("Solvix"), a privately held company based in Villaz-Saint-Pierre, Switzerland. A manufacturer of power supplies for the surface treatment and thin films industry, Solvix brings plasma-based sputtering and cathodic arc deposition applications to Advanced Energy's existing product portfolio. With its arc detection and suppression technology, Solvix's product line will enhance Advanced Energy's offerings in low power and pulsed DC products, allowing it to expand into new applications and serve a broader worldwide customer base. With the addition of Solvix's engineering site in Villaz-Saint-Pierre, Advanced Energy will also establish a European engineering and development center for its thin-film industrial products business, in keeping with its strategy to move closer to its customers.

On April 8, 2013, we acquired Refusol Holding GmbH ("Refusol"), a privately held company based in Metzingen, Germany. Refusol develops three-phase string inverters for commercial customers across Europe and Asia. Its three-phase string inverter offerings range in size from 8kW to 24kW broadening the range of solar inverter products offered by Advanced Energy. Note 2 to our Consolidated Financial Statements, *Business Acquisition and Disposition,* describes the acquisitions of Solvix and Refusol and the disposition of our gas flow control business.

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 January 2011, management announced the creation of two focused business units within the Company. The two business units are Thin Films Deposition Power Conversion and Thermal Instrumentation ("Thin Films") and Solar Energy. The creation of these two units enables greater focus on each business’ unique needs and requirements, allowing each to expand and accelerate our growth by better serving each of these very different industries. Note 21 to our Consolidated Financial Statements, *Segment Information,* describes our business units and their related financial information including sales, segment operating income, and total segment assets. Also included in Note 21 is information related to the location of our long-lived assets.

The Thin Films business unit principally serves original equipment manufacturers ("OEM") and end customers in the semiconductor, flat panel display, solar panel, and other industrial capital equipment markets. The Solar Energy business unit focuses mainly on commercial and utility-scale solar projects and installations selling primarily to distributors, Engineering, Procurement, and Construction contractors ("EPC"s), developers, and utility companies.

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, as well as the commercial and utility-scale solar inverter markets. These markets can be cyclical in nature. Therefore, demand for our products and our financial results can change as demand for manufacturing equipment, solar inverters, and 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.

THIN FILMS

Our thin-film deposition power conversion systems include direct current ("DC"), pulsed DC mid frequency, and radio frequency ("RF") power supplies, matching networks, Remote Plasma Sources ("RPS") 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 thermal instrumentation products are used in the semiconductor industry, as well as the solar panel and light emitting diode ("LED") industries, in order to provide 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. In 2012, our thermal instrumentation group expanded its applications space through the development of non-contact measurement of the height of the melt in crystal growing crucibles.

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 in the United States ("U.S."), the People's Republic of China ("PRC"), Japan, South Korea, Taiwan, Germany, and Great Britain.

SOLAR ENERGY

Our solar power inverters offer both a transformer-based and a transformerless advanced grid-tied PV solution for commercial and utility-scale system installations. Our PV inverters are designed to convert renewable solar power, drawn from large and small scale solar arrays, into high-quality, reliable electrical power. We also offer integrated monitoring and performance measurement to minimize the cost of energy and enhance the value and reliability of PV installations.

Markets

Our products compete in markets for high tech manufacturing capital equipment and renewable energy production. The inverter market has lower volume sales during the winter months due to reduced ability to install products. Our other markets are not 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.

Thin Films

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. 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.

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 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.

Solar Energy

We sell primarily commercial and utility-grade solar inverters to distributors, contractors, developers, and utility companies who integrate our inverter products into solar array installations. Our solar inverters convert DC power, which is produced by the solar panels in the array, into alternating current ("AC") power for consumption on-site or to be sold back through the public utility grid. Our commercial and utility-grade inverters have power outputs from 8 kilowatts ("kW") to two megawatts and can be used in small-scale and utility-scale solar array installations.

Customers

Our products are sold worldwide to approximately 420 OEMs and integrators and directly to more than 1,387 end users. Our ten largest customers accounted for approximately 44.2% of our sales in 2013, 47.7% of our sales in 2012, and 44.6% of our sales in 2011. 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 17.4% of our sales in 2013, 14.1% of our sales in 2012, and 13.1% of our sales in 2011. Additionally, in June 2012, Lam Research merged with Novellus Systems, Inc. Had the two businesses been a combined entity for the full year, they would have accounted for 10.7% of our sales in 2012. No other customer accounted for greater than 10% of our sales in 2013, 2012, or 2011. The loss of Applied Materials, Inc. or Lam Research as a customer could have a material adverse effect on our results of operations.

Backlog

Our backlog was approximately $128.3 million at December 31, 2013, a 38.4% increase from $92.7 million at December 31, 2012. This increase was the result of orders of our new 1 megawatt ("MW") inverter and large project wins in our solar business. 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 located in the United States, Canada, the PRC, Great Britain, Germany, Japan, South Korea, Australia, India, Greece, Italy, Czech Republic, 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, 2013, 2012, and 2011. Sales are attributed to individual countries based on customer location. A summary of financial information for each reportable segment is found in Note 21 - *Segment Information* of our Consolidated Financial Statements.

	Years ended December 31,		
Sales to external customers:	**2013**	**2012**	**2011**
		(In thousands)	
United States	$ 328,330	$ 322,847	$ 338,343
Canada	33,000	30,113	3,622
North America	361,330	352,960	341,965
People's Republic of China	27,420	19,987	38,654
Other Asian countries	62,990	54,825	79,424
Asia	90,410	74,812	118,078
Germany	87,115	18,374	47,228
Other European Countries	8,149	5,785	9,528
Europe	95,264	24,159	56,756
Total sales	$ 547,004	$ 451,931	$ 516,799

Total sales to all foreign countries totaled $218.7 million, $129.1 million, and $178.5 million in the years ended December 31, 2013, 2012, and 2011, respectively.

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

Manufacturing

The manufacturing of our Thin Films related power products is performed in Shenzhen, PRC and Seoul, South Korea. Manufacturing in these two 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. Our solar inverters are produced in Fort Collins, Colorado; Ontario, Canada; and Shenzhen, PRC. Shenzhen has become a platform for building commonality of parts in the inverters and then shipping to the US and Canada for final assembly and test and to support local content requirements. The manufacturing of our three-phase string inverters is done in Greenville, South Carolina, India, Hungary, and Germany with our contract manufacturing partners.

On October 15, 2010, we sold our gas flow control business to Hitachi Metals Ltd. and exited the gas flow control business. In connection with this transaction, we entered into a Master Services Agreement and a Supplemental Transition Services Agreement pursuant to which we agreed to provide contract manufacturing services of gas flow control products and other transition services. These contract manufacturing services were concluded and completely transferred to Hitachi Metals Ltd. in June 2012.

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 manufacture and support of our products. Although we make reasonable efforts to assure that parts are available from multiple qualified suppliers, this is not always possible.

Accordingly, 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:

(1) 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 Thin Films follows semiconductor industry standard practices, such as “copy exact”;

(2) monitoring the financial condition of key suppliers;

(3) 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;

(4) qualifying new parts on a timely basis and in geographies that reduce costs without degradation to quality;

(5) locating certain manufacturing operations in areas that are closer to suppliers and customers; and

(6) 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 103 United States patents and 55 foreign-issued patents, and have 151 patent applications pending in the United States, Europe, Asia, India, Brazil, South Africa, and Chile. A substantial majority of our patents relate to our Thin Films 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.

During 2012, we acquired Solvix and all related intellectual property including one United States patent and one patent application pending in the United States. During 2013, we acquired Refusol and all related intellectual property including three patents in Germany.

As part of our ongoing effort to improve the efficiency within our business, on December 31, 2009, we transferred the economic rights to most of our patents and know-how between affiliates throughout the world, streamlined our intercompany agreements between company affiliates, and restructured our order processing transaction flow. We subsequently reconfigured our legal entity structure to realign our Chinese manufacturing operations with the intellectual property utilized in such manufacturing. This realignment was accomplished through various license agreements and did not involve any assignment of patents. Accordingly, our patents remain registered in countries with more developed intellectual property laws than those of the PRC. The result of this structure has been to improve efficiency, streamline processes, and properly align intellectual property and the related expenses with the manufacturing operations undertaken in the PRC. In addition, we believe we will see worldwide tax savings related to the new structure over time.

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. Lumasense Technologies, CI Systems, BASF, and Laytec GmbH offer products that compete with our thermal products. SMA Solar Technology AG, Power-One, Inc. (now a part of ABB Ltd.), Schneider Electric SA, and Siemens AG offer products that compete with our solar inverters.

Additionally, a focus on local content is causing new competitors for both our business units 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.

Research and Development

The market for our thin film power conversion and thermal measurement 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 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 customers and other industry leaders in order to remain responsive to their product requirements now and in the future.

Our development focus in renewable equipment continues to address commercial and utility-scale solar projects and installations. Our designs are engineered for reliability, efficiency, and levelized cost of energy (“LCOE”) performance in the worldwide markets we serve. We continually invest in research and development projects in order to rapidly deliver better emerging technologies and solutions to the market in support of our customers’ demands for maximum performance, reliability, and functionality, combined with the lowest LCOE.

Research and development expenses were $58.3 million in 2013, $58.1 million in 2012, and $65.0 million in 2011, representing 10.7% of our sales in 2013, 12.9% of our sales in 2012, and 12.6% of our sales in 2011.

Employees

As of December 31, 2013, we had a total of 1,504 employees. There is no union representation of our employees, notwithstanding 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 or 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," "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;
- our future gross profit;
- reducing our operating breakeven point;
- market acceptance of our products;
- the fair value of our assets and financial instruments;
- research and development expenses;
- selling, general, and administrative expenses;
- sufficiency and availability of capital resources;
- capital expenditures;
- adequacy of our reserve for excess and obsolete inventory;
- adequacy of our warranty reserves;
- restructuring activities and expenses;

- 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, 2013 are as follows:

Garry W. Rogerson, 61, joined us in August 2011 as our Chief Executive Officer and Board member. Mr. Rogerson was Chairman from 2009 and Chief Executive Officer from 2004 of Varian, Inc., a major supplier of scientific instruments and consumable laboratory supplies, vacuum products, and services, until the purchase of Varian by Agilent Technologies, Inc. in May 2010. Mr. Rogerson served as Varian's Chief Operating Officer from 2002 to 2004, as Senior Vice President, Scientific Instruments from 2001 to 2002, and as Vice President, Analytical Instruments from 1999 to 2001. Mr. Rogerson received an honours degree and Ph.D. in biochemistry from the University of Kent at Canterbury. Mr. Rogerson is also the chairman of Coherent, Inc., a publicly held laser manufacturer, a position he has held since 2007.

Danny C. Herron, 59, joined us in September 2010 as Executive Vice President and Chief Financial Officer. He was Chief Financial Officer of Sundrop Fuels, Inc., a solar gasification-based renewable fuels company, from October 2009 through August 2010. From May 2009 to October 2009, Mr. Herron was a consultant at Tatum LLC, a financial consulting business, providing interim chief financial officer and financial consulting services. Mr. Herron served VeraSun Energy Corporation, a corn-based ethanol company, from 2006 to 2008 first as Senior Vice President and Chief Financial Officer and later as President and Chief Financial Officer. From 2002 to 2006, Mr. Herron was Executive Vice President and Chief Financial Officer at Swift & Company, a beef and pork producer acquired from ConAgra Foods, Inc. Prior to that, Mr. Herron served as division Chief Financial Officer of ConAgra Foods, Inc. Beef Division.

Yuval Wasserman, 59, 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 Syncroness, Inc., an outsourced engineering and product development company, in 2010. Mr. Wasserman received a Bachelor of Science in Chemical Engineering from the Ben-Gurion University in Be'er Sheva, Israel.

Gordon Tredger, 53, joined us in December 2011, and was appointed President of the Solar Energy business unit in April 2012. From May 2010 to December 2010, he served as Executive Vice President of Operations at the Chemical Analysis Division of Bruker Daltonics, a leading provider of high-performance scientific instruments and solutions. From March 2006 through May 2010, Mr. Tredger was Vice President of Analytical Instruments at Varian Inc., a leading worldwide supplier of scientific instrumentation. Mr. Tredger held prior executive roles at Argonaut Technologies, Perkin-Elmer Instruments, and Photovac (acquired by Perkin-Elmer). Mr. Tredger received a Bachelor of Arts degree from the University of Toronto in Ontario, Canada.

Thomas O. McGimpsey, 52, 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. From February 2008 to April 2009, Mr. McGimpsey held the position of Vice President of Operations for 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 and Chief Legal Officer, Senior Vice President and General Counsel, and Vice President of Corporate Development. 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.

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 manufacture our products timely 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.

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, we may be unable to deliver further product 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. Our obligation to our suppliers at December 31, 2013 under these purchase commitments and agreements was $68.6 million. 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 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.

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 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 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.

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.

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.

We are exposed to risks as a result of ongoing changes specific to the solar inverter industry.

A significant portion of our business is in the emerging solar inverter market, which, in addition to the general industry changes described above in the risk factor ***"The industries in which we compete are subject to volatile and unpredictable cycles,"*** is also characterized by ongoing changes particular to the solar inverter industry. Our business is subject to changes in technology or demand for solar products arising from, among other things, adoption of our inverter products by our customers, changes in technology trends in the industry, behaviors by our customers resulting from technology trend changes, compatibility of our solar inverter technology with our customers' products or certain solar panel providers, customers' and end-users' access to affordable financial capital, the cost and performance of solar technology compared to other energy sources, the adequacy of or changes in government energy policies, including the availability and amount of government incentives for solar power (such as feed-in tariffs and tax credits), the continuation of renewable portfolio standards, and the extent of investment or participation in solar by utilities or other companies that generate, transmit, or distribute power to end users. The current debt crisis in Europe and the resulting economic uncertainty and instability in the region could result in limited access to capital for our customers or changes to government incentives for renewable energy which could cause the delay or cancellation of current projects in the solar industry. There is also increased market volatility as the size of utility scale solar projects is increasing to hundreds of megawatts of capacity. Sales to large solar projects can cause variations in our revenue from quarter to quarter. Such large-scale solar projects require significant financial resources on our part should we be selected as the supplier for solar inverters. We are beginning to see requirements in the solar industry for performance guarantees related to solar inverters and associated liquidated damages provisions. This could result in financial exposure for our business if our solar inverters do not meet reliability or uptime requirements. Lastly, customers using our solar inverters are beginning to evaluate multi-year service agreements from us for on-site maintenance and support of our inverters and even the solar site. These agreements, however, are subject to annual renewal and may not be renewed by the customers.

If we do not successfully manage the risks resulting from these ongoing changes occurring in the solar industry, we may miss out on substantial opportunities for revenue and our business, financial condition, and results of operations could be materially and adversely affected.

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

During the second half of 2011 and the second quarter of 2013, we implemented restructuring plans to align our cost structure with current industry conditions in the Thin Film Business Unit and the Solar Energy Business Unit. 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 transfered various operating activities, such as supply chain management, manufacturing, engineering and other activities, to our Shenzhen, China facility. This means that we will be even more highly 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.

Businesses, consumers, and utilities might not adopt alternative energy solutions as a means for providing or obtaining their electricity and power needs.

On-site distributed power generation solutions, such as photovoltaic systems, which utilize our inverter products, provide an alternative means for obtaining electricity and are relatively new methods of obtaining electrical power that businesses, consumers, and utilities may not adopt at levels sufficient to grow this part of our business. Traditional electricity distribution is based on the regulated industry model whereby businesses and consumers obtain their electricity from a government regulated utility. For alternative methods of distributed power to succeed, businesses, consumers and utilities must adopt new purchasing practices and must be willing to rely upon less traditional means of providing and purchasing electricity. As larger solar projects come online, utilities are becoming increasingly concerned with grid stability, power management and the predictable loading of such power onto the grid.

We cannot be certain that businesses, consumers, and utilities will choose to utilize on-site distributed power at levels sufficient to sustain our business in this area. The development of a mass market for our products may be impacted by many factors which are out of our control, including:

- market acceptance of photovoltaic systems that incorporate our solar inverter products;
- the cost competitiveness of these systems;
- regulatory requirements; and
- the emergence of newer, more competitive technologies and products.

If a mass market fails to develop or develops more slowly than we anticipate, we may be unable to recover the costs we will have incurred to develop these products.

We might make substantial capital expenditures and commitments to meet anticipated demand for our solar inverters.

We have invested and will continue to invest significant human and financial resources in the development, marketing, and sale of our solar inverters. To increase our manufacturing capacity for our solar inverters in order to meet anticipated demand, we have purchased equipment, leased new facilities, and made other capital expenditures. These additional expenditures have increased, and may continue to increase, our overhead expenses during a time when our operations are not fully absorbing current overhead expenses. The impact could lower gross margins until such time that revenue related to the sale of our solar inverters can fully absorb overhead expenses. We have experienced a shortage of components for our solar inverters that could affect our ability to manufacture products and systems. We and other participants in the industry have seen shortages of insulated gate bipolar transistors, capacitors, switchgear, and other discrete electrical components. To mitigate the risk of not having such critical parts, we pro-actively make additional purchases which we believe addresses such risk.

Recent unfair trade complaints filed against imports of solar cells from China could have significant negative effects on our business, financial condition or results of operations.

In October 2011, a coalition of several U.S. solar companies filed complaints with the U.S. Department of Commerce ("DOC") and International Trade Commission ("ITC") charging that Chinese solar cell manufacturers have engaged in, and benefited from, various unfair trade practices. A similar trade case may also be filed in Europe. In early 2012, duties were imposed on solar panels imported from China which have resulted in other trade-related conflicts. Since some of our inverters are well-suited for use with crystalline silicon panel modules, the impact of these duties on the cost of solar panels could have a material adverse impact on our business, financial position or results of operations.

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

Our ten largest customers accounted for 44.2% of our sales in 2013, 47.7% of our sales in 2012, and 44.6% of our sales in 2011. Applied Materials Inc., our largest customer, accounted for 17.4% of our sales in 2013, 14.1% of our sales in 2012, and 13.1% of our sales in 2011. Additionally, in June 2012, Lam Research merged with Novellus Systems, Inc. Had the two businesses been a combined entity for the full year, they would have accounted for 10.7% of our sales in 2012. No other single customer accounted for more than 10% of our sales during 2013, 2012 or 2011. At December 31, 2013 our accounts receivable from Applied Materials accounted for 17.4% of our total accounts receivable. At December 31, 2012, our accounts receivable from Applied Materials, Ltd. were $10.9 million, comprising 13% of our total accounts receivable. No other single customer accounted for more than 10% of our accounts receivable as of December 31, 2013, or 2012. If we were to lose any of our significant customers or suffer a material reduction in their purchase orders, revenue could decline and our business, financial condition, and results of operations could be materially and adversely affected.

Market pressures 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 may not be able to reduce our expenses in an amount sufficient to offset potential margin declines. The decrease in cash flow could materially and adversely impact our financial condition.

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 in which we operate 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.

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.

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, 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.

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 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 2012, 2013 and 2014, we acquired Solvix, Refusol, and the Power Controls Modules product line of AEG Power Solutions, respectively, 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.

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

As 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 (such as the recent introduction of our 1 megawatt solar inverter) 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.

The performance of our solar inverters is highly dependent on the customer meeting product specification, installation and maintenance requirements.

Our commercial and utility-grade solar inverters have product specification, installation and maintenance requirements that if not followed could result in product failure or downtime. For example, if a customer fails to properly design and build the solar site consistent with our product specification and installation requirements (*e.g.*, exceeding input DC voltage, improper grounding, cabling errors, etc.), the inverter's performance could be adversely affected and, in some cases, the inverter may be damaged. Customers are responsible for their solar site design and build. Although we conduct testing on our products, our solar inverters cannot be tested in an environment simulating the various solar site conditions that may exist. We may expend considerable time and resources in diagnosing alleged product issues in the field that are actually attributable to a customer's failure to follow such product specification, installation and maintenance requirements. To the extent we experience such increased costs associated with investigating such claims, we may not be able to recover such costs from the customer, resulting in decreased profitability.

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.

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 and Seoul, South Korea. Our thermal instrumentation products that are used in the semiconductor industry are manufactured in Vancouver, Washington. 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 transformer based and transformerless solar inverters are manufactured in Fort Collins, Colorado, Shenzhen, PRC and Ontario, Canada. While manufacturing could be shifted to a different manufacturing location for the transformer based and transformerless inverters if a labor disruption, supply difficulty or natural or other uncontrollable occurrence occurred, it may take significant time to transition to another site, and delivery times and costs would likely increase, preventing us from meeting our customers' requirements in a timely manner, or at all. To the extent that local content requirements exist, we may also be limited in such transitions.

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 Bend, Oregon, which renders us 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.

We are subject to risks inherent in international operations.

Sales to our customers outside the United States were approximately 40.0% of our total sales in 2013, 28.6% in 2012, and 34.5% in 2011. The recent acquisitions of the three phase string inverter and power controls modules product lines have increased our presence in international locations. India is becoming a focus of possible expansion for sales, research and development, and manufacturing. As opportunities arise we may begin expanding into markets such as Mexico, Chile, and Brazil. 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;
- timely collecting accounts receivable from foreign customers including $46.0 million in accounts receivable from foreign customers as of December 31, 2013; 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.

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.

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. Recent 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, and continue to consider transitioning additional purchasing related to our solar inverters 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.

We have entered into contract manufacturing relationships with international suppliers for certain of our inverter products.

We have entered into contract manufacturing relationships with well-established suppliers in Canada, Hungary, India and the United States for the manufacture of certain goods in our inverter product line and Germany for our Power Control Module product line. These relationships will facilitate our compliance with localization requirements in some world regions where incentives and benefits are granted for local manufacturing. These relationships will also afford us a more flexible manufacturing capacity, thereby enabling us to maintain a competitive advantage in the marketplace for our inverter products. These partners, working closely with us, will in turn be developing a common supply chain for the components that are incorporated into our inverters. While we believe that our contract manufacturers are qualified to manufacture these inverters for us, we may need to address short-term quality and delivery scheduling issues as we develop this new supply chain for these inverters. If we were to encounter significant quality or delivery schedule concerns it might materially and adversely affect our relationships with customers for these inverters and our results of operations. As with many contract manufacturing relationships, costs may be incurred if manufacturing capacity is not fully utilized.

Changes in tax rules, tax liabilities, or utilization of our deferred tax assets could materially affect our results.

Our future annual and quarterly tax rates could be affected by numerous factors, including changes in the applicable tax laws, composition of earnings in countries with differing tax rates, or our valuation and utilization of net deferred tax assets. In the second half of 2009, we reconfigured our legal entity structure to realign our Chinese manufacturing operations with the intellectual property utilized in such manufacturing. On December 31, 2009, we transferred the economic rights to most of our patents and know-how from other affiliates throughout the world, including the parent company. In general, we are subject to regular examination of our income tax returns by the Internal Revenue Service and other tax authorities. We regularly assess the likelihood of favorable or unfavorable outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. Although we believe our tax estimates and reserves against deferred tax assets and uncertain tax positions are reasonable, including those relied upon in the execution of our entity restructuring, there can be no assurance that any final determination will not be materially different from the treatment reflected in our current or historical income tax provisions and accruals, which could materially and adversely affect our results of operations.

Reductions in government subsidies could impact revenue and results of operations in the renewable energy markets.

Various government subsidies, including feed-in tariffs, have been a significant driver in the growth of the renewable energy industry. Countries throughout the world are providing incentives to spur adoption of renewable energy. While many countries, including Great Britain, certain regions in the United States and Canada, India, and China, are beginning to adopt feed-in tariffs and varying subsidies, others are re-evaluating the level of incentive they wish to provide. A number of countries, including the Czech Republic have proposed reductions to their feed-in tariffs while Italy and Germany reduced their feed-in tariffs. As new political parties take office in countries throughout the world, agendas on renewable energy and governments' desire or ability to provide incentives may shift or change. Proposed feed-in tariff reductions in regions in which we do significant business could negatively affect the results of our operations. Such a reduction in the feed-in tariffs, including any potential further reductions, could result in a significant decline in demand and price levels for renewable energy products and result in foreign competitors moving into the U.S. solar market, which could have a material adverse effect on our business, financial condition, and results of operations.

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 they receive in payment for such sales could be less valuable at the time of receipt as a result of exchange rate fluctuations. 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.

The PRC government is continually pressured by its trading partners to allow its currency to float in a manner similar to other major currencies. 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 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 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.

We currently have $157.8 million of goodwill and $19.4 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 first report is due on May 31, 2014 for the 2013 calendar year.

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.

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.

Our Chairman of the Board owns a significant percentage of our outstanding common stock, which could enable him to influence our business and affairs, and future sales of our common stock by our Chairman of the Board may negatively affect the market price of our common stock.

Douglas S. Schatz, our Chairman of the Board, beneficially owned approximately 6.4% of our outstanding common stock as of February 27, 2014. Depending on the number of shares that abstain or otherwise are not voted on a particular matter, Mr. Schatz may be able to influence our business affairs for the foreseeable future in a manner with which our other stockholders may not agree. In addition, the sale of a substantial amount of the shares beneficially owned by him could negatively affect the market price of our common stock.

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 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.

Historically, acquisitions have been an important element of our strategy. However, we may not find suitable acquisition candidates in the future and we may not be able to successfully integrate and manage acquired businesses. Any acquisitions we make could disrupt our business and harm our financial condition.

We have in the past 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. In the event of any future acquisitions, 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 also involve numerous risks, including:

- problems combining the acquired 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, including the costs associated with improving the internal controls of the acquired company;
- 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 acquisitions; 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.

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. 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.

Like many modern 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 the unauthorized access by third parties 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.

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, if a third party gains unauthorized access to our data, including any regarding our customers, such security breach could expose us to a risk of loss of this information, loss of business, litigation and possible liability. These security measures may be breached as a result of third-party action, including intentional misconduct by computer hackers, employee error, malfeasance or otherwise. Additionally, third parties may 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.

Our 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.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Information concerning our principal properties at December 31, 2013 is set forth below:

Location	Principal Activity	Business Unit	Ownership
Fort Collins, CO	Corporate headquarters, research and development, distribution, sales, and service	Thin Films / Solar Energy	Leased
Villaz-St-Pierre, Switzerland	Research and development, outsourced manufacturing	Thin Films	Leased
San Jose, CA	Distribution, sales, and service, research and development	Thin Films / Solar Energy	Leased
Vancouver, WA	Research and development, manufacturing, distribution, sales, and service	Thin Films	Leased
Toronto, Canada	Distribution, manufacturing and sales	Solar Energy	Leased
Shanghai, China	Distribution and sales	Thin Films	Leased
Shenzhen, China	Manufacturing, distribution and service	Thin Films / Solar Energy	Leased
Metzingen, Germany	Distribution, sales, and service	Thin Films / Solar Energy	Leased
Pune, India	Research and development and sales	Solar Energy	Leased
Tokyo, Japan	Sales	Solar Energy	Leased
Hwasung Kyunggi-do, South Korea	Distribution, sales, and service	Thin Films	Leased
Sungnam City, South Korea	Distribution, manufacturing, sales, service and research and development	Thin Films	Owned
Singapore	Sales and service	Thin Films	Leased
Taipei, Taiwan	Distribution, sales, and service	Thin Films	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 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 also 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. 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.

ITEM 4. MINE SAFETY DISCLOSURES

None.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND 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 27, 2014, the number of common stockholders of record was 434, and the closing sale price of our common stock on the NASDAQ Global Select Market on that day was $27.96 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:

	2013		2012	
	High	**Low**	**High**	**Low**
First Quarter	$ 19.97	$ 13.61	$ 13.40	$ 10.64
Second Quarter	$ 18.93	$ 16.82	$ 13.95	$ 11.72
Third Quarter	$ 22.07	$ 17.38	$ 14.14	$ 11.01
Fourth Quarter	$ 25.97	$ 17.29	$ 13.81	$ 11.27

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 and do not anticipate paying cash or other dividends on our common stock in the foreseeable future.

Share Repurchases

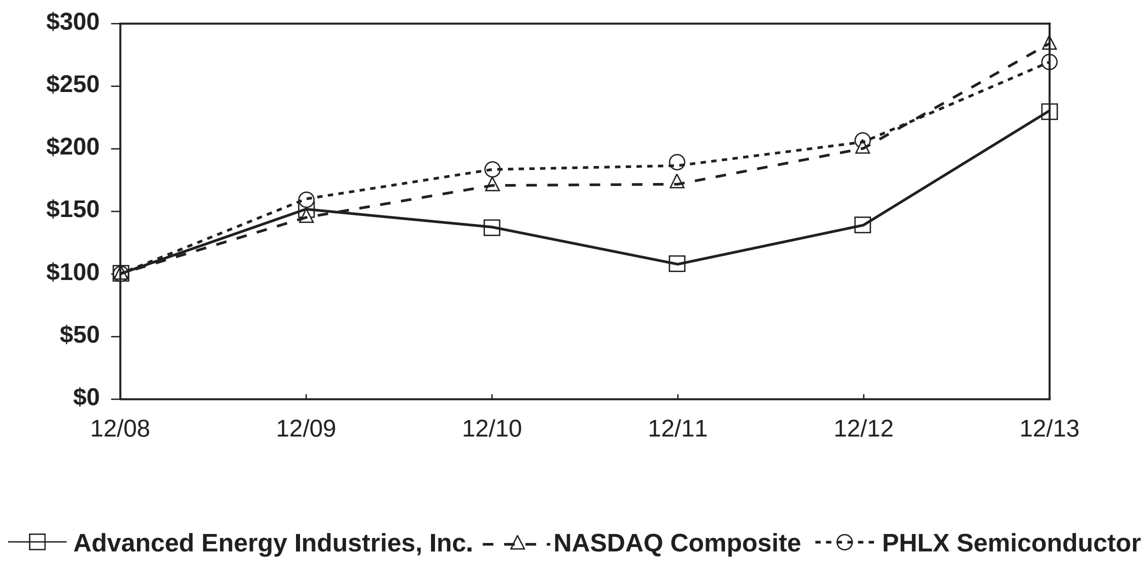
In October 2012, our Board of Directors authorized a program to repurchase up to $25.0 million of our common stock over a twelve-month period. We did not repurchase any shares under this program, which ended in the fourth quarter of 2013.

Performance Graph

The performance graph below shows the five-year cumulative total stockholder return on our common stock during the period from December 31, 2009 through December 31, 2013. 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, 2008 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.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN*

Among Advanced Energy Industries, Inc., the NASDAQ Composite Index, and
the PHLX Semiconductor Index



*$100 invested on 12/31/08 in stock or index, including reinvestment of dividends.
Indices and our stock performance calculated on a calendar year-end basis.

	12/08	12/09	12/10	12/11	12/12	12/13
Advanced Energy Industries, Inc.	**$ 100.00**	**$ 151.56**	**$ 137.09**	**$ 107.84**	**$ 138.78**	**$ 229.75**
NASDAQ Composite	**100.00**	**144.88**	**170.58**	**171.30**	**199.99**	**283.39**
PHLX Semiconductor	**100.00**	**159.68**	**183.23**	**186.05**	**204.93**	**268.55**

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,				
	2013	2012	2011	2010	2009
	(In thousands, except per share data)				
Consolidated Statements of Operations Data:		REVISED	REVISED	REVISED	REVISED
Sales	$ 547,004	$ 451,931	$ 516,799	$ 459,414	$ 161,846
Operating income (loss)	14,623	27,374	49,251	65,188	(97,140)
Income (loss) from continuing operations before income taxes	14,284	29,806	50,468	67,409	(95,230)
Income (loss) from continuing operations, net of income taxes	32,086	20,176	36,854	53,593	(101,812)
Income (loss) from discontinued operations, net of income taxes	—	405	(540)	17,599	(893)
Net income (loss)	32,086	20,581	36,314	71,192	(102,705)
Earnings per Share:					
Continuing Operations:					
Basic earnings (loss) per share	$ 0.81	$ 0.52	$ 0.85	$ 1.25	$ (2.43)
Diluted earnings (loss) per share	$ 0.79	$ 0.51	$ 0.84	$ 1.23	$ (2.43)
Discontinued Operations:					
Basic earnings (loss) per share	$ —	$ 0.01	$ (0.01)	$ 0.41	$ (0.02)
Diluted earnings (loss) per share	$ —	$ 0.01	$ (0.01)	$ 0.41	$ (0.02)
Net Income (Loss):					
Basic earnings (loss) per share	$ 0.81	$ 0.53	$ 0.84	$ 1.66	$ (2.45)
Diluted earnings (loss) per share	$ 0.79	$ 0.52	$ 0.83	$ 1.64	$ (2.45)
Basic weighted-average common shares outstanding	39,597	38,879	43,465	42,862	41,966
Diluted weighted-average common shares outstanding	40,667	39,447	43,954	43,419	41,966
Consolidated Balance Sheets Data:					
Total assets	$ 652,977	$ 537,242	$ 532,460	$ 504,239	$ 344,207

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 processing for various products, such as semiconductor devices, flat panel displays, thin film renewables, industrial coating, gas abatement and architectural glass. We also supply thermal instrumentation products for advanced temperature control in thin-film processing for these same markets. Our solar inverter products support renewable power generation solutions for primarily commercial, and utility-scale solar projects and installations. Our network of global service support centers provides a recurring revenue opportunity as we offer repair services, conversions, upgrades, and refurbishments to companies using our products. We also offer a wide variety of operations and maintenance service plans that can be tailored for individual photovoltaic ("PV") sites of all sizes.

We operate in two reportable segments: Thin Films Deposition Power Conversion and Thermal Instrumentation ("Thin Films") and Solar Energy. A summary of financial information for each reportable segment is found in Note 21 - *Segment Information* of our Consolidated Financial Statements.

Our Thin Films business unit saw increased sales driven by improved conditions across many of the industries we serve. We have continued to grow and evolve the sale of our products and services in this segment by increasing our market share on existing applications as well as expanding into new markets, such as hard coating and environmental applications. Our Solar Energy business unit also saw an increase in sales in 2013 driven primarily by the acquisition of our new three phase string inverter line and the introduction of our 1 MW inverter. This revenue growth, coupled with our restructuring activities, which included consolidation of certain facilities, product rationalization, further centralization of manufacturing activities, as well as a corporate culture of continuous improvement and cost consciousness, led to an increase in net income for the year.

As always, we enter 2014 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.

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* of our Consolidated Financial Statements 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. For customers purchasing our Solar Energy products, we provide installation, support, and services after the product has been shipped. For arrangements containing these additional elements, we allocate revenue based on vendor specific objective evidence of the selling price of each individual element of the arrangement. As we also sell these additional elements separately, the evidence is our selling price for those elements when sold separately. We defer the revenue of any undelivered elements until the undelivered element is delivered. 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. The customers purchasing our Solar Energy products require larger credit limits than those purchasing our Thin Film products. 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 could 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 thin-film products for periods typically ranging from 12 to 24 months after shipment. We warrant our solar inverter products for five to ten years and provide the option to purchase additional warranty coverage up to 20 years. 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

We completed our acquisitions of Solvix in November 2012 and Refusol in April 2013 for total costs of $21.2 million and $87.2 million, respectively. The total cost of the Solvix acquisition includes $5.3 million of contingent consideration to be paid out over a three-year period upon completion of specific milestones and reaching certain revenue thresholds. 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 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. We performed an assessment of qualitative factors for our annual impairment test of the goodwill associated with our Solar Energy business in 2012 and the goodwill associated with our Thin Film business in 2013. The factors reviewed included macroeconomic conditions, industry and market conditions, cost factors, and overall financial performance of our solar inverter business. This assessment resulted in the conclusion that there is no impairment of goodwill in the respective years. For the 2013 annual impairment test of goodwill associated with our Solar Energy business unit, we performed a quantitative analysis by comparing the fair value of the Solar Energy reporting unit to its carrying value. This analysis uses projected future cash flows and market multiples of comparable companies to arrive at the fair value of the reporting. The analysis of the Solar Energy business unit resulted in the conclusion that there is no impairment of goodwill in 2013.

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 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

As a result of the acquisition of the three phase string inverter product line, we assessed the overall Solar product line for product optimization. Through this assessment, it was determined that the intangible assets related to products acquired from PV Powered were impaired. We performed an analysis using projected future cash flows and determined their carrying value was impaired resulting in an impairment of $31.9 million in 2013.

Income Taxes

We are subject to income taxes in the United States and numerous foreign jurisdictions. When structuring our operations, we have considered the impact on our effective tax rate. Our effective tax rates differs from the US statutory rate due to factors such as foreign operations taxed at different tax rates, research and development tax credits, and non-deductible compensation. Additionally, in 2013, the Company recognized significant tax benefit related to restructuring expenses incurred primarily in the U.S. Our effective tax rate was -124.6%, 32.3%, and 27.0% for 2013, 2012, and 2011, respectively. Our determination of our tax liability requires estimation and significant judgment and is subject to audit and review by applicable domestic and foreign tax authorities.

Our income tax rate is significantly affected by the tax rates that apply to our foreign earnings. In addition to local country tax laws and regulations, our income tax rate depends on the extent that our earnings are indefinitely reinvested outside the U.S. Indefinite reinvestment is determined by management's judgment about and intentions concerning our future operations. At December 31, 2013, $119.2 million of earnings had been indefinitely reinvested outside the U.S., primarily in active non-U.S. business operations. We do not intend to repatriate these earnings to fund U.S. operations and, accordingly, we do not provide for U.S. federal income and foreign withholding tax on these earnings.

Significant judgment is required in evaluating our uncertain tax positions and determining our provision for income taxes. Although we believe our reserves are reasonable, no assurance can be given that the final tax outcome of these matters will not be different from that which is reflected in our historical income tax provisions and accruals. We adjust these reserves in light of changing facts and circumstances, 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 from the amounts recorded, such differences will affect the provision for income taxes in the period in which such determination is made. The provision for income taxes includes the effect of reserves and any changes to the reserves that are considered appropriate, as well as the related net interest and penalties, if applicable.

Significant judgment is required in determining any valuation allowance recorded against deferred tax assets. In assessing the need for a valuation allowance, we consider all available evidence, including past operating results, estimates of future taxable income, and the feasibility of tax planning strategies. In the event that we change our determination as to the amount of deferred tax assets that can be realized, we will adjust our valuation allowance with a corresponding effect to the provision for income taxes in the period in which such determination is made.

Business Environment and Trends

SEMICONDUCTORS

Investment in semiconductor capital equipment spending decreased overall worldwide by roughly 9% in 2013. With the maturing integrated circuit end-markets largely correlated to worldwide Gross Domestic Product and continuing consolidation at both the integrated circuit company level and the semiconductor equipment level, a relatively lackluster semiconductor capital investment rate was experienced in the first half of 2013. Investments rose 22% in the second half of the year as there were significant investments in 3D memory and capacity build-outs at the 20nm node in the Foundry market.

Semiconductor equipment manufacturers are faced with increasing research and development challenges as they develop sub-20 nanometer ("nm") technology node products and processes. The evolution of 3D devices and new materials drive an increase in the use of Plasma processes and with it the need for advanced Power supplies. New semiconductor equipment manufacturers continue to emerge in Asia providing plasma processing tools for film deposition and Etch. We believe that we are well positioned to offer both the depth and breadth of power delivery products required for the leading edge of product development at the larger OEMs and have the localization and customization positioning necessary to take advantage of the emerging Asian-based semiconductor equipment companies.

Looking forward, we believe that semiconductor equipment investment will be up in the range of 5-10% compared to 2013. We believe foundries and 3D NAND customers will continue to invest for leading edge capability and to develop sub 20 nm capacity. Furthermore, memory investments will likely pause in the first half of 2014, with capital investments perhaps resuming in the second half of the year.. AE is a leader in advanced RF technologies and matching networks with enabling tune-while-pulsing capabilities for plasma control and should be well positioned to continue market penetration in etch, PECVD, and physical vapor deposition (“PVD”) applications.

FLAT PANEL DISPLAY

Growth in our flat panel display ("FPD") market is driven by both capacity expansion and investment in new technologies, particularly in the development of next-generation high-definition liquid crystal display (“LCD”) and AMOLED displays for TVs, smart phones and tablet computers. In 2013, FPD investment picked-up significantly from 2012 lows as the end market for displays grew with capacity expansions requiring capital equipment for generation 5.5 AMOLED displays in Korea and generation 8 LCD in China. The pause in 2012 enabled improved manufacturer profitability, which in part enabled new LCD equipment purchases. Overall, we expect flat panel display sales in 2014 to be flat to 2013 as customers continue investing in generation 5.5 and 6 AMOLED capacity and plan to build out generation 8 LCD lines in China with generation 8 AMOLED being pushed into future years.

We believe we are well-positioned to benefit from growth in PVD process technologies where we hold strong technology and market positions. Similar to the semiconductor market, Korean FPD PVD equipment suppliers continue to capture market share in FPD. Our continued investment in expanded localized Korean capabilities brings us closer to the advanced technologies and manufacturing processed for LCD and AMOLED our customers implement in their factories enhancing our responsiveness to their evolving needs.

THIN FILM RENEWABLES

Demand for our crystalline silicon ("c-SI") PV products in Europe and China, which decreased significantly in 2012 remained at record low levels in 2013. Declines in PV module prices, along with an oversupply of panel and capital equipment, kept thin-film renewables sales low throughout 2013. As a result of oversupply, end market pricing in the major PV markets, wafer, cell and module production capacity is likely to remain stalled until 2015 at the earliest. Many of the largest suppliers of PV products, along with smaller Chinese solar companies, will most likely continue to run their plants below capacity, and more may cease production completely. This scenario will have an adverse impact on our sales in this market for the foreseeable future.

Thin-film solar manufacturing process for copper indium gallium selenide ("CIGS") and cadmium telluride ("CdTe"), will drive limited capacity and technology buys as the technology matures; therefore, the relative market share of thin-film renewables in CIGS and CdTe should remain constant for the foreseeable future. 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.

INDUSTRIAL MARKETS

Throughout 2013, 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 (“EMI”) films, aesthetic, optical and tribilogical coatings. We expect this demand to continue in 2014. The acquisition of complimentary product lines for industrially hardened DC, pulsed DC and arc supplies was accepted positively by the market with major application wins at OEMS supplying systems to consumer electronics leaders. AE will continue to strengthen its position in these markets through internal development and 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.

INVERTER

After two years of downturn, the global solar industry appears to be rebounding. Worldwide PV installations are expected to rise by double digits in 2014, solar manufacturing capital spending is recovering, module prices are stabilizing and emerging markets are on the rise. However, challenges remain, such as changes in government incentives and policy such as the reduced support and incentives in major European markets, a still-fragile global economy and razor-thin margins throughout the solar value chain.

Historically the PV market has been driven exclusively by government subsidies, including feed-in tariffs (FITs), tax credits and tender schemes. In recent years, these subsidies have been scaled back as PV installations have grown rapidly and lower system cost has made the original schemes very attractive and also costly to support for 20 years or more.

The rise of solar markets in Japan and China is spurring the rapid growth of the PV inverter business in those countries, boosting market share for domestic suppliers in 2013. In November, China’s National Energy Administration (NEA)announced plans for 12 GW of PV projects in 2014. These consist of 8 GW of distributed PV and 4 GW of ground-mount systems. This announcement is extremely encouraging for both the Chinese and global PV industry. Additionally, high electricity prices and the falling cost of PV will allow 700 MW of unsubsidized PV to be developed worldwide in 2014, especially in regions with high irradiation and intense electricity demand.

With the acquisition of our three-phase string product line and the development and launch of our 1 MW central inverter product in 2013, we are poised to take advantage of the growth in commercial installations in Japan and other world markets, as well as continue to gain market share in North America in utility-scale installations.

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 Solvix for the period November 8, 2012 through December 31, 2012 and for the full year ended December 31, 2013. Results of operations include the results of Refusol for the period April 8, 2013 through December 31, 2013. Operating results applicable to our gas flow control business are excluded from our results of continuing operations for all periods presented. 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.

SEGMENT REPORTING IN FISCAL 2013

Advanced Energy is organized into two reportable segments - Thin Films and Solar Energy. The Thin Films business unit principally serves our OEM and end customers in the semiconductor, flat panel display, solar panel, and other capital equipment markets, while the Solar Energy business unit focuses primarily on commercial and utility-scale solar projects and installations, selling primarily to distributors, Engineering, Procurement, and Construction contractors ("EPC"s), developers, and utility companies. Utilizing these reportable segments enables greater focus on each business' unique needs and requirements, allowing each to expand and accelerate our growth by better serving each of these very different industries.

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

	Years Ended December 31,		
	2013	2012	2011
		(In thousands)	
Sales	$ 547,004	$ 451,931	$ 516,799
Gross profit	210,136	167,746	205,157
Operating expenses	195,513	140,372	155,906
Operating income	14,623	27,374	49,251
Other income (expense)	(339)	2,432	1,217
Income from continuing operations before income taxes	14,284	29,806	50,468
Provision (benefit) for income taxes	(17,802)	9,630	13,614
Income from continuing operations, net of income taxes	$ 32,086	$ 20,176	$ 36,854

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,		
	2013	2012	2011
Sales	100.0%	100.0%	100.0%
Gross profit	38.4%	37.1%	39.7%
Operating expenses	35.8%	31.2%	30.2%
Operating income	2.6%	5.9%	9.5%
Other income (expense)	(0.1)%	0.5%	0.3%
Income from continuing operations before income taxes	2.5%	6.4%	9.8%
Provision (benefit) for income taxes	(3.3)%	2.1%	2.6%
Income from continuing operations, net of income taxes	5.8%	4.3%	7.2%

SALES

The following tables summarize annual net sales, and percentages of net sales, by segment for each of the years ended 2013, 2012, and 2011:

	Years Ended December 31,			Increase/ (Decrease)		Percent Change	
	2013	**2012**	**2011**	**2013 v. 2012**	**2012 v. 2011**	**2013 v. 2012**	**2012 v. 2011**
				(In thousands)			
Thin Films:							
Semiconductor capital equipment market	$ 176,230	$ 134,216	$ 146,175	$ 42,014	$ (11,959)	31.3%	(8.2)%
Non-semiconductor capital equipment	70,575	51,023	130,378	19,552	(79,355)	38.3%	(60.9)%
Global Support	49,730	50,096	52,061	(366)	(1,965)	(0.7)%	(3.8)%
Total Thin Films	296,535	235,335	328,614	61,200	(93,279)	26.0%	(28.4)%
Solar Energy	250,469	216,596	188,185	33,873	28,411	15.6%	15.1%
Total sales	$ 547,004	$ 451,931	$ 516,799	$ 95,073	$ (64,868)	21.0%	(12.6)%

	Years Ended December 31,		
	2013	**2012**	**2011**
Thin Films:			
Semiconductor capital equipment market	32.2%	29.7%	28.3%
Non-semiconductor capital equipment	12.9%	11.3%	25.2%
Global Support	9.1%	11.1%	10.1%
Total Thin Films	54.2%	52.1%	63.6%
Solar Energy	45.8%	47.9%	36.4%
Total sales	100.0%	100.0%	100.0%

Total Sales

Total sales for the twelve months ended December 31, 2013 increased 21.0% to $547.0 million from $451.9 million for the twelve months ended December 31, 2012. The increase in sales was driven by an increase in spending in the semiconductor market. A majority of this increase was a result of large capital investment for technology changes in the Thin Film flat panel display market made during the early part of 2013 and, to a lesser extent, demand for our products in the semiconductor market. Additionally, the acquisition of the three-phase string inverter product line drove higher sales in our solar business.

Total sales decreased 12.6% to $451.9 million in 2012 as compared to $516.8 million in 2011. The decrease in sales was driven by a significant decline in capital spending in all the thin-film markets that we serve. Although there was softness in the semiconductor market throughout 2012, the non-semiconductor market, particularly flat panel displays and thin film renewables, was the primary driver behind the decline in sales from 2011. Excess manufacturing capacity and overall uncertainty in these markets significantly reduced demand in late 2011 and throughout 2012. The decline in sales for our Thin Films business unit was partially offset by increased sales in Solar Energy. Solar Energy sales were impacted positively by an increase in utility sales as well as the acquisition of the three-phase string product line; however, those increases were partially offset by our product rationalization strategy in which we have started to phase out a portion of our transformer-based inverter line.

Thin Films

Results for Thin Films for the twelve months ended December 31, 2013, 2012, and 2011 are as follows (in thousands):

	Years Ended December 31,		
	2013	**2012**	**2011**
Sales	$ 296,535	$ 235,335	$ 328,614
Operating Income	64,790	22,804	68,241

2013 SALES COMPARED TO 2012

Thin Film sales for 2013 increased 26.0% as compared to 2012 reflecting increasing strength in the semiconductor markets as well as flat panel display.

In 2013, sales in our thin-film semiconductor market increased 31.3% to $176.2 million, or 32.2% of sales, from $134.2 million, or 29.7% of sales in 2012, driven by a strong increase in capital investment in the second half of 2013 as well as our investment in R&D centers worldwide, which we believe has allowed us to become embedded in our customers' design processes. We believe this has allowed us to increase our customer base in Korea and Japan and led to design wins in etch, PVD, and PECVD applications. Furthermore, we believe our investment in RF pulsing technology and products has allowed us to grow our presence in etch applications.

Sales to the non-semiconductor capital equipment markets increased 38.3% to $70.6 million, or 12.9% of sales in 2013, from $51.0 million, or 11.3% of sales in 2012. The markets that comprise our non-semiconductor capital equipment markets include flat panel display, thin film renewables, data storage, architectural glass, and other industrial thin-film manufacturing equipment markets. Our customers in these markets are predominantly large OEMs. The flat panel display and architectural glass markets are the primary drivers of the increase in the non-semiconductor market in 2013.

Sales to customers in the flat panel display market increased 199.8% to $25.8 million, or 4.7% of total sales in 2013 as compared to $8.6 million, or 1.9% of total sales in 2012. Investments in active-matrix light-emitting diode ("AMOLED") technology resulted in stronger sales in the flat panel display market. We expect flat panel display sales in 2014 to be flat to 2013 as customers continue to invest in current technology, pushing new technology investments out to future years.

Sales to customers in the thin film renewables market remained relatively flat at $4.2 million, or 0.8% of total sales in 2013 as compared to $4.8 million, or 1.1% of total sales in 2012. Sales related to architectural glass applications increased in the latter half of the year propelled by sales in China. We expect this activity to drive expansion of the low-E coated glass business well into 2014 to match Chinese government infrastructure investments.

Global support revenue for 2013 decreased 0.7% to $49.8 million, or 9.1% of total sales, as compared to $50.1 million, or 11.1% of total sales in 2012. The later half of 2013 saw an increase in sales due to interest in upgrades and refurbishment programs, coupled with our preventative maintenance programs. We are gaining customer share through our 'fab-wide' solutions offerings and we expect these strengthened relationships and offerings to continue into 2014.

2012 SALES COMPARED TO 2011

Thin Film sales for 2012 declined 28.4% as compared to 2011 reflecting continued weakness in the semiconductor markets along with significant declines in the flat panel display and solar panel markets.

In 2012, sales in our thin-film semiconductor market decreased 8.2% to $134.2 million, or 29.7% of sales, from $146.2 million or 28.3% of sales in 2011. In late 2011, capital expansion by our customer's end users began to slow in the semiconductor market and foundry utilization rates continued to remain lower throughout 2012 than previous levels.

Sales to the non-semiconductor capital equipment markets decreased 60.9% to $51.0 million, or 11.3% of sales in 2012, from $130.4 million, or 25.2% of sales in 2011. The markets that comprise our non-semiconductor capital equipment markets include flat panel display, thin film renewables, data storage, architectural glass, and other industrial thin-film manufacturing equipment markets. Our customers in these markets are predominantly large OEMs. Each of these markets was also adversely impacted by lower capital spending and factory utilization rates, although the impact in each was slightly different.

Sales to customers in the flat panel display market decreased 71.1% to $8.6 million, or 1.9% of total sales in 2012 as compared to $29.8 million, or 5.8% of total sales in 2011. A drop in overall demand for flat panel televisions resulted in production overcapacity in 2012. This, coupled with delays in technology transitions, negatively impacted sales to this market as manufacturers delayed further investment.

Sales to customers in the thin film renewables market decreased 90.6% to $4.8 million, or 1.1% of total sales in 2012 as compared to $50.5 million, or 9.8% of total sales in 2011. A worldwide excess of solar panel manufacturing capacity and inventory, particularly in the PRC, resulted in a significant decline in sales to the solar panel market. There has not been enough marketplace demand to absorb the high levels of worldwide inventory on hand resulting in competitive consolidation of a number of solar panel manufacturers.

Global support revenue for 2012 decreased 3.8% to $50.1 million, or 11.1% of total sales, as compared to $52.1 million, or 10.1% of total sales in 2011. Although service activity levels were stable in most of our geographic regions, factory utilization rates in both the flat panel display and solar panel markets had a negative impact on our customer's maintenance budgets and the need for repairs. Additionally, in June 2012, we ceased providing service for the gas flow control business that we sold in 2010.

Applied Materials Inc., our largest customer, accounted for $97.0 million or 17.4% of our sales in 2013; $63.9 million, or 14.1% of our sales in 2012; and $68.0 million, or 13.1%, of our sales in 2011. Our sales to Applied Materials included sales for the semiconductor capital equipment market, as well as the solar and flat panel display markets.

Solar Energy

Results for Solar Energy for the twelve months ended December 31, 2013, 2012, and 2011 are as follows (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Sales	$ 250,469	$ 216,596	$ 188,185
Operating income (loss)	(3,772)	14,003	4,323

Solar Energy sales increased $33.9 million, or 15.6%, to $250.5 million in 2013, as compared to $216.6 million in 2012. Solar Energy comprised 45.8% of total sales in 2013 as compared to 47.9% in 2012. The addition of our three-phase string inverter product line in April as well as fourth quarter shipments of our new product offering, the 1Megawatt ("1 MW"), have contributed to this increase in sales. These increases were partially offset by our product rationalization strategy in which we have started to phase out a portion of our transformer-based inverter line.

Solar Energy sales increased $28.4 million, or 15.1%, to $216.6 million in 2012, as compared to $188.2 million in 2011. Solar Energy comprised 47.9% of total sales in 2012 as compared to 36.4% in 2011. Large utility-scale projects drove the increase in sales for Solar Energy in 2012. During 2012 we expanded our presence in Canada resulting in significant growth in sales for that market.

GROSS PROFIT

Our gross profit was $210.1 million or 38.4% of revenue in 2013 compared to $167.7 million or 37.1% of revenue in 2012. The increase in terms of absolute dollars was a result of higher sales in the Thin Film business unit as demand increased in all of the markets we serve, as well as the addition of the string inverter product line acquired by the Solar Energy business in April 2013. The slight increase in gross margin as a percentage of sales for the year is due the overall revenue mix shift between our Thin Film business, which yields a higher gross margin, and lower-margin Solar Energy sales.

Gross profit was $167.7 million, or 37.1% of revenue in 2012 and $205.2 million, or 39.7% of revenue in 2011. The decrease in absolute dollars and as a percentage of sales is due to the decline in sales in the thin films markets. Our Thin Films business unit has higher gross margins than our Solar Energy business unit, resulting in a decline in gross margin as a percentage of sales when Thin Films sales decline as a percentage of total sales.

Operating income of each business unit does not include restructuring charges as these are considered a corporate expense.

OPERATING EXPENSE

The following table summarizes our operating expenses as a percentage of sales for the years ended 2013, 2012 and 2011:

	Years Ended December 31,					
	2013		2012		2011	
			(in thousands)			
Research and development	$ 58,314	10.7%	$ 58,076	12.9%	$ 64,984	12.6%
Selling, general, and administrative	84,662	15.5%	69,127	15.3%	79,722	15.5%
Amortization of intangible assets	6,142	1.1%	5,696	1.3%	3,852	0.7%
Restructuring charges	46,395	8.5%	7,473	1.7%	7,348	1.4%
Total operating expenses	$ 195,513	35.8%	$ 140,372	31.2%	$ 155,906	30.2%

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 Holdings GmbH ("Refusol") described in *Note 2. Business Acquisition and Disposition* in Part II Item 8 of this Form 10-K, 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 completed as of 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, 2013 increased $0.2 million from the same period in 2012. This increase was primarily due to the addition of our three-phase string inverter product line and was significantly offset by the cost savings experienced from restructuring efforts under the 2011 restructuring plan.

The decrease in research and development expenses of $6.9 million in the twelve months ended December 31, 2012 as compared to the same period in 2011 was primarily the result of a full year of lower personnel expenses as a result of headcount reductions under our restructuring plan. The strategic initiatives that began in late 2011 and were completed in 2012 involved consolidating facilities and engineering teams and activities to be closer to our customers.

Selling, General and Administrative

Our selling expenses support domestic and international sales and marketing activities that include personnel, trade shows, advertising, 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 $15.5 million in the twelve months ended December 31, 2013 as compared to the same period in 2012. The increase is primarily due to the acquisition of the three-phase string inverter product line coupled with higher incentive compensation accruals as a result of overall company performance.

SG&A expenses decreased $10.6 million in the twelve months ended December 31, 2012 as compared to the same period in 2011. The decrease is primarily due to a significant reduction in bad debt expenses from 2011 coupled with recoveries of balances reserved in the prior year. Lower commissions due to lower sales, reductions in advertising and trade show expenses, and reductions in outside services also contributed to the decline in SG&A spending.

Amortization Expense

Amortization expense was $6.1 million for the twelve months ended December 31, 2013, compared to $5.7 million for the same period ending December 31, 2012 and $3.9 million for the same period ending December 31, 2011. The increase of $0.4 million in 2013 is due primarily to the acquisitions of Refusol and Solvix, which added $10.5 million and $8.2 million, respectively of amortizable intangible assets acquired which was partially offset by the impairment of intangible assets recorded in the second and third quarters of 2013. Our initial estimate of the impairment was recorded in the second quarter with the final value determined during the third quarter. As a result of the acquisition of the three-phase string inverter product line, we assessed the overall Solar product line for product optimization, resulting in an impairment to the technology purchased from PV Powered. See *Note 11 — Intangible Assets* to our Consolidated Financial Statements for additional information on intangible assets and related future amortization.

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 Holdings GmbH ("Refusol") described in *Note 2. Business Acquisition and Disposition* in Part II Item 8 of this Form 10-K, 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.

Other Income

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

Interest income (expense) for the twelve month periods ending December 31, 2013, 2012, and 2011 was $(0.3) million, $0.6 million, and $0.2 million respectively. Interest rates have remained very low in 2013 resulting in interest income remaining flat in 2013.

Other income (expense), net was $(0.3) million in 2013, $2.4 million in 2012 and $1.2 million in 2011. Other income, net decreased in 2013 due to the gain on the sale of fixed assets of $1.9 million related to ending our contract manufacturing agreement with HML that was recorded in 2012. This gain also drove the increase in Other income, net between 2011 and 2012.

Provision for Income Taxes

We recorded a 2013 income tax benefit of $17.8 million, or an effective tax rate of -124.6%. 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, the release of uncertain tax positions, and, a domestic production activity benefit. Additionally, the Company recognized significant tax benefit related to restructuring expenses incurred primarily in the U.S.

We recorded a 2012 income tax provision of $9.6 million, or an effective tax rate of 32.3%. 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, a benefit from the federal alternative minimum tax credit, a domestic production activity benefit, offset by a net expense related to a change in the valuation allowance applicable to deferred tax assets.

We recorded a 2011 income tax provision of $13.6 million, or an effective tax rate of 27.0%. The effective tax rate differs from the statutory rate of 35% primarily due to the benefit of earnings in foreign jurisdictions which are subject to lower tax rates, a domestic production activity benefit, and the federal research and development tax credit.

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

On October 15, 2010, we completed the sale of our gas flow control business, which includes the Aera® mass flow control and related product lines to Hitachi Metals, Ltd., for $43.3 million. Assets and liabilities sold include, without limitation, inventory, real property in Hachioji, Japan, equipment, certain contracts, intellectual property rights related to the gas flow control business, and certain warranty liability obligations. The results of continuing operations were reduced by the revenue and costs associated with the gas flow control business which are included in the Income (Loss) from Discontinued Operations, net of taxes, in our Consolidated Statements of Operations. In connection with the closing of this asset disposition, we entered into a Master Services Agreement and a Supplemental Transition Services Agreement pursuant to which we provided certain transition services until October 2011 and we became an authorized service provider for Hitachi in all countries other than Japan. As of May 31, 2012 we ceased providing contract manufacturing services to Hitachi and completed the sale of certain fixed assets related to that manufacturing. We do not anticipate any additional activity with Hitachi in respect of these assets that would materially impact our financial statements in the future.

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.

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

	Years Ended December 31,		
	2013	2012	2011
Income (loss) from continuing operations, net of tax, as reported	$ 32,086	$ 20,176	$ 36,854
Adjustments, net of tax:			
Restructuring charges	30,235	4,775	5,349
Non-GAAP income from continuing operations, net of tax, excluding restructuring charges	62,321	24,951	42,203
Adjustments, net of tax:			
One-time gain on sale of flow assets	—	(1,452)	—
Acquisition-related costs	993	—	—
Stock-based compensation	12,010	8,103	9,126
Amortization of intangible assets	5,342	3,629	2,804
Non-recurring tax release items	(5,608)	—	—
Non-GAAP income from continuing operations, net of tax	$ 75,058	$ 35,231	$ 54,133
Diluted weighted-average common shares outstanding	40,667	39,447	43,954
Non-GAAP Earnings Per Share excluding restructuring charges	$ 1.53	$ 0.63	$ 0.96
Non-GAAP Earnings Per Share	$ 1.85	$ 0.90	$ 1.23

Impact of Inflation

In recent years, inflation has not had a significant impact on our operations. However, we continuously monitor operating price increases, particularly in connection with the supply of component parts used in our manufacturing process. To the extent permitted by competition, we pass increased costs on to our customers by increasing sales prices over time. Sales price increases, however, were not significant in any of the years presented herein.

Liquidity and Capital Resources

LIQUIDITY

Our ability to fund our operations, acquisitions, capital expenditures, and product development efforts will depend on our ability to generate cash from operating activities. Our operating activities are subject to general economic, financial, competitive, legislative, regulatory, and other conditions, some of which may be beyond our control. Our primary sources of liquidity are our available cash, investments, cash generated from current operations and availability under our credit facilities noted below.

At December 31, 2013, we had $149.7 million in cash, cash equivalents, and marketable securities. We believe that adequate liquidity and cash generation will be important to the execution of our strategic initiatives. We believe that our current cash levels and our cash flows from future operations will be adequate to meet anticipated working capital needs, anticipated levels of capital expenditures, and contractual obligations for the next twelve months.

On October 12, 2012, we entered into an agreement with Wells Fargo Bank, National Association which provides for a secured revolving credit facility ("Credit Facility") of up to $50.0 million. Borrowings under the Credit Facility are subject to a borrowing base based upon our accounts receivable and inventory and are available for various corporate purposes. The Credit Facility provides us further flexibility for execution of our strategic plans including acquisitions. With the acquisition of Refusol, we assumed the outstanding balances under their existing lines of credit. Refusol has two outstanding notes with various banks that provide up to 12.0 million Euros of borrowing. As of December 31, 2013 there was $13.7 million outstanding on these notes. For more information on these Credit Facilities see *Note 22. Credit Facilities* of our Consolidated Financial Statements.

In October 2012, our Board of Directors authorized a program to repurchase up to $25.0 million of our common stock over a twelve-month period. We did not repurchase any shares under this program, which ended in the fourth quarter of 2013.

CASH FLOWS

A summary of our cash provided by and used in operating, investing and financing, activities is as follows:

	Years Ended December 31,		
	2013	**2012**	**2011**
		(In thousands)	
Net cash provided by operating activities	$ 35,316	$ 110,777	$ 38,095
Net cash used in investing activities	(70,926)	(24,527)	(34,724)
Net cash provided by (used in) financing activities	26,313	(54,864)	(17,092)
Effect of currency translation on cash	858	(2,461)	446
Increase (decrease) in cash and cash equivalents	(8,439)	28,925	(13,275)
Cash and cash equivalents, beginning of the period	146,564	117,639	130,914
Cash and cash equivalents, end of the period	$ 138,125	$ 146,564	$ 117,639

2013 CASH FLOWS COMPARED TO 2012

Net cash provided by operating activities

Net cash provided by operating activities for the twelve months ended December 31, 2013 was $35.3 million, compared to $110.8 million for the same period ended December 31, 2012. The decrease of $75.5 million in net cash flows from operating activities is primarily due to increases in accounts receivable and inventory coupled with higher payments of taxes due to improved operating results. The overall increase in sales discussed above resulted in higher accounts receivable balances while inventory has increased in anticipation of higher shipment volumes of our new 1 megawatt inverter product which began shipping late in the fourth quarter. Restructuring activities resulted in payments for severance and facility closing costs further impacting cash from operations.

Net cash used in investing activities

Net cash used in investing activities for the twelve months ended December 31, 2013 was $70.9 million, an increase in cash used of $46.4 million from the prior year. The increase is the result of the cash payment of $75.4 million, net of cash acquired, for the acquisition of Refusol. Investments in marketable securities generated cash in 2013 as it was needed to fund the acquisition while there was very little net cash from investments in 2012.

Capital expenditures in 2013 were consistent with 2012 and are expected to remain at current levels. We expect to fund future capital expenditures with cash generated from operations.

Net cash provided by (used in) financing activities

Net cash generated by financing activities in the twelve months ended December 31, 2013 was $26.3 million, a $81.2 million increase from the $54.9 million use of cash in the same period of 2012. As the value of our stock continued its increase in 2013, many holders of options began exercising their options generating $26.3 million of cash.

2012 CASH FLOWS COMPARED TO 2011

Net cash provided by operating activities

Net cash provided by operating activities for the twelve months ended December 31, 2012 was $110.8 million, compared to $38.1 million for the same period ended December 31, 2011. The $72.7 million increase in net cash flows from operating activities is primarily due to the collection of accounts receivable during 2012. Although sales declined in 2012 approximately 12.6%, accounts receivable balances declined nearly 36.6% as a result of improved collection efforts.

Net cash flows used in investing activities

Net cash used in investing activities for the twelve months ended December 31, 2012 was $24.5 million, a decrease of cash used of $10.2 million from the prior year. Investments in marketable securities used less cash in 2012 than in 2011 as cash was needed to fund the acquisition of Solvix. Investments in marketable securities used $1.2 million in 2012 as compared to $15.8 million in 2011, a difference of $14.7 million. The acquisition of Solvix used $15.3 million of cash.

Capital expenditures in 2012 were significantly lower compared to 2011 as the prior year included the expansion of production capacity for solar inverters and additions for test equipment related to research and development activities.

Net cash flows provided by (used in) financing activities

Net cash used in financing activities in the twelve months ended December 31, 2012 was $54.9 million, a $37.8 million change from the cash provided by financing activities of $17.1 million in the same period of 2011. In November 2011, we announced a $75.0 million share repurchase program, of which $57.1 million of cash was used to repurchase 4.7 million shares through the end of 2012 as compared to $17.9 million to repurchase 1.7 million shares in 2011. The repurchase program was completed during the second quarter of 2012. The exercise of stock options provided $3.7 million of cash in 2012 as compared to $2.0 million in 2011.

Effect of currency translation on cash

The effect of foreign currency translations on cash changed $3.3 million to a $0.9 million positive impact for the year ended December 31, 2013 compared to a $2.5 million negative impact for the year ended December 31, 2012. The net effect of foreign currency translations on cash changed $2.9 million to a $2.5 million negative impact for the year ended December 31, 2012 compared to a $0.4 million positive impact for the year ended December 31, 2011.

The functional currencies of our worldwide operations primarily include U.S. dollar ("USD"), Japanese Yen ("JPY"), Chinese Yuan Renminbi ("CNY"), New Taiwan Dollar ("TWD"), South Korean Won ("KRW"), British Pound ("GBP"), Swiss Franc ("CHF"), Canadian Dollar ("CAD") , Euro ("EUR"), and Indian Rupee ("INR"). Our purchasing and sales activities are primarily denominated in USD, JPY, CNY, and EUR. The change in these key currency rates during the twelve months ended December 31, 2013 and 2012 are as follows:

		Twelve Months Ended December 31,		
From	**To**	**2013**	**2012**	**2011**
CNY	USD	2.9%	1.2%	4.7%
EUR	USD	4.2%	2.0%	(3.2)%
JPY	USD	(17.6)%	(10.7)%	5.0%
KRW	USD	0.7%	9.3%	(3.4)%
TWD	USD	(3.0)%	4.6%	(4.0)%
GBP	USD	1.9%	4.9%	(0.2)%
CAD	USD	(6.6)%	3.0%	(1.8)%
CHF	USD	2.5%	2.6%	(0.4)%
INR	USD	(11.3)%	(3.3)%	(15.8)%

Off Balance Sheet Arrangements

We have no off-balance sheet arrangements or variable interest entities.

Contractual Obligations

The following table sets forth our future payments due under contractual obligations as of December 31, 2013:

Contractual Obligations:	Total	Less than 1 year	1 -3 years	3-5 years	More than 5 years
			(In thousands)		
Operating lease obligations	$ 20,763	$ 5,909	$ 6,236	$ 3,392	$ 5,226
Notes payable to banks	13,661	13,661	—	—	—
Purchase obligations	68,649	68,649	—	—	—
Total	$ 103,073	$ 88,219	$ 6,236	$ 3,392	$ 5,226

As of December 31, 2013, we have $5.5 million in uncertain tax positions, net of federal benefit. Because of the uncertainty of the amounts to be ultimately paid, as well as the timing of such payments, these liabilities are not reflected in the contractual obligations table. Purchase obligations include firm commitments and agreements with various suppliers to ensure the availability of components.

Recent Accounting Pronouncements

From time to time, the Financial Accounting Standards Board ("FASB") or other standards setting bodies issue new accounting pronouncements. Updates to the FASB Accounting Standards Codification ("ASC") are communicated through issuance of an Accounting Standards Update ("ASU"). Unless otherwise discussed, we believe that the impact of recently issued guidance, whether adopted or to be adopted in the future, is not expected to have a material impact on our Consolidated Financial Statements upon adoption.

To understand the impact of recently issued guidance, whether adopted or to be adopted, please review the information provided in Note 1— *Operations and Summary of Significant Accounting Policies and Estimates* to our Consolidated Financial Statements included in Item 8 of this Form 10-K.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Market Risk and Risk Management

In the normal course of business, we have exposures to interest rate risk from our investments, credit facility, and foreign exchange rate risk related to our foreign operations and foreign currency transactions.

Interest Rate Risk

Our market risk exposure relates to changes in interest rates in our investment portfolio and credit facility. We generally place our investments with high-credit quality issuers and by policy are averse to principal loss and seek to protect and preserve our invested funds by limiting default risk, market risk, and reinvestment risk.

As of December 31, 2013, our investments consisted primarily of certificates of deposit with maturity of less than 2 years. As a measurement of the sensitivity of our portfolio and assuming that our investment portfolio balances remain constant, a hypothetical decrease of 100 basis points (1%) in interest rates would decrease annual pre-tax earnings by approximately $0.1 million.

We had $13.7 million of debt outstanding as of December 31, 2013 under various debt instruments, some with variable interest rates and principal payments. Assuming a full drawdown on all outstanding loan agreements subject to variable interest rates, and holding other variables constant, a hypothetical immediate one percentage point change in interest rates would be expected to have an impact on pre-tax earnings and cash flows of approximately $0.5 million over the course of 12 months.

Foreign Currency Exchange Rate Risk

We are impacted by changes in foreign currency exchange rates through sales and purchasing transactions when we sell products and purchase materials in currencies different from the currency in which product and manufacturing costs were incurred. The functional currencies of our worldwide facilities primarily include the USD, EUR, KRW, TWD, GBP, and CNY.

Our purchasing and sales activities are primarily denominated in the USD, EUR and CNY. We may be impacted by changes in the relative buying power of our customers, which may impact sales volumes either positively or negatively. As these currencies fluctuate against each other, and other currencies, we are exposed to foreign currency exchange rate risk on sales, purchasing transactions and labor.

From time to time, we enter into foreign currency exchange rate contracts to hedge against changes in foreign currency exchange rates on assets and liabilities expected to be settled at a future date. Market risk arises from the potential adverse effects on the value of derivative instruments that result from a change in foreign currency exchange rates. In 2011 we entered into foreign currency forward contracts to manage the exchange rate risk associated with intercompany debt denominated in nonfunctional currencies. We minimize our market risk applicable to foreign currency exchange rate contracts by establishing and monitoring parameters that limit the types and degree of our derivative contract instruments. We enter into derivative contract instruments for risk management purposes only. We do not enter into or issue derivatives for trading or speculative purposes.

Our reported financial results of operations, including the reported value of our assets and liabilities, are also impacted by changes in foreign currency exchange rates. Assets and liabilities of substantially all of our subsidiaries outside the U.S. are translated at period end rates of exchange for each reporting period. Operating results and cash flow statements are translated at weighted-average rates of exchange during each reporting period. Although these translation changes have no immediate cash impact, the translation changes may impact future borrowing capacity, and overall value of our net assets.

Currency exchange rates vary daily and often one currency strengthens against the USD while another currency weakens. Because of the complex interrelationship of the worldwide supply chains and distribution channels, it is difficult to quantify the impact of a change in one or more particular exchange rates.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Shareholders
Advanced Energy Industries, Inc.

We have audited the accompanying consolidated balance sheets of Advanced Energy Industries, Inc. and subsidiaries (a Delaware corporation) (the "Company") as of December 31, 2013 and 2012, and the related consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2013. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

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

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Advanced Energy Industries, Inc. and subsidiaries as of December 31, 2013 and 2012, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2013 in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the Company's internal control over financial reporting as of December 31, 2013, based on criteria established in the 1992 *Internal Control-Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated March 3, 2014 expressed an unqualified opinion.

/s/ GRANT THORNTON LLP

Denver, Colorado
March 3, 2014

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Shareholders
Advanced Energy Industries, Inc.

We have audited the internal control over financial reporting of Advanced Energy Industries, Inc. (a Delaware corporation) and subsidiaries (the "Company") as of December 31, 2013, based on criteria established in the 1992 *Internal Control-Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying *Management's Report on Internal Control over Financial Reporting* appearing under Item 9A of the Company's Annual Report on Form 10-K for the year ended December 31, 2013 ("Management's Report"). Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. Our audit of, and opinion on, the Company's internal control over financial reporting does not include the internal control over financial reporting of Refusol Holding GmbH, a wholly-owned subsidiary, whose financial statements reflect total assets and sales constituting 6.2% and 11.3%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2013. As indicated in Management's Report, Refusol Holding GmbH was acquired during 2013. Management's assertion on the effectiveness of the Company's internal control over financial reporting excluded internal control over financial reporting of Refusol Holding GmbH.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2013, based on criteria established in the 1992 *Internal Control-Integrated Framework* issued by COSO.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated financial statements of the Company as of and for the year ended December 31, 2013, and our report dated March 3, 2014 expressed an unqualified opinion on those financial statements.

/s/ GRANT THORNTON LLP

Denver, Colorado
March 3, 2014

ADVANCED ENERGY INDUSTRIES, INC.
Consolidated Balance Sheets
(In thousands, except per share amounts)

	December 31, 2013	December 31, 2012 REVISED
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 138,125	$ 146,564
Marketable securities	11,568	25,683
Accounts receivable, net of allowances of $2,920 and $4,589, respectively	125,782	83,914
Inventories, net of reserves of $15,349 and $14,629, respectively	109,771	81,482
Deferred income tax assets	10,746	19,477
Income taxes receivable	10,027	4,951
Other current assets	10,950	9,075
Total current assets	416,969	371,146
Property and equipment, net	34,888	39,523
Deposits and other	2,421	7,529
Goodwill	157,800	60,391
Other intangible assets, net	19,411	46,209
Deferred income tax assets	21,488	12,444
Total assets	$ 652,977	$ 537,242
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES:		
Accounts payable	$ 55,623	$ 41,044
Income taxes payable	2,324	8,131
Accrued payroll and employee benefits	12,892	11,675
Accrued warranty expense	10,198	7,419
Other accrued expenses	20,704	15,399
Customer deposits	6,955	2,080
Notes payable	13,661	—
Total current liabilities	122,357	85,748
Deferred income tax liabilities	1,500	16,832
Uncertain tax positions	5,781	13,669
Accrued warranty expense	11,869	7,378
Long term deferred revenue	43,171	20,111
Other long-term liabilities	3,837	3,893
Total liabilities	188,515	147,631
Commitments and contingencies (Note 17)	—	—
STOCKHOLDERS' EQUITY:		
Preferred stock, $0.001 par value, 1,000 shares authorized, none issued and outstanding	—	—
Common stock, $0.001 par value, 70,000 shares authorized; 40,504 and 37,991 issued and outstanding, respectively	41	38
Additional paid-in capital	251,550	212,520
Retained earnings	179,414	147,328
Accumulated other comprehensive income	33,457	29,725
Total stockholders' equity	464,462	389,611
Total liabilities and stockholders' equity	$ 652,977	$ 537,242

The accompanying notes are an integral part of these Consolidated Financial Statements.

ADVANCED ENERGY INDUSTRIES, INC.
Consolidated Statements of Operations
(In thousands, except per share amounts)

	Years Ended December 31,		
	2013	**2012**	**2011**
SALES	$ 547,004	$ 451,931	$ 516,799
COST OF SALES	336,868	284,185	311,642
GROSS PROFIT	210,136	167,746	205,157
OPERATING EXPENSES:			
Research and development	58,314	58,076	64,984
Selling, general, and administrative	84,662	69,127	79,722
Amortization of intangible assets	6,142	5,696	3,852
Restructuring charges and asset impairment	46,395	7,473	7,348
Total operating expenses	195,513	140,372	155,906
OPERATING INCOME	14,623	27,374	49,251
Interest income (expense)	(320)	607	169
Other income (expense), net	(19)	1,825	1,048
Total other income (expense)	(339)	2,432	1,217
Income from continuing operations before income taxes	14,284	29,806	50,468
Provision (benefit) for income taxes	(17,802)	9,630	13,614
INCOME FROM CONTINUING OPERATIONS, NET OF INCOME TAXES	32,086	20,176	36,854
Income (loss) from discontinued operations, net of income taxes	—	405	(540)
INCOME FROM DISCONTINUED OPERATIONS, NET OF INCOME TAXES	—	405	(540)
NET INCOME	$ 32,086	$ 20,581	$ 36,314
Basic weighted-average common shares outstanding	39,597	38,879	43,465
Diluted weighted-average common shares outstanding	40,667	39,447	43,954
EARNINGS PER SHARE:			
CONTINUING OPERATIONS:			
BASIC EARNINGS PER SHARE	$ 0.81	$ 0.52	$ 0.85
DILUTED EARNINGS PER SHARE	$ 0.79	$ 0.51	$ 0.84
DISCONTINUED OPERATIONS			
BASIC EARNINGS (LOSS) PER SHARE	$ —	$ 0.01	$ (0.01)
DILUTED EARNINGS (LOSS) PER SHARE	$ —	$ 0.01	$ (0.01)
NET INCOME:			
BASIC EARNINGS PER SHARE	$ 0.81	$ 0.53	$ 0.84
DILUTED EARNINGS PER SHARE	$ 0.79	$ 0.52	$ 0.83

The accompanying notes are an integral part of these Consolidated Financial Statements.

ADVANCED ENERGY INDUSTRIES, INC.
Consolidated Statements of Comprehensive Income
(In thousands)

	Years Ended December 31,		
	2013	**2012**	**2011**
Net income	$ 32,086	$ 20,581	$ 36,314
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustment	3,733	1,188	1,474
Unrealized gains (losses) on marketable securities	(1)	10	(21)
Comprehensive income	$ 35,818	$ 21,779	$ 37,767

The accompanying notes are an integral part of these Consolidated Financial Statements.

ADVANCED ENERGY INDUSTRIES, INC.
Consolidated Statements of Stockholders' Equity
(In thousands)

	Common Stock		Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income	Total Stockholders' Equity
	Shares	Amount				
Balances, January 1, 2011	43,330	$ 43	$ 258,398	$ 88,453	$ 27,074	$ 373,968
Prior period adjustment (Note 1)	—	—	—	1,980	—	1,980
Balances, January 1, 2011 as revised	43,330	$ 43	$ 258,398	$ 90,433	$ 27,074	$ 375,948
Stock issued from equity plans	370	—	1,981	—	—	1,981
Stock-based compensation	—	—	12,529	—	—	12,529
Excess tax benefit from stock-based compensation	—	—	(1,011)	—	—	(1,011)
Stock buyback	(1,744)	(1)	(17,894)	—	—	(17,895)
Comprehensive income:						
Equity adjustment from foreign currency translation	—	—	—	—	1,474	1,474
Unrealized holding gains	—	—	—	—	(21)	(21)
Net income	—	—	—	36,314	—	36,314
Total comprehensive income	—	—	—	36,314	1,453	37,767
Balances, December 31, 2011 as revised	41,956	$ 42	$ 254,003	$ 126,747	$ 28,527	$ 409,319
Stock issued from equity plans	691	1	3,721	—	—	3,722
Stock-based compensation	—	—	12,720	—	—	12,720
Excess tax benefit from stock-based compensation	—	—	(811)	—	—	(811)
Stock buyback	(4,656)	(5)	(57,113)	—	—	(57,118)
Comprehensive income:						
Equity adjustment from foreign currency translation	—	—	—	—	1,188	1,188
Unrealized holding losses	—	—	—	—	10	10
Net income	—	—	—	20,581	—	20,581
Total comprehensive income	—	—	—	20,581	1,198	21,779
Balances, December 31, 2012 as revised	37,991	$ 38	$ 212,520	$ 147,328	$ 29,725	$ 389,611
Stock issued from equity plans	2,513	3	26,334	—	—	26,337
Stock-based compensation	—	—	13,742	—	—	13,742
Excess tax benefit from stock-based compensation	—	—	(1,046)	—	—	(1,046)
Comprehensive income:						
Equity adjustment from foreign currency translation	—	—	—	—	3,733	3,733
Unrealized holding gains	—	—	—	—	(1)	(1)
Net income	—	—	—	32,086	—	32,086
Total comprehensive income	—	—	—	32,086	3,732	35,818
Balances at December 31, 2013	40,504	$ 41	$ 251,550	$ 179,414	$ 33,457	$ 464,462

The accompanying notes are an integral part of these Consolidated Financial Statements.

ADVANCED ENERGY INDUSTRIES, INC.
Consolidated Statements of Cash Flows
(In thousands)

	Years Ended December 31,		
	2013	**2012**	**2011**
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net income	$ 32,086	$ 20,581	$ 36,314
Adjustments to reconcile net income to net cash provided by operating activities, net of assets and liabilities acquired:			
Depreciation and amortization	18,871	17,786	14,525
Stock-based compensation expense	13,742	12,720	12,529
Provision (benefit) for deferred income taxes	(16,020)	(6,528)	3,363
Restructuring charges	36,599	1,284	1,390
Net loss on disposal of assets	1,197	286	1,629
Changes in operating assets and liabilities, net of assets acquired:			
Accounts receivable	(31,863)	49,577	(12,135)
Inventories	(12,006)	(375)	(3,465)
Other current assets	10,345	5,294	1,689
Accounts payable	(3,259)	(2,710)	(10,813)
Other current liabilities and accrued expenses	(352)	(961)	3,124
Income taxes	(14,024)	13,823	(8,087)
Non-current assets	—	—	(1,968)
Net cash provided by operating activities	35,316	110,777	38,095
CASH FLOWS FROM INVESTING ACTIVITIES:			
Purchases of marketable securities	(19,034)	(29,580)	(31,598)
Proceeds from sale of marketable securities	33,093	28,399	15,761
Proceeds from the sale of assets	—	2,200	—
Acquisitions, net of cash acquired	(75,374)	(15,313)	—
Purchases of property and equipment	(9,611)	(10,233)	(18,887)
Net cash used in investing activities	(70,926)	(24,527)	(34,724)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Borrowings from lines of credit, net	1,103	—	—
Payment of debt issuance costs	—	(562)	—
Purchase and retirement of common stock	—	(57,117)	(17,895)
Proceeds from exercise of stock options	26,337	3,723	1,981
Excess tax from stock-based compensation deduction	(1,046)	(811)	(1,011)
Other financing activities	(81)	(97)	(167)
Net cash provided by (used in) financing activities	26,313	(54,864)	(17,092)
EFFECT OF CURRENCY TRANSLATION ON CASH	858	(2,461)	446
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	(8,439)	28,925	(13,275)
CASH AND CASH EQUIVALENTS, beginning of period	146,564	117,639	130,914
CASH AND CASH EQUIVALENTS, end of period	$ 138,125	$ 146,564	$ 117,639
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:			
Cash paid for interest	$ 70	$ 17	$ 74
Cash paid for income taxes	14,888	3,630	23,254
Cash received for refunds of income taxes	2,945	7,434	7,430
Cash held in banks outside the United States	29,068	36,185	67,426

The accompanying notes are an integral part of these Consolidated Financial Statements.

In this Annual Report on Form 10-K, we use the terms “Advanced Energy,” “we,” “our,” and “us” to refer to Advanced Energy Industries, Inc. and its subsidiaries.

NOTE 1. OPERATIONS AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND ESTIMATES

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 deposition for various products, such as semiconductor devices, flat panel displays, solar panels, and architectural glass. We also supply thermal instrumentation products for advanced temperature control in the thin-film process for these same markets. Our solar inverter products support renewable power generation solutions primarily for commercial, and utility-scale solar projects and installations. Our network of global service support centers offer repair services, conversions, upgrades, and refurbishments to companies using our products. We also offer a wide variety of operations and maintenance service plans that can be tailored for individual photovoltaic (“PV”) sites of all sizes.

Principles of Consolidation — Our Consolidated Financial Statements include our accounts and the accounts of our wholly-owned subsidiaries. All intercompany accounts and transactions have been eliminated. Our Consolidated Financial Statements are stated in United States dollars and have been prepared in accordance with accounting principles generally accepted in the United States (“U.S. GAAP”).

Corrections to Previously Reported Financial Statements **—** During the quarter ended December 31, 2013, the Company identified an error in the accounting for income taxes. This error accumulated gradually over many years and was caused by an inadequate process to reconcile worldwide tax accounts. The Company assessed the materiality of this item on previously issued financial statements in accordance with the SEC's Staff Accounting Bulletin ("SAB") No. 99 and concluded that the error was not material to any of the individual annual or interim periods. In accordance with SAB No. 108, the Company has corrected the accompanying Consolidated Financial Statements by increasing 2011 beginning retained earnings by approximately $2.0 million and the respective lines in the balance sheet as of December 31, 2012 as follows (in thousands):

Increase in current taxes receivable	$	636
(Decrease) in deferred tax assets		(1,554)
Decrease in income tax payable		2,898
(Increase) in retained earnings at January 1, 2011	$	(1,980)

Use of Estimates in the Preparation of the Consolidated Financial Statements **—** The preparation of our consolidated financial statements in conformity with U.S. GAAP requires us to make estimates, assumptions and judgments that affect the reported amounts of assets and liabilities, and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. We believe that the significant estimates, assumptions, and judgments when accounting for items and matters such as allowances for doubtful accounts, excess and obsolete inventory, warranty reserves, acquisitions, asset valuations, asset life, depreciation, amortization, recoverability of assets, impairments, deferred revenue, stock option and restricted stock grants, taxes, and other provisions are reasonable, based upon information available at the time they are made. Actual results may differ from these estimates, making it possible that a change in these estimates could occur in the near term.

Foreign Currency Translation — The functional currency of our foreign subsidiaries is their local currency, with the exception of our manufacturing facility in Shenzhen, The People's Republic of China (“PRC”) where the United States dollar is the functional currency. Assets and liabilities of foreign subsidiaries are translated to United States dollars at period-end exchange rates, and our Consolidated Statements of Operations and Cash Flows are translated at average exchange rates during the period. Resulting translation adjustments are recorded as a component of accumulated other comprehensive income.

Transactions denominated in currencies other than the local currency are recorded based on exchange rates at the time such transactions arise. Subsequent changes in exchange rates result in foreign currency transaction gains and losses which are reflected as unrealized (based on period end translation) or realized (upon settlement of the transactions) in other income, net in our Consolidated Statements of Operations.

Fair Value of Financial Instruments — We value our financial assets and liabilities using fair value measurements. Fair value is based on the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The carrying amount of cash and cash equivalents, marketable securities, accounts receivable, other current assets, accounts payable, accrued liabilities, and other current liabilities in our Consolidated Financial Statements approximates fair value because of the short-term nature of the instruments.

Cash and Cash Equivalents — We consider all amounts on deposit with financial institutions and highly liquid investments with an original maturity of three months or less to be cash equivalents. Cash and cash equivalents are highly liquid investments that consist primarily of short-term money market instruments and demand deposits with insignificant interest rate risk and original maturities of three months or less at the time of purchase.

Sometimes we invest excess cash in money market funds not insured by the Federal Deposit Insurance Corporation. We believe that the investments in money market funds are on deposit with credit-worthy financial institutions and that the funds are highly liquid. The investments in money market funds are reported at fair value, with interest income recorded in earnings and are included in "Cash and cash equivalents." The fair values of our investments in money market funds are based on the quoted market prices.

Marketable Securities — All of our investments in marketable securities are classified as available-for-sale at the respective balance sheet dates. Marketable securities classified as available-for-sale are recorded at fair value based upon quoted market prices, and any temporary difference between the cost and fair value of the investment is presented as a separate component of accumulated other comprehensive income (loss). We recognize gains and losses on the date our investments mature or are sold and record these gains and losses in other income, net. The specific identification method is used to determine the gains and losses on investments in marketable securities.

Concentrations of Credit Risk **—** Financial instruments, which potentially subject us to credit risk, include cash and cash equivalents, marketable securities, and trade accounts receivable. To preserve capital and maintain liquidity, we invest with financial institutions we deem to be of high quality and sound financial condition. Our investments are in low-risk instruments and we limit our credit exposure in any one institution or type of investment instrument based upon criteria including creditworthiness.

At December 31, 2013, our accounts receivable from Applied Materials were $22.0 million, comprising 17.4% of our total accounts receivable. At December 31, 2012, our accounts receivable from Applied Materials, Ltd. were $10.9 million, comprising 13% of our total accounts receivable. No other customer balance exceeded 10% of our total accounts receivable balance at December 31, 2013 or December 31, 2012. We have established an allowance for doubtful accounts based upon factors surrounding the credit risk of specific customers, historical trends, and other information.

Accounts Receivable and Allowance for Doubtful Accounts **—** Accounts receivable are recorded at net realizable value. We have not historically charged interest on overdue balances, although we do notify our customers that we reserve the right to do so. 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, there is no assurance that we will continue to experience the same credit loss rates that we have in the past. A significant change in the liquidity or financial position of our customers could have a material adverse impact on the collectability of accounts receivable and our future operating results.

Changes in allowance for doubtful accounts are summarized as follows (in thousands):

	Years Ended December 31,		
	2013	**2012**	**2011**
Balances at beginning of period	$ 4,589	$ 6,796	$ 3,440
Additions - charged to expense	1,121	1,705	4,806
Deductions - write-offs, net of recoveries	(2,790)	(3,912)	(1,450)
Balances at end of period	$ 2,920	$ 4,589	$ 6,796

Inventories — Inventories include costs of materials, direct labor, manufacturing overhead, in-bound freight, and duty. Inventories are valued at the lower of cost (first-in, first-out method) or market and are presented net of reserves for excess and obsolete inventory.

Reserves are provided for excess and obsolete inventory. 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. A significant decrease in demand could result in an increase in the charges for excess inventory quantities on hand.

In addition, our industry is subject to technological change, new product development, and product technological obsolescence that could result in an increase in the amount of obsolete inventory quantities on hand. Therefore, any significant unanticipated changes in demand or technological developments could have a significant impact on the value of our inventory and our reported operating results.

Property and Equipment — Property and equipment is stated at cost or estimated fair value if acquired in a business combination. Depreciation is computed over the estimated useful lives using the straight-line method. Estimated useful lives for financial reporting purposes are as follows: building, 20 to 40 years; machinery, equipment, furniture and fixtures and vehicles, three to 10 years; and computer and communication equipment, three years.

Amortization of leasehold improvements and leased equipment is calculated using the straight-line method over the lease term or the estimated useful life of the assets, whichever period is shorter. Additions, improvements, and major renewals are capitalized, while maintenance, repairs, and minor renewals are expensed as incurred. When depreciable assets are retired, or otherwise disposed of, the cost and related accumulated depreciation are removed from the accounts and any related gains or losses are included in other income, net, in our Consolidated Statements of Operations.

Intangible Assets, Goodwill and Other Long-Lived Assets **—** We completed our acquisitions of Solvix in November 2012 and Refusol in April 2013 for total costs of $21.2 million and $87.2 million, respectively. As a result of our acquisitions, we identified and recorded intangible assets and goodwill. Intangible assets are valued based on estimates of future cash flows and amortized over their estimated useful lives. Goodwill is subject to annual impairment testing, as well as testing upon the occurrence of any event that indicates a potential impairment. Intangible assets and other long-lived assets are subject to an impairment test if there is an indicator of impairment. 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 and goodwill may be impaired and the resulting charge to operations may be material. When we determine that the carrying value of intangibles or other long-lived assets may not be recoverable based upon the existence of one or more indicators of impairment, we use the projected undiscounted cash flow method to determine whether an impairment exists, and then measure the impairment using discounted cash flows.

Due to the restructuring plan announced in 2011, we determined there were indicators of impairment related to one research and development project that was recorded as in-process research and development in conjunction with the acquisition of PV Powered. This project was abandoned as part of the restructuring plan and thus resulted in an impairment of the intangible asset recorded. In December 2011, we recorded an impairment of $1.1 million as part of our restructuring charges related to this project.

As a result of the acquisition of the three phase string inverter product line, we assessed the overall Solar product line for product optimization. Through this assessment, it was determined that the intangible assets related to products acquired from PV Powered were impaired. We performed an analysis using projected future cash flows and determined their carrying value was impaired resulting in an impairment of $31.9 million in 2013.

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

The annual impairment test for goodwill 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, 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. We performed an assessment of qualitative factors for our annual impairment test of the goodwill associated with our Solar Energy business in 2012 and the goodwill associated with our Thin Film business in 2013. The factors reviewed included macroeconomic conditions, industry and market conditions, cost factors, and overall financial performance of our solar inverter business. This assessment resulted in the conclusion that there is no impairment of goodwill in the respective years. For the 2013 annual impairment test of goodwill associated with our Solar Energy business unit, we performed a quantitative analysis by comparing the fair value of the Solar Energy reporting unit to its carrying value. This analysis used projected future cash flows and market multiples of comparable companies to arrive at the fair value of the reporting. The analysis of the Solar Energy business unit resulted in the conclusion that there is no impairment of goodwill in 2013.

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. For customers purchasing our Solar Energy products, we provide installation, support, and services after the product has been shipped. For arrangements containing these additional elements, we allocate revenue based on vendor specific objective evidence of the selling price of each individual element of the arrangement. As we also sell these additional elements separately, the evidence is our selling price for those elements when sold separately. We defer the revenue of any undelivered elements until the undelivered element is delivered. 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 worldwide support organization in eight countries, including the United States, the PRC, Japan, Korea, Taiwan, Canada, Germany, and Great Britain. Support services include warranty and non-warranty repair services, upgrades, and refurbishments on the products we sell. Revenue from repairs and replacements, that are non-warranty in nature, are recognized as the work is performed on a time and materials basis. Repairs that are covered under our standard warranty do not generate revenue.

We also provide our customers with extended warranty and preventive maintenance service contract options on the products we sell. Any up-front fees received for extended warranties or maintenance plans are deferred and recognized ratably over the service periods, as defined in the agreements. We deferred revenue related to extended warranties totaling $43.2 million as of December 31, 2013 and $20.5 million as of December 31, 2012, including the current portion.

Based on the credit worthiness of certain customers, we may require payment prior to the manufacture or shipment of products purchased by these customers. Cash payments received prior to shipment are recorded as customer deposits, a current liability, and then recognized as revenue when appropriate based upon the revenue recognition criteria discussed earlier in this section. As of December 31, 2013 and December 31, 2012 the total amount of customer deposits was $7.0 million and $2.1 million, respectively. We do not offer price protection to customers, or allow returns, unless covered by our normal policy for repair of defective products.

We occasionally agree to make payments to certain customers in order to participate in anticipated sales activity. Payments made to customers are accounted for as a reduction of revenue unless they are made in exchange for identifiable goods or services with fair values that can be reasonably estimated. These reductions in revenues are recognized immediately to the extent that the payments cannot be attributed to anticipated future sales, and are recognized in future periods to the extent that the payments relate to future sales, based on the specific facts and circumstances underlying each payment.

***Taxes Collected from Customers* —** In the course of doing business we collect various taxes from customers including, but not limited to, sales taxes and value added taxes. It is our policy to record revenue net of taxes collected from customers in our Consolidated Statements of Operations.

Shipping and Handling Costs — Amounts billed to customers for shipping and handling are recorded in sales. Shipping and handling costs incurred by us for the delivery of products to customers are included in cost of sales.

***Advertising Costs* —** Advertising costs are expensed when incurred and are included in selling, general, and administrative expenses.

Research and Development Expenses — Costs incurred to advance, test or otherwise modify our proprietary technology or develop new technologies are considered research and development costs and are expensed when incurred. These costs are primarily comprised of costs associated with the operation of our laboratories and research facilities, including internal labor, materials, and overhead.

***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 thin-film products for periods typically ranging from 12 to 24 months after shipment. We warrant our solar inverter products for five to ten years. 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 of each product platform. Should product failure rates differ from our estimates, actual costs could vary significantly from our expectations.

Stock-Based Compensation — Accounting for stock-based compensation requires the measurement and recognition of compensation expense for all share-based payment awards made to employees and directors based on estimated fair values. Except as noted below, we have estimated the fair value of all stock options and awards on the date of grant using the Black-Scholes-Merton pricing model, which is affected by our stock price, as well as assumptions regarding a number of complex and subjective variables. These variables include our expected stock price volatility over the term of the awards, actual and projected employee option exercise behaviors, risk free interest rates and expected dividends. We also estimate forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from our estimates. Our expected volatility assumption is based on the historical daily closing price of our stock over a period equivalent to the expected life of the options. Our Long-term Incentive Plan ("LTI Plan") includes a cash settlement option for awards of restricted stock units.

During 2011 we granted non-qualified stock options to our Chief Executive Officer that will vest based on the achievement of certain stock price targets. To estimate the fair value of these stock options on the grant date we used the Monte Carlo simulation method which is also affected by our stock price and assumptions regarding multiple variables.

Income Taxes — We follow the liability method of accounting for income taxes under which deferred tax assets and liabilities are recognized for future tax consequences. A deferred tax asset or liability is computed for both the expected future impact of differences between the financial statement and tax basis of assets and liabilities and for the expected future tax benefit to be derived from tax loss and tax credit carry-forwards. Valuation allowances are established, when necessary, to reduce deferred tax assets to the amount expected to be realized, based upon an assessment of both negative and positive evidence, in future tax returns. Tax rate changes are reflected in the period such changes are enacted.

We assess the recoverability of our net deferred tax assets and the need for a valuation allowance on a quarterly basis. Our assessment includes a number of factors including historical results and taxable income projections for each jurisdiction. The ultimate realization of deferred income tax assets is dependent on the generation of taxable income in appropriate jurisdictions during the periods in which those temporary differences are deductible. We consider the scheduled reversal of deferred income tax liabilities, projected future taxable income, and tax planning strategies in determining the amount of the valuation allowance. Based on the level of historical taxable income and projections for future taxable income over the periods in which the deferred income tax assets are deductible, we determine if we will realize the benefits of these deductible differences.

Accounting for income taxes requires a two-step approach to recognize and measure uncertain tax positions. In general, we are subject to regular examination of our income tax returns by the Internal Revenue Service and other tax authorities. The first step is to evaluate the tax position for recognition by determining, if based on the technical merits, it is more likely than not that the position will be sustained upon audit, including resolutions of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50% likely of being realized upon ultimate settlement. We regularly assess the likelihood of favorable or unfavorable outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. This evaluation is based on factors including, but not limited to, changes in facts or circumstances, changes in tax law, effectively settled issues under audit, and new audit activity.

Commitments and Contingencies — From time to time we are 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 in a particular period. An unfavorable decision, particularly 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. We accrue loss contingencies when it is probable that a loss has occurred or will occur and the amount of the loss can be reasonably estimated. Our estimates of probability of losses are subjective, involve significant judgment and uncertainties, and are based on the best information we have at any given point in time. Resolution of these uncertainties in a manner inconsistent with our expectations could have a significant impact on our results of operations and financial condition.

NEW ACCOUNTING STANDARDS

From time to time, the Financial Accounting Standards Board ("FASB") or other standards setting bodies issue new accounting pronouncements. Updates to the FASB Accounting Standards Codification (“ASC”) are communicated through issuance of an Accounting Standards Update (“ASU”). Unless otherwise discussed, we believe that the impact of recently issued guidance, whether adopted or to be adopted in the future, is not expected to have a material impact on the Consolidated Financial Statements upon adoption.

NOTE 2. BUSINESS ACQUISITION AND DISPOSITION

Acquisition

Solvix SA

On November 8, 2012, we acquired Solvix SA ("Solvix"), a privately-held Switzerland based company, pursuant to a stock purchase agreement dated November 8, 2012 between AEI International Holdings, CV ("AEI CV"), a wholly-owned subsidiary of Advanced Energy incorporated in the Netherlands, and CPA Group SA ("CPA Group"), a privately held Switzerland company. Pursuant to the stock purchase agreement, AEI CV purchased 100% of the outstanding stock of Solvix.

We acquired all of the outstanding Solvix common stock for total consideration with a fair value of approximately $21.2 million consisting of cash payments totaling $16.0 million, net of cash acquired, and contingent consideration payable to the former shareholders of Solvix. The additional cash consideration of up to $7.9 million is payable to CPA Group if certain milestone targets are met during the year ending December 31, 2013 and certain financial targets are met in the three years ended December 31, 2015. The estimated fair value of this contingent consideration is approximately $5.3 million as of November 8, 2012, of which the remaining balance of $0.9 million is included in Other accrued expenses and $2.3 million is included in Other long-term liabilities on the Consolidated Balance Sheet.

Solvix is a manufacturer of power supplies for the surface treatment and thin films industry. Solvix manufactures products that bring plasma-based sputtering and cathodic arc deposition applications to Advanced Energy's existing product portfolio and is included in our Thin Film business unit. Solvix has approximately 10 employees and had revenues of $5.2 million in its fiscal year ended September 30, 2012.

During 2013, we initiated the move of the Solvix product line from a contract manufacturer in Switzerland to our Shenzhen facility. The move was substantially completed by the end of the fourth quarter of 2013.

The components of the fair value of the total consideration transferred for the Solvix acquisition are as follows (in thousands):

Cash paid to owners	$	16,673
Contingent consideration		5,253
Cash acquired		(680)
Total fair value of consideration transferred	$	21,246

The following table summarizes estimated fair values of the assets acquired and liabilities assumed as of November 8, 2012 (in thousands):

Cash	$	680
Accounts receivable		1,074
Inventories		57
Other receivables		32
Other current assets		46
Property and equipment		43
Accounts payable		(390)
Accrued payroll and employee benefits		(186)
Other accrued expenses		(159)
Customer deposits		(38)
Deferred tax liabilities		(1,628)
		(469)
Amortizable intangible assets:		
Trademarks		106
Technology		2,723
Customer relationships		5,398
Total amortizable intangible assets		8,227
Total identifiable net assets		7,758
Goodwill		13,488
Total fair value of consideration transferred	$	21,246

A summary of the intangible assets acquired, amortization method and estimated useful lives as of November 8, 2012 follows (in thousands, except useful life):

	Amount	Amortization Method	Useful Life
Trademarks	$ 106	Straight-line	3
Technology	2,723	Straight-line	9
Customer relationships - other	755	Straight-line	7
Customer relationships - design	4,643	Straight-line	12
	$ 8,227		

Goodwill and intangible assets are recorded in the functional currency of the entity and are subject to changes due to translation at each balance sheet date.

Refusol Holding

On April 8, 2013, we acquired all the outstanding shares of Refusol Holding GmbH pursuant to a Sale and Purchase Agreement (the "Agreement ") between AEI Holdings, GmbH (formerly Blitz S13-103, GmbH) ("AEI Holdings"), an indirect wholly-owned subsidiary of Advanced Energy Industries, Inc. and Jolaos Verwaltungs GmbH ("Jolaos") and Prettl Beteilgungs Holding GmbH. Refusol Holding GmbH ("Refusol Holding") owns all of the shares of Refusol GmbH and its subsidiaries (collectively and together with Refusol Holding, "Refusol"). Refusol develops, manufactures, distributes and services photovoltaic inverters.

All of the outstanding shares of Refusol Holding were acquired for total consideration of approximately $87.2 million, consisting of a cash payment of $75.4 million, net of cash acquired and a working capital reduction and assumption of debt totaling $11.9 million. The agreement calls for additional cash consideration if certain stretch financial targets are met by our Solar Energy business unit and Refusol, on a combined basis, at the end of the twelve (12) calendar months following April 1, 2013. The contingent consideration has no estimated fair value as of April 8, 2013 and December 31, 2013 based on management's estimates of operating income for the Solar Energy business unit for the specified period. The preliminary base price is subject to a post-closing adjustment based on confirmation of the financial statements of Refusol effective as of the closing date.

Refusol develops three-phase string inverters for commercial customers across Europe and Asia. Its three-phase string inverter offerings range in size from 8kW to 24kW broadening the range of solar inverter products offered by Advanced Energy. Refusol is included in our Solar Energy business unit. Refusol had revenues of $170.5 million in its fiscal year ended December 31, 2012.

The components of the fair value of the total consideration transferred for the Refusol acquisition are as follows (in thousands):

Cash paid to owners	$ 79,550
Debt assumed	11,873
Working capital adjustment	(2,340)
Cash acquired	(1,836)
Total fair value of consideration transferred	$ 87,247

The following table summarizes estimated fair values of the assets acquired and liabilities assumed as of April 8, 2013 (in thousands):

Accounts receivable	$ 9,929
Inventories	15,245
Other current assets	6,769
Property and equipment	4,746
Other long-term assets	130
Deferred tax assets	222
Current liabilities	(21,094)
Long-term liabilities	(30,673)
	(14,726)
Amortizable intangible assets:	
Trademarks	1,300
Technology	5,700
Customer relationships	3,500
Total amortizable intangible assets	10,500
Total identifiable net assets	(4,226)
Goodwill	91,473
Total fair value of consideration transferred	$ 87,247

A summary of the intangible assets acquired, amortization method and estimated useful lives as of April 8, 2013 follows (in thousands, except useful life):

	Amount	Amortization Method	Useful Life
Trademarks	$ 1,300	Straight-line	1.5
Technology	5,700	Straight-line	5
Customer relationships	3,500	Straight-line	5
	$ 10,500		

Goodwill and intangible assets are recorded in the functional currency of the entity and are subject to changes due to translation at each balance sheet date. The goodwill associated with the acquisition is the result of expected synergies and expansion of the technology into additional markets that we already serve.

The cost of the acquisition may increase or decrease based on the final amount payable to the former owner of Refusol related to the financial targets to be met during the twelve month period subsequent to April 1, 2013 and a post-closing working capital adjustment based on confirmation of the financial statements of Refusol effective as of the closing date. Advanced Energy is in the process of finalizing valuations of accounts receivable, inventory, other intangibles, property, plant and equipment, estimates of the fair value of liabilities associated with the acquisition and deferred taxes.

The results of Refusol operations are included in our Consolidated Statements of Operations beginning April 8, 2013. For the period ended December 31, 2013, sales of approximately $61.6 million and operating loss of $6.1 million attributable to Refusol were included in the Consolidated Statements of Operations. Refusol's results of operations included restructuring charges of $3.8 million and amortization of purchased intangible assets of $2.1 million.

Pro Forma Results for Refusol Acquisition

The following unaudited *pro forma* financial information presents the combined results of operations of Advanced Energy and Refusol as if the acquisition had occurred as of January 1, 2012. The pro forma financial information is presented for informational purposes and is not indicative of the results of operations that would have been achieved if the acquisition had taken place at January 1, 2012. The unaudited pro forma financial information for the twelve months ended December 31, 2012 includes the historical results of Advanced Energy for the twelve months ended December 31, 2012 and the historical results of Refusol for the same periods.

The unaudited pro forma results for all periods presented include amortization charges for acquired intangible assets and related tax effects. These pro forma results consider the sale of the gas flow control business and related product lines as discontinued operations. The unaudited pro forma results follow (in thousands, except per share data):

	(Unaudited)	
	Years Ended December 31,	
	2013	2012
Sales	$ 567,087	$ 622,388
Net income	27,380	19,978
Earnings per share:		
Basic	$ 0.69	$ 0.51
Diluted	$ 0.67	$ 0.50

Disposition

On October 15, 2010, we completed the sale of our gas flow control business, which included the Aera® mass flow control and related product lines to Hitachi Metals, Ltd. ("Hitachi"), for approximately $43.3 million. Assets and liabilities sold included, without limitation, inventories, real property in Hachioji, Japan, equipment, certain contracts, intellectual property rights related to the gas flow control business and certain warranty liability obligations, which were included in the Thin Film business unit.

In connection with the closing of this asset disposition, we entered into a Master Services Agreement and a Supplemental Transition Services Agreement pursuant to which we provided certain transition services until October 2011 and we became an authorized service provider for Hitachi in all countries other than Japan. As of May 31, 2012 we ceased providing contract manufacturing services to Hitachi and completed the sale of certain fixed assets related to that manufacturing. We do not anticipate any additional activity with Hitachi in respect of these assets that would materially impact our financial statements in the future.

In accordance with authoritative accounting guidance for reporting discontinued operations, for the periods reported in this Form 10-K, the results of continuing operations were reduced by the revenue and costs associated with the gas flow control business, which are included in the income from discontinued operations, net of income taxes, in our Consolidated Statements of Operations.

Operating results of discontinued operations are as follows (in thousands):

	Years Ended December 31,	
	2012	2011
Sales	$ 8,959	$ 27,823
Cost of sales	9,189	27,671
Gross profit (loss)	(230)	152
Operating expenses:		
Research and development	—	8
Selling, general, and administrative	88	862
Amortization of intangible assets	—	—
Total operating expenses	88	870
Operating income (loss) from discontinued operations	(318)	(718)
Other income	881	(26)
Gain on sale of net assets of discontinued operation	—	—
Income from discontinued operations before income taxes	563	(744)
Provision for income taxes		
Income taxes on income from discontinued operations	158	(204)
Total provision for income taxes	158	(204)
Income from discontinued operations, net of income taxes	$ 405	$ (540)

NOTE 3. INCOME TAXES

The geographic distribution of pretax income (loss) is as follows (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Domestic	$ (9,480)	$ 17,905	$ 54,339
Foreign	23,764	11,901	(3,871)
	$ 14,284	$ 29,806	$ 50,468

The provision for income taxes is summarized as follows (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Current:			
Federal	$ (6,866)	$ 11,248	$ 9,101
State and local	(530)	2,273	970
Foreign taxes	5,614	2,637	180
Total current provision	$ (1,782)	$ 16,158	$ 10,251
Deferred:			
Federal	$ (12,023)	$ (7,914)	$ 3,525
State and local	(1,208)	(1,174)	145
Foreign taxes	(2,789)	2,560	(307)
Total deferred provision	(16,020)	(6,528)	3,363
Total provision for income taxes	$ (17,802)	$ 9,630	$ 13,614

The following reconciles our effective tax rate on income from continuing operations to the federal statutory rate of 35% (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Income taxes per federal statutory rate	$ 5,000	$ 10,433	$ 17,664
State income taxes, net of federal deduction	(1,553)	417	777
Change in valuation allowance	(393)	1,694	—
Stock based compensation	(296)	745	1,150
Tax effect of foreign operations	(15,520)	(2,166)	(3,192)
Tax credits	(2,691)	(1,317)	(1,432)
Domestic production activity benefit	(408)	(327)	(1,436)
Uncertain Tax Position reserves, net of releases	(2,723)	—	—
Reorganization costs	576	—	—
Other permanent items, net	206	151	83
Total provision for income taxes	$ (17,802)	$ 9,630	$ 13,614

Deferred tax assets and liabilities are recognized for the future tax consequences of differences between the carrying amounts of assets and liabilities and their respective tax bases using enacted tax rates in effect for the year in which the differences are expected to be reversed. Significant deferred tax assets and liabilities consist of the following (in thousands):

	Years Ended December 31,	
	2013	**2012**
Deferred tax assets		
Stock based compensation	7,887	9,460
Net operating loss and tax credit carryforwards	8,723	6,106
Excess and obsolete inventory	4,207	5,381
Warranty reserve	11	4,024
Deferred revenue	12,338	3,958
Vacation accrual	1,253	700
Restructuring	2,087	515
Bad debt reserve	402	415
Employee bonuses and commissions	98	36
Unrealized gain/loss	587	—
Other	540	—
Deferred tax assets	$ 38,133	$ 30,595
Less: Valuation allowance	(2,158)	(2,551)
Net deferred tax assets	$ 35,975	$ 28,044
Deferred tax liabilities		
Depreciation and amortization	5,069	16,342
Purchase accounting	2,686	—
Foreign other	1,565	—
Other	440	750
Deferred tax liabilities	$ 9,760	$ 17,092
Net deferred tax assets/liabilities	$ 26,215	$ 10,952

As of December 31, 2013, we had federal, foreign, and state net operating loss carryforwards of approximately $0.7 million, $18.6 million, and $61.9 million respectively. The federal and state net operating loss carryforwards are subject to various limitations under Section 382 of the Internal Revenue Code and applicable state laws. The foreign net operating losses consist primarily of Germany and Japan net operating losses totaling $12.8 million and $5.6 million, respectfully. The Germany net operating losses can be carried forward indefinitely subject to certain annual limitations. A valuation allowance has been provided on the full amount of the Japan net operating losses. If not utilized, the Japan net operating losses will begin to expire in 2021. The state net operating losses have various dates of expiration.

Undistributed earnings of foreign subsidiaries are considered to be permanently reinvested and accordingly, no provision for U.S. federal and state income taxes or foreign withholding taxes has been made. Unrepatriated earnings of approximately $119.2 million could become subject to U.S. income taxes subject to a reduction for foreign tax credits and withholding taxes payable to the various foreign countries if they are remitted as dividends, are loaned to us, or if we sell our stock in the subsidiaries. The determination of the additional deferred taxes that would be provided for undistributed earnings has not been determined because the hypothetical calculation is not practicable.

We account for uncertain tax positions by applying a minimum recognition threshold to tax positions before recognizing these positions in the financial statements.

The reconciliation of our total gross unrecognized tax benefits is as follows (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Balance at beginning of period	$ 12,810	$ 16,018	$ 15,665
Additions based on tax positions taken during a prior period	1,006	—	—
Additions based on tax positions taken during the current period	1,495	295	353
Reductions related to a lapse of applicable statute of limitations	(9,788)	(3,503)	—
Balance at end of period	$ 5,523	$ 12,810	$ 16,018

If the $5.5 million of tax contingencies recorded on our balance sheet reverse, $5.5 million will affect our effective tax rate. The tax years 2004 through 2013 remain open to examination by the United States and foreign taxing jurisdictions to which we are subject. In accordance with our accounting policy, we recognize accrued interest and penalties related to unrecognized tax benefits as a component of tax expense. We had an immaterial amount of accrued interest and penalties at December 31, 2013 and 2012. We do not anticipate a material change to the amount of unrecognized tax positions within the next 12 months.

NOTE 4. EARNINGS PER SHARE

Basic earnings per share ("EPS") is computed by dividing income available to common stockholders by the weighted-average number of common shares outstanding during the period. The computation of diluted EPS is similar to the computation of basic EPS except that the numerator is increased to exclude charges that would not have been incurred, and the denominator is increased to include the number of additional common shares that would have been outstanding (using the if-converted and treasury stock methods), if securities containing potentially dilutive common shares (stock options and restricted stock units) had been converted to common shares, and if such assumed conversion is dilutive.

The following is a reconciliation of the weighted-average shares outstanding used in the calculation of basic and diluted earnings per share for the years ended December 31, 2013, 2012, and 2011 (in thousands, except per share data):

	Years Ended December 31,		
	2013	2012	2011
Income from continuing operations, net of income taxes	$ 32,086	$ 20,176	$ 36,854
Basic weighted-average common shares outstanding	39,597	38,879	43,465
Assumed exercise of dilutive stock options and restricted stock units	1,070	568	489
Diluted weighted-average common shares outstanding	40,667	39,447	43,954
Income from continuing operations:			
Basic earnings per share	$ 0.81	$ 0.52	$ 0.85
Diluted earnings per share	$ 0.79	$ 0.51	$ 0.84

The following stock options and restricted units were excluded in the computation of diluted earnings per share because they were anti-dilutive:

	Years Ended December 31,		
	2013	2012	2011
Stock options	413	4,960	4,550
Restricted stock units	—	—	18

Stock Buyback

In November 2011, our Board of Directors authorized a program to repurchase up to $75.0 million of our common stock over a twelve-month period. As of June 30, 2012, we completed this repurchase program. Total shares repurchased were 6.4 million shares of our common stock for $75.0 million. All share repurchases 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 October 2012, our Board of Directors authorized a program to repurchase up to $25.0 million of our common stock over a twelve-month period. We did not repurchase any shares under this program, which ended in the fourth quarter of 2013.

NOTE 5. MARKETABLE SECURITIES

Our investments with original maturities of more than three months at time of purchase are considered marketable securities available for sale.

The composition of our marketable securities is as follows (in thousands):

	December 31, 2013		December 31, 2012	
	Cost	Fair Value	Cost	Fair Value
Commercial paper	$ —	$ —	$ 749	$ 749
Certificates of deposit	11,568	11,568	12,498	12,498
Corporate bonds/notes	—	—	11,274	11,253
Municipal bonds/notes	—	—	285	285
Agency bonds/notes	—	—	900	898
Total marketable securities	$ 11,568	$ 11,568	$ 25,706	$ 25,683

The maturities of our marketable securities available for sale as of December 31, 2013 are as follows:

	Earliest		Latest
Certificates of deposit	1/21/2014	to	11/4/2015

The value and liquidity of the marketable securities we hold are affected by market conditions, as well as the ability of the issuers of such securities to make principal and interest payments when due, and the functioning of the markets in which these securities are traded. Our current investments in marketable securities are expected to be liquidated during the next twelve months.

As of December 31, 2013, we do not believe any of the underlying issuers of our marketable securities are presently at risk of default.

NOTE 6. DERIVATIVE FINANCIAL INSTRUMENTS

We are impacted by changes in foreign currency exchange rates. We manage these risks through the use of derivative financial instruments, primarily forward contracts. During the years ended December 31, 2013, 2012, and 2011 we entered into foreign currency exchange forward contracts to manage the exchange rate risk associated with intercompany debt denominated in nonfunctional currencies. These derivative instruments are not designated as hedges; however, they do offset the fluctuations of our intercompany debt due to foreign exchange rate changes. These forward contracts are typically for one month periods. At December 31, 2013, 2012, and 2011 we had both EUR and CAD forward contracts. At December 31, 2013 and 2012 we also had CHF forward contracts.

The notional amount of foreign currency exchange contracts at December 31, 2013, 2012, and 2011 was $25.0 million, $20.5 million, and $32.3 million, respectively, and the fair value of these contracts was not significant at December 31, 2013, 2012, and 2011. During the years ended December 31, 2013, 2012, and 2011, we recognized losses of $0.9 million and $0.5 million, and a gain of $1.6 million respectively, on our foreign currency exchange contracts. These gains and losses were offset by corresponding gains and losses on the related intercompany debt and both are included as a component of other income, net, in our Consolidated Statements of Operations.

NOTE 7. ASSETS AND LIABILITIES MEASURED AT FAIR VALUE

Fair Value Hierarchy

Financial assets and liabilities recorded at fair value in our Consolidated Balance Sheets are categorized based upon a fair value hierarchy established by U.S. GAAP, which prioritizes the inputs used to measure fair value into the following levels:

Level 1: Quoted market prices in active markets for identical assets or liabilities at the measurement date.

Level 2: Quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets and liabilities in markets that are not active, or other inputs that are observable and can be corroborated by observable market data.

Level 3: Inputs reflect management’s best estimates and assumptions of what market participants would use in pricing the asset or liability at the measurement date. The inputs are unobservable in the market and significant to the valuation of the instruments.

A financial instrument’s categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The following tables present information about our financial assets measured at fair value, on a recurring basis, as of December 31, 2013, and December 31, 2012. The tables indicate the fair value hierarchy of the valuation techniques utilized to determine such fair value. We did not have any financial liabilities measured at fair value, on a recurring basis, as of December 31, 2013, and December 31, 2012.

December 31, 2013	**Level 1**	**Level 2**	**Level 3**	**Total**
		(In thousands)		
Certificates of deposit	$ —	$ 11,568	$ —	$ 11,568
Total marketable securities	$ —	$ 11,568	$ —	$ 11,568

December 31, 2012	**Level 1**	**Level 2**	**Level 3**	**Total**
		(In thousands)		
Commercial paper	$ —	$ 749	$ —	$ 749
Certificates of deposit	—	12,498	—	12,498
Corporate bonds/notes	—	11,253	—	11,253
Municipal bonds/notes	—	285	—	285
Agency bonds/notes	898	—	—	898
Total marketable securities	$ 898	$ 24,785	$ —	$ 25,683

We did not have any Level 3 investments or financial liabilities measured at fair value, on a recurring basis, as of December 31, 2013 and December 31, 2012. In the third quarter of 2012, we reclassified our investments in corporate bonds and municipal bonds from Level 1 into Level 2 as we believe this more appropriately reflects the level of inputs available for valuing these financial instruments. There were no transfers in or out of Level 1, 2, or 3 fair value measurements during the year ended December 31, 2013.

NOTE 8. INVENTORIES

For information regarding the valuation of our inventory refer to Note 1 - *Operations and Summary of Significant Accounting Policies and Estimates.*

Our inventories are valued at the lower of cost or market and computed on a first-in, first-out (FIFO) basis. Components of inventories are as follows (in thousands):

	December 31, 2013	December 31, 2012
Parts and raw materials	$ 75,815	$ 59,484
Work in process	3,507	3,728
Finished goods	30,449	18,270
	$ 109,771	$ 81,482

NOTE 9. PROPERTY AND EQUIPMENT

Details of property and equipment are as follows (in thousands):

	December 31, 2013	December 31, 2012
Buildings and land	$ 1,807	$ 1,794
Machinery and equipment	41,451	40,993
Computer and communication equipment	23,117	22,895
Furniture and fixtures	4,028	1,845
Vehicles	367	359
Leasehold improvements	24,369	27,976
Construction in process	5,426	3,362
	100,565	99,224
Less: Accumulated depreciation	(65,677)	(59,701)
Total property and equipment, net	$ 34,888	$ 39,523

Depreciation expense recorded in continuing operations and included in selling, general and administrative expense is as follows (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Depreciation expense	$ 12,729	$ 12,090	$ 10,673

NOTE 10. GOODWILL

The following summarizes the changes in goodwill during the years ended December 31, 2013 and 2012 (in thousands):

	Years Ended December 31,	
	2013	2012
Gross carrying amount, beginning of period	$ 60,391	$ 46,515
Additions and adjustments	91,473	13,499
Translation adjustments	5,936	377
Gross carrying amount, end of period	$ 157,800	$ 60,391

Additions during the year represent the difference between the purchase price paid and the values assigned to identifiable assets acquired and liabilities assumed in purchase accounting, as described in Note 2, *Business Acquisition and Disposition*.

NOTE 11. INTANGIBLE ASSETS

Other intangible assets consisted of the following as of December 31, 2013 (in thousands, except weighted-average useful life):

	Gross Carrying Amount	Effect of Changes in Exchange Rates	Impairment and Other Charges	Accumulated Amortization	Net Carrying Amount	Weighted-Average Useful Life in Years
Amortizable intangibles:						
Technology-based	$ 50,368	$ 441	$ (26,168)	$ (14,712)	$ 9,929	4
Trademarks and other	18,515	514	(5,705)	(3,842)	9,482	7
Total intangible assets	$ 68,883	$ 955	$ (31,873)	$ (18,554)	$ 19,411	

Other intangible assets consisted of the following as of December 31, 2012 (in thousands, except weighted-average useful life):

	Gross Carrying Amount	Effect of Changes in Exchange Rates	Accumulated Amortization	Net Carrying Amount	Weighted-Average Useful Life in Years
Amortizable intangibles:					
Technology-based	$ 44,668	$ 83	$ (10,775)	$ 33,976	7
Trademarks and other	13,703	167	(1,637)	12,233	9
Total intangible assets	$ 58,371	$ 250	$ (12,412)	$ 46,209	

Amortization expense relating to other intangible assets included in our income from continuing operations is as follows (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Amortization expense	$ 6,142	$ 5,696	$ 3,852

Estimated amortization expense related to intangibles for each of the five years 2014 through 2018 and thereafter is as follows (in thousands):

Year Ending December 31,	
2014	$ 5,116
2015	4,022
2016	2,787
2017	2,787
2018	1,328
Thereafter	3,371
	$ 19,411

NOTE 12. ACCRUED LIABILITIES

Accrued liabilities consisted of the following as of December 31, 2013 (in thousands):

	2013	2012
Accrued liabilities:		
Current deferred tax liability	$ 4,519	$ 4,137
Accrued restructuring costs	3,280	1,852
Current contingent consideration	933	2,773
Accrued sales and use tax	2,415	1,010
Other	9,557	5,627
Total accrued liabilities	$ 20,704	$ 15,399

Other accrued liabilities consists of items that are individually less than 5% of total current liabilities.

NOTE 13. WARRANTIES

Provisions of our sales agreements include product warranties customary to these types of agreements, ranging from 18 months to 24 months following installation for Thin Films products and 5 years to 10 years following installation for Solar Energy products. Our provision for the estimated cost of warranties is recorded when revenue is recognized. We estimate the anticipated costs of repairing our products under such warranties based on the historical cost 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. We also offer our Solar Energy customers the option to purchase additional warranty coverage up to 20 years after the base warranty period expires.

We establish accruals for warranty issues that are probable to result in future costs. Changes in product warranty accruals are as follows (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Balances at beginning of period	$ 14,797	$ 14,719	$ 12,949
Warranty liabilities acquired	10,678	—	—
Increases to accruals related to sales during the period	14,087	7,561	10,203
Warranty expenditures	(17,495)	(7,483)	(8,433)
Balances at end of period	$ 22,067	$ 14,797	$ 14,719

NOTE 14. STOCK-BASED COMPENSATION

As of December 31, 2013, we had two active stock-based incentive compensation plans; the 2008 Omnibus Incentive Plan and the Employee Stock Purchase Plan (“ESPP”). All new equity compensation grants are issued under these two plans; however, outstanding awards previously issued under inactive plans will continue to vest and remain exercisable in accordance with the terms of the respective plans. At December 31, 2013, there were 5.2 million shares reserved and 0.6 million shares available for future grant under our stock-based incentive plans.

2008 OMNIBUS INCENTIVE PLAN — The 2008 Omnibus Incentive Plan (the “Plan”) provides officers, directors, key employees, and other persons an opportunity to acquire or increase a direct proprietary interest in our operations and future success. Our Board of Directors currently administers the Plan, and makes all decisions concerning which officers, directors, employees, and other persons are granted awards, how many to grant to each recipient, when awards are granted, how the Plan should be interpreted, whether to amend or terminate the Plan, and whether to delegate administration of the Plan to a committee. In May 2010, our shareholders approved an increase from 3,500,000 to 7,500,000 shares authorized for issuance under the Plan. The Plan provides for the grant of stock options, stock appreciation rights, restricted stock, stock units (including deferred stock units), unrestricted stock, and dividend equivalent rights. Any of the awards may be made as performance incentives to reward attainment of annual or long-term performance goals in accordance with the terms of the Plan. Stock options granted under the Plan may be non-qualified stock options or incentive stock options except that stock options granted to outside directors, consultants, or advisers providing services to us shall in all cases be non-qualified stock options. Included in this plan is our LTI Plan which grants performance-based stock options and awards to selected participants that vest annually over a three-year period upon the achievement of certain annual return on net asset targets. This plan contains an option to settle the restricted stock awards in cash or shares. The Plan will terminate on May 7, 2018 unless the administrator terminates the Plan earlier. As of December 31, 2013, 177,462 shares of common stock were available for grant under the Plan.

Stock-based Compensation Expense

Non-cash stock-based compensation expense is primarily included in selling, general and administrative expense and was $13.7 million, $12.7 million, and $12.5 million for the years ending December 31, 2013, 2012, and 2011, respectively.

Our stock-based compensation expense is based on the value of the portion of share-based payment awards that are ultimately expected to vest, assuming estimated forfeitures at the time of grant. Estimated forfeiture rates for our stock-based compensation expense applicable to options and RSUs was approximately 16% for the year ended December 31, 2013, 14% for the year ended December 31, 2012, and 13% for the year ended December 31, 2011.

Stock Options

Stock option awards are generally granted with an exercise price equal to the market price of our stock at the date of grant and with a four-year vesting schedule and a term of 10 years, except as noted below.

In January 2012, we made grants of performance based options and awards, which will vest annually over a three-year period based on the Company's achievement of return on net assets targets established by our Board of Directors at the time the grants were made. These awards are granted with an exercise price equal to the market price of our common stock at the date of grant and have a term of 10 years.

In the second quarter of 2013, we granted additional options and awards under the LTI plan to our Chief Executive Officer who was not previously a participant in the plan. The fair value of these shares was estimated using the Black-Scholes-Merton option pricing model utilizing an expected volatility of 68.9%, a risk free rate of 0.74%, a dividend yield of zero, and an expected term of 5.6 years. The weighted-average grant date fair value of the options is $10.55 and the weighted-average grant date fair value of the awards is $17.80.

During the third quarter of 2011, we granted non-qualified stock options to our Chief Executive Officer that will vest based on the achievement of certain stock price targets. The stock-based compensation cost and derived service periods for these stock options were estimated using the Monte Carlo simulation method utilizing a volatility of 61.6% and a risk-free rate of 2.4%. The weighted-average fair value of these awards is $2.92 and the derived service periods range from approximately one and one-half years to approximately two years. As of December 31, 2013, the first level target was met and the shares vested. If the remaining target is not met, the non-qualified stock options will expire on the third anniversary of the grant date.

The fair value of options granted during the years ended December 31, 2013, 2012 and 2011 was estimated on the date of grant using the Black-Scholes-Merton option-pricing model using the following assumptions by grant year (except the market awards granted to our Chief Executive Officer as noted above):

	2013	2012	2011
Fair value assumptions - stock options:			
Risk-free interest rates	0.74%	0.6% - 1.2%	1.09% - 2.4%
Expected dividend yield rates	—%	—%	—%
Expected term	5.6 years	5.9 years	5.5 years
Expected volatility	69%	61.5%	58%

The risk free interest rate is based on the five-year U.S. Treasury Bill at the time of the grant. Historically, company information is the primary basis for selection of the expected dividend yield. The expected term is based on historical experience. Expected volatility is based on historical volatility of our common stock using daily stock price observations.

The weighted-average fair value of options issued and total intrinsic value of options exercised were (in thousands, except share prices):

	2013	2012	2011
Weighted-average grant date fair value of options	$ 10.55	$ 6.24	$ 6.68
Total intrinsic value of options exercised	$ 12,917	$ 1,697	$ 896

Changes in outstanding time based stock options during the year ended December 31, 2013 were as follows (in thousands, except share prices):

	2013		2012		2011	
	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Exercise Price
Changes in outstanding stock options:						
Options outstanding at beginning of year	4,036	$ 13.61	5,596	$ 14.04	5,709	$ 14.72
Options granted	—	—	18	11.67	1,518	12.52
Options exercised	(2,055)	13.31	(446)	9.17	(216)	10.60
Options forfeited	(199)	13.01	(455)	12.99	(886)	13.20
Options expired	(209)	19.74	(677)	20.41	(529)	19.73
Options outstanding at end of year	1,573	13.29	4,036	13.61	5,596	14.04
Options vested during the year	294		73		49	

Changes in outstanding performance based stock options during the year ended December 31, 2013 were as follows (in thousands, except share prices):

	2013		2012		2011	
	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Exercise Price
Changes in outstanding stock options:						
Options outstanding at beginning of year	1,623	$ 12.65	225	$ 24.75	—	$ —
Options granted	43	17.80	1,660	11.15	225	24.75
Options exercised	(89)	11.02	—	—	—	—
Options forfeited	(87)	11.02	(262)	11.02	—	—
Options expired	(251)	11.10	—	—	—	—
Options outstanding at end of year	1,239	13.38	1,623	12.65	225	24.75
Options vested during the year	314		—		—	

During each of the three years ended December 31, 2013, 2012, and 2011, the value of shares withheld for taxes from both time-based and performance based option exercises totaled $1.3 million, $0.5 million, and $0.3 million, respectively.

As of December 31, 2013, there was $4.0 million of total unrecognized compensation cost related to stock options granted and outstanding, net of expected forfeitures related to non-vested options, which is expected to be recognized through fiscal year 2016, with a weighted-average remaining vesting period of 1.3 years. Information about our stock options that are outstanding, options that we expect to vest and options that are exercisable at December 31, 2013 follows (in thousands except share prices and lives):

Options Expected to Vest:	Number	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life	Aggregate Intrinsic Value
Options outstanding	2,812	$ 12.27	6.7 years	$ 29,787
Options expected to vest	2,597	12.41	6.6 years	27,164
Options exercisable	1,243	12.82	5.4 years	12,505

The following table summarizes information about the stock options outstanding at December 31, 2013 (in thousands, except share prices and lives):

	Options Outstanding			Options Exercisable	
Range of Exercise Prices	**Number Outstanding**	**Weighted-Average Remaining Contractual Life**	**Weighted-Average Exercise Price**	**Number Exercisable**	**Weighted-Average Exercise Price**
$7.15 to $7.95	132	2.2 years	$ 7.35	132	$ 7.35
$8.65 to $8.65	384	7.6 years	8.65	218	8.65
$8.95 to $10.90	160	6.3 years	9.61	83	9.70
$11.02 to $11.02	871	8.0 years	11.02	98	11.02
$11.21 to $12.77	293	7.0 years	12.24	153	12.18
$12.80 to $14.21	331	6.4 years	13.82	165	13.79
$14.40 to $15.65	327	6.6 years	14.82	161	14.88
$16.13 to $22.30	272	4.2 years	18.61	191	19.28
$22.47 to $22.47	21	3.6 years	22.47	21	22.47
$24.21 to $24.21	21	3.3 years	24.21	21	24.21
$7.15 to $24.21	2,812	6.7 years	12.27	1,243	12.82

Restricted Stock Units

The fair value of our RSUs is determined based upon the closing fair market value of our common stock on the grant date. Changes in the unvested time based restricted stock units during the year ended December 31, 2013 were as follows (in thousands):

	2013		2012		2011	
	Shares	**Weighted-Average Grant Date Fair Value**	**Shares**	**Weighted-Average Grant Date Fair Value**	**Shares**	**Weighted-Average Grant Date Fair Value**
Balance at beginning of year	442	$ 12.96	764	$ 12.99	447	$ 13.82
RSUs granted	99	17.58	75	12.93	623	13.72
RSUs vested	(242)	12.99	(253)	12.93	(147)	15.56
RSUs forfeited	(69)	12.88	(144)	12.94	(159)	13.32
Balance at beginning of year	230	13.41	442	12.96	764	12.99

Changes in the unvested performance based restricted stock units during the year ended December 31, 2013 were as follows (in thousands):

	2013		2012		2011	
	Shares	**Weighted-Average Grant Date Fair Value**	**Shares**	**Weighted-Average Grant Date Fair Value**	**Shares**	**Weighted-Average Grant Date Fair Value**
Balance at beginning of year	1,631	$ 11.15	—	$ —	—	$ —
RSUs granted	50	17.80	1,937	11.13	—	—
RSUs vested	(235)	11.10	—	—	—	—
RSUs forfeited	(102)	11.02	(306)	11.02	—	—
Balance at beginning of year	1,344	11.42	1,631	11.15	—	—

The weighted-average fair value of RSUs issued and total fair value of RSUs converted to shares were (in thousands, except share prices):

	2013	2012	2011
Weighted-average grant date fair value of RSUs	$ 17.73	$ 11.20	$ 12.94
Total fair value of RSUs converted to shares	$ 11,032	$ 8,908	$ 1,974

As of December 31, 2013, there was $5.9 million of total unrecognized compensation cost, net of expected forfeitures related to non-vested RSUs granted, which is expected to be recognized through fiscal 2016, with a weighted-average remaining vesting period of 0.8 years.

Employee Stock Purchase Plan

The ESPP, a stockholder-approved plan, provides for the issuance of rights to purchase up to 1,000,000 shares of common stock. In May 2010, shareholders approved an increase from 500,000 to 1,000,000 shares authorized for sale under our ESPP. Employees are eligible to participate in the ESPP if employed by us for at least 20 hours per week during at least five months per calendar year. Participating employees may contribute up to the lesser of 5% of their eligible earnings or $5,000 during each plan period. Currently, the plan period is six months. The purchase price of common stock purchased under the ESPP is currently equal to the lower of: 1) 85% of the fair market value of our common stock on the commencement date of each plan period or 2) 85% of the fair market value of our common shares on each plan period purchase date. At December 31, 2013, 409,876 shares remained available for future issuance under the ESPP.

Purchase rights granted under the ESPP are valued using the Black-Scholes-Merton model. As of December 31, 2013, there was $0.1 million of total unrecognized compensation cost related to the ESPP that is expected to be recognized over a remaining period of five months. Total compensation expense was $0.2 million for each of the years ended December 31, 2013, 2012, and 2011.

The fair value of each purchase right granted under the ESPP was estimated on the date of grant using the Black-Scholes-Merton option pricing model with the following assumptions:

	2013	2012	2011
Risk-free interest rates	0.07% - 0.1%	0.15% - 0.61%	0.05% - 0.1%
Expected dividend yield rates	—%	—%	—%
Expected term	0.5 years	0.5 years	0.5 years
Expected volatility	61.5%	60.4%	61.9%

The risk free interest rate is based on the six month U.S. Treasury Bill at the time of the grant. Historical company information is the primary basis for selection of the expected dividend yield. The expected term is based on historical experience. Expected volatility is based on historical volatility of our common shares using daily stock price observations.

NOTE 15. RETIREMENT PLANS

We have a 401(k) profit sharing and retirement savings plan covering substantially all full-time U.S. employees. Participants may defer up to the maximum amount allowed as determined by law. Participants are immediately vested in their contributions. Profit sharing contributions to the plan, which are discretionary, are approved by the Board of Directors. Vesting in the profit sharing contribution account is based on years of service, with most participants fully vested after four years of credited service.

For the years ended December 31, 2013, 2012, and 2011 our contribution for participants in our 401(k) plan was 50% matching on contributions by employees up to 6% of the employee's compensation.

During the years ended December 31, 2013, 2012, and 2011 we recognized total defined contribution benefit plan costs of $1.0 million, $1.3 million, and $1.3 million, respectively.

NOTE 16. ACCUMULATED OTHER COMPREHENSIVE INCOME

Accumulated other comprehensive income consisted of the following (in thousands):

	Foreign Currency Adjustments	Unrealized Gains (Losses) on Marketable Securities	Total Accumulated Other Comprehensive Income
Balances at December 31, 2012	$ 29,730	$ (5)	$ 29,725
Current period other comprehensive income (loss)	3,733	(1)	3,732
Balances at December 31, 2013	$ 33,463	$ (6)	$ 33,457

NOTE 17. COMMITMENTS AND CONTINGENCIES

Disputes and Legal Actions

We are 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 also 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. 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.

Operating Leases

We have various operating leases for automobiles, equipment, and office and production facilities. Rent expense under operating leases was approximately $6.1 million in 2013, $5.8 million in 2012, and $6.6 million in 2011.

The future minimum rental payments required under non-cancelable operating leases as of December 31, 2013 are as follows (in thousands):

2014	$ 5,909
2015	4,258
2016	1,978
2017	1,753
2018	1,639
Thereafter	5,226
	$ 20,763

*Future estimated payments on foreign leases are based on the estimated spot rate at December 31, 2013 and are subject to change.

Purchase Commitments

We have firm purchase commitments and agreements with various suppliers to ensure the availability of components. The obligation as of December 31, 2013 is approximately $68.6 million. Our policy with respect to all purchase commitments, is to record losses, if any, when they are probable and reasonably estimable. We continuously monitor these commitments for exposure to potential losses and will record a provision for losses when it is deemed necessary.

NOTE 18. RESTRUCTURING COSTS

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. Collectively, these steps will enable us to more efficiently use our resources to achieve strategic goals.

As a part of the product rationalization initiated under the restructuring plan, we determined that the intangible assets associated with certain technology should be tested for recoverability. To test the intangible assets for recoverability, we compared the carrying value of the assets with their fair value which resulted in an impairment of $31.9 million which is recorded in restructuring charges and asset impairment in the Consolidated Statement of Operations for the twelve months ended December 31, 2013. All activities under this restructuring plan were completed prior to December 31, 2013.

The following table summarizes the components of our restructuring costs incurred under the 2013 plan (in thousands):

	Twelve Months Ended December 31, 2013	Cumulative costs through December 31, 2013
Severance and related costs	$ 7,002	$ 7,002
Property and equipment and intangible asset impairments	36,624	36,624
Facility closure costs	2,769	2,769
Total restructuring charges and asset impairments	$ 46,395	$ 46,395

The following table summarizes our restructuring liabilities under the 2013 plan (in thousands):

	Balances at December 31, 2012	Costs incurred and charged to expense	Cost paid or otherwise settled	Effect of change in exchange rates	Balances at December 31, 2013
Severance and related costs	$ —	$ 7,002	$ (5,049)	$ 125	$ 2,078
Property and equipment and intangible asset impairments	—	36,624	(36,624)	—	—
Facility closure costs	—	2,769	(2,220)	22	571
Total restructuring liabilities	$ —	$ 46,395	$ (43,893)	$ 147	$ 2,649

In September 2011, we approved and committed to several initiatives to realign our manufacturing and research and development activities in order to foster growth and enhance profitability. These initiatives are designed to align research and development activities with the location of our customers and reduce production costs. Under this plan, we reduced our global headcount, consolidated our facilities by terminating or exiting several leases, and recorded impairments for assets no longer in use due to the restructuring of our business. All activities under this restructuring plan were completed prior to December 31, 2012. The following table summarizes our restructuring liabilities under this plan (in thousands):

	Balances at December 31, 2012	Costs incurred and charged to expense	Cost paid or otherwise settled	Effect of change in exchange rates	Balances at December 31, 2013
Severance and related costs	$ 1,345	$ —	$ (1,128)	$ —	$ 217
Facility closure costs	508	—	(94)	—	414
Total restructuring liabilities	$ 1,853	$ —	$ (1,222)	$ —	$ 631

NOTE 19. OTHER INCOME, NET

During 2013, 2012 and 2011, we participated, through our wholly-owned subsidiary AE Solar Energy, Inc., in the Solar Energy Grid Integration System Program (“SEGIS”) sponsored by the Department of Energy and administered by Sandia National Labs. Our participation in the SEGIS program is performed in stages, and revenue, net of costs incurred, is recognized in other income, net, in our Consolidated Statements of Operations. We invoice SEGIS upon completion of certain milestones. Net revenues for the years ended December 31, 2013, 2012 and 2011 were $0.8 million, $0.7 million and $0.4 million, respectively. The revenues were recognized and recorded in other income, net, as this project does not represent commercial product sales and we are not normally engaged in research and development type projects from which revenue is generated.

Included in Other income, net for the year ended December 31, 2012 is a $1.9 million gain on the sale of manufacturing assets to Hitachi. These assets were sold in May 2012 when we ceased our contracting manufacturing relationship with Hitachi.

NOTE 20. RELATED PARTY TRANSACTIONS

During the years ended December 31, 2013, 2012, and 2011, we engaged in the following transactions with companies related to members of our Board of Directors, as described below (in thousands):

	Years Ended December 31,		
	2013	**2012**	**2011**
Sales - related parties	$ 622	$ 583	$ 3,874
Rent expense - related parties	1,880	1,872	2,306

Sales - Related Parties

Members of our Board of Directors hold various executive positions and serve as directors at other companies, including companies that are our customers. During the year ended December 31, 2013, we had sales to one such company as noted above and there were no aggregate accounts receivable from this customer at December 31, 2013. During the year ended December 31, 2012 we had sales to two such companies as noted above and there were no aggregate accounts receivable from these customers at December 31, 2012. During the year ended December 31, 2011 we had sales to three such companies as noted above and there were no aggregate accounts receivable from these customers at December 31, 2011.

Rent Expense - Related Parties

We lease our executive offices, research and development, and manufacturing facilities in Fort Collins, Colorado from a limited liability partnership in which Douglas Schatz, our Chairman of the Board and former Chief Executive Officer, holds an interest. The leases relating to these spaces expire during 2021 and obligate us to total annual payments of approximately $1.9 million, which includes facilities rent and common area maintenance costs.

NOTE 21. SEGMENT INFORMATION

Our Thin Films Strategic Business Unit ("SBU") offers power conversion products for direct current, pulsed DC mid frequency, and radio frequency power supplies, matching networks, and RF instrumentation, as well as thermal instrumentation products. Our 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 thermal instrumentation products provide 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, and other semiconductor and solar applications requiring non-contact temperature measurement. Our network of global service support centers offer repair services, conversions, upgrades, and refurbishments to companies using our products. Our Thin Films SBU principally serves original equipment manufacturers (“OEMs”) and end customers in the semiconductor, flat panel display, solar panel, and other capital equipment markets.

Our Solar Energy SBU offers both a transformer-based and a transformerless advanced grid-tied PV inverter solution primarily for commercial and utility-scale system installations. Our PV inverters are designed to convert renewable solar power, drawn from large and small scale solar arrays, into high-quality, reliable electrical power. Our Solar Energy SBU focuses on commercial and utility-scale solar projects and installations, selling primarily to distributors, engineering, procurement, and construction contractors, developers, and utility companies. Our Solar Energy revenue has seasonal variations. Installations of inverters are normally lowest during the first quarter as a result of typically poor weather and installation scheduling by our customers.

Our chief operating decision maker, who is our Chief Executive Officer, and other management personnel regularly review our performance and make resource allocation decisions by reviewing the results of our two business segments separately. Revenue and operating profit is reviewed by our chief operating decision maker. We have also divided inventory and property and equipment based on business segment.

Sales with respect to our operating segments is as follows (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Thin Films	$ 296,535	$ 235,335	$ 328,614
Solar Energy	250,469	216,596	188,185
Total	$ 547,004	$ 451,931	$ 516,799

Income from continuing operations before income taxes by operating segment is as follows (in thousands):

	Years Ended December 31,		
	2013	2012	2011
Thin Films	$ 64,790	$ 22,804	$ 68,241
Solar Energy	(3,772)	14,003	4,323
Total segment operating income	61,018	36,807	72,564
Corporate expenses	—	(1,960)	(15,965)
Restructuring charges	(46,395)	(7,473)	(7,348)
Other income (expense), net	(339)	2,432	1,217
Income from continuing operations before income taxes	$ 14,284	$ 29,806	$ 50,468

Beginning in 2012, we are allocating "corporate expenses" in full to our business units. These expenses, which include certain support functions such as legal, human resources, information technology, accounting and finance, are now allocated as noted below to the business units based on sales contribution. This change was implemented in an effort to provide investors with a clearer understanding of the business unit's operating performance. The remaining corporate expenses consist of intangible amortization from past acquisitions that management determined should not be charged to either business unit.

Segment assets consist of inventories, net and property and equipment, net. A summary of consolidated total assets by segment follows (in thousands):

	December 31, 2013	December 31, 2012
Thin Films	$ 39,450	$ 40,965
Solar Energy	104,227	76,393
Total segment assets	143,677	117,358
Unallocated corporate property and equipment	982	3,647
Unallocated corporate assets	508,318	416,237
Consolidated total assets	$ 652,977	$ 537,242

"Corporate” is a non-operating business segment with the main purpose of supporting operations. Unallocated corporate assets include accounts receivable, deferred income taxes, other current assets and intangible assets.

We have operations in the United States, Europe and Asia. Our disclosure about sales and long-lived assets by geographic area and information relating to major customers are presented below. Sales attributed to individual countries are based on customer location.

Sales to external customers:	Years Ended December 31, 2013		2012		2011	
	(In thousands)					
United States	$ 328,330	60.0%	$ 322,847	71.4%	$ 338,343	65.5%
Canada	33,000	6.0%	30,113	6.7%	3,622	0.7%
North America	361,330	66.1%	352,960	78.1%	341,965	66.2%
People's Republic of China	27,420	5.0%	19,987	4.4%	38,654	7.5%
Other Asian countries	62,990	11.6%	54,825	12.0%	79,424	15.4%
Asia	90,410	16.5%	74,812	16.6%	118,078	22.8%
Germany	87,115	15.9%	18,374	4.1%	47,228	9.1%
Other European Countries	8,149	1.4%	5,785	1.4%	9,528	1.8%
Europe	95,264	17.4%	24,159	5.3%	56,756	11.0%
Total sales	$ 547,004	100.0%	$ 451,931	100.0%	$ 516,799	100.0%

Sales to Applied Materials Inc., our largest customer, were $97.0 million or 17.4% of total sales for 2013, $63.9 million, or 14.1% of total sales, for 2012 and $68.0 million, or 13.1% of total sales for 2011. Additionally, in June 2012, Lam Research merged with Novellus Systems, Inc. Had the two businesses been a combined entity for the full year, they would have accounted for 10.7% of our sales in 2012. Our sales to Applied Materials, Lam Research, and Novellus include thin film 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.

*Long lived assets:	December 31, (in thousands) 2013	2012
United States	$ 75,097	$ 118,553
Canada	884	1,246
Asia	3,412	3,963
Europe	132,706	8,576
	$ 212,099	$ 132,338

* Long-lived assets include property and equipment, goodwill and other intangible assets.

NOTE 22. CREDIT FACILITY

In October 2012, we, along with two of our wholly-owned subsidiaries, AE Solar Energy, Inc. and Sekidenko, Inc., entered into a Credit Agreement, subsequently amended in November 2012 and August 2013, (the "Credit Agreement") with Wells Fargo Bank, National Association ("Wells Fargo"), as agent for and on behalf of certain lenders (each a "Lender"), which provides for a new secured revolving credit facility of up to $50.0 million (the "Credit Facility"). The Credit Facility provides us with the ability to borrow up to $50.0 million, although the amount of the Credit Facility may be increased by an additional $25.0 million up to a total of $75.0 million subject to receipt of lender commitments and other conditions. Borrowings under the Credit Facility are subject to a borrowing base based upon our domestic accounts receivable and inventory and are available for various corporate purposes, including general working capital, capital expenditures, and certain permitted acquisitions. The Credit Agreement also permits us to issue letters of credit. The maturity date of the Credit Facility is October 12, 2017.

At our election, the loans comprising each borrowing will bear interest at a rate per annum equal to either: (a) a "base rate" plus between one-half (0.5%) and one (1.0%) full percentage point depending on the amount available for additional draws under the Credit Facility ("Base Rate Loan"); or (b) the LIBOR rate then in effect plus between one and one-half (1.5%) and two (2%) percentage points depending on the amount available for additional draws under the Credit Facility. The "base rate" for any Base Rate Loan will be the greatest of the federal funds rate plus one-half (0.5%) percentage point; the one-month

LIBOR rate plus one (1.0%) percentage point; and Wells Fargo's "prime rate" then in effect. As of December 31, 2013, the rate in effect was 3.75%.

The Credit Agreement requires us to pay certain fees to the Lenders and contains affirmative and negative covenants, which, among other things, require us to deliver to the Lenders specified quarterly and annual financial information, and limit us and our Guarantors (as defined below), subject to various exceptions and thresholds, from, among other things: (i) creating liens on our assets; (ii) merging with other companies or engaging in other extraordinary corporate transactions; (iii) selling certain assets or properties; (iv) entering into transactions with affiliates; (v) making certain types of investments; (vi) changing the nature of our business; and (vii) paying certain distributions or certain other payments to affiliates. Additionally, there are the following financial covenants: (i) during any period in which $12.5 million or less is available to us under the Credit Facility and for sixty (60) days thereafter, the Credit Agreement requires the maintenance of a defined consolidated fixed charge coverage ratio; and (ii) if there is any indebtedness under any issued and outstanding convertible notes, we are required to maintain a specified level of liquidity.

The Credit Agreement requires us to pay certain fees to the Lenders, including a $2,500 collateral management fee for each month that the Credit Facility is in place, and a fee based on the unused amount of the Credit Facility. During the twelve months ended December 31, 2013, we expensed $0.2 million in interest and fees related to unused line of credit fees and amortization of debt issuance costs. We did not borrow against the Credit Facility in 2013.

Pursuant to a Guaranty and Security Agreement (the "GS Agreement"), borrowings under the Credit Facility are guaranteed by our wholly-owned subsidiaries Aera Corporation and AEI US Subsidiary, Inc., (collectively the " Guarantors"). Under the GS Agreement, we and the Guarantors granted the Lenders a security interest in certain, but not all, of our and the Guarantors' assets.

As part of the acquisition of Refusol described in *Note 2. Business Acquisition and Disposition*, we assumed the outstanding debt of Refusol as of the acquisition date. There were three outstanding loans with banks related to this debt, of which one was repaid and cancelled during the third quarter of 2013.

Refusol, GmbH has an outstanding loan agreement with Commerzbank Aktiengesellschaft ("Commerzbank") for up to 8.0 million Euros ("Commerzbank Loan Agreement"). The agreement allows Refusol to borrow up to 8.0 million Euros through various types of instruments including an overdraft (revolving) facilities, money market (term) loans, surety loans, or guarantees. There is no maturity date. Borrowings under the revolving credit facility bear interest at 5.32%. Surety and guarantee loans bear interest at 1.5%. Money market loans are granted by separate agreement when requested and must meet certain Euro thresholds related to the value depending on the maturity date chosen. The Commerzbank Loan Agreement requires the payment of a credit commission of 0.5% of the total loan amount. The agreement contains a various covenants including a financial covenant requiring a specified level of equity. At December 31, 2013 $9.0 million was outstanding on this line of credit.

Refusol, GmbH also had an outstanding loan agreement with Bayerische Landesbank ("Bayern") which allowed it to borrow up to 4.0 million Euros either as overdraft facilities, term loans, or guarantees with repayment occurring one lump sum at the maturity date of the individual transaction with respect to term loans, or maturity of the loan agreement which was July 31, 2013 (the "Bayern Loan Agreement"). The overdraft facility bore interest at 4.5%. Term loans bore interest at the money market rate established by Bayern at the time of the loan plus a margin of 1.9%. Guarantees bore interest at 1.25% and had an issuing fee per guarantee. Loan commitment fees were 0.25% on the unused portion of the total loan amount. The Bayern Loan Agreement contained certain reporting requirements and a financial covenant requiring a specified level of equity.

Upon expiration of this agreement, Refusol, GmbH entered into a new loan agreement with Bayerische Landesbank ("Bayern") under which it has the ability to borrow up to 4.0 million Euros as either bank overdrafts, term loans, guarantees, or letters of credit. The overdraft facility bears interest at 3.9%, guarantees bears a rate of 1.64% and interest on term loans is a fixed rate set for each term loan period based on money market rates. Loan commitment fees are 0.25%. The loan matures on July 31, 2014. At December 31, 2013 $4.6 million was outstanding on this line of credit.

Refusol, Inc., a wholly-owned subsidiary of Refusol, GmbH located in the United States, has a revolving line of credit with Wells Fargo with an aggregate principal amount of $1.5 million and a maturity date of July 1, 2013. Borrowings under the line of credit are secured by all of Refusol, Inc.'s accounts receivable, inventory, and property, plant, and equipment and a letter of credit issued under the Commerzbank Loan Agreement. The line of credit bears interest at either (a) a fluctuating rate per annum one quarter of one percent (0.25%) above the Prime Rate or (b) the LIBOR rate then in effect plus two percent (2.0%). Refusol, Inc. has the option to select the method of interest each month. A commitment fee of 0.125% is payable by Refusol, Inc. on the unused portion of the line of credit. The line of credit contains certain affirmative and negative covenants limiting Refusol, Inc.'s ability to borrow additional funds or guarantee the debt of others. This line of credit was paid down and cancelled on its maturity date of July 1, 2013.

NOTE 23. Supplemental Quarterly Financial Data (Unaudited)

The following tables present unaudited quarterly results for each of the eight quarters in the period ended December 31, 2013. We believe that all necessary adjustments have been included in the amounts stated below to present fairly such quarterly information. Due to the volatility of the industries in which our customers operate, the operating results for any quarter are not necessarily indicative of results for any subsequent period.

	Quarter Ended							
	December 31, 2013	September 30, 2013	June 30, 2013	March 31, 2013	December 31, 2012	September 30, 2012	Jun. 30, 2012	Mar. 31, 2012
	(in thousands except per share data)							
Sales	$ 152,580	$ 142,899	$ 139,711	$ 111,814	$ 112,971	$ 117,515	$ 115,658	$ 105,787
Gross Profit	58,827	56,211	53,259	41,839	38,546	45,727	43,729	39,744
Restructuring	2,305	19,884	24,206	—	2,039	3,003	(144)	2,575
Operating income (loss)	20,018	(1,542)	(11,572)	7,719	5,499	9,938	11,314	623
Income (loss) from continuing operations, net of income taxes	34,355	687	(9,782)	6,826	4,874	5,735	8,801	766
Income (loss) from discontinued operations, net of income taxes	—	—	—	—	(25)	—	127	303
Net income (loss)	34,355	687	(9,782)	6,826	4,849	5,735	8,928	1,069
Earnings per Share:								
Continuing Operations:								
Basic earnings (loss) per share	$ 0.85	$ 0.02	$ (0.25)	$ 0.18	$ 0.13	$ 0.15	$ 0.23	$ 0.02
Diluted earnings (loss) per share	$ 0.83	$ 0.02	$ (0.24)	$ 0.17	$ 0.13	$ 0.15	$ 0.22	$ 0.02
Discontinued Operations:								
Basic earnings (loss) per share	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ 0.01
Diluted earnings (loss) per share	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ 0.01
Net Income (Loss):								
Basic earnings (loss) per share	$ 0.85	$ 0.02	$ (0.25)	$ 0.18	$ 0.13	$ 0.15	$ 0.23	$ 0.03
Diluted earnings (loss) per share	$ 0.83	$ 0.02	$ (0.24)	$ 0.17	$ 0.13	$ 0.15	$ 0.23	$ 0.03

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We have established disclosure controls and procedures, which are designed to ensure that information required to be disclosed in reports filed or submitted under the Securities Exchange Act of 1934 (the "Act") is recorded, processed, summarized, and reported, within the time periods specified in the Securities and Exchange Commission’s rules and forms. These disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed in the reports that we file or submit under the Act is accumulated and communicated to management, including our Principal Executive Officer (Garry Rogerson, Chief Executive Officer) and Principal Financial Officer (Danny C. Herron, Executive Vice President & Chief Financial Officer), as appropriate, to allow timely decisions regarding required disclosures.

As of the end of the period covered by this report, we conducted an evaluation, with the participation of management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of the disclosure controls and procedures pursuant to the Exchange Act Rule 13a-15(b). Based upon this evaluation, the Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of December 31, 2013. The conclusions of the Chief Executive Officer and Chief Financial Officer from this evaluation were communicated to the Audit Committee. We intend to continue to review and document our disclosure controls and procedures, including our internal controls and procedures for financial reporting, and may from time to time make changes aimed at enhancing their effectiveness and to ensure that our systems evolve with our business.

Management’s Annual Report on Internal Control over Financial Reporting

It is management’s responsibility to establish and maintain effective internal control over our financial reporting, which is a process designed under the supervision of our Chief Executive Officer and Chief Financial Officer and effected by our Board of Directors, management, and other personnel. Our internal control over financial reporting is designed to provide reasonable assurance concerning the reliability of our financial reporting and the preparation of our financial statements for external purposes in accordance with generally accepted accounting principles.

Management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our internal control over financial reporting as of December 31, 2013, using the criteria described in *Internal Control-Integrated Framework (1992)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based upon this evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2013.

As discussed in Note 2, *Business Acquisition and Disposition*, to our Consolidated Financial Statements, on April 8, 2013, we acquired Refusol. We considered the results of our pre-acquisition due diligence activities and the continuation by Refusol of their established internal control over financial reporting as of December 31, 2013. We believe the design of Refusol's established internal control over financial reporting is sufficiently different from our overall design. We are in the process of completing a more complete review of Refusol's internal control over financial reporting and will be implementing changes to better align its reporting and controls with the rest of Advanced Energy. As a result of the timing of the acquisition and the changes that are anticipated to be made, we have excluded Refusol from the December 31, 2013 assessment of our internal control over financial reporting. Refusol's total assets, excluding goodwill and intangible assets recorded as part of the purchase price, accounted for 6.2% of our total assets as of December 31, 2013. Controls over goodwill and intangible assets are performed at the corporate level and, therefore, are included in the Company's overall assessment of internal controls over financial reporting. Additionally, Refusol accounted for 11.3% of our total sales for the year ended December 31, 2013.

Grant Thornton LLP, an independent registered public accounting firm, has audited our Consolidated Financial Statements included in this Form 10-K, and as part of the audit, has issued a report, included herein, on the effectiveness of our internal control over financial reporting as of December 31, 2013.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting, except as noted below, that occurred during the fourth quarter of 2013 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

As discussed in Note 1, *Corrections to Previously Reported Financial Statements*, during the quarter ended December 31, 2013, the Company identified an error in the accounting for income taxes. This error, which accumulated over many years and was caused by an inadequate process to reconcile worldwide tax accounts, resulted in a net overstatement of approximately $2.0 million in liability for income taxes as of December 31, 2012. The Company assessed the materiality of this item on previously issued financial statements in accordance with the SEC's Staff Accounting Bulletin ("SAB") No. 99 and concluded that the error was not material to any of the individual annual or interim periods. In accordance with SAB No. 108, the Company has corrected the accompanying Consolidated Financial Statements by increasing 2011 beginning retained earnings by $2.0 million.

The controls previously performed to validate the Company’s year-end taxes payable account were not designed at a level of detail sufficient to accurately identify the obligation to each jurisdiction in which we operate around the world. In the fourth quarter of 2013, the Company designed, implemented and performed a more detailed review and reconciliation of the taxes payable account by jurisdiction in order to determine the correct obligation as of December 31, 2013. This improved control has been implemented as part of our internal controls over financial reporting and will continue to be performed on an ongoing basis.

Limitations on Controls and Procedures

Management has concluded that our disclosure controls and procedures and internal control over financial reporting provide reasonable assurance that the objectives of our control system are met. We do not expect, however, that our disclosure controls and procedures or internal control over financial reporting will prevent or detect all misstatements, errors, or fraud, if any. All control systems, no matter how well designed and implemented, have inherent limitations, and therefore no evaluation can provide absolute assurance that every misstatement, error, or instance of fraud, if any, or risk thereof, has been or will be prevented or detected. The occurrence of a misstatement, error, or fraud, if any, would not necessarily require a conclusion that our controls and procedures are not effective.

ITEM 9B. OTHER INFORMATION

None.

PART III

In accordance with General Instruction G(3) of Form 10-K, certain information required by this Part III is incorporated by reference to the definitive proxy statement relating to our 2014 Annual Meeting of Stockholders (the "2014 Proxy Statement"), as set forth below. The 2014 Proxy Statement will be filed with the Securities and Exchange Commission within 120 days after the end of our fiscal year.

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

The information set forth in the 2014 Proxy Statement under the headings "Proposal No. 1/ Election of Directors" and "Section 16(a) Beneficial Ownership Reporting Compliance" is incorporated herein by reference. The information under the heading "Executive Officers of the Registrant" in Part I of this Form 10-K is also incorporated herein by reference.

ITEM 11. EXECUTIVE COMPENSATION

The information set forth in the 2014 Proxy Statement under the headings "Executive Compensation" is incorporated herein by reference.

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

The information set forth in the 2014 Proxy Statement under the headings "Security Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information" is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The information is set forth in Note 20 — *Related Party Transactions* to our Consolidated Financial Statements, and in the 2014 Proxy Statement under the caption "Certain Relationships and Related Transactions" is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information set forth in the 2014 Proxy Statement under the caption "Proposal No. 2/Ratification of the Appointment of Grant Thornton LLP as Advanced Energy's Independent Registered Public Accounting Firm for 2013" is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(A) Documents filed as part of this Annual Report on Form 10-K are as follows:

1. Financial Statements:

Reports of Grant Thornton LLP

Consolidated Financial Statements:

Balance Sheets at December 31, 2013 and 2012

Statements of Operations for each of the three years in the period ended December 31, 2013

Statements of Comprehensive Income for each of the three years in the period ended December 31, 2013

Statements of Stockholders' Equity for each of the three years in the period ended December 31, 2013

Statements of Cash Flows for each of the three years in the period ended December 31, 2013

Notes to Consolidated Financial Statements

2. Financial Statement Schedules for each of the three years in the period ended December 31, 2013

NOTE: All schedules have been omitted because they are either not required or the information is included in the financial statements and notes thereto.

(B) Exhibits:

3.1 Restated Certificate of Incorporation, as amended.(1)

3.2 Restated By-laws, as amended.(20)

3.3 Amendment to Bylaws.(3)

3.4 Second Amendment to the By-laws of Advanced Energy Industries, Inc.(24)

3.5 Third Amendment to the By-Laws of Advanced Energy Industries, Inc.(28)

4.1 Form of Specimen Certificate for Common Stock.(2)

10.1 Lease, dated June 12, 1984, amended June 11, 1992, by and between Prospect Park East Partnership and Advanced Energy Industries, Inc., for property located in Fort Collins, Colorado.(2)

10.2 Lease, dated March 14, 1994, as amended, by and between Sharp Point Properties, L.L.C., and Advanced Energy Industries, Inc., for property located in Fort Collins, Colorado.(2)

10.3 Lease, dated May 19, 1995, by and between Sharp Point Properties, L.L.C. and Advanced Energy Industries, Inc., for a building located in Fort Collins, Colorado.(2)

10.4 Lease dated March 20, 2000, by and between Sharp Point Properties, L.L.C. and Advanced Energy Industries, Inc., for a building located in Fort Collins, Colorado.(5)

10.5 Lease Amendment, dated as of April 26, 2010 by and between Sharp Point Properties, LLC and Advanced Energy Industries, Inc., for a building located in Fort Collins, Colorado.(29)

10.6 Lease Amendment, dated as of August 19, 2010, by and between Sharp Point Properties, LLC and Advanced Energy Industries, Inc., for a building located in Fort Collins, Colorado.(33)

10.7 Lease Termination Agreement, dated as of December 28, 2011, by and between Sharp Point Properties, LLC and Advanced Energy Industries, Inc., for buildings located in Fort Collins, Colorado. (37)

10.8 Lease Agreement, dated as of December 28, 2011, by and between Sharp Point Properties, LLC and Advanced Energy Industries, Inc., for a building located at 1625 Sharp Point Drive, Fort Collins, Colorado. (37)

10.9 Lease Agreement, dated as of December 28, 2011, by and between Sharp Point Properties, LLC and Advanced Energy Industries, Inc., for a building located at 2424 Midpoint Drive, Fort Collins, Colorado. (37)

10.10 Lease dated January 16, 2003, by and between China Great Wall Computer Shenzhen Co., Ltd., Great Wall Limited and Advanced Energy Industries (Shenzhen) Co., Ltd., for a building located in Shenzhen, China.(6)

10.11 Form of Indemnification Agreement.(2)

10.12 Form of Director Indemnification Agreement.(24)

10.13 1995 Stock Option Plan, as amended and restated through February 7, 2001.(7)*

10.14 1995 Non-Employee Directors' Stock Option Plan, as amended and restated through February 7, 2001.(7)*

10.15 2001 Employee Stock Option Plan.(1)*

10.16 2002 Employee Stock Option Plan.(1)*

10.17 2003 Stock Option Plan.(1)*

10.18 Amendment No. 1 to 2003 Stock Option Plan, dated January 31, 2005.(8)*

10.19 Form of Stock Option Agreement pursuant to the 2003 Stock Option Plan.(8)*

10.20	Amended and Restated 2003 Employees' Stock Option Plan.(4)*
10.21	2003 Non-Employee Directors' Stock Option Plan.(1)*
10.22	2003 Non-Employee Directors' Stock Option Plan, as amended and restated.(4)*
10.23	Form of Restricted Stock Unit Award Agreement pursuant to the 2003 Non-Employee Directors' Stock Option Plan, as amended and restated as of February 15, 2006.(9)*
10.24	Form of Restricted Stock Unit Agreement pursuant to the 2003 Non-Employee Directors' Stock Option Plan.(10)*
10.25	Restricted Stock Unit Agreement pursuant to the 2003 Stock Option Plan.(11)*
10.26	Form of Notice of Grant for Restricted Stock Unit. (46)*
10.27	Form of Restricted Stock Unit Agreement. (46)*
10.28	Form of Notice of Grant of Stock Option. (46)*
10.29	Form of Incentive Stock Option Agreement. (46)*
10.30	Form of Non-Qualified Stock Option Agreement. (46)*
10.31	Form of LTI Notice of Grant. (46)*
10.32	Form of LTI Performance Stock Option Agreement pursuant to the 2008 Omnibus Incentive Plan.(46)*
10.33	Form of LTI Performance Stock Unit Agreement pursuant to the 2008 Omnibus Incentive Plan.(46)*
10.34	Non-employee Director Compensation summary.(12)*
10.35	Non-Employee Director Compensation Structure.(17)*
10.36	2012 - 2014 Long-Term Incentive (LTI) Plan.*
10.37	2012 Short Term Incentive (STI) Plan, as revised.*
10.38	2008 Omnibus Incentive Plan, as amended May 4, 2010.(36)*
10.39	Executive Change in Control Severance Agreement. (13)
10.39.1	Form of Amendment to Executive Change in Control Agreement. (44)
10.40	Retirement Term Sheet relating to Douglas S. Schatz.(14)
10.41	Offer letter, dated August 14, 2010, by and among Advanced Energy Industries, Inc. and Danny C. Herron.(31)
10.42	Offer Letter, dated August 1, 2011, by and among Advanced Energy Industries, Inc. and Garry Rogerson. (38)
10.43	Executive Change in Control Agreement, dated August 4, 2011, by and among Advanced Energy Industries, Inc. and Garry Rogerson.(39)
10.44	Executive Change in Control Agreement, dated March 29, 2008, by and among Advanced Energy Industries, Inc. and Yuval Wasserman.(19)
10.45	Executive Change in Control Agreement, dated August 14, 2010, by and among Advanced Energy Industries Inc. and Danny C. Herron.(32)
10.46	Executive Change in Control Agreement, dated August 14, 2010, by and among Advanced Energy Industries Inc. and Thomas O. McGimpsey.(41)

10.47 Executive Change in Control Agreement, dated August 14, 2010, by and among Advanced Energy Industries Inc. and Gordon Tredger.(42)

10.48 Relocation Agreement, dated August 5, 2013, by and among Advanced Energy Industries, Inc. and Yuval Wasserman. (47)

10.49 Master Executive Separation Agreement, dated August 11, 2010, by and among Advanced Energy Industries, Inc. and Lawrence D. Firestone.(31)

10.50 Global Supply Agreement by and between Advanced Energy Industries, Inc. and Applied Materials Inc. dated August 29, 2005.(16)+

10.51 Shipping Amendment to the Global Supply Agreement by and between Advanced Energy Industries, Inc. and Applied Materials Inc. dated August 29, 2005. (16)+

10.52 Bridge Amendment to the Global Supply Agreement by and between Advanced Energy Industries, Inc. and Applied Materials Inc. dated January 26, 2011. (40)+

10.53 Agreement and Plan of Merger by and among Advanced Energy Industries, Inc., PV Powered, Inc. and Neptune Acquisition Sub, Inc., dated as of March 24, 2010.(25)

10.54 Amendment No. 1 to Agreement and Plan of Merger by and among Advanced Energy Industries, Inc., PV Powered, Inc. and Neptune Acquisition Sub, Inc., dated as of April 21, 2010.(26)

10.55 Amendment No. 2 to Merger Agreement by and among Advanced Energy Industries, Inc., PV Powered, Inc. and Neptune Acquisition Sub, Inc., dated as of October 30, 2010.(34)

10.56 Sale and Purchase Agreement by and among Advanced Energy Industries, Inc., Blitz S13-103 GmbH, Jolaos Verwaltungs GmbH and Prettl Beteiligungs Holdings, GmbH, dated as of April 8, 2013. (45)

10.57 Asset Purchase Agreement, dated as of July 21, 2010, by and among Advanced Energy Industries, Inc. and Hitachi Metals, Ltd.(30)

10.58 Amendment to Asset Purchase Agreement by and between Advanced Energy Industries, Inc. and Hitachi Metals, Ltd., dated as of October 15, 2010.(31)

10.59 Credit Agreement, dated October 12, 2012, by and among Wells Fargo Bank, National Association, as administrative agent for certain lenders, Advanced Energy Industries, Inc., AE Solar Energy Inc., and Sekidenko, Inc.(43)

10.60 Guaranty and Security Agreement dated October 12, 2012 among Wells Fargo Bank, National Association, Advanced Energy Industries, Inc., AE Solar Energy, Inc., Sekidenko, Inc., AEI US Subsidiary, Inc. and Aera Corporation.(43)

10.61 Amendment No. 1 to Credit Agreement dated November 8, 2012 among Wells Fargo Bank, National Association, Advanced Energy Industries, Inc., AE Solar Energy, Inc., Sekidenko, Inc., AEI US Subsidiary, Inc. and Aera Corporation. (44)

10.62 Loan Agreement dated February 1, 2011 among Commerzbank Aktiengesellschaft, Refusol GmbH, and Refu Elektronik, GmbH. (47)

10.63 Addendum No. 1 to Loan Agreement between Commerzbank Aktiengesellschaft, Refusol GmbH, and Refu Elektronik, GmbH. (47)

10.64 Master Loan Agreement dated August 18, 2011 among Beyerische Landesbank and Refusol GmbH. (47)

10.65 1st Amendment dated July 30, 2012 to Master Loan Agreement among Bayerische Landesbank and Refusol GmbH. (47)

10.66 Master Loan Agreement dated July 31, 2013 among Bayerische Landesbank and Refusol GmbH. (48)

10.67 Credit Agreement dated March 1, 2012 among Wells Fargo Bank, National Association and Refusol, Inc. (47)

10.68 Extension to Credit Agreement dated February 19, 2013 among Wells Fargo Bank, National Association and Refusol, Inc. (47)

14.1 Code of Ethical Conduct, as revised.(18)

21.1 Subsidiaries of Advanced Energy Industries, Inc.

23.1 Consent of Grant Thornton LLP, Independent Registered Public Accounting Firm.

31.1 Certification of the Chief Executive Officer Pursuant to Rule 13a-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.

31.2 Certification of the Principal Financial Officer Pursuant to Rule 13a-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.

32.1 Certification of the Chief Executive Officer Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

32.2 Certification of the Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

____

(1) Incorporated by reference to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2003 (File No. 000-26966), filed November 4, 2003.
(2) Incorporated by reference to the Registrant’s Registration Statement on Form S-1 (File No. 33-97188), filed September 2, 1995.
(3) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed December 5, 2007.
(4) Incorporated by reference to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2007 (File No. 000-26966), filed August 3, 2007.
(5) Incorporated by reference to the Registrant’s Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 000-26966), filed March 27, 2001.
(6) Incorporated by reference to the Registrant’s Annual Report on Form 10-K for the year ended December 31, 2003 (File No. 000-26966), filed February 24, 2004.
(7) Incorporated by reference to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2001 (File No. 000-26966), filed May 9, 2001.
(8) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed February 3, 2005.
(9) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed May 31, 2006.
(10) Incorporated by reference to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2006 (File No. 000-26966), filed August 9, 2006.
(11) Incorporated by reference to the Registrant’s Annual Report on Form 10-K for the year ended December 31, 2005 (File No. 000-26966), filed March 28, 2006.
(12) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed February 1, 2006.
(13) Incorporated by reference to the Registrant’s Annual Report on Form 10-K (File No. 000-26966), filed March 31, 2005.
(14) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed August 9, 2005.
(15) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed July 6, 2005.
(16) Incorporated by reference to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2005 (File No. 000-26966), filed November 7, 2005.
(17) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed July 28, 2006.
(18) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed May 1, 2007.
(19) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed April 4, 2008.
(20) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q (File No. 000-26966), filed August 6, 2013.
(21) Reserved.
(22) Incorporated by reference to the Registrant’s Annual Report on Form 10-K for the year ended December 31, 2008 (File No. 000-26966), filed February 27, 2009.
(23) Reserved.
(24) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed December 14, 2009.

(25) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed March 24, 2010.
(26) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed April 22, 2010.
(27) Reserved.
(28) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed April 23, 2010.
(29) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed May 7, 2010.
(30) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed July 22, 2010.
(31) Incorporated by reference to the Registrant’s Quarterly Report on Form 10-Q (File No. 000-26966), filed November 5, 2010.
(32) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed August 16, 2010.
(33) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed August 20, 2010.
(34) Incorporated by reference to the Registrant’s Current Report on Form 8-K (File No. 000-26966), filed November 2, 2010.
(35) Reserved.
(36) Incorporated by reference to the Registrant's Annual Report on Form 10-K (File No. 000-26966), filed March 2, 2011.
(37) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed December 29, 2011.
(38) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed August 2, 2011.
(39) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed August 4, 2011.
(40) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q (File No. 000-26966), filed May 6, 2011.
(41) Incorporated by reference to the Registrant's Annual Report on Form 10-K (File No. 000-26966) filed March 2, 2012.
(42) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966) filed April 30, 2012.
(43) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966) filed October 15, 2012.
(44) Incorporated by reference to the Registrant's Annual Report on Form 10-K (File No. 000-26966) filed March 6, 2013.
(45) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966) filed April 11, 2013.
(46) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966) filed May 10, 2013.
(47) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q (File No. 000-26966) filed August 6, 2013.
(48) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q (File No. 000-26966) filed November 8, 2013.

* Compensation Plan

+ Confidential treatment has been granted for portions of this agreement.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

ADVANCED ENERGY INDUSTRIES, INC.

(Registrant)

/s/ Garry Rogerson

Garry Rogerson
Chief Executive Officer

Date: March 3, 2014

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signatures	Title	Date
/s/ Garry Rogerson Garry Rogerson	Chief Executive Officer and Director	March 3, 2014
/s/ Danny C. Herron Danny C. Herron	Executive Vice President and Chief Financial Officer	March 3, 2014
/s/ Douglas S. Schatz Douglas S. Schatz	Chairman of the Board	March 3, 2014
/s/ Frederick A. Ball Frederick A. Ball	Director	March 3, 2014
/s/ Richard P. Beck Richard P. Beck	Director	March 3, 2014
/s/ Edward C. Grady Edward C. Grady	Director	March 3, 2014
/s/ Terry Hudgens Terry Hudgens	Director	March 3, 2014
/s/ Thomas M. Rohrs Thomas M. Rohrs	Director	March 3, 2014

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