

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, 2020.

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**  
(State or other jurisdiction of incorporation or organization)

**84-0846841**  
(I.R.S. Employer Identification No.)

**1595 Wynkoop Street, Suite 800, Denver, Colorado**  
(Address of principal executive offices)

**80202**  
(Zip Code)

Registrant's telephone number, including area code: (970) 407-6626  
Securities registered pursuant to Section 12(b) of the Act:

Title of each class  
**Common Stock, \$0.001 par value**

Trading Symbol(s)  
**AEIS**

Name of each exchange on which registered  
**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 every electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes  No

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

Large accelerated filer  Accelerated filer  Non-accelerated filer  Smaller reporting company  Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

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 \$2,563,579,586 as of June 30, 2020, based upon the price at which such common stock was last sold on such date.

As of February 18, 2021, there were 38,300,076 shares of the registrant's common stock outstanding.

**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 2021 Annual Meeting of Stockholders (to be filed with the Commission under Regulation 14A no later than 120 days after the end of the registrant's fiscal year ended December 31, 2020).

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### **Special Note Regarding Forward-Looking Statements**

This Annual Report on Form 10-K includes or incorporates by reference "forward-looking statements" within the meanings of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements contained or incorporated by reference in this Annual Report on Form 10-K, other than statements of historical fact, are "forward-looking statements." For example, statements relating to our beliefs, expectations, plans, projections, forecasts, goals, and estimates are forward-looking statements, as are statements that specified actions, conditions, or circumstances will continue or change. Forward-looking statements involve risks and uncertainties. In some cases, forward-looking statements can be identified by the inclusion of words such as "believe," "expect," "plan," "anticipate," "estimate," "may," "might," "could," "should," "will," "continue," "intend," "goal," 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 sales, including backlog orders;
- our ability to be successful in the design win process with our customers;
- unanticipated costs in fulfilling our warranty obligations for solar inverters;
- our future gross profit;
- our competition;
- market acceptance of, and demand for, our products;
- the fair value of our assets and financial instruments;
- research and development expenses;
- selling, general, and administrative expenses;
- sufficiency and availability of materials;
- sufficiency and availability of capital resources;
- capital expenditures;
- our production and factory strategy;
- our share repurchase program;
- our tax assets and liabilities;
- our other commitments and contingent liabilities;
- adequacy of our reserve for excess and obsolete inventory;
- adequacy of our warranty reserves;
- our estimates of goodwill and related fair value of assets acquired;
- restructuring activities and expenses;
- the integration of our acquisitions;
- general global political and 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 Item 1A "Risk Factors." 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.

### **Market and Industry Data**

The market and industry data used in this Annual Report on Form 10-K are based on independent industry publications, customers, trade or business organizations, reports by market research firms and other published statistical information from third parties, as well as information based on management's good faith estimates, which we derive from our review of internal information and independent sources. Although we believe these sources to be reliable, we have not independently verified the accuracy or completeness of the information.

## PART I

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

### ITEM 1. BUSINESS

#### Overview

Advanced Energy provides highly-engineered, mission-critical, precision power conversion, measurement and control solutions to our global customers. We design, manufacture, sell and support precision power products that transform, refine, and modify the raw electrical power from the utility and convert it into various types of highly-controllable, usable power that is predictable, repeatable, and customizable. Our power solutions enable innovation in complex semiconductor and thin film plasma processes such as dry etch, strip, chemical and physical deposition, high and low voltage applications such as process control, data center computing, networking, telecommunication, analytical instrumentation, medical equipment, industrial technology and temperature-critical thermal applications such as material and chemical processing. We also supply related instrumentation products for advanced temperature measurement and control, electrostatic instrumentation products for test and measurement applications, and gas sensing and monitoring solutions for multiple industrial markets. Our network of global service support centers provides local repair and field service to our customers in key regions as well as upgrade and refurbishment services, and sales of used equipment to businesses that use our products. Our products are primarily sold into the Semiconductor Equipment, Industrial and Medical, Data Center Computing, and Telecom and Networking markets. Advanced Energy is organized on a global, functional basis and operates in a single segment structure for electrical power conversion and control products. We sell our products into four markets or applications and provide revenue data by market to enable tracking of market trends. Following the acquisition of Artesyn Embedded Technologies, Inc.'s embedded power business ("Artesyn") in September 2019, we have also provided information on an organic and inorganic basis, which in 2020 was limited to the Artesyn acquisition, to improve comparability during the periods.

During 2020, we saw the continued spread of COVID-19 which grew into a global pandemic. Our first priority was to provide a healthy and safe working environment for our employees which led to intermittent shutdowns of our manufacturing facilities to implement new health and safety protocols and make additional investments to comply with government guidelines. There were periods when some of our manufacturing facilities were not operating or were operating at reduced capacity due to government mandates to restrict travel, require social distancing and implement health and safety procedures. Many of our engineers and non-manufacturing personnel transitioned largely to a work from home environment. Additionally, the availability of materials, parts and subcomponents needed for production was also impacted during 2020. We expect the challenges associated with this environment to continue into 2021.

Although COVID-19 has impacted our revenues and manufacturing efficiency over the course of 2020, COVID-19 has not materially impacted our liquidity, our ability to access capital, our ability to comply with our debt covenants or the fair value of our assets. Additionally, we believe the accommodations we have made to our work environment, including employees utilizing work-from-home arrangements where necessary, will not impact our ability to maintain effective internal controls over financial reporting. While COVID-19 has not had a material adverse effect on our business during 2020, it is unknown if COVID-19 will have a material adverse impact on our future operations, our financial results (including, but not limited to, gross profit, and cash generation) or liquidity. Please see the information under the caption "Risk Factors" in Item 1A of this Annual Report on Form 10-K for additional discussion on the potential impacts of COVID-19 to the future operations of our business.

We incorporated in Colorado in 1981 and reincorporated in Delaware in 1995. Our executive offices are located at 1595 Wynkoop Street, Suite 800, Denver, Colorado 80202, and our telephone number is (970) 407-6555.

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*Recent Acquisitions*

In December 2020, we completed the acquisition of Versatile Power, Inc. This acquisition added radio frequency ("RF") and programmable power supplies for medical and industrial applications to our product portfolio and further expands our presence in the medical market by adding proven technologies, deep customer relationships, expertise in medical design, and a medical-certified manufacturing center.

In September 2019, we completed the acquisition of Artesyn. Artesyn's embedded power business was one of the world's largest providers of highly engineered, application-specific AC-DC and DC-DC power supplies for demanding applications. This acquisition diversified our product portfolio and gave us access to attractive growth markets, including data centers (including hyperscale), telecom infrastructure in next generation 5G networks, embedded industrial power applications and medical diagnostic and treatment applications.

For additional information, see *Note 2. Business Acquisitions* in Part II, Item 8 "Financial Statements and Supplementary Data."

**Products and Services**

*PRODUCTS*

Our precision power products and solutions are designed to enable new process technologies, improve productivity, lower the cost of ownership, and provide critical power capabilities for our customers. These products are designed to meet our customers' demanding requirements in efficiency, flexibility, performance, and reliability. We also provide repair and maintenance services for our products.

We principally serve global original equipment manufacturers ("OEM") and end customers in a wide range of semiconductor and industrial technology applications with a broad range of advanced and embedded power products. Our advanced power products are solutions that are designed to deliver precise power, control and measurement of processes used in a diverse set of applications in semiconductor device manufacturing, thin film deposition of advanced materials, thermal power control, instrumentation and gas detection and monitoring. Our embedded power products are solutions designed to provide stable and efficient power in mission critical applications across a variety of industrial technology applications such as telecommunication and networking equipment, data center servers and storage systems, medical equipment, robotics, motion control and test and measurement equipment.

Our process power solutions include direct current ("DC"), pulsed DC, low frequency alternating current ("AC"), high voltage, and RF power supplies, RF matching networks, remote plasma sources for reactive gas applications and RF instrumentation. These solutions are used in a wide range of thin film processes across multiple semiconductor applications and for deposition of advanced materials in adjacent industries such as flat panel display, solar cell manufacturing, thin film coating, and hard coatings.

Our power control modules and thermal instrumentation products are used in the semiconductor and adjacent industries, in which time-temperature cycles affect material properties, productivity, and yield. These products are used in processes such as rapid thermal processing, chemical vapor deposition and crystal growing, which require non-contact temperature measurement. They are also used in many industrial production applications for chemical processing, metal and glass manufacturing, and numerous other industrial power applications.

Our gas detection and monitoring products utilize proven infrared technologies to detect and analyze gases in a wide range of industrial applications, including automotive, energy, environmental controls, aerospace, medical and research. Our products offer cost-effective online monitoring, allowing our customers to automate manual monitoring or sampling processes that will improve process efficiency, reduce waste, and lower maintenance costs.

Our embedded power products are designed to maximize energy conversion efficiency, minimize physical sizes, and to meet a variety of standards, such as IEC 60601-1 for medical equipment or IEC 60950-1 for information technology equipment. Our low-voltage AC-DC and DC-DC power supplies are used in a wide variety of end markets such as data

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center computing, telecom, networking, medical equipment, and broad industrial electronics. These products feature industry-leading efficiency and density, to maximize performance, lower energy costs, and minimize the form factor. These products target applications where energy usage is high, such as data centers, but also applications that require a highly reliable and rugged design for use in demanding climate conditions, such as a wireless cellular tower.

Our high and lower voltage DC-DC products are designed to meet the demanding requirements of OEMs worldwide. Our DC-DC solutions and custom-built power conversion products offer high and low voltage topology, providing wide input and output operating ranges while retaining excellent stability and efficiencies ranging from benchtop and rackmount systems to micro-size printed circuit board mount modules. The high voltage DC-DC products target applications including semiconductor wafer processing and metrology, electrostatic clamping of substrates, scientific instrumentation, mass spectrometry, and x-ray systems for industrial and analytical applications. The low voltage DC-DC board mounted solutions are designed for a wide range of industrial applications such as healthcare, telecommunications, test and measurement, instrumentation, industrial equipment and distributed power in server and storage systems.

PowerInsight, our big data analytics solution transforms the data acquired from our power delivery systems into useable insights, through a combination of enhanced data sets and advanced analytics. These capabilities allow our customers to maximize performance, reduce costs and improve yield in their manufacturing processes.

### *GLOBAL SUPPORT*

Our global support services group offers in-warranty and out-of-warranty repair services in the regions in which we operate, providing us with revenue opportunities from repair, upgrades and retrofit offerings to our installed base. Our customers wish to lower the cost of ownership of their capital equipment and are increasingly sensitive to the significant costs of system downtime. They expect suppliers to offer comprehensive local repair service and customer support. In addition to product repairs our customers look for upgrade and retrofit offerings to extend the useable life of their capital equipment for additional technology generations. To meet these market requirements, we maintain a worldwide support organization in ten countries, including the United States ("U.S."), the People's Republic of China ("PRC"), Japan, Korea, Taiwan, Germany, Ireland, Singapore, Israel, and Great Britain. Support services include warranty and non-warranty repair services, upgrades, and refurbishments on the products we sell.

As of December 31, 2015, we discontinued the production, engineering, and sales of our solar inverter product line representing a strategic shift in our business. As such, all inverter revenues, costs, assets, and liabilities are reported in Discontinued Operations for all periods presented herein and we currently report as a single unit. However, extended warranties historically sold and reflected as deferred revenue on our Consolidated Balance Sheets, represent future revenue and service costs to be incurred by our global services group and are reflected as continuing operations for historical periods and future periods. In May 2019, we divested the U.S. central inverter repair and support business to Bold Renewables. See *Note 4. Disposed and Discontinued Operations* in Part II, Item 8 "Financial Statements and Supplementary Data."

### **Markets**

Our products compete in markets for high tech applications using capital equipment. The majority of our markets are not generally subject to significant 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, and access to affordable capital. Other factors, such as global economic and market conditions and technological advances in the applications we serve can also have an impact on our financial results, both positively and negatively. For more information related to the markets in which we compete and the current environment in those markets, see *Business Environment and Trends* in Part II, Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations."

### *SEMICONDUCTOR EQUIPMENT MARKET*

Customers in the semiconductor capital equipment market incorporate our products into equipment that make integrated circuits. Our process power conversion products and systems provide the energy to enable thin film plasma-

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based processes, such as dry etch, strip, chemical and physical deposition. 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. Our high voltage products are used in applications such as ion implant, wafer inspection and metrology, electrostatic measurement, and electrostatic clamping of the wafers. Our thermal instrumentation products measure the temperature of the processed substrate or the process chamber. Our power control modules are used in thermal processing applications and for epitaxial growth of photonics or microelectronic devices. Our remote plasma sources deliver ionized gases for reactive chemical processes used in cleaning, surface treatment, and gas abatement. Our low voltage power products deliver stable, clean, and reliable power and are used in semiconductor Automatic Test Equipment ("ATE"), wafer processing equipment, back-end assembly equipment, and auxiliary equipment such as wafer handling. Our strategy in the Semiconductor Equipment market is to expand our content of power related products and grow share.

### *INDUSTRIAL AND MEDICAL MARKET*

Customers in the Industrial and Medical market incorporate our advanced power, embedded power, and measurement products into a wide variety of equipment used in applications such as advanced material fabrication, medical devices, analytical instrumentation, test and measurement equipment, robotics, motor drives and connected light-emitting diodes.

OEM customers design equipment utilizing our process power technologies in a variety of industrial thin film applications including glass coating, glass manufacturing, flat panel displays, photovoltaics solar cell manufacturing, data storage, and decorative, hard and optical coatings. These applications employ similar technologies to those used in the Semiconductor Equipment market to deposit films on non-semiconductor substrates. Our strategy around these applications is to leverage our thin film deposition technologies into an expanded set of new materials and applications in adjacent markets.

We serve the Industrial and Medical market with mission-critical power components that deliver high reliability, precise, low noise or differentiated power to the equipment they serve. Examples of products sold into the Industrial and Medical market include high voltage products for analytical instrumentation, and medical equipment, low voltage power supplies used in applications for medical devices, test and measurement, medical lasers, scientific instrumentation and industrial equipment, and power control modules and thermal instrumentation products for material fabrication, processing, and treatment. Our gas monitoring products serve multiple applications in the energy market, air quality monitoring and automobile emission monitoring and testing. Our strategy in the Industrial and Medical market is to expand our addressable market both organically through our global distribution channels and through acquisitions of products and technologies that are complimentary and adjacent to our core power conversion applications.

### *DATA CENTER COMPUTING MARKET*

Following the acquisition of Artesyn in September 2019, Advanced Energy entered the Data Center Computing market with industry-leading products and low-voltage power conversion technologies. We sell to many data center and hyperscale server and storage manufacturers, as well as cloud service providers and their partners. Driven by the growing adoption of cloud computing, market demand for server and storage equipment has shifted from enterprise on-premise computing to data centers. Our power systems, power shelves, AC-DC and DC-DC power conversion products feature industry-leading performance and are used in a variety of computing applications such as server rack power, back-up power and CPRS server power supply, including a wide range of standard and custom power solutions used in data center racks, server, and storage systems. We offer our customers industry-leading technology with a strong reputation and deep customer relationships. With a growing presence at both cloud service providers and industry-leading data center server and storage vendors, we believe we are well positioned to continue to capitalize on the ongoing shift towards cloud computing. Starting in late 2019 and through the end of 2020, demand for our embedded power products in the Data Center Computing market increased significantly driven by share gain and ramp at hyperscale customers. In addition, we believe COVID-19 is having a positive impact on hyperscale demand given the increased need for cloud and network applications. Demand for hyperscale products declined sequentially during the third and fourth quarter of 2020 based on customer digestion following large investments in the first half of the year but was offset by higher demand from enterprise computing customers, which had been cyclically down in the first half of 2020. We expect this digestion period to continue into the first half of 2021.

## TELECOM AND NETWORKING MARKET

The acquisition of Artesyn in September 2019 provided Advanced Energy with a portfolio of products and technologies that are used across the Telecom and Networking market. Our customers include many leading vendors and original design manufacturers of wireless and wireline infrastructure equipment, telecommunication equipment and computer networking. Our products serving telecom and networking applications are differentiated by their rugged design and high reliability, even in harsh outdoor environments. Our wide range of AC-DC power supplies/rectifiers and DC-DC conversion modules are used by leading developers of telecom systems across fixed, mobile, and converged network applications. Our products are designed into many wireless infrastructure applications such as remote radio heads, RF power amplifiers in base stations and multi-access edge computing equipment. In networking, our products are designed into many core and edge networking systems, including gateways, application servers, switches, routers, and wireless networking. The wireless telecom market continues to evolve with more advanced mobile standards. 5G wireless technology promises to drive substantial growth opportunities for the telecom industry as it enables new advanced applications such as autonomous vehicles and virtual/augmented reality. Telecom service providers have started to invest in 5G, and this trend is expected to drive demand for our products in the Telecom and Networking market over time. In datacom, demand is driven by networking investments by telecom service providers and enterprise upgrading of their network, as well as cloud data center networking investments for increased bandwidth. Demand in late 2019 and the first half of 2020 was lower as geopolitical issues and consolidation of wireless telecom providers drove slower global investment in cellular and network infrastructure; however, we saw modest market growth off these reduced levels in the third and fourth quarter of 2020.

### Customers

Our products are sold worldwide to OEMs, integrators, distributors and directly to end users. The following table summarizes the percentage of our total sales derived from our ten largest customers:

	Years Ended December 31,		
	2020	2019	2018
Ten largest customers	58.0 %	57.3 %	62.5 %

The following table summarizes sales to and percentage of total sales from Applied Materials, Inc. and Lam Research Corp., our two largest customers (in thousands):

	Years Ended December 31,					
	2020		2019		2018	
Applied Materials, Inc.	\$ 248,350	17.5 %	\$ 164,724	20.9 %	\$ 258,027	35.9 %
Lam Research	141,778	10.0 %	88,251	11.2 %	109,005	15.2 %

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. The loss of a large customer could have a material adverse effect on our results of operations.

### Backlog

Our backlog was approximately \$290.7 million on December 31, 2020, a 12.3% increase from \$258.9 million on December 31, 2019. For more information related to our expectations for the markets we serve, see *Business Environment and Trends* in Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations." Backlog orders are firm orders scheduled to be filled and shipped in the next 12 months.

Backlog orders are not necessarily an indicator of future sales levels because of variations in lead times and the significance of customer production demand pull systems to our business, which are not reflected in orders or backlog. Customers may delay delivery of products or cancel orders prior to shipment, subject to possible cancellation penalties. Delays in delivery schedules and/or customer changes to backlog orders during any particular period could cause a decrease in sales and have a material adverse effect on our business and results of operations.



## Marketing, Sales and Distribution

We sell our products through direct and indirect sales channels in North America, Europe, and Asia. Our sales operations are primarily located in the U.S., the PRC, the United Kingdom, Germany, Israel, Japan, South Korea, India, Singapore, Philippines, Hong Kong, Ireland, and Taiwan. In addition to a direct sales force, we have independent sales representatives, channel partners 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 sales by geographic region. Sales are attributed to individual countries based on customer location (in thousands).

	Years Ended December 31,								
	2020		2019		2018				
North America	\$	687,814	48.6 %	\$	373,634	47.4 %	\$	372,834	51.8 %
Asia		606,893	42.9		295,155	37.4		250,574	34.9
Europe		117,990	8.3		119,427	15.1		94,793	13.2
Other		3,129	0.2		732	0.1		691	0.1
Total	\$	1,415,826	100.0 %	\$	788,948	100.0 %	\$	718,892	100.0 %

Total sales to all countries outside of the U.S. totaled \$972.2 million, \$467.1 million, and \$348.1 million in the years ended December 31, 2020, 2019, and 2018, respectively.

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

## Manufacturing

The manufacturing of our products is primarily performed in major sites in the PRC and the Philippines and in 2020 we began to increase production at an additional major manufacturing site in Penang, Malaysia. In addition, we perform limited specialty manufacturing for some of our products in the U.S., United Kingdom, Germany, and Denmark. Manufacturing in these locations, primarily in the PRC, exposes us to risks, such as exchange controls and currency restrictions, changes in local economic conditions, changes in laws and regulations, government actions, political conditions, and other regional risks including natural disasters and health risks, and an inability to meet customer demands if one of our facilities becomes impaired. See Item 1A, "Risk Factors" for a discussion of certain risks related to our manufacturing operations.

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, some key parts may be obtained from a sole supplier or a limited group of suppliers. During 2020, COVID-19 impacted the availability of materials, parts, and subcomponents needed for production, and we expect the related supply chain challenges will continue into 2021. We seek to reduce costs and to lower the risks of production and service interruptions, as well as shortages of key parts by:

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

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- maintaining appropriate inventories of key parts, including making last time purchases of key parts when notified by suppliers that they are ending the supply of those parts;
- qualifying new parts on a timely basis and in geographies that reduce costs without degradation in quality;
- locating certain manufacturing operations in areas that are closer to suppliers and customers; and
- competitively sourcing parts through electronic bidding tools to ensure the lowest total cost is achieved for the parts needed in our products.

### **Intellectual Property**

We seek patent protection for inventions governing new products or technologies as part of our ongoing research and development. We currently hold 285 U.S. issued patents and 340 foreign issued patents, and we have 337 patent applications pending in the U.S., Europe, and Asia. Most patents are active for 20 years, and our patents expire on various dates through 2039. A substantial majority of our patents are related to our process power products and solutions business. Generally, our efforts to obtain international patents have been concentrated in the industrialized countries within Europe and Asia because there are other manufacturers and developers of power conversion and control systems in those countries, as well as customers for those systems for which our intellectual property applies.

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

### **Competition**

The markets we serve are highly competitive and characterized by rapid technological development and changing customer requirements. We face a wide variety of competitors and 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 encounter substantial competition from foreign and domestic companies for each of our product lines. Our list of competitors has increased over the past year due to the acquisition of Artesyn, which competes in different markets and against different competitors. 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. Adtec Plasma Tech. Co., Ltd., COMET Holding AG., Daihen Corp., Kyosan Electric Mfg. Co., Ltd., MKS Instruments, Inc., New Power Plasma Co., Ltd. and TRUMPF Hüttinger GmbH + Co. KG. are primary competitors to our power conversion products for semiconductor and thin film processing. Competitors to our low voltage AC-DC and DC-DC embedded power conversion offerings include, but are not limited to ABB Ltd., Acbel Polytech Inc., Cosel Co., Ltd., Delta Electronics, Inc., Flex Ltd., Lite-On Technology Corp., Murata Manufacturing, MEAN WELL Enterprises, TDK-Lambda Americas Inc., and XP Power Ltd. In high voltage DC-DC, our competitors include, but are not limited to Crane Co., Matsusada Precision, Inc., and Spellman High Voltage Electronics Corp. CD Automation, Control Concepts Inc., Eurotherm and Spang Power Electronics offer products that compete with our power control modules. BASF SE., Fluke Corp., LayTec AG. and Photon Control Inc. offer products that compete with our thermal measurement and instrumentation products. Honeywell International, Inc., Morgan Schaffer Ltd., Qualitrol Corp., and Williamson Corp. offer products that compete with our gas detection and monitoring products.

In addition, a focus on local content is causing new competitors to emerge around the world, with strong support from local governments, industry leaders, and investors. Our ability to compete successfully in these markets depends on our ability to make timely introduction of new products and enhancements to existing products, to localize these development and production activities in key world regions close to our customers, and to produce high 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 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 products is characterized by ongoing technological changes and evolving customer requirements. We believe that continued and timely development of new highly-differentiated products and enhancements to existing products to support end user and OEM requirements is necessary for us to maintain a competitive position in the markets we serve. Accordingly, we continue to devote a significant portion of our personnel and financial resources to research and development projects and seek to maintain close relationships with our key customers and other industry leaders in order to remain responsive to their product requirements now and in the future.

Research and development expenses were \$144.0 million in 2020, \$101.5 million in 2019, and \$76.0 million in 2018, representing 10.2% of our sales in 2020, 12.9% of our sales in 2019, and 10.6% of our sales in 2018.

## **Employees**

As of December 31, 2020, we had approximately 10,000 employees. Our employees are not represented by unions, except for statutory organization rights applicable to our employees in the PRC and Germany. 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. We recognize that our employees are our most important asset, and we know that each person's diverse background and unique skill set are fundamental to our success. See Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations" for a discussion of human capital resources.

## **Environmental Matters**

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 and service 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.

## **Available Information**

Our website address is [www.advancedenergy.com](http://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](http://www.sec.gov). Information contained on our website is not incorporated by reference in, or otherwise part of, this Annual Report on Form 10-K nor any of our other filings with the SEC.

## **ITEM 1A. RISK FACTORS**

Our business, financial condition, operating results, and cash flows can be impacted by a number of factors, including, but not limited to, those set forth below, any of which could cause our results to be adversely impacted and could result in a decline in the value or loss of an investment in our common stock. Other factors may also exist that we cannot anticipate or that we currently do not consider to be material based on information that is currently available. These risks and uncertainties have the potential to materially affect our business, financial condition, results of operations, cash flows and future results. Such risks and uncertainties may also impact the accuracy of forward-looking statements included in this Form 10-K and other reports we file with the Securities and Exchange Commission.

## **COVID-19, natural disasters, and related risks**

*COVID-19 could further materially adversely affect our business, workforce, supply chain, results of operations, financial condition and/or cash flows.*

The continuing spread in 2020 of COVID-19 and related foreign and domestic government actions restricting travel, commerce and gathering has adversely affected our manufacturing locations. COVID-19 has also resulted in economic recessions and high unemployment in many countries which could negatively impact future customer purchases of our products. If COVID-19 continues to spread and restrictions remain in place or are reinstated, we may continue to see adverse impact on our ability (a) to manufacture, test, service and ship our products, (b) to get required materials and sub-assemblies to build and service our products and (c) to staff labor and management for manufacturing, research and development, supply chain, service, and administrative operations. Further, we may experience adverse impact with our global supply chain partners and transportation service providers which may result in increased costs and material shortages. In addition, much of our workforce is now working remotely. While we have been successful in transitioning to this remote environment, the long-term impact on productivity and innovation is not yet clear. As a result, COVID-19 could adversely impact our near-term and long-term revenues, earnings and cash flow and could require further expenditures. This situation continues to evolve, and other impacts may arise that we are not aware of currently. We have an active rapid response team to mitigate risks we are aware of currently and as they arise.

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

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

## **Industry-related risks**

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

As a supplier to the global semiconductor equipment, telecom, networking, data center computing, industrial, and medical industries, we are subject to business cycles, the timing, length, and volatility of which can be difficult to predict. Certain of 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. 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 enough manufacturing capacity and inventory to fulfill customer orders, effectively manage our supply chain, and attract, retain, and motivate enough 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. For example, following record levels of demand in the first half of 2018, the Semiconductor Equipment market experienced a decline, and, as a result, Advanced Energy's revenue from the Semiconductor Equipment market declined 24.5% during 2019, as compared to 2018. Although the Semiconductor Equipment market improved during the fourth quarter of 2019 and throughout 2020, it is unclear how long this recovery will last. In addition, the market may be characterized in the future with more "mini-ramps" rather than sustained growth periods as experienced during 2015-2017 given market dynamics, inventory levels, and geopolitical changes. In addition, our Data Center Computing and Telecom

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and Networking markets are characterized by large program investments, which can cause variations in quarterly or annual revenues. For example, during 2020 our growth in data center computing and telecom networking has been driven by share gains at specific customer accounts. Towards the end of 2020, we began to experience a period of digestion by our major customers resulting in lower demand. We expect this digestion to continue into the first half of 2021 and overall business levels may not continue to be realized at these levels each quarter.

*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.*

Driven by continuing technology migration and changing customers demand, the markets we serve are constantly changing in terms of advancement in applications, core technology and competitive pressures. New products we design for capital equipment manufacturers typically have a lifespan of five to ten years. Increasingly, we are required to accelerate our investment in research and development to meet time-to-market, performance and technology adoption cycle needs of our customers simply to compete for design wins. Given such up-front investments we make to develop, evaluate, and qualify products in the design win process, our success and future growth depend on our products being designed into our customers new generations of equipment as they develop new technologies and applications. We must work with these manufacturers early in their design cycles to modify, enhance and upgrade our products or design new products that meet the requirements of their new systems. The design win process is highly competitive, and we may win or lose new design wins for our existing customers or new customers next generations of equipment. If existing or new customers do not choose us during the design win process, our market share will be reduced, the potential revenues related to the lifespan of our customers' products, which can be five to ten years, will not be realized, and our business, financial condition and results of operations would be materially and adversely impacted.

### **Business model, acquisitions, and capital structure related risks**

*Despite the continued evolution of our manufacturing footprint our product lines are manufactured 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 Penang, Malaysia. Our high voltage products are manufactured in Ronkonkoma and Lockport, New York, Littlehampton, United Kingdom and Shenzhen, PRC. Our thermal instrumentation products are manufactured in Vancouver, Washington, Littlehampton, United Kingdom and Frankfurt, Germany. Our pyrometry solutions are manufactured in Ballerup, Denmark, Frankfurt, Germany, Magdeburg, Germany and Vancouver, Washington. Our telecom, networking, data center computing, and medical products are manufactured in Zhongshan, PRC, Rosario, Philippines and Santa Rosa, Philippines. Most facilities are under operating lease and interruptions in operations could be caused by early termination of existing leases by landlords or failure by landlords to renew existing leases upon expiration, including the possibility that suitable operating locations may not be available in proximity to existing facilities which could result in labor or supply chain risks. Each facility manufactures different products, and therefore, is not interchangeable. Natural, uncontrollable occurrences or other operational issues at any of our manufacturing facilities could significantly reduce or disrupt our productivity at such site and could prevent us from meeting our customers' requirements in a timely manner, or at all.

Additionally, we have a plan to relocate our Shenzhen, PRC manufacturing facility by December 2021. As a result, we are investing in a dual manufacturing facility in Penang, Malaysia capable of manufacturing our semiconductor and other products. We believe this investment will help to mitigate our exposure to regional risks, improve our business continuity profile and lower costs over time. We opened this facility in 2020; however, it may take additional time to realize the facility's full production capacity given the impact of COVID-19.

*Our long-term success and results of operations depend on our ability to successfully integrate Artesyn's business and operations and realize the anticipated benefits from the acquisition.*

In September 2019, we acquired Artesyn, and we are continuing to combine Artesyn's business with our business. The acquisition of Artesyn has significantly increased our embedded power product offerings, increased our exposure to the Industrial and Medical, Data Center Computing, and Telecom and Networking markets, and significantly increased the number of employees and facilities.

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To realize the anticipated benefits of the acquisition, we must continue to combine our businesses in an efficient and effective manner and realize our synergy and cost-savings targets. Integrating Artesyn's business and operations with ours requires significant management attention, effort, and expenditures, and we may not be able to achieve the longer-term integration goals in an effective, complete, timely or cost-efficient manner.

Potential risks related to the successful integration of Artesyn's business include our ability to:

- maintain and improve Artesyn's financial and operating results while integrating and optimizing our combined sales, marketing, manufacturing, and corporate administrative organizations;
- optimize our combined worldwide manufacturing footprint while utilizing Artesyn's vertically integrated manufacturing model for a broader set of company products;
- successfully eliminate fixed costs previously absorbed by other businesses prior to the transaction;
- recognize and capitalize on anticipated product sales and technology enhancement opportunities presented by our combined businesses;
- integrate our information technology systems to mitigate cyber-security risks and enable the management and operation of the combined business.

If we are unable to successfully or timely integrate the operations of Artesyn's business into our business over the long-term, we may be unable to realize the long-term revenue growth, synergies, cost-savings, and other anticipated benefits resulting from the acquisition and our business could be adversely affected. Additionally, we have and may continue to incur transaction-related costs, including legal, regulatory, and other costs associated with implementing integration plans, including facilities and systems consolidation costs and employment-related costs. Artesyn's business and operations may not achieve the anticipated revenues and operating results. Any of the foregoing risks could materially harm our business, financial condition, and results of operations.

*Our debt obligations and the restrictive covenants in the agreements governing our debt could limit our ability to operate our business or pursue our business strategies, could adversely affect our business, financial condition, results of operations, and cash flows, and could significantly reduce stockholder benefits from a change of control event.*

Our debt obligations could make us more vulnerable to general adverse economic and industry conditions and could limit our flexibility in planning for, or reacting to, changes in our business and the industries in which we operate, thereby placing us at a disadvantage to our competitors that have less indebtedness.

Our debt obligations impose financial covenants on us and our subsidiaries that require us to maintain a certain leverage ratio. The financial covenants place certain restrictions on our business that may affect our ability to execute our business strategy successfully or take other actions that we believe would be in the best interests of our Company. These include limitations or restrictions, among other things, on our ability and the ability of our subsidiaries to:

- incur additional indebtedness;
- pay dividends or make distributions on our capital stock or certain other restricted payments or investments;
- make domestic and foreign investments and extend credit;
- engage in transactions with affiliates;
- transfer and sell assets;
- effect a consolidation or merger or sell, transfer, lease, or otherwise dispose of all or substantially all of our assets; and
- create liens on our assets to secure debt.

Our debt obligations contain certain customary events of default. Any breach of the covenants or other event of default could cause a default on our debt obligations, which could restrict our ability to borrow under our revolving credit facility. If there were an event of default under certain provisions of our debt arrangements that was not cured or waived, the holders of the defaulted debt may be able to cause all amounts outstanding with respect to the debt instrument, plus any required settlement costs, to be due and payable immediately. Our assets and cash flow may not be sufficient to fully repay

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borrowings under our outstanding debt instruments if accelerated upon an event of default. If we are unable to repay, refinance, or restructure our indebtedness as required, or amend the covenants contained in these agreements, the lenders can exercise all rights and remedies available under our Credit Agreement or applicable laws or equity.

*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, 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 number 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, 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. If demand for our products does not continue at current levels, we might not be able to use all 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 enough raw materials, parts, components, or subassemblies, on favorable terms or at all, to fulfill the excess demand. For example, entering 2021 there is global shortage of certain electronics and semiconductor parts given higher global demand and the impact of COVID-19 on the global supply chain. If we are not able to obtain parts in a reasonable timeframe our business may be adversely impacted.

*Activities necessary to integrate acquisitions may result in costs more than current expectations or be less successful than anticipated.*

We have completed acquisitions in the past 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 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 transitioned a significant amount of our supply base to Asian suppliers.*

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

*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

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labor, materials, and equipment in the manufacturing process effectively. In addition, we may purchase inventory in anticipation of sales that do not materialize, resulting in excess and obsolete inventory write-offs.

*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. Our customers continually exert pressure on us to reduce our prices and extend payment terms and we may be required to enter into long term reduced pricing agreements with our largest customers to remain competitive. In addition, we compete in markets in which customers may include dual or multi-sourcing of power. We believe some of our Asian competitors benefit from local governmental funding incentives and purchasing preferences from end-user customers in their respective countries. 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, product offerings and product costs accordingly, and if we are unable to do so, our business, financial condition, and results of operations could be materially and adversely affected.

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

The following table summarizes the percentage of total sales derived from our ten largest customers:

	Years Ended December 31,		
	2020	2019	2018
Ten largest customers	58.0 %	57.3 %	62.5 %

The following table summarizes sales to and percentage of total sales from Applied Materials, Inc. and Lam Research Corp., our two largest customers (in thousands):

	Years Ended December 31,					
	2020		2019		2018	
Applied Materials, Inc.	\$ 248,350	17.5 %	\$ 164,724	20.9 %	\$ 258,027	35.9 %
Lam Research	141,778	10.0 %	88,251	11.2 %	109,005	15.2 %

We have an accounts receivable balance from Applied Materials, Inc. of \$33.4 million and \$36.8 million as of December 31, 2020 and 2019, respectively. A significant decline in sales from this or other large customers, or the Company's inability to collect on these sales, could materially and adversely impact our business, results of operations and financial condition.

*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. We may not be successful in retaining our key employees or attracting or retaining additional skilled personnel as required. Failure to retain or attract key personnel could significantly harm our results of operations and competitive position. Our success in hiring and retaining employees depends on a variety of factors, including the attractiveness of our compensation and benefit programs, global economic or political and industry conditions, our organizational structure, our reputation, culture and working environment, competition for talent and the availability of qualified employees, the availability of career development opportunities, and our ability to offer a challenging and rewarding work environment. We must develop our personnel to provide succession plans capable of maintaining continuity during the inevitable unpredictability of personnel retention. While we have plans for key management succession and long-term compensation plans designed to retain our senior employees, if our succession plans do not operate effectively, our business could be adversely affected.



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*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.

**Commercial and financial related risks**

*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 customers or 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. 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.

*Our operations in the People's Republic of China (PRC) and the Asia Pacific region 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 and tariffs, changes in tax policies, changes in PRC laws and regulations, possible expropriation or other PRC government actions, and unsettled political conditions including potential changes in U.S. policy regarding overseas manufacturing. At various times during recent years, the U.S. and PRC have had significant disagreements over geopolitical, trade and economic issues. Controversies may arise in the future between these two countries. Any escalating political controversies between the U.S. and PRC, whether or not directly related to our business, could have a material adverse effect on our operations, business, results of operations, and financial condition. See "We are exposed to risks associated with worldwide financial markets and the global economy" risk factor below.

Additionally, there is inherent risk, based on the complex relationships among PRC, Hong Kong, Taiwan, and the United States, that political, diplomatic, and national security influences might lead to trade, technology, or capital disputes,

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and/or disruptions, in particular those affecting the semiconductor industry. This would adversely affect our business with PRC, Hong Kong, and/or Taiwan and perhaps the entire Asia Pacific region or global economy.

Actions by the Chinese government extending its territorial claims, such as the recent passage of the national security law in Hong Kong and the planned establishment of an Air Defense Identification Zone over the South China Sea, raises the fear of conflict that could result in international reprisal. Actions by the U.S. government on trade policy against the PRC and companies like Huawei Technologies Co., Ltd. have also escalated tensions. Lastly, the recent U.S. and PRC consulate closures and the continuing Hong Kong political unrest is creating more uncertainty. Should the PRC take any actions against Taiwan, we could see additional risks to diplomatic and trade relations in the region. Given our expanded presence in the PRC and Hong Kong, the company's business results, operations and financial condition could be adversely affected by these developments and other changes to political, diplomatic, and social conditions. Moreover, PRC's policies towards, and treatment of, U.S. companies operating in PRC and Hong Kong could change quickly resulting in an adverse impact on the Company.

*We are subject to risks inherent in international operations.*

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.

Sales to our customers outside the United States were approximately 68.7% and 59.2% of our total sales for the year ended December 31, 2020 and 2019, respectively. Our acquisitions have increased our presence in international locations. 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 customs audits in various countries that occur from time to time);
- the ability to provide enough 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 significant balances in accounts receivable from foreign customers as of December 31, 2020;
- changes in tariffs, taxes, and foreign currency exchange rates; and

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.

*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 and has negatively impacted the global demand for our products. 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 orders.

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Difficulties or increased costs 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 including inflation, interest rates, availability of capital markets, consumer spending rates, energy availability and costs and the effects of government initiatives to manage 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.

*Globalization of sales increases risk of compliance with policy.*

We operate in an increasingly complex sales environment around the world which places greater importance on our global control environment and imposes additional oversight risk. Such increased complexity could adversely affect our operating results by increasing compliance costs in the near-term and by increasing the impact of control failures in the event of non-compliance.

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

Our legacy inverter products (of which we discontinued the manufacture, engineering, and sale in December 2015 and which are reflected as Discontinued Operations in this filing) contain components that may contain errors or defects and were sold with original product warranties ranging from one to ten years with an option to purchase additional warranty coverage for up to 20 years. If any of our products are defective or fail because of their design, we might be required to repair, redesign, or recall those products or to pay damages (including liquidated damages) or warranty claims, and we could suffer significant harm to our reputation. We are experiencing increasing claims from customers and suppliers and increasing litigation related to the legacy inverter product line. We review such claims and vigorously defend against such lawsuits in the ordinary course of our business. We cannot assure that any such claims or litigation brought against us will not have a material adverse effect on our business or financial statements. Our involvement in such litigation could result in significant expense to us and divert the efforts of our technical and management personnel. We also accrue a warranty reserve for estimated costs to provide warranty services including the cost of technical support, product repairs, and product replacement for units that cannot be repaired. Our estimate of costs to fulfill our warranty obligations is based on historical experience and expectation of future conditions. To the extent we experience increased warranty claim activity or increased costs associated with servicing those claims, our warranty accrual will increase, resulting in additional expenses in the line "Income (loss) from discontinued operations, net of income taxes" on our Consolidated Statement of Operations in future periods. We plan to continue supporting inverter customers with service maintenance and repair operations. This includes performing service to fulfill obligations under existing service maintenance contracts. There is no certainty that these can be performed profitably and could be adversely affected by higher than anticipated product failure rates, loss of critical service technician skills, an inability to obtain service parts, customer demands and disputes and cost of repair parts, among other factors. See *Note 4. Disposed and Discontinued Operations* in Part II, Item 8 "Financial Statements and Supplementary Data" contained herein.

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

Our products use complex system designs and components that may contain errors or defects, particularly when we incorporate new technology into our products or release new versions. If any of our products are defective or fail because of their design, we might be required to repair, redesign, or recall those products, pay damages (including liquidated damages) or warranty claims, and we could suffer significant harm to our reputation. We accrue a warranty reserve for estimated costs to provide warranty services including the cost of technical support, product repairs, and product replacement for units that cannot be repaired. Our estimate of costs to fulfill our warranty obligations is based on historical experience and expectation of future conditions. To the extent we experience increased warranty claim activity or increased costs associated with servicing those claims, our warranty accrual will increase, resulting in decreased gross profit. In recent years, we have experienced increased warranty costs for our legacy inverter product lines, which is reflected in "Income (loss) from discontinued operations, net of income taxes." See *Note 4. Disposed and Discontinued Operations* in Part II, Item 8 "Financial Statements and Supplementary Data" contained herein.

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*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, we have large, long term liabilities such as local lease and pension liabilities in Europe and Asia creating more significant exposure to fluctuations in the value of the Euro, Philippine Peso, and Chinese Yuan. The company does not attempt to hedge these exposures given the long-term nature of the underlying liabilities and the non-cash nature of the foreign exchange gain or loss.

The PRC government is continually pressured by its trading partners to allow its currency to float in a manner like other major currencies. Any change in the value of the Chinese yuan could significantly increase the labor and other costs incurred in the operation of our Shenzhen and Zhongshan facilities and the cost of raw materials, parts, components, and subassemblies that we source in the PRC, which could materially and adversely affect our results of operations.

*The United Kingdom's exit from the European Union and related actions could adversely affect us.*

On June 23, 2016, the United Kingdom ("UK") held a referendum in which voters approved an exit from the European Union ("EU"). On January 23, 2020, the UK left the EU, which is commonly referred to as "Brexit," and was in a transitional period through December 31, 2020. As of January 1, 2021, EU Trade Agreements no longer apply to the UK. The UK has taken steps to reproduce the effects of trading agreements that previously applied through the provisional application of new trade agreements not yet ratified and has introduced the UK Global Tariff. These changes result in increased regulatory complexities on imports and exports between the UK and EU countries and may adversely affect our sales, operations, and financial results. Our operations in the UK may be adversely affected by significant fluctuations in the UK exchange rates and increased administrative costs and tariffs on the importation of parts for manufacturing and repair services. Moreover, the imposition of any import restrictions and duties levied on our UK products as imported for EU customers may make our products more expensive for such customers and less competitive from a pricing perspective.

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

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

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

As part of our day-to-day business, we store our data and certain data about our customers in our global information technology system. Unauthorized access to our data, including any regarding our customers, could expose us to a risk of loss of this information, loss of business, litigation, and possible liability. These security measures may be breached by intentional misconduct by computer hackers, because of third-party action, employee error, malfeasance or otherwise. Additionally, third parties may attempt to fraudulently induce employees or customers into disclosing sensitive information such as usernames, 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

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recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures. Any security breach could result in a loss of confidence by our customers, damage our reputation, disrupt our business, lead to legal liability, and negatively impact our future sales.

*We 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 our technology.*

Litigation may be necessary to enforce our commercial or property rights, to defend ourselves against claimed violations of such rights of others, or to protect our interests in regulatory, tax, customs, commercial, and other disputes, or similar matters. We have been experiencing increased litigation related to our legacy inverter product line. 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.

*Return on investments or interest rate declines on plan investments could result in additional unfunded pension obligations for our pension plan.*

We currently have unfunded obligations to our pension plans. The extent of future contributions to the pension plan depends heavily on market factors such as the discount rate used to calculate our future obligations and the actual return on plan assets which enable future payments. We estimate future contributions to the plan using assumptions with respect to these and other items. Changes to those assumptions could have a significant effect on future contributions. Additionally, a material deterioration in the funded status of the plan could increase pension expenses and reduce our profitability. See *Note 17. Employee Retirement Plans and Postretirement Benefits* in Part II, Item 8 "Financial Statements and Supplementary Data" contained herein.

*Our intangible assets may become impaired.*

As of December 31, 2020, we have \$210.0 million of goodwill and \$168.9 million in intangible assets. We periodically review the estimated useful lives of our 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.

### **International trade, tax, and regulatory related risks**

*Significant developments stemming from recent U.S. government actions and proposals concerning tariffs and other economic proposals could have a material adverse effect on us.*

U.S. government actions are imposing greater restrictions and economic disincentives on international trade. It has initiated the imposition of additional tariffs on certain foreign goods, including steel and aluminum, semiconductor manufacturing equipment and spare parts thereof and has also announced the imposition of import license requirements on aluminum articles. The government has amended and expanded export regulations regarding sales to companies on the U.S. Entity List. These changes prevent sales of foreign produced direct product of the U.S. that is manufactured using controlled U.S.-origin equipment, technology, and software located outside the United States to companies on the U.S. Entity List. Additionally, the U.S. Department of Defense continues to issue lists of companies it has determined to be owned or controlled by China's People's Liberation Army on which sanctions could be levied by executive order, and the

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Department of Commerce has published their "first tranche" of designated military end users from China and Russia for whom export licenses are now required.

Furthermore, the government has determined that the Special Administrative Region of Hong Kong is no longer sufficiently autonomous to justify being treated as separate from China and has eliminated certain license exceptions for the export of controlled goods to Hong Kong and has removed Hong Kong as a separate shipping destination under the Export Administration Regulations ("EAR").

In response to U.S. Government actions, China passed the Export Control Law of the People's Republic of China, effective December 1, 2020. The Export Control Law provides the Chinese government with the framework to ban exports of strategic materials and advanced technologies to specific foreign entities on its Control List and also provides a counterweight to the U.S. government's restrictions through provisions for retaliatory action and extraterritorial jurisdiction.

Changes in U.S. trade policy could result in one or more U.S. trading partners adopting responsive trade policy making it more difficult or costly for us to export our products to those countries. As indicated above, these measures could also result in increased costs for goods imported into the U.S. This in turn could require us to increase prices to our customers which may reduce demand, or, if we are unable to increase prices, result in lowering our margin on goods and services sold. To the extent that trade tariffs and other restrictions imposed by the U.S. increase the price of semiconductor equipment and related parts imported into the U.S., the cost of our materials may be adversely affected and the demand from customers for products and services may be diminished, which could adversely affect our revenues and profitability.

The adoption and expansion of trade restrictions, the occurrence of a trade war, or other governmental action related to tariffs or trade agreements or policies has the potential to adversely impact demand for our products, our costs, our customers, our suppliers, and the U.S. economy, which in turn could adversely impact our business, financial condition, and results of operations.

Changes in U.S. social, political, regulatory, and economic conditions or in laws and policies governing foreign trade, manufacturing, development and investment in the territories and countries where we currently develop and sell products, and any negative sentiments towards the United States as a result of such changes, could adversely affect our business. In addition, negative sentiments towards the United States among non-U.S. customers and among non-U.S. employees or prospective employees could adversely affect sales or hiring and retention, respectively.

*Increased governmental action on income tax regulations could negatively impact our business.*

International governments have heightened their review and scrutiny of multinational businesses like ours which could increase our compliance costs and future tax liability to those governments. As governments continue to look for ways to increase their revenue streams, they could increase audits of companies to accelerate the recovery of monies perceived as owed to them under current or past regulations. Such an increase in audit activity could have a negative impact on companies which operate internationally, as we do.

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

We are subject to income taxes in the U.S. (federal and state) and numerous foreign jurisdictions. Tax laws, regulations, and administrative practices in various jurisdictions by their nature are complex and may be subject to significant change due to economic, political, and other conditions, and significant judgment is required in evaluating and estimating our provision and accruals for these taxes. There are many transactions that occur during the ordinary course of business for which the ultimate tax determination is uncertain. Our effective tax rates could be adversely affected by earnings being lower than anticipated in jurisdictions where we have lower statutory rates and earnings higher than anticipated in jurisdictions where we have higher statutory rates, losses incurred in jurisdictions for which we are not able to realize the related tax benefit, changes in foreign currency exchange rates, entry into new businesses and geographies and changes to our existing businesses, acquisitions (including integrations) and investments, changes in our deferred tax assets and liabilities and their valuation, and changes in the relevant tax, accounting, and other laws, regulations, administrative

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practices, principles, and interpretations, including fundamental changes to the tax laws applicable to corporate multinationals. The U.S., many countries in the European Union, and several other countries are actively considering changes in this regard.

*Changes in our provision for income taxes or adverse outcomes resulting from examination of our income tax returns could adversely affect our results.*

Our provision for income taxes is subject to volatility and could be adversely affected by earnings being lower than anticipated in countries that have lower tax rates and higher than anticipated in countries that have higher tax rates; by changes in the valuation of our deferred tax assets and liabilities; by changes, regulations, and interpretations of foreign-derived intangible income ("FDII"), global intangible low-tax income ("GILTI") and base erosion and anti-abuse tax laws ("BEAT"); by expiration of or lapses in tax incentives; by transfer pricing adjustments, including the effect of acquisitions on our legal structure; by tax effects of nondeductible compensation; by tax costs related to intercompany realignments; by changes in accounting principles; or by changes in tax laws and regulations, treaties, or interpretations thereof, including changes to the taxation of earnings of our foreign subsidiaries, the deductibility of expenses attributable to foreign income, and the foreign tax credit rules. Significant judgment is required to determine the recognition and measurement attribute prescribed in the accounting guidance for uncertainty in income taxes. The Organization for Economic Co-operation and Development ("OECD"), an international association comprised of 36 countries, including the United States, has made changes to numerous long-standing tax principles. There can be no assurance that these changes, once adopted by countries, will not have an adverse impact on our provision for income taxes. Further, because of certain of our ongoing employment and capital investment actions and commitments, our income in certain countries is subject to reduced tax rates. Our failure to meet these commitments could adversely impact our provision for income taxes. In addition, we are subject of regular examination of our income tax returns by tax authorities. We regularly assess the likelihood of adverse outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. There can be no assurance that the outcomes from these continuous examinations will not have an adverse effect on our operating results and financial condition.

*Our business is subject to complex and evolving U.S. and international laws and regulations regarding privacy and data protection. Many of these laws and regulations are subject to change and uncertain interpretation and could result in claims, changes to our business practices, penalties, increased cost of operations, or declines in user growth or engagement, or otherwise harm our business.*

Regulatory authorities around the world have implemented or are considering several legislative and regulatory proposals concerning data protection, including measures to ensure that encryption of users' data does not hinder law enforcement agencies' access to that data. In addition, the interpretation and application of consumer and data protection laws in the U.S., Europe and elsewhere are often uncertain and in flux. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our data practices. These legislative and regulatory proposals, if adopted, and such interpretations could, in addition to the possibility of fines, result in an order requiring that we change our data practices, which could have an adverse effect on our business and results of operations. Complying with these various laws could cause us to incur substantial costs or require us to change our business practices in a manner adverse to our business.

*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. In addition, with our acquisition of Versatile Power, Inc., we expanded our presence in the medical market to include more highly regulated applications and added its medical-certified manufacturing center to our operating footprint. We may encounter increased costs to maintain compliance with the quality systems and other regulations and requirements that apply to the acquired business. 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

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numerous imports, exports, 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.

*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 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 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 require companies to perform due diligence, disclose and report whether such minerals originate from the Democratic Republic of Congo and adjoining countries. We must perform sufficient due diligence to determine whether such minerals are used in the manufacture of our products. Regarding our acquisition of Artesyn, we will need to complete due diligence on the minerals used in the manufacture of those products and include our due diligence results in our next conflict minerals report. In addition, we incur 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 the components of our products are certified as conflict mineral free.

**General Risk Factors**

*Our failure to maintain appropriate environmental, social, and governance ("ESG") practices and disclosures could result in reputational harm, a loss of customer and investor confidence, and adverse business and financial results.*

Governments, investors, customers, and employees are enhancing their focus on ESG practices and disclosures, and expectations in this area are rapidly evolving and increasing. While we monitor the various and evolving standards and associated reporting requirements, failure to adequately maintain appropriate ESG practices that meet diverse stakeholder expectations may result in the loss of business, diluted market valuation, an inability to attract customers, and an inability to attract and retain top talent.

**ITEM 1B. UNRESOLVED STAFF COMMENTS**

None.



## ITEM 2. PROPERTIES

Information concerning our principal properties is set forth below:

<u>Location</u>	<u>Principal Activity</u>	<u>Ownership</u>
Denver, Colorado	Corporate headquarters, general and administrative	Leased
Fort Collins, Colorado	Research and development, distribution, sales, and service	Leased
Lockport, New York	Manufacturing, distribution, service, and research and development	Leased
Campbell, California	Manufacturing, distribution, service, and research and development	Leased
Milpitas, California	Research and development, sales, and service	Leased
Ronkonkoma, New York	Manufacturing, distribution, service, and research and development	Leased
Vancouver, Washington	Research and development, manufacturing, distribution, sales, and service	Leased
Georgetown, Massachusetts	Sales	Leased
Eden Prairie, Minnesota	Engineering, and research and development	Leased
Tempe, Arizona	Sales and administration	Leased
Beijing, China	Sales	Leased
Shanghai, China	Sales and distribution	Leased
Shenzhen, China	Manufacturing, distribution, service, and research and development	Leased
Xian, China	Service	Leased
Zhongshan, China	Manufacturing	Leased
Pune, India	Sales	Leased
Tokyo, Japan	Sales and service	Leased
Seoul, South Korea	Sales and service	Leased
Bukit Minak, Malaysia	Manufacturing and distribution	Leased
Quezon, Philippines	Engineering, research and development, administration, and support	Leased
Rosario, Philippines	Manufacturing	Owned
Santa Rosa, Philippines	Manufacturing	Leased
Singapore, Singapore	Global operations headquarters (sales, service, and research and development)	Leased
Taipei, Taiwan	Sales, distribution, and service	Leased
Hong Kong, Hong Kong	Distribution and general and administrative	Leased
Ballerup, Denmark	Manufacturing, distribution, sales, service, and research and development	Leased
Metzingen, Germany	Distribution, sales, and service	Leased
Warstein-Belecke, Germany	Research and development, distribution, sales, and service	Leased
Frankfurt, Germany	Manufacturing, distribution, sales, service, and research and development	Leased
Magdeburg, Germany	Manufacturing and distribution	Leased
Cork, Ireland	Sales, service, and research and development	Leased
Caesarea, Israel	Research and development and service	Leased
Littlehampton, United Kingdom	Manufacturing, distribution, sales, service, and research and development	Leased

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

### **ITEM 3. LEGAL PROCEEDINGS**

We are presently involved in disputes and legal actions arising in the normal course of our business. While we currently believe that the amount of any ultimate loss would not be material to our financial position, the outcome of these actions is inherently difficult to predict. In the event of an adverse outcome, the ultimate loss could have a material adverse effect on our financial position or reported results of operations. An unfavorable decision in patent litigation could require material changes in production processes and products or result in our inability to ship products or components found to have violated third-party patent rights. An unfavorable decision in a collection action against a customer we sold products to, or a claim or counterclaim from a customer related to alleged product failures, could also have a material adverse effect on our financial position or reported results of operations. We are engaged presently in such disputes and legal actions with customers and supplier for the inverter product line. We accrue loss contingencies in connection with our commitments and contingencies, including litigation, when it is probable that a loss has occurred, and the amount of the loss can be reasonably estimated. For further information see *Note 19. Commitments and Contingencies* in Part II, Item 8 "Financial Statements and Supplementary Data."

### **ITEM 4. MINE SAFETY DISCLOSURES**

Not applicable.

## **PART II**

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

#### **Principal Market**

Our common stock is listed on the NASDAQ Global Select Market under the symbol "AEIS." On January 31, 2021, the number of common stockholders of record was approximately 300.

#### **Dividend Policy**

We have not declared or paid any cash dividends on our capital stock in our history as a public company. However, on December 15, 2020, our Board of Directors ("the Board") approved the initiation of a cash dividend program under which we intend to pay a regular quarterly dividend of \$0.10 per share, starting in the first quarter of 2021. On February 1, 2021, the Board declared a quarterly dividend of \$0.10 per share payable to shareholders of record as of February 22, 2021. Future dividend payments are subject to approval by the Board.

#### **Purchases of Equity Securities by the Issuer**

In September 2015, the Board authorized a program to repurchase up to \$150.0 million of our stock over a thirty-month period. In November 2017, the Board approved an extension of the share repurchase program to December 2019 from its original maturity of March 2018. In May 2018, the Board approved a \$50 million increase in the repurchase authorization.

On December 18, 2019, the Board authorized to remove the expiration date from the repurchase program and increased the balance available for stock repurchase by \$25.1 million. As of December 31, 2020, the Company was authorized to repurchase shares of the Company's common stock of up to a total of \$38.4 million.

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The following table summarizes the stock repurchase activity for the three months ended December 31, 2020 (in thousands, except per share amount):

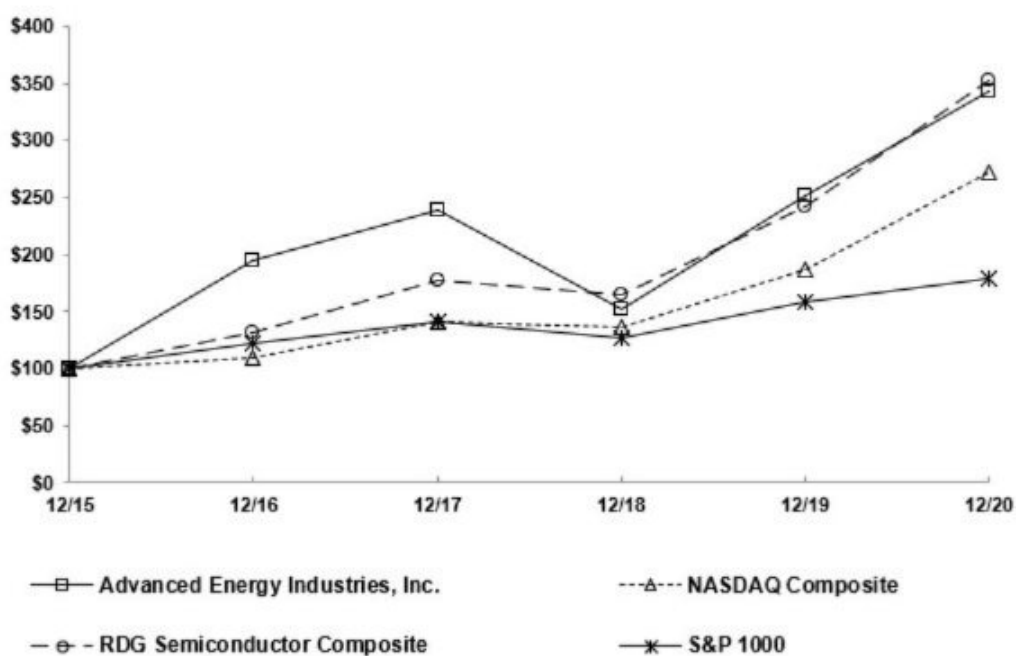
	<b>Total Number of Shares Purchased</b>	<b>Average Price Paid per Share</b>	<b>Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs</b>	<b>Maximum Dollar Value of Shares that May Yet be Purchased Under the Plans or Programs</b>
October 1, 2020 - October 31, 2020	1	\$ 61.91	1	\$ 38,369
November 1, 2020 - November 30, 2020	—	—	—	—
December 1, 2020 - December 31, 2020	—	—	—	—
Total	<u>1</u>	<u>\$ 61.91</u>	<u>1</u>	<u>\$ 38,369</u>

In order to execute the repurchase of shares of our common stock, the Company periodically enters into stock repurchase agreements. All shares repurchased were executed in the open market, and no shares were repurchased from related parties. Repurchased shares are retired and assumed the status of authorized and unissued shares. Accordingly, the associated cost of the repurchased shares was recognized as a reduction to additional paid-in capital.

**Performance Graph**

The performance graph below shows the five-year cumulative total stockholder return on our common stock in comparison with various other indices during the period from December 31, 2015 through December 31, 2020. The comparison assumes \$100 was invested on December 31, 2015 in Advanced Energy common stock and in each of the 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,  
the RDG Semiconductor Composite Index and the S&P 1000 Index



\* \$100 invested on December 31, 2015 in our stock or index, including reinvestment of dividends. Indices and our stock performance are calculated on a calendar year-end basis.

	December 31,					
	2015	2016	2017	2018	2019	2020
Advanced Energy Industries, Inc.	\$ 100.00	\$ 193.94	\$ 239.04	\$ 152.07	\$ 252.21	\$ 343.50
NASDAQ Composite	100.00	108.87	141.13	137.12	187.44	271.64
RDG Semiconductor Composite	100.00	131.64	177.48	164.63	242.61	351.91
S&P 1000	100.00	122.49	141.26	126.71	158.57	179.15

Information relating to compensation plans under which our equity securities are authorized for issuance is set forth in Part III, Item 12 "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters" of this Annual Report on Form 10-K.

**ITEM 6. SELECTED FINANCIAL DATA**

Not applicable.

**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 "*Special Note Regarding Forward-Looking Statements*" in 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.

This section of this Form 10-K discusses and compares the results of operations for 2020 and 2019. The discussion and analysis comparing the results of operations for 2018 to 2019 are not included in this Form 10-K and can be found within Part II, Item 7 "Management's Discussion and Analysis for Financial Condition and Results of Operations" in our 2019 Form 10-K for the year ended December 31, 2019.

**Overview**

We design, manufacture, sell and support precision power products that transform, refine, and modify the raw electrical power from the utility and convert it into various types of highly-controllable, usable power that is predictable, repeatable, and customizable. Our power solutions enable innovation in complex semiconductor and thin film plasma processes such as dry etch, strip, chemical and physical deposition, high and low voltage applications such as process control, data center computing, networking, telecommunication, analytical instrumentation, medical equipment, industrial technology, and temperature-critical thermal applications such as material and chemical processing. Our network of global service support centers provides a recurring revenue opportunity as we offer repair services, conversions, upgrades, and refurbishments and used equipment to companies using our products.

Driven by continuing technology evolution and changing customer demands, the markets we serve are constantly changing in terms of advancement in applications, core technology and competitive pressures. New products we design for capital equipment manufacturers could have a lifespan of five to ten years. Our success and future growth depend on our products being designed into our customers' new generations of equipment as they develop new technologies and applications. We work with these original equipment manufacturers early in their design cycles to modify, enhance and upgrade our products or design new products that meet the requirements of their new and future systems. The design win process is highly competitive, and we may win or lose new designs for our existing customers' or new customers' next generations of equipment. If existing or new customers do not choose our products as a result of the development, evaluation and qualification efforts related to the design win process, our market share may be reduced, our potential revenues related to the lifespan of our customers' products, which can be 5-10 years, may not be realized, and our business, financial condition and results of operations may be materially and adversely impacted.

**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 us to make judgments, assumptions, and estimates that affect the amounts reported. *Note 1. Operations and Summary of Significant Accounting Policies and Estimates* in Part II, Item 8 "Financial Statements and Supplementary Data" describes the significant accounting policies used in the preparation of our consolidated financial statements. The accounting positions described below are significantly affected by critical accounting estimates. Such accounting positions require significant judgments, assumptions, and estimates to be used in the preparation of the consolidated financial statements, actual results could differ materially from the amounts reported based on variability in factors affecting these statements.

*Revenue Recognition*

We recognize revenue when we have satisfied our performance obligations which typically occurs when control of the products or completion of services have been transferred to our customers. The transaction price is based upon the standalone selling price. In most transactions, we have no obligations to our customers after the date products are shipped, other than pursuant to warranty obligations. Revenue is recognized net of any taxes collected from customers, which are subsequently remitted to governmental authorities. Shipping and handling fees, if any, are recognized as revenue. The related shipping and handling costs are recognized in cost of sales. Support services include warranty and non-warranty repair services, upgrades, and refurbishments on the products we sell. Repairs that are covered under our standard warranty do not generate revenue.

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

*Business Combinations*

We record the assets acquired and liabilities assumed in a business combination at their acquisition date fair values. Fair values of assets acquired, and liabilities assumed are based upon available information and may involve engaging an independent third party to perform an appraisal. Estimating fair values can be complex and subject to significant business judgment. We must also identify and include in the allocation all acquired tangible and intangible assets that meet certain criteria, including assets that were not previously recorded by the acquired entity. The estimates most commonly involve property, plant and equipment and intangible assets, including those with indefinite lives. The estimates also include the fair value of contracts including commodity purchase and sale agreements, storage contracts, and transportation contracts. The excess of the purchase price over the net fair value of acquired assets and assumed liabilities is recorded as goodwill, which is not amortized but instead is evaluated for impairment at least annually. Pursuant to GAAP, an entity is allowed a reasonable period of time (not to exceed one year) to obtain the information necessary to identify and measure the fair value of the assets acquired and liabilities assumed in a business combination.

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### *Income Taxes*

We are subject to income taxes in the United States and numerous foreign jurisdictions. Significant judgment is required in determining our provision for income taxes and income tax assets and liabilities, including evaluating uncertainties in the application of accounting principles and complex tax laws. We record a provision for income taxes for the anticipated tax consequences of the reported results of operations using the asset and liability method. Under this method, we recognize deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial reporting and tax bases of assets and liabilities, as well as for operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured using the tax rates that are expected to apply to taxable income for the years in which those tax assets and liabilities are expected to be realized or settled. We calculate tax expense consistent with intraperiod tax allocation methodology resulting in an allocation of current year tax expense/benefit between continuing operations and discontinued operations. We record a valuation allowance to reduce our deferred tax assets to the net amount that we believe is more likely than not to be realized.

We recognize tax benefits from uncertain tax positions only if we believe that it is more likely than not that the tax position will be sustained on examination by the taxing authorities based on the technical merits of the position. Although we believe that we have adequately reserved for our uncertain tax positions, we can provide no assurance that the final tax outcome of these matters will not be materially different. We adjust these reserves when facts and circumstances change, such as the closing of a tax audit or the refinement of an estimate. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will affect the provision for income taxes in the period in which such determination is made and could have a material impact on our financial condition and operating results. The provision for income taxes includes the effects of any reserves that we believe are appropriate, as well as the related net interest and penalties. For more details see *Note 5. Income Taxes* in Part II, Item 8 "Financial Statements and Supplementary Data."

### *Inventory*

We value our inventory at the lower of cost (first-in, first-out method) or net realizable value. 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. Our industry is subject to technological change, new product developments, and changes in end-user demand for our products which can fluctuate significantly. Any significant changes in end-user demand, technology or new product developments could have a significant impact on the value of our inventory and our reported operating results.

### *Warranty Costs*

We offer warranty coverage for a majority of our products for periods typically ranging from 12 to 24 months after shipment. We provided warranties on our inverter products for five to ten years and also provided the option to purchase additional warranty coverage up to 20 years. Our standard inverter product warranty expense is reported within discontinued operations. We estimate the anticipated costs of repairing our products under such warranties based on the historical costs of the repairs. The assumptions we use to estimate warranty accruals are reevaluated periodically, considering 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. See *Note 4. Disposed and Discontinued Operations* in Part II, Item 8 "Financial Statements and Supplementary Data" for more information on our discontinued operations and *Note 15. Warranties* in Part II, Item 8 "Financial Statements and Supplementary Data" for more information.

### *Goodwill, Intangible and Other Long-Lived Assets*

We evaluate the carrying value of our goodwill for impairment at least annually or when an interim triggering event occurs that would indicate that impairment may have taken place. Our annual impairment test was performed as of December 31<sup>st</sup> with no indication of impairment. We evaluate our other definite-lived intangible assets for impairment when evidence exists that certain events or changes in circumstances indicate that the carrying amount of these assets may not be recoverable. Significant judgments and assumptions are required in such impairment evaluations.

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The annual impairment test of goodwill may be performed using an assessment of qualitative factors if it is considered more likely than not that goodwill is not impaired. If this qualitative assessment indicates that it is more likely than not that goodwill is impaired, then the next step of impairment testing compares the fair value of a reporting unit to its carrying value. If fair value exceeds carrying value, then we conclude no goodwill impairment has occurred. Conversely, if carrying value exceeds fair value, we recognize an impairment loss.

We evaluate definite-lived intangible assets and other long-lived assets whenever 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. 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. Changes in these estimates could result in significant revisions to the carrying value of these assets and may result in material charges to our results of operations.

### *Defined Benefit Pension Plans*

Accounting for pension plans requires that we make assumptions that involve considerable judgment which are significant inputs in the actuarial models that measure our net pension obligations and ultimately impact our earnings. These include the discount rate, long-term expected rate of return on assets, compensation trends, inflation considerations, health care cost trends and other assumptions, as well as determining the fair value of assets in our funded plans. Specifically, the discount rates, as well as the expected rates of return on assets and plan asset fair value determination, are important assumptions used in determining the plans' funded status and annual net periodic pension and benefit costs. We evaluate these critical assumptions at least annually on a plan and country-specific basis. We also, with the help of actuaries, periodically evaluate other assumptions involving demographic factors, such as retirement age, mortality and turnover, and update them to reflect our experience and expectations for the future. The Company believes the accounting estimates related to our pension plans are critical accounting estimates because they are highly susceptible to change from period to period based on the performance of plan assets, actuarial valuations, market conditions and contracted benefit changes. While we believe that our assumptions are appropriate, significant differences in our actual experience or significant changes in our assumptions may materially affect our net pension and postretirement benefit obligations and related expense.

### **Human Capital Resources**

Our corporate citizenship, social responsibility and commitment to our employees extends beyond the products we make. We recognize that our employees are our most important asset, and with approximately 10,000 employees located across the globe, we know that each person's diverse background and unique skill set are fundamental to our success. We regularly conduct anonymous surveys to seek feedback from our employees on important topics related to confidence in company leadership, career growth opportunities, and improvements on how we can make our company a great place to work. In addition, the results of the survey are shared with our Board. To further increase our commitment to diversity and equity, in 2020, we announced the launch of our inaugural Advanced Energy STEM Diversity Scholarship, which is aimed at developing emerging talent and promoting greater ethnic, racial and gender diversity in STEM. The annual program will begin in the 2021 academic year and will accept applications from undergraduate and post-graduate students attending five leading institutions in the field of power technologies.

### *Total Rewards*

As part of our total rewards philosophy, we believe in offering and maintaining competitive compensation and benefits programs for our employees in order to attract and retain a talented, highly engaged workforce. Our compensation programs are focused on equitable, fair pay practices including market-based base pay, an annual pay-for-performance incentive plan, and discounted Employee Stock Purchase Plan. In addition to our competitive compensation practices, we offer a strong benefits package in each of the countries in which we operate. In the majority of our non-U.S. operations, we offer additional benefits that supplement governmental statutory benefits. In the U.S., we offer a competitive benefits package that includes four different health care plan options with employee premiums lower than the market average,



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dental, vision, disability and life insurance, health savings and flexible spending accounts, paid-time off, 8-weeks of paid parental leave for both parents, company matched 401(k), flexible work schedules, expanded mental health coverage and employee assistance programs. With the challenging times created by COVID-19, we made the commitment to ensure our employees maintained financial security and provided employees the ability to work from home and paid leave time for our hourly employees who may have been impacted by temporary site closures.

### *Learning and Development*

To support our employees in reaching their full potential and to build internal capabilities, we offer a wide range of internal and external learning and development opportunities. We have a program for education assistance reimbursement that provides financial support to employees who seek to expand their skills and abilities. We support a women's leadership forum conducted by our employees that discusses, among other things, career development, leadership topics, and the opportunities for mentorship. We also have an internship program designed to help support a pipeline of talent for the Company. We have a robust succession planning process to develop internal leadership capabilities and technical bench strength, ensuring we have a strong workforce for the future.

### *Health and Safety*

We are committed to providing a safe work environment for our employees. We provide regular health and safety training both on-site as needed and through our virtual training tool that assigns training requirements based on job profiles and site-specific requirements. Our Environmental, Health and Safety organization is a global team responsible for health and safety related to on-site operations including hazard and risk identification. Workplace safety is also addressed in operations meetings and monthly business reviews. We are also committed to the standards of the Responsible Business Alliance Code of Conduct which promotes labor, health and safety, environmental and ethics best practices.

### *Community Involvement*

Our charitable contributions committee, founded in 2010, is supported and led by our employees. The committee provides financial support for 501(c)(3) corporations, non-profit institutions, and organizations that improve education, the environment, health and social services across the communities in which we operate and where our employees live. We provide financial support to workforce initiatives led by the local chamber of commerce in Northern Colorado and have partnered with a community college to provide equipment and funding to train technicians and develop skilled labor that may lead to employment opportunities with us or other local companies. We offer each employee eight hours of paid-time off to volunteer with a 501(c)(3) organization of the employee's choosing. Our Educational Scholarship Program, available to children of AE employees, celebrates education accomplishments and facilitates career and learning goals. In 2020, we received a record number of submissions and recognized ten employees' students across multiple countries.

## **Business Environment and Trends**

Advanced Energy operates in a single segment structure for power electronics conversion products. The acquisition of Artesyn added additional products and market verticals to our business. Following the acquisition, we have continued to be organized on a global, functional basis to achieve the anticipated synergies associated with the acquisition. We operate in four vertical markets or applications and provide revenue information to enable tracking of market trends. Following the acquisition of Artesyn in September of 2019, we also provide information on an organic and inorganic basis to improve comparability during the periods.

The demand environment in each of our markets is impacted by various market trends, customer buying patterns, design wins, macroeconomic and other factors. During 2020 we saw strengthening demand in Semiconductor Equipment and Data Center Computing Markets and weakening demand in our general industrial markets.

In the beginning of the first quarter of 2020, we began to see an impact of COVID-19 on our operations particularly in China, which has affected both our own workforce and supply chain. This situation remains dynamic and may continue to affect our operations. See Item 1A "Risk Factors" for a discussion of certain risks related to COVID-19.

### *SEMICONDUCTOR EQUIPMENT MARKET*

Growth in the Semiconductor Equipment market is driven by growing integrated circuits content across many industries, increased demand for processing and storage in advanced applications such as artificial intelligence or autonomous vehicles, the rapid adoption of advanced mobile connectivity solutions such as 5G and enhancing existing and enabling new wireless applications. To address the long-term growing demand for semiconductor devices, the industry continues to invest in production capacities for advanced logic devices at the 7nm technology node and beyond, the latest memory devices including 3D-NAND, DRAM, and new emerging memories such as MRAM, and back-end test and advanced wafer-level packaging. The industry's transition to advanced technology nodes in logic and DRAM and to increased layers in 3D memory devices is requiring an increased number of etch and deposition process tools and higher content of our advanced power solutions per tool. As etching and deposition processes become more challenging due to increasing aspect ratios in advanced 3D devices, more advanced radio frequency ("RF") and direct current ("DC") technologies are needed. We are meeting these challenges by providing a broader range of more complex RF and DC power solutions. Beyond etch and deposition processes, the growing complexity at the advanced nodes also drive a higher number of other processes across the fab, including inspection, metrology, thermal, ion implantation, and semiconductor test, where Advanced Energy is actively participating as a critical technology provider. In addition, our global support services group offers comprehensive local repair service, upgrade and retrofit offerings to extend the useable life of our customers' capital equipment for additional technology generations. The acquisition of Artesyn in September 2019 expanded Advanced Energy's reach within the Semiconductor Equipment market by adding a broad range of low voltage applications as well as back-end test and assembly equipment makers.

In the first half of 2019, the semiconductor industry went through a period of weakening equipment investment as a result of slowing growth in end market demand for semiconductor devices, ongoing digestion of equipment capacity, and consumption of existing inventory. Demand for semiconductor equipment has continued to grow through the fourth quarter of 2020 driven by foundry logic and certain memory investments and has returned to prior peak levels. In addition, the demand for semiconductor devices for a wide range of applications is expected to drive investment into 2021. However, due to limited visibility and uncertainty arising from COVID-19 and its impact on the global economy and supply chain, geopolitical uncertainty, overall levels of current investment by our customers, and the cyclical nature of the market it is difficult to determine the extent or duration to which the increased demand for semiconductor equipment will continue.

### *INDUSTRIAL AND MEDICAL MARKET*

Customers in the Industrial and Medical market incorporate our advanced power, embedded power, and measurement products into a wide variety of equipment used in applications such as advanced material fabrication, medical devices, analytical instrumentation, test and measurement equipment, robotics, motor drives and connected light-emitting diodes.

OEM customers design equipment utilizing our process power technologies in a variety of industrial applications including glass coating, glass manufacturing, flat panel displays, photovoltaics solar cell manufacturing, and similar thin film manufacturing, including data storage and decorative, hard and optical coatings. These applications employ similar technologies to those used in the Semiconductor Equipment market to deposit films on non-semiconductor substrates. Our strategy around these applications is to leverage our thin film deposition technologies into an expanded set of new materials and applications in adjacent markets.

Advanced Energy serves the Industrial and Medical market with mission-critical power components that deliver high reliability, precise, low noise or differentiated power to the equipment they serve. Examples of products sold into the Industrial and Medical market includes high voltage products for analytical instrumentation, medical equipment, low voltage power supplies used in applications for medical devices, test and measurement, medical lasers, scientific instrumentation and industrial equipment, and power control modules and thermal instrumentation products for material fabrication, processing, and treatment. Our gas monitoring products serve multiple applications in the energy market, air quality monitoring and automobile emission monitoring and testing. Our strategy in the Industrial and Medical market is to grow and expand our addressable market both organically through our global distribution channels and through acquisitions of products and technologies that are complimentary and adjacent to our core power conversion applications.

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Revenue for Industrial and Medical products improved in the second half of 2020 after lower revenues in the first half of 2020 primarily due to recessionary macroeconomic conditions, and production and supply chain delays related to COVID-19 that pushed shipments into the third and fourth quarter of 2020. Additionally, we saw modest improvement in industrial markets as global economic growth resumed and our customers were able to increase capacity after governmental restrictions were relaxed during the second half of 2020.

*DATA CENTER COMPUTING MARKET*

Following the acquisition of Artesyn in September 2019, Advanced Energy entered the Data Center Computing market with industry-leading products and low-voltage power conversion technologies. We sell to many data center server and storage manufacturers, as well as cloud service providers and their partners. Driven by the growing adoption of cloud computing, market demand for server and storage equipment has shifted from enterprise on-premise computing to the data center. Nevertheless, with a growing presence at both cloud service providers and industry-leading data center server and storage vendors, we believe Advanced Energy is well positioned to continue to capitalize on the ongoing shift towards cloud computing. In late 2019 and through 2020, demand for our embedded power products in the data center computing market increased significantly driven by share gains and a capacity ramp at hyperscale customers. In addition, we believe as a consequence of COVID-19, hyperscale demand has risen in the near term given the increased need for cloud and network applications in the current environment. Demand for hyperscale products declined sequentially during the latter half of 2020, as a result of market digestion following a ramp of investment earlier in the year. This digestion period is expected to continue into the first part of 2021.

*TELECOM AND NETWORKING MARKET*

The acquisition of Artesyn in September 2019 provided Advanced Energy with a portfolio of products and technologies that are used across the Telecom and Networking market. Our customers include many leading vendors of wireless infrastructure equipment, telecommunication equipment and computer networking. The wireless telecom market continues to evolve with more advanced mobile standards. 5G wireless technology promises to drive substantial growth opportunities for the telecom industry as it enables new advanced applications such as autonomous vehicles and virtual/augmented reality. Telecom service providers have started to invest in 5G, and this trend is expected to drive demand of our products into the Telecom and Networking market. In datacom, demand is driven by networking investments by telecom service providers and enterprises upgrading of their network, as well as cloud data center networking investments for increased bandwidth. Demand in late 2019 and the first half of 2020 was lower as geopolitical issues and consolidation of wireless telecom providers drove slower global investment in cellular and network infrastructure. Revenue increased sequentially in the third and fourth quarters primarily as a result of modest improvement in market conditions and improved manufacturing capacity amid COVID-19.

**Results of Continuing Operations**

The analysis presented below is organized to provide the information we believe will facilitate an understanding of our historical performance and relevant trends going forward, and should be read in conjunction with our consolidated financial statements, including the notes thereto, in Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K.

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The following table sets forth certain data derived from our Consolidated Statements of Operations (in thousands):

	<b>Year Ended December 31,</b>	
	<b>2020</b>	<b>2019</b>
Sales	\$ 1,415,826	\$ 788,948
Gross profit	541,869	315,652
Operating expenses	365,846	261,264
Operating income from continuing operations	176,023	54,388
Other income (expense), net	(17,876)	12,806
Income from continuing operations before income taxes	158,147	67,194
Provision for income taxes	22,996	10,699
Income from continuing operations, net of income taxes	\$ 135,151	\$ 56,495

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

	<b>Year Ended December 31,</b>	
	<b>2020</b>	<b>2019</b>
Sales	100.0 %	100.0 %
Gross profit	38.3	40.0
Operating expenses	25.8	33.1
Operating income from continuing operations	12.4	6.9
Other income (expense), net	(1.3)	1.6
Income from continuing operations before income taxes	11.2	8.5
Provision for income taxes	1.6	1.4
Income from continuing operations, net of income taxes	9.5 %	7.2 %

*SALES, NET*

The following tables summarize annual sales and percentages of sales, by product line (in thousands):

	<b>Year Ended December 31,</b>		<b>Change 2020 v. 2019</b>	
	<b>2020</b>	<b>2019</b>	<b>Dollar</b>	<b>Percent</b>
Semiconductor Equipment	\$ 611,864	\$ 403,018	\$ 208,846	51.8 %
Industrial and Medical	313,646	245,992	67,654	27.5
Data Center Computing	322,539	91,438	231,101	252.7
Telecom and Networking	167,777	48,500	119,277	245.9
Total	\$ 1,415,826	\$ 788,948	\$ 626,878	79.5 %

	<b>Years Ended December 31,</b>	
	<b>2020</b>	<b>2019</b>
Semiconductor Equipment	43.2 %	51.1 %
Industrial and Medical	22.1	31.2
Data Center Computing	22.8	11.6
Telecom and Networking	11.9	6.1
Total	100.0 %	100.0 %

## OPERATING EXPENSE

The following table summarizes our operating expense as a percentage of sales (in thousands):

	Years Ended December 31,			
	2020		2019	
Research and development	\$ 143,961	10.2 %	\$ 101,503	12.9 %
Selling, general, and administrative	188,590	13.3	142,555	18.1
Amortization of intangible assets	20,129	1.4	12,168	1.5
Restructuring charges	13,166	0.9	5,038	0.6
Total operating expenses	<u>\$ 365,846</u>	<u>25.8 %</u>	<u>\$ 261,264</u>	<u>33.1 %</u>

## 2020 Results Compared To 2019

### SALES

Total sales for the year ended December 31, 2020 increased \$626.9 million, or 79.5% to \$1,415.8 million from \$788.9 million for the year ended December 31, 2019. Revenue in 2020 benefited from \$670.8 million in inorganic sales from the acquisition of Artesyn. Organic sales in 2020 increased \$176.4 million primarily due to increased demand in the Semiconductor Equipment market offset by lower sales of our industrial thin film products due to a weaker overall macroeconomic environment and the impact of COVID-19. Sales in 2019 include \$220.3 million in sales from our acquisition of Artesyn.

In 2020, sales to the Semiconductor Equipment market increased \$208.8 million, or 51.8% to \$611.9 million from \$403.0 million in 2019. The increase in sales during 2020 is primarily due to an overall increase in demand for semiconductor equipment used in deposition and etch applications, increasing power content in semiconductor manufacturing tools, and market share gains in RF match and remote plasma sources.

Sales to the Industrial and Medical market increased \$67.7 million, or 27.5% to \$313.6 million in 2020 from \$246.0 million in 2019. Our customers in this market are primarily global and regional original equipment and device manufacturers. Inorganic growth contributed \$97.9 million in 2020, while organic sales in the Industrial and Medical market decreased \$30.3 million, or 17.9%. The increase in inorganic sales is primarily due to inclusion of full year results for Artesyn in 2020 compared to a partial year during 2019. The decrease in organic sales was primarily due to slowing macroeconomic conditions, the impact of COVID-19 on global manufacturing, and lower demand in the consumer hard coating and flat panel display markets impacting our thin film deposition markets, partially offset by growth in medical and other embedded power products.

Sales in the Data Center Computing market were \$322.5 million in 2020 and \$91.4 million in 2019. The increase in Data Center Computing market sales is primarily due to inclusion of full year results for Artesyn in 2020 compared to a partial year during 2019 and revenue increases driven by growth in hyperscale customers and market share gains.

Sales in the Telecom and Networking market were \$167.8 million in 2020 and \$48.5 million in 2019. The increase in telecom and networking sales is due to the addition of new product verticals through inorganic growth. Since early 2019, demand for telecom and networking equipment has been impacted by reduced investment in current generation networks given geopolitical issues, consolidation of network providers, and slowing global growth. Demand in the Telecom and Networking market started to recover in the second half of 2020, and over time 5G infrastructure investments and upgrades to enterprise networks are expected to drive growth in this market.

Sales to Applied Materials, Inc. and Lam Research Corp., our two largest customers, increased \$137.1 million to \$390.1 million, and 27.5% of sales, in 2020 from \$253.0 million, and 32.1% of sales in 2019. Our sales to Applied Materials, Inc. and Lam Research Corp. included sales in the Semiconductor Equipment market, as well as sales in the Industrial and Medical market for equipment used in flat panel displays.

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*Backlog*

Our backlog was \$290.7 million on December 31, 2020 as compared to \$258.9 million on December 31, 2019.

*GROSS PROFIT*

Gross profit increased \$226.2 million to \$541.9 million, or 38.3%, in 2020 as compared to \$315.7 million, or 40.0%, in 2019. The decrease in gross profit as a percent of revenue is largely related to the mix of embedded power products acquired from Artesyn, which carry a lower gross margin, offset partially by the impact of increased volume from our organic product mix, improvements in material cost, and synergies from the combined company. Gross profit in 2020 includes \$160.8 million from our acquisitions of Artesyn. Gross profit in 2019 includes \$44.8 million associated with our acquisition of Artesyn.

*OPERATING EXPENSE*

*Research and Development*

We perform research and development ("R&D") of products to develop new or emerging applications, technological advances to provide higher performance, lower cost, or other attributes that we may expect to advance our customers' products. We believe that continued development of technological applications, as well as enhancements to existing products and related software 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.

R&D expenses in 2020 increased \$42.5 million to \$144.0 million, from \$101.5 million in 2019, and decreased as a percentage of total revenue to 10.2% in 2020 from 12.9% in 2019. R&D expenses in 2020 include \$47.2 million from our acquisition of Artesyn. R&D expenses in 2019 include \$14.2 million from our acquisition of Artesyn. R&D excluding the acquisition of Artesyn increased \$9.7 million primarily due to increased payroll, consulting and material and supplies costs as we invested in new programs to maintain and increase our technological leadership and provide solutions to our customers' evolving needs.

*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, including acquisition-related activities.

Selling, general and administrative ("SG&A") expenses in 2020 increased \$46.0 million to \$188.6 million from \$142.6 million in 2019 and decreased as a percentage of total revenue to 13.3% in 2020 from 18.1% in 2019. SG&A expenses include \$57.0 million from our acquisition of Artesyn. SG&A expenses in 2019 include \$19.3 million from our acquisition of Artesyn. Organic SG&A expenses increased by \$8.3 million primarily due to increased incentive and stock-based compensation, offset partially by decrease in reserve for credit losses related to prior year credit exposure in the PRC as a result of deferred programs due in part to COVID-19, and lower headcount, professional services, and synergies related to the Artesyn integration.

*Amortization of Intangibles*

Amortization expense in 2020 increased \$8.0 million to \$20.1 million from \$12.2 million in 2019. The increase in 2020 is primarily driven by incremental amortization of intangible assets for a full year related to our acquisition of Artesyn.

### *Restructuring*

Restructuring charges relate to previously announced management plans to optimize our manufacturing footprint to lower-cost regions, improvements in operating efficiencies, and synergies related to acquisitions. For the year ended December 31, 2020, we incurred \$13.2 million in restructuring charges which relate to severance costs for the transition and exit of our facility in Shenzhen, PRC and actions associated with Artesyn synergies. Refer to *Note 14. Restructuring Costs* in Item 8. Financial Statements and Supplementary Data.

### *Other Income (Expense), net*

Other income (expense), net consists primarily of interest income and expense, foreign exchange gains and losses, gains and losses on sales of fixed assets, and other miscellaneous items. Other income (expense), net was (\$17.9) million in 2020, as compared to \$12.8 million in 2019. In May 2019 we sold our central solar inverter repair and service operation and recorded a one-time gain of \$14.8 million. Other income (expense) excluding the effect of the sale of the central inverter service and repair business was (\$2.0) million in 2019. The increase in other income (expense) is primarily due to foreign exchange losses as our exposure to foreign currencies increased with the Artesyn acquisition and higher interest expense related to a full year of interest in 2020 compared to approximately four months interest in the second half of 2019 related to the debt issued in connection with the acquisition of Artesyn.

### *Provision for Income Taxes*

In 2020, we recorded income tax expense for our continuing operations of \$23.0 million or an effective tax rate of 14.5%. Income tax expense in 2019 was \$10.7 million or an effective tax rate of 15.9%. The 2020 effective tax rate differs from the federal statutory rate of 21% primarily due to the benefit of earnings in foreign jurisdictions which are subject to lower tax rates, offset by net U.S. tax on foreign operations and withholding taxes.

### **Discontinued Operations**

In December 2015, we completed the wind down of engineering, manufacturing, and sales of our solar inverter product line (the "inverter business"). Accordingly, the results of our inverter business have been reflected as "Income (loss) from discontinued operations, net of income taxes" on our Consolidated Statements of Operations for all periods presented herein.

The effect of our sales of the remaining extended inverter warranties to our customers continues to be reflected in deferred revenue in our Consolidated Balance Sheets. Deferred revenue for extended inverter warranties and the associated costs of warranty service will be reflected in Sales and Cost of goods sold, respectively, from continuing operations in future periods in our Consolidated Statements of Operations, as the deferred revenue is earned, and the associated services are rendered. Extended warranties related to the inverter product line are no longer offered.

In May 2019, we divested our grid-tied central solar inverter repair and service operation. In conjunction with the divestiture, the initial product warranty for the previously sold grid-tied central solar inverters was transferred to the buyer. Accordingly, a gain of \$8.6 million net of tax expense of \$2.4 million was recognized in Other income (expense), net and Provision (benefit) for income taxes, respectively, in our discontinued operations for the year December 31, 2019. Operating income from discontinued operations for the year ended December 31, 2020 and 2019, also includes the impacts of changes in our estimated product warranty liability, the recovery of accounts receivable and foreign exchange gain or (losses).

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Income (loss) from discontinued operations, net of income taxes (in thousands):

	Years Ended December 31,	
	2020	2019
Sales	\$ —	\$ —
Cost of sales	—	(901)
Total operating expense	620	1,022
Operating income (loss) from discontinued operations	(620)	(121)
Other income (expense)	65	10,895
Income (loss) from discontinued operations before income taxes	(555)	10,774
Provision (benefit) for income taxes	(134)	2,294
Income (loss) from discontinued operations, net of income taxes	<u>\$ (421)</u>	<u>\$ 8,480</u>

**Non-GAAP Results**

Management uses non-GAAP operating income and non-GAAP EPS to evaluate business performance without the impacts of certain non-cash charges and other charges which are not part of our usual operations. We use these non-GAAP measures to assess performance against business objectives, make business decisions, including developing budgets and forecasting future periods. In addition, management's incentive plans include these non-GAAP measures as criteria for achievements. 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. However, we believe these non-GAAP measures provide additional information that enables readers to evaluate our business from the perspective of management. 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 non-cash related charges, such as stock-based compensation and amortization of intangible assets. In addition, they exclude discontinued operations and other non-recurring items such as acquisition-related costs and restructuring expenses, as they are not indicative of future performance. The tax effect of our non-GAAP adjustments represents the anticipated annual tax rate applied to each non-GAAP adjustment after consideration of their respective book and tax treatments and effect of adoption of the Tax Act.

**Reconciliation of Non-GAAP measure - operating expenses and operating income from continuing operations, excluding certain items (in thousands)**

	Years Ended December 31,	
	2020	2019
Gross profit from continuing operations, as reported	\$ 541,869	\$ 315,652
Adjustments to gross profit:		
Stock-based compensation	567	525
Facility expansion, relocation costs and other	4,349	3,891
Acquisition-related costs	5,381	8,290
Non-GAAP gross profit	<u>552,166</u>	<u>328,358</u>
Non-GAAP gross margin	39.0%	41.6%
Operating expenses from continuing operations, as reported	365,846	261,264
Adjustments:		
Amortization of intangible assets	(20,129)	(12,168)
Stock-based compensation	(11,705)	(6,803)
Acquisition-related costs	(10,209)	(12,002)
Facility expansion, relocation costs and other	(2,213)	(948)
Restructuring charges	(13,166)	(5,038)
Non-GAAP operating expenses	<u>308,424</u>	<u>224,305</u>
Non-GAAP operating income	<u>\$ 243,742</u>	<u>\$ 104,053</u>
Non-GAAP operating margin	17.2%	13.2%



[Table of Contents](#)**Reconciliation of Non-GAAP measure – income from continuing operations, excluding certain items (in thousands)**

	Years Ended December 31,	
	2020	2019
Income from continuing operations, less non-controlling interest, net of income taxes	\$ 135,096	\$ 56,461
Adjustments:		
Amortization of intangible assets	20,129	12,168
Acquisition-related costs	15,590	20,292
Facility expansion, relocation costs and other	6,562	4,838
Restructuring charges	13,166	5,038
Unrealized foreign currency (gain) loss	8,384	—
Acquisition-related and other costs included in Other income (expense), net	716	(29)
Central inverter services business sale	—	(13,737)
Tax effect of non-GAAP adjustments	(7,611)	3,206
Non-GAAP income, net of income taxes, excluding stock-based compensation	192,032	88,237
Stock-based compensation, net of taxes	9,418	5,627
Non-GAAP income, net of income taxes	\$ 201,450	\$ 93,864
Non-GAAP diluted earnings per share	\$ 5.23	\$ 2.44

**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*

We believe that adequate liquidity and cash generation is important to the execution of our strategic initiatives. Our ability to fund our operations, acquisitions, capital expenditures, and product development efforts may depend on our ability to generate cash from operating activities which is subject to future operating performance, as well as 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, and cash generated from current operations.

On December 31, 2020, we had \$483.0 million in cash, cash equivalents, and marketable securities. 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 December 31, 2020, we had \$179.6 million in cash, cash equivalents, and marketable securities held by foreign subsidiaries. As a result of the recent Tax Act, we have provided for U.S. tax on certain foreign unremitted earnings. Accordingly, cash related to these unremitted earnings could be repatriated to the U.S. with minimal additional taxes. Additional taxes would include foreign withholding taxes and U.S. state income taxes. During 2018 and 2019, the Company changed its policy regarding indefinite investment of unremitted earnings and recognized the tax expense associated with this change in election. Consistent with the Company's capital deployment initiatives, the Company intends to utilize foreign cash to expand our operations through internal growth and strategic acquisitions, provide for service of existing debt, and opportunistically return cash to stockholders.

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*Credit Facility*

In connection with the acquisition of Artesyn in 2019, the Company entered into a credit agreement ("Credit Agreement") that provided aggregate financing of \$500.0 million, consisting of a \$350.0 million senior unsecured term loan facility (the "Term Loan Facility") and a \$150.0 million senior unsecured revolving facility ("Revolving Facility"). Both the Term Loan Facility and Revolving Facility mature on September 10, 2024. On December 31, 2020, we had \$150.0 million in available funding under the Revolving Facility. See *Note 21. Credit Facility* in Part II, Item 8 "Financial Statements and Supplemental Data" for additional information.

*Dividends*

We have not declared or paid any cash dividends on our capital stock in our history as a public company. However, on December 15, 2020, our Board approved the initiation of a cash dividend program under which we intend to pay a regular quarterly dividend of \$0.10 per share, starting in the first quarter of 2021. On February 1, 2021, the Board declared a quarterly dividend of \$0.10 per share payable to shareholders of record as of February 22, 2021. Future dividend payments are subject to approval by the Board.

*Share Repurchase*

On December 18, 2019, the Board authorized to remove the expiration date to the Company's common stock share repurchase program and increase the authorized amount by \$25.1 million, which increased the authorization to repurchase shares up to a total of \$50.0 million. As of December 31, 2020, a total of \$38.4 million remained available for future share repurchases. During the year ended December 31, 2020, we repurchased 244 thousand shares for \$11.6 million at an average price of \$47.75 per share. There were no share repurchases during the year ended December 31, 2019.

*Cash Flows*

A summary of our cash from operating, investing, and financing activities is as follows (in thousands):

	<u>Years Ended December 31,</u>	
	<u>2020</u>	<u>2019</u>
Net cash from operating activities from continuing operations	\$ 202,159	\$ 47,899
Net cash from operating activities from discontinued operations	(923)	493
Net cash from operating activities	201,236	48,392
Net cash from investing activities from continuing operations	(42,840)	(393,847)
Net cash from financing activities from continuing operations	(29,612)	338,840
Effect of currency translation on cash	5,143	(1,496)
Increase (decrease) in cash and cash equivalents	133,927	(8,111)
Cash and cash equivalents, beginning of period	346,441	354,552
Cash and cash equivalents, end of period	<u>\$ 480,368</u>	<u>\$ 346,441</u>

*Net cash from operating activities*

Net cash from operating activities in 2020 was \$201.2 million, an increase of \$152.8 million, or 315.7% compared to \$48.4 million in 2019. The increase in net cash from operating activities was primarily due to overall increases in sales and net income.

Net cash from operating activities in the fourth quarter and full year of 2019 was impacted by net payments for acquisition related activities and assumed liabilities of approximately (\$27.0) million, partially offset by receipt of approximately \$10.0 million in cash related to the transfer of inventory and other current assets to Smart Global Holdings, Inc. in connection with the completion of the pre-acquisition carve-out of Artesyn's embedded computing business.

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### *Net cash from investing activities*

Net cash from investing activities in 2020 was (\$42.8) million, compared to (\$393.8) million in 2019. Net cash from investing activities in 2020 includes (\$36.5) million in purchases of property and equipment as we invested in our manufacturing footprint and capacity, and (\$5.5) million related to business acquisitions. Net cash from investing activities in 2019 includes (\$366.1) million associated with the acquisition of Artesyn.

### *Net cash from financing activities*

Net cash from financing activities in 2020 was (\$29.6) million, which consists primarily of (\$17.5) million in principal repayments on our Term Loan Facility and (\$11.6) million in stock repurchases. The net cash from financing activities in 2019 was \$338.8 million which included the effect of cash proceeds of \$350.0 million, net of financing costs of (\$2.5) million, from our Term Loan Facility, partially offset by (\$8.8) million in principal repayments.

### **Off-Balance Sheet Arrangements**

As of December 31, 2020, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of Regulation S-K.

### **Contractual Obligations**

The following table sets forth our future payments due under contractual obligations as of December 31, 2020 (in thousands):

	<b>Total</b>	<b>Less than 1 year</b>	<b>1-3 years</b>	<b>3-5 years</b>	<b>More than 5 years</b>
Debt obligations <sup>(1)</sup>	\$ 323,750	\$ 17,500	\$ 35,000	\$ 271,250	\$ —
Interest payments associated with debt obligations <sup>(1)</sup>	13,956	4,038	7,478	2,440	—
Operating lease obligations <sup>(2)</sup>	148,471	21,916	30,397	22,936	73,222
Purchase obligations <sup>(3)</sup>	191,765	191,205	560	—	—
Income tax obligations <sup>(4)</sup>	10,608	1,117	3,211	6,280	—
Pension funding commitment <sup>(5)</sup>	60,701	2,255	4,156	5,192	49,098
<b>Total</b>	<b>\$ 749,251</b>	<b>\$ 238,031</b>	<b>\$ 80,802</b>	<b>\$ 308,098</b>	<b>\$ 122,320</b>

- (1) Our debt obligations consist of principal and interest repayments due on our Credit Facility based on current interest rates.
- (2) Amounts represent the minimum contractual cash commitments, including the effects of fixed rental escalation clauses and deferred rent, exclusive of certain contingent rents that are not determinable for future periods.
- (3) Our purchase obligations consist of purchase commitments with various manufacturing suppliers to ensure the availability of components.
- (4) Income tax obligations are a result of the Tax Act and include a transition tax on unremitted foreign earnings and profits, of which we have elected to pay the estimated amount over an eight-year period.
- (5) Our pension funding commitments represent the amounts that we are required to pay to fund our pension plan obligations.

### **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* in Part II, Item 8 "Financial Statements and Supplementary Data."

## **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, 2020, our investments consisted primarily of certificates of deposit with maturity of less than one year. As a measurement of the sensitivity of our portfolio and if our investment portfolio balances remain constant, a hypothetical decrease of 100 basis points (1%) in interest rates would decrease annual pre-tax earnings by a nominal amount.

As of December 31, 2020, we had \$323.8 million of borrowings under our Credit Facility at a rate based on a reserve adjusted Eurodollar Rate or a Base Rate plus an applicable margin. Our quarterly commitments of interest payments are impacted by an increase or decrease of interest rate fluctuations.

In April 2020, the Company executed interest rate swap contracts with independent financial institutions to partially reduce the variability of cash flows in LIBOR indexed debt interest payments on our Term Loan Facility (under the Company's existing Credit Agreement dated as of September 10, 2019). These transactions are accounted for as cash flow hedging instruments.

The interest rate swap contracts fixed 85% of the outstanding principal balance on our term loan to a total interest rate of 1.271%. This is comprised of 0.521% average fixed rate per annum in exchange for a variable interest rate based on one-month USD-LIBOR-BBA plus the credit spread in the Company's existing Credit Agreement, which is 75 basis points at current leverage ratios.

If our \$323.8 million in borrowings had been outstanding for the full year ended December 31, 2020, a hypothetical increase of 100 basis points (1%) in interest rates would increase our commitments by \$3.2 million.

#### **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, ILS, GBP, and CNY. Our purchasing and sales activities are primarily denominated in the USD, JPY, 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.

Acquisitions are a large component of our capital deployment strategy. A significant number of acquisition target opportunities are located outside the U.S. and their value may be denominated in foreign currency. Changes in exchange rates therefore may have a material impact on their valuation in USD and may impact our view of their attractiveness.

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From time to time, we may 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, including foreign currency, which may be required for a potential foreign acquisition. Market risk arises from the potential adverse effects on the value of derivative instruments that result from a change in foreign currency exchange rates. We may enter 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.

**Effect of currency translation on cash**

The effect of foreign currency translations on cash had a \$5.1 million favorable impact for the year ended December 31, 2020 compared to a \$1.5 million unfavorable impact for the year ended December 31, 2019. Our foreign operations primarily sell product and incur expenses in the related local currency. Exchange rate 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 adversely impacted. The functional currencies of our worldwide operations include U.S. dollar ("USD") and the currencies noted in the table below. Our purchasing and sales activities are primarily denominated in USD, CNY, EUR, and JPY.

The change in these key currency rates are as follows:

From	To	Years Ended December 31,	
		2020	2019
Canadian Dollar (CAD)	USD	2.2 %	4.7 %
Swiss Franc (CHF)	USD	9.6 %	1.7 %
Chinese Yuan (CNY)	USD	6.7 %	(1.3)%
Danish Krone (DKK)	USD	9.8 %	(2.1)%
Euro (EUR)	USD	9.4 %	(2.0)%
Pound Sterling (GBP)	USD	3.5 %	3.5 %
Israeli New Shekel (ILS)	USD	7.6 %	8.5 %
India Rupee (INR)	USD	(2.4)%	(2.5)%
Japanese Yen (JPY)	USD	5.3 %	1.2 %
South Korean Won (KRW)	USD	6.3 %	(3.6)%
Philippine Peso (PHP)	USD	5.6 %	3.5 %
Singapore Dollar (SGD)	USD	1.8 %	1.3 %
New Taiwan Dollar (TWD)	USD	6.7 %	N/A %

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**ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA**

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## **Report of Independent Registered Public Accounting Firm**

To the Stockholders and the Board of Directors of Advanced Energy Industries, Inc.

### **Opinion on the Financial Statements**

We have audited the accompanying consolidated balance sheets of Advanced Energy Industries, Inc. (the Company) as of December 31, 2020 and 2019, the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the two years in the period ended December 31, 2020, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2020, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 23, 2021 expressed an unqualified opinion thereon.

### **Basis for Opinion**

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audit included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

### **Critical Audit Matter**

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on

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the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

***Accounting for income taxes***

*Description of the Matter*

As described in Notes 1 and 5 to the consolidated financial statements, the Company is subject to income taxes in the U.S. and numerous foreign jurisdictions, which affect the Company's provision for income taxes. Specifically, the Company is entitled to claim US foreign tax credits for taxes paid in international tax paying jurisdictions. The Company is also subject to taxation of global intangible low-taxed income (GILTI) earned by foreign subsidiaries. For the year ended December 31, 2020, the Company's provision for income taxes was \$23.0 million.

Auditing the Company's provision for income taxes, particularly the effects of foreign tax credits and GILTI, was especially challenging because interpretation of the relevant foreign tax regulations and the application of these interpretations to the calculation of the foreign tax credits and GILTI is highly complex.

*How We Addressed the Matter in Our Audit*

We obtained an understanding, evaluated the design and tested the operating effectiveness of the controls over the Company's accounting for income taxes. For example, we tested controls over management's identification and assessment of changes in applicable tax regulations. We also tested controls over the calculation of the foreign tax credits and GILTI, including review of the completeness and accuracy of the inputs and underlying data.

To test the Company's provision for income taxes, we performed audit procedures that included, among others, evaluating the Company's assessment of applicable tax regulations and testing the calculation of the provision, including the completeness and accuracy of the underlying data. We also evaluated the Company's significant assumptions and the completeness and accuracy of the data used to determine the amount of the foreign tax credits and GILTI, including foreign earnings and profits, and tested the accuracy of such calculations. As part of these procedures, we engaged tax subject matter professionals with knowledge of and experience with international and local income tax laws to evaluate the application of these regulations to the Company's tax positions. We have also evaluated the Company's income tax disclosures included in Note 5 of the consolidated financial statements in relation to these matters.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2019.  
Denver, Colorado  
February 23, 2021



**REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

Board of Directors and Stockholders  
Advanced Energy Industries, Inc.

**Opinion on the financial statements**

We have audited the accompanying consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows of Advanced Energy Industries Inc. (a Delaware corporation) (and subsidiaries) (the "Company") for the year ended December 31, 2018, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the results of operations and cash flows of the Company for the year ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

**Basis for opinion**

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ GRANT THORNTON LLP

We served as the Company's auditor from 2004 to 2019.

Denver, Colorado  
February 21, 2019

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

	December 31,	
	2020	2019
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 480,368	\$ 346,441
Marketable securities	2,654	2,614
Accounts and other receivable, net	235,178	246,564
Inventories	221,346	230,019
Income taxes receivable	4,804	4,245
Other current assets	35,899	36,855
Total current assets	980,249	866,738
Property and equipment, net	114,731	108,109
Operating lease right-of-use assets	103,858	105,404
Deposits and other assets	19,101	22,556
Goodwill	209,983	202,932
Intangible assets, net	168,939	184,011
Deferred income tax assets	50,801	42,656
<b>TOTAL ASSETS</b>	<b>\$ 1,647,662</b>	<b>\$ 1,532,406</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities:		
Accounts payable	\$ 125,224	\$ 170,671
Income taxes payable	11,850	9,687
Accrued payroll and employee benefits	63,487	51,545
Other accrued expenses	49,565	41,691
Customer deposits and other	12,179	10,926
Current portion of long-term debt	17,500	17,500
Current portion of operating lease liabilities	16,592	18,312
Total current liabilities	296,397	320,332
Long-term debt	304,546	321,527
Operating lease liabilities	95,993	90,538
Pension benefits	80,447	68,169
Deferred income tax liabilities	10,088	9,952
Uncertain tax positions	12,839	16,055
Long-term deferred revenue	7,352	8,011
Other long-term liabilities	24,660	20,562
Total liabilities	832,322	855,146
Commitments and contingencies (Note 19)		
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; 38,293 and 38,358 issued and outstanding on December 31, 2020 and December 31, 2019, respectively	38	38
Additional paid-in capital	105,009	104,849
Accumulated other comprehensive loss	(2,605)	(5,897)
Retained earnings	712,297	577,724
Advanced Energy stockholders' equity	814,739	676,714
Noncontrolling interest	601	546
Total stockholders' equity	815,340	677,260
<b>TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY</b>	<b>\$ 1,647,662</b>	<b>\$ 1,532,406</b>

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,		
	2020	2019	2018
Sales, net:			
Product	\$ 1,296,867	\$ 678,061	\$ 610,326
Services	118,959	110,887	108,566
Total sales, net	<u>1,415,826</u>	<u>788,948</u>	<u>718,892</u>
Cost of sales:			
Product	816,329	416,976	298,597
Services	57,628	56,320	54,688
Total cost of sales	<u>873,957</u>	<u>473,296</u>	<u>353,285</u>
Gross profit	541,869	315,652	365,607
Operating expenses:			
Research and development	143,961	101,503	76,008
Selling, general and administrative	188,590	142,555	108,033
Amortization of intangible assets	20,129	12,168	5,774
Restructuring expense	13,166	5,038	4,239
Total operating expenses	<u>365,846</u>	<u>261,264</u>	<u>194,054</u>
Operating income	176,023	54,388	171,553
Other income (expense), net	<u>(17,876)</u>	<u>12,806</u>	<u>823</u>
Income from continuing operations, before income taxes	158,147	67,194	172,376
Provision for income taxes	<u>22,996</u>	<u>10,699</u>	<u>25,227</u>
Income from continuing operations	135,151	56,495	147,149
Income (loss) from discontinued operations, net of income taxes	<u>(421)</u>	<u>8,480</u>	<u>(38)</u>
<b>Net income</b>	<u>\$ 134,730</u>	<u>\$ 64,975</u>	<u>\$ 147,111</u>
Income from continuing operations attributable to noncontrolling interest	55	34	86
<b>Net income attributable to Advanced Energy Industries, Inc.</b>	<u>\$ 134,675</u>	<u>\$ 64,941</u>	<u>\$ 147,025</u>
Basic weighted-average common shares outstanding	38,314	38,281	39,081
Diluted weighted-average common shares outstanding	38,542	38,495	39,352
<b>Earnings per share:</b>			
Continuing operations:			
Basic earnings per share	\$ 3.53	\$ 1.47	\$ 3.76
Diluted earnings per share	\$ 3.51	\$ 1.47	\$ 3.74
Discontinued operations:			
Basic earnings (loss) per share	\$ (0.01)	\$ 0.22	\$ —
Diluted earnings (loss) per share	\$ (0.01)	\$ 0.22	\$ —
<b>Net income:</b>			
<b>Basic earnings per share</b>	\$ 3.52	\$ 1.70	\$ 3.76
<b>Diluted earnings per share</b>	\$ 3.50	\$ 1.69	\$ 3.74

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

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

	<u>Years Ended December 31,</u>		
	<u>2020</u>	<u>2019</u>	<u>2018</u>
Net income	\$ 134,730	\$ 64,975	\$ 147,111
Other comprehensive income (loss), net of income taxes			
Foreign currency translation	13,095	(2,523)	(5,285)
Change in fair value of cash flow hedges	(2,139)	—	—
Minimum benefit retirement liability	(7,664)	75	(697)
Comprehensive income	<u>\$ 138,022</u>	<u>\$ 62,527</u>	<u>\$ 141,129</u>
Comprehensive income attributable to noncontrolling interest	55	34	86
Comprehensive income attributable to Advanced Energy Industries, Inc.	<u>\$ 137,967</u>	<u>\$ 62,493</u>	<u>\$ 141,043</u>

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

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

Advanced Energy Industries, Inc. Stockholders' Equity							
	Common Stock			Accumulated Other Comprehensive Income	Retained Earnings	Non- controlling Interest	Total Stockholders' Equity
	Shares	Amount	Additional Paid-in Capital				
Balances, December 31, 2017	39,604	\$ 40	\$ 184,843	\$ 2,533	\$ 333,225	\$ —	\$ 520,641
Adoption of new accounting standards	—	—	—	—	32,533	—	32,533
Non-controlling interest from acquisition	—	—	—	—	—	426	426
Stock issued from equity plans	256	—	(2,005)	—	—	—	(2,005)
Stock-based compensation	—	—	9,703	—	—	—	9,703
Stock buyback	(1,696)	(2)	(95,123)	—	—	—	(95,125)
Other comprehensive income (loss)	—	—	—	(5,982)	—	—	(5,982)
Net income	—	—	—	—	147,025	86	147,111
Balances, December 31, 2018	<u>38,164</u>	<u>\$ 38</u>	<u>\$ 97,418</u>	<u>\$ (3,449)</u>	<u>\$ 512,783</u>	<u>\$ 512</u>	<u>\$ 607,302</u>
Stock issued from equity plans	194	—	104	—	—	—	104
Stock-based compensation	—	—	7,327	—	—	—	7,327
Other comprehensive income (loss)	—	—	—	(2,448)	—	—	(2,448)
Net income	—	—	—	—	64,941	34	64,975
Balances, December 31, 2019	<u>38,358</u>	<u>\$ 38</u>	<u>\$ 104,849</u>	<u>\$ (5,897)</u>	<u>\$ 577,724</u>	<u>\$ 546</u>	<u>\$ 677,260</u>
Adoption of new accounting standards	—	—	—	—	(102)	—	(102)
Stock issued from equity plans	179	—	(482)	—	—	—	(482)
Stock-based compensation	—	—	12,272	—	—	—	12,272
Stock buyback	(244)	—	(11,630)	—	—	—	(11,630)
Other comprehensive income (loss)	—	—	—	3,292	—	—	3,292
Net income	—	—	—	—	134,675	55	134,730
Balances, December 31, 2020	<u>38,293</u>	<u>\$ 38</u>	<u>\$ 105,009</u>	<u>\$ (2,605)</u>	<u>\$ 712,297</u>	<u>\$ 601</u>	<u>\$ 815,340</u>

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,		
	2020	2019	2018
<b>CASH FLOWS FROM OPERATING ACTIVITIES:</b>			
Net income	\$ 134,730	\$ 64,975	\$ 147,111
Income (loss) from discontinued operations, net of income taxes	(421)	8,480	(38)
Income from continuing operations, net of income taxes	135,151	56,495	147,149
Adjustments to reconcile net income to net cash provided by (used in) operating activities:			
Depreciation and amortization	47,770	26,147	13,592
Stock-based compensation expense	12,272	7,327	9,703
Provision (benefit) for deferred income taxes	(622)	1,015	5,618
Gain on sale of central inverter service business	—	(14,795)	—
Discount on notes receivable	721	1,100	—
Net loss on disposal of assets	1,296	700	481
Changes in operating assets and liabilities, net of assets acquired:			
Accounts and other receivable, net	15,412	(18,879)	3,445
Inventories	11,658	3,687	(11,276)
Other assets	1,750	23,544	(2,975)
Accounts payable	(48,163)	(16,094)	(12,618)
Other liabilities and accrued expenses	24,520	(12,486)	(3,239)
Income taxes	394	(9,862)	1,547
Net cash from operating activities from continuing operations	202,159	47,899	151,427
Net cash from operating activities from discontinued operations	(923)	493	(156)
Net cash from operating activities	201,236	48,392	151,271
<b>CASH FLOWS FROM INVESTING ACTIVITIES:</b>			
Proceeds from sale of marketable securities	3	1,742	494
Acquisitions, net of cash acquired	(5,476)	(366,101)	(93,756)
Issuance of notes receivable	(1,000)	(4,300)	—
Proceeds from sale of property and equipment	116	—	—
Purchases of property and equipment	(36,483)	(25,188)	(20,330)
Net cash from investing activities from continuing operations	(42,840)	(393,847)	(113,592)
Net cash from investing activities from discontinued operations	—	—	—
Net cash from investing activities	(42,840)	(393,847)	(113,592)
<b>CASH FLOWS FROM FINANCING ACTIVITIES:</b>			
Net proceeds from long-term borrowings	—	347,486	—
Payments on long-term borrowings	(17,500)	(8,750)	—
Purchase and retirement of common stock	(11,630)	—	(95,125)
Net receipts (payments) related to stock-based award activities	(482)	104	(2,009)
Net cash from financing activities from continuing operations	(29,612)	338,840	(97,134)
Net cash from financing activities from discontinued operations	—	—	—
Net cash from financing activities	(29,612)	338,840	(97,134)
<b>EFFECT OF CURRENCY TRANSLATION ON CASH</b>	5,143	(1,496)	(1,030)
<b>NET CHANGE IN CASH AND CASH EQUIVALENTS</b>	133,927	(8,111)	(60,485)
CASH AND CASH EQUIVALENTS, beginning of period	346,441	354,552	415,037
<b>CASH AND CASH EQUIVALENTS, end of period</b>	480,368	346,441	354,552
<b>Less cash and cash equivalents from discontinued operations</b>	—	—	5,251
<b>CASH AND CASH EQUIVALENTS FROM CONTINUING OPERATIONS, end of period</b>	\$ 480,368	\$ 346,441	\$ 349,301
<b>SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:</b>			
Cash paid for interest	\$ 5,278	\$ 3,479	\$ 228
Cash paid for income taxes	21,032	18,594	16,190
Cash received for refunds of income taxes	1,569	1,762	1,135

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

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**  
**(in thousands, except per share amounts)**

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

Advanced Energy provides highly-engineered, mission-critical, precision power conversion, measurement and control solutions to our global customers. We design, manufacture, sell and support precision power products that transform, refine, and modify the raw electrical power from the utility and convert it into various types of highly-controllable usable power that is predictable, repeatable, and customizable. We operate in a single segment structure for power electronics conversion products and we operate in four vertical markets or applications to enable tracking of market trends. Our power solutions enable innovation in complex semiconductor and thin film plasma processes such as dry etch, strip, chemical and physical deposition, high and low voltage applications such as process control, analytical instrumentation, medical equipment, and in temperature-critical thermal applications such as material and chemical processing. We also supply related instrumentation products for advanced temperature measurement and control, electrostatic instrumentation products for test and measurement applications, and gas sensing and monitoring solutions for several industrial markets. Our network of service support centers provides local repair and field service capability in key regions, provide upgrades and refurbishment services, and sell used equipment to businesses that use our products. In September 2019, we acquired Artesyn Embedded Technologies, Inc.'s embedded power business ("Artesyn"), which added new power products and technologies used in networking, computing, data center (including hyperscale), industrial, and medical applications. As of December 31, 2015, we discontinued our engineering, production, and sales of our inverter product line. As such, all inverter product revenues, costs, assets, and liabilities are reported in Discontinued Operations for all periods presented herein, and we currently report as a single unit. See *Note 4. Disposed and Discontinued Operations* for more information. Ongoing inverter repair and service operations are reported as part of our continuing operations.

**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").

**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 liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. We believe at the significant estimates, assumptions, and judgments when accounting for items and matters such as allowances for expected credit loss, excess and obsolete inventory, warranty reserves, pension obligations, right-of-use assets and related operating lease liabilities, 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 certain of our foreign subsidiaries is the local currency. Assets and liabilities of these foreign subsidiaries are translated to the United States dollar at prevailing exchange rates on the balance sheet date; revenues and expenses are translated at the average exchange rates in effect for each period. Translation adjustments resulting from this process are reported as a separate component of Other Comprehensive Income.

For certain other subsidiaries, the functional currency is the U.S. Dollar. Foreign currency transactions are recorded based on exchange rates at the time such transactions arise. Subsequent changes in exchange rates for foreign currency denominated monetary assets and liabilities result in foreign currency transaction gains and losses which are



**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

reflected as unrealized (based on period end remeasurement) or realized (upon settlement of the transactions) in Other income (expense), net in our Consolidated Statements of Operations.

**Derivatives** — The Company uses derivative financial instruments to manage risks associated with foreign currency and interest rate fluctuations. Unless we meet specific hedge accounting criteria, changes in the fair value of derivative financial instruments are recognized in the Consolidated Statements of Operations within Other income (expense), net.

For derivatives designated as cash flow hedges, changes in fair value are recorded to Accumulated other comprehensive loss on the Consolidated Balance Sheets and are reclassified to earnings when the underlying forecasted transaction affects earnings. We reassess the probability of the underlying forecasted transactions occurring on a quarterly basis.

**Fair Value** — We value our financial assets and liabilities using fair value measurements.

U.S. GAAP for fair value establishes a hierarchy that prioritizes fair value measurements based on the types of inputs used for the various valuation techniques (market approach, income approach, and cost approach). The Company's financial assets and liabilities are measured using inputs from the three levels of the fair value hierarchy. The three levels of the hierarchy and the related inputs are as follows:

- Level 1 — Quoted prices (unadjusted) in active markets for identical assets or liabilities that the entity can access on the measurement date.
- Level 2 — Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.
- Level 3 — Unobservable inputs for the asset or liability.

The Company categorizes fair value measurements within the fair value hierarchy based upon the lowest level of the most significant inputs used to determine fair value. Our assessment of the significance of a particular input to the fair value measurement requires judgement and may affect the valuation of the fair value of assets and liabilities and their placement within the fair value hierarchy levels.

The carrying amounts of our cash and cash equivalents, accounts receivable, accounts payable and other current assets and liabilities approximate fair value as recorded due to the short-term nature of these instruments.

The Company's non-financial assets, which primarily consist of property and equipment, goodwill, and other intangible assets, are not required to be carried at fair value on a recurring basis and are reported at carrying value. However, on a periodic basis or whenever events or changes in circumstances indicate that their carrying value may not be fully recoverable (and at least annually for goodwill and indefinite-lived intangible assets), non-financial instruments are assessed for impairment and, if applicable, written down to and recorded at fair value. See *Note 12. Goodwill* and *Note 13. Intangible Assets* for further discussion and presentation of these amounts.

The fair value of borrowings approximates the recorded borrowing value based upon market interest rates for similar facilities. See *Note 21. Credit Facility* for additional information. The fair value of contingent consideration and other acquired assets and liabilities associated with our acquisitions are based on Level 3 inputs.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

**Cash, Cash Equivalents, and Marketable Securities** — 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, and those with stated maturities of greater than three months as marketable securities. 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."

**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.

We have established a reserve for credit losses based upon factors surrounding the credit risk of specific customers, historical trends, and other information.

**Accounts Receivable and Reserve for Credit Losses** — Accounts receivable are recorded at net realizable value. We maintain a credit approval process and we make significant judgments in connection with assessing our customers' ability to pay. 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.

Our principal customers are original equipment manufacturers ("OEM") and end user customers, which operate globally through wholly owned subsidiaries that purchase the Company's products under substantially the same credit terms, with similar historical credit risks. As a result, we assess credit risks as a single group. We evaluate collection risk and establish expected credit loss primarily through a combination of the following: an assessment of customer credit risk ratings utilizing third party credit risk data, analysis of historical aging and credit loss experience, and customer specific information.

**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 net realizable value and are presented net of reserves 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 historical usage and 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.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

**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: buildings, 20 to 40 years; machinery, equipment, furniture and fixtures and vehicles, 3 to 15 years; and computer and communication equipment, 3 years.

Amortization of leasehold improvements is calculated using the straight-line method over the lease term or the estimated useful life of the assets, whichever period is shorter. Leasehold additions and improvements are capitalized, while maintenance and repairs 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 (expense), net, in our Consolidated Statements of Operations.

**Purchase accounting** — Business combinations are accounted for using the purchase method of accounting. Under the purchase method, assets and liabilities, including intangible assets, are recorded at their fair values as of the acquisition date. Acquisition costs in excess of amounts assigned to assets acquired and liabilities assumed are recorded as goodwill. Transaction related costs associated with business combinations are expenses as incurred.

**Intangible Assets, Goodwill and Other Long-Lived Assets** — 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.

The estimation of useful lives and expected cash flows requires us to make judgments regarding future periods that are subject to some factors outside of our control. Changes in these estimates can result in 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.

**Debt Issuance Costs** — The Company has incurred debt issuance costs in connections it its debt facilities. Amounts paid directly to lenders are classified as issuance costs. Commitment fees and other costs directly associated with obtaining credit facilities are deferred financing costs which are recorded in the Consolidated Balance Sheets and amortized over the term of the facility. The Company allocates deferred debt issuance costs incurred for its current credit facility between the revolver and term loan based on their relative borrowing capacity. Deferred debt issuance costs associated with the revolving credit facility are recorded within other assets and those associated with the term loan are recorded as a reduction of the carrying value of the debt on the Consolidated Balance Sheets. All deferred debt issuance costs are amortized using the effective interest rate method to interest expense within Other income (expense), net on the Company's Consolidated Statements of Operations. See *Note 21. Credit Facility* for additional details.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

**Revenue Recognition** — We recognize revenue when we have satisfied our performance obligations which typically occurs when control of the products or services have been transferred to our customers. The transaction price is based upon the standalone selling price. In most transactions, we have no obligations to our customers after the date products are shipped, other than pursuant to warranty obligations. Revenue is recognized net of any taxes collected from customers, which are subsequently remitted to governmental authorities. Shipping and handling fees billed to customers, if any, are recognized as revenue. The related cost for shipping and handling fees is recognized in cost of sales. We expense incremental costs of obtaining contracts when the amortization period of the costs is less than one year. These costs are included in selling, general, and administrative expenses.

We maintain a worldwide support organization in ten countries, including the United States, the Peoples Republic of China ("PRC"), Japan, Korea, Taiwan, Germany, Ireland, Singapore, Israel, and Great Britain. Support services include warranty and non-warranty repair services, upgrades, and refurbishments on the products we sell. Repairs that are covered under our standard warranty do not generate revenue.

As part of our ongoing service business, we satisfy our service obligations under extended warranties and preventive maintenance contracts. Extended warranties had previously been offered on our discontinued inverter products. 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.

**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 precision power products for periods typically ranging from 12 to 24 months after shipment. We warranted our inverter products for five to ten years and provided the option to purchase additional warranty coverage for up to 20 years. The warranty expense accrued related to our standard inverter product warranties is now considered part of our discontinued operations and is recorded as such on our Consolidated Balance Sheets. See *Note 4. Disposed and Discontinued Operations* for more information. See *Note 15. Warranties* for more information on our warranties from continuing operations. We estimate the anticipated costs of repairing our products under such warranties based on the historical costs of the repairs. The assumptions we use to estimate warranty accruals are reevaluated periodically, considering 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.

**Stock-Based Compensation** — Accounting for stock-based compensation requires the measurement and recognition of compensation expense for all stock-based payment awards made to employees and directors based on estimated fair values. 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.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

**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 carryforwards. 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 several 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.

On December 22, 2017, the Tax Act was enacted into law and the new legislation contains several key tax provisions that affected us, including a one-time mandatory transition tax on accumulated foreign earnings and a reduction of the corporate income tax rate to 21%, among others. In conjunction with the Tax Act enactment, the SEC issued Staff Accounting Bulletin No. 118, *Income Tax Accounting Implications of the Tax Cuts and Jobs Act* ("SAB 118"), which allowed for the recording of provisional amounts related to the Tax Act and subsequent adjustments related to the Tax Act during an up to one-year measurement period. The Company recorded what it believed to be reasonable estimates during the SAB 118 measurement period which lasted from December 2017 to December 2018. During the quarter ended December 31, 2018, the Company finalized the accounting treatment of the income tax effects of the Tax Act. Although the SAB 118 measurement period has ended, there may be some aspects of the Tax Act that remain subject to future regulations and/or notices which may further clarify certain provisions of the Tax Act. Accordingly, the Company may need to adjust its previously recorded amounts to reflect the recognition and measurement of its tax accounting positions in accordance with Accounting Standards Codification Topic-740, "Income Taxes" which could be material.

Under U.S. GAAP, an accounting policy election can be made to either recognize deferred taxes for temporary basis differences expected to reverse as global intangible low-tax income ("GILTI") in future years, or to provide for the tax expense related to GILTI in the year the tax is incurred as a period expense only. We have elected to account for GILTI in the year the tax is incurred.

**Leases** — We lease manufacturing and office space under non-cancelable operating leases. Our lease agreements generally contain lease and non-lease components, and we combine fixed payments for non-lease components with lease payments and account for them together as a single lease component. Certain lease agreements may contain variable payments, which are expensed as incurred and not included in the right-of-use lease assets and operating lease liabilities.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

Right-of-use assets and operating lease liabilities are recognized at the present value of the future lease payments on the lease commencement date. The interest rate used to determine the present value of the future lease payments is our incremental borrowing rate, because the interest rate implicit in our leases is not readily determinable. Our incremental borrowing rate is estimated to approximate the interest rate on a collateralized basis with similar terms and payments. Our lease terms include periods under options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Right-of-use assets also include any prepaid lease payments and lease incentives. Operating lease expense is recognized on a straight-line basis over the lease term.

**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**

***New Accounting Standards Adopted***

In December 2019, the FASB issued ASU 2019-12, "*Income Taxes (Topic 740)—Simplifying the Accounting for Income Taxes*" ("ASU 2019-12"), which is meant to simplify and reduce the cost of accounting for income taxes. The FASB has stated that ASU 2019-12 is being issued in connection with its Simplification Initiative, which is meant to reduce complexity in accounting standards by improving certain areas of generally accepted accounting principles without compromising information provided to users of financial statements. We early adopted ASU 2019-12 in the first quarter of 2020. The impact of the adoption of ASU 2019-12 was not material to our consolidated financial statements.

In August 2018, the FASB issued ASU 2018-13, "*Fair Value Measurement (Topic 820)*" ("ASU 2018-13"). ASU 2018-13 modifies the disclosure requirements on fair value measurements in Topic 820, Fair Value Measurement, based on the concepts in the Concepts Statement, including the consideration of costs and benefits. ASU 2018-13 was effective for interim and annual periods ending after December 15, 2019 and shall be applied to all periods presented on a retrospective basis. We adopted ASU 2018-13 in the first quarter of 2020. The impact of the adoption of ASU 2018-13 was not material to our consolidated financial statements.

In June 2016, the FASB issued ASU 2016-13, "*Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*" ("ASU 2016-13"). ASU 2016-13 changes the methodology for measuring credit losses on financial instruments and the timing of when such losses are recorded. ASU 2016-13 was effective for interim and annual periods, beginning after December 15, 2019. We adopted ASU 2016-13 in the first quarter of 2020 through a cumulative-effect adjustment to beginning retained earnings using the modified retrospective approach. The impact of the adoption of ASU 2016-13 was not material to our consolidated financial statements.

***New Accounting Standards Issued But Not Yet Adopted***

In August 2018, the FASB issued ASU 2018-14, "*Compensation—Retirement Benefits—Defined Benefit Plans—General (Subtopic 715-20)*" ("ASU 2018-14"). ASU 2018-14 eliminates requirements for certain disclosures and requires additional disclosures under defined benefit pension plans and other post-retirement plans. ASU 2018-14 is

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

effective for interim and annual periods ending after December 15, 2020 and shall be applied to all periods presented on a retrospective basis. Early adoption is permitted. We are currently assessing and do not believe ASU 2018-14 will have a significant impact on our defined benefit plan disclosure requirements.

In March 2020, the FASB issued ASU 2020-04, "Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting" ("ASU 2020-04"). ASU 2020-04 provides optional expedients and exceptions for applying GAAP to contract modifications and hedging relationships, subject to meeting certain criteria, that reference LIBOR or another rate that is expected to be discontinued. ASU 2020-04 will be in effect through December 31, 2022. We are currently assessing the potential impact of ASU 2020-04 on our consolidated financial statements.

**NOTE 2. BUSINESS ACQUISITIONS**

*Versatile Power, Inc*

On December 31, 2020, we acquired 100% of the issued and outstanding shares of Versatile Power, Inc., which is based in Campbell, California. This acquisition added radio frequency ("RF") and programmable power supplies for medical and industrial applications to our product portfolio and further expands our presence in the medical market by adding proven technologies, deep customer relationships, expertise in medical design, and a medical-certified manufacturing center.

The components of the fair value of the total consideration transferred are as follows:

Cash paid for acquisition	\$ 4,594
Holdback	950
Contingent consideration	1,500
Total fair value of consideration transferred	7,044
Less cash acquired	(245)
Total purchase price	<u>\$ 6,799</u>

The following table summarizes the estimated preliminary values of the assets acquired and liabilities assumed:

	<b>Preliminary Fair Value December 31, 2020</b>
Current asset and liabilities, net	\$ 1,015
Property and equipment	35
Operating lease right-of-use assets	453
Intangible assets	4,000
Goodwill	1,749
Total assets acquired	7,252
Operating lease liability	453
Total liabilities assumed	453
Total fair value of net assets acquired	<u>\$ 6,799</u>

*Artesyn's Embedded Power Business*

In September 2019, we completed the acquisition of Artesyn Embedded Technologies, Inc.'s embedded power business pursuant to the Stock Purchase Agreement dated May 14, 2019 as amended (the "Acquisition Agreement").

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Pursuant to the Acquisition Agreement, we acquired 100% of Artesyn’s issued and outstanding shares for a purchase price of \$370.2 million, including the assumption of certain liabilities and the finalization of the net working capital adjustment. In connection with the Acquisition Agreement, we entered into a credit agreement that provided us with aggregate financing of \$500.0 million which was used to partially fund the Artesyn acquisition. See *Note 21. Credit Facility* for additional details related to the credit agreement.

Artesyn’s embedded power business is one of the world’s largest providers of highly engineered, application-specific power supplies for demanding applications. This acquisition diversified our product portfolio and gave us access to additional growth markets, such as data centers (including hyperscale), telecom infrastructure in next generation 5G networks, embedded industrial power applications and medical power for diagnostic and treatment applications.

The components of the fair value of the total consideration transferred are as follows:

Cash paid for acquisition	\$ 390,453
Contingent consideration	3,008
<b>Total fair value of consideration transferred</b>	<b>393,461</b>
Less cash acquired	(23,225)
<b>Total purchase price</b>	<b>\$ 370,236</b>

The following table summarizes the final fair values of the assets acquired and liabilities assumed:

	<b>Final Fair Value December 31, 2020</b>
Accounts and other receivable, net	\$ 132,466
Inventories	156,407
Property and equipment	63,321
Operating lease right-of-use assets	54,439
Goodwill	114,998
Intangible assets	124,000
Other assets	63,214
<b>Total assets acquired</b>	<b>708,845</b>
Accounts payable	152,635
Operating lease liability	54,515
Pension liability	48,315
Deferred income tax liabilities	1,695
Other liabilities	81,449
<b>Total liabilities assumed</b>	<b>338,609</b>
<b>Total fair value of net assets acquired</b>	<b>\$ 370,236</b>

A summary of the intangible assets acquired, amortization method and estimated useful lives are as follows:

		<b>Amortization Method</b>	<b>Useful Life</b>
Technology	\$ 28,000	Straight-line	5
Customer relationships	75,000	Straight-line	15
Tradename	21,000	Straight-line	10
<b>Total</b>	<b>\$ 124,000</b>		



**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
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Goodwill and intangible assets are recorded in the functional currency of the entity and are subject to changes due to translation on each balance sheet date. The goodwill represents expected operating synergies from combining operations with the acquired company and the estimated value associated with the enhancements to our comprehensive product lines and access to new markets. Advanced Energy settled the adjustment for the net working capital and finalized the fair value for the assets acquired and liabilities assumed related to the Artesyn acquisition. Accordingly, the purchase price allocation presented above is final.

*Pro forma results for Advanced Energy Inc. giving effect to the Artesyn Transaction*

The following unaudited pro forma financial information presents the combined results of operations of Advanced Energy and Artesyn as if the acquisition had been completed on January 1, 2019. The unaudited 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 acquisitions had taken place at the beginning of the year prior to the acquisition dates, nor are they indicative of future results.

The unaudited pro forma financial information for the year ended December 31, 2019 combines Advanced Energy's results with the pre-acquisition results of Artesyn for that period.

	Year Ended December 31, 2019	
	As Reported	Pro Forma
Total sales	\$ 788,948	\$ 1,202,790
Net income attributable to Advanced Energy Industries, Inc.	\$ 64,941	\$ 83,104
Earnings per share:		
Basic earnings per share	\$ 1.70	\$ 2.17
Diluted earnings per share	\$ 1.69	\$ 2.16

The unaudited pro forma results for all periods presented include adjustments made to account for certain costs and transactions that would have been incurred had the acquisitions been completed at the beginning of the year prior to the year of acquisition. These include adjustments to amortization charges for acquired intangible assets, interest and financing expenses, transaction costs, amortization of purchased gross profit and the alignment of various accounting policies. These adjustments are net of any applicable tax impact and were included to arrive at the pro forma results above.

Artesyn's operating results have been included in the Advanced Energy's operating results for the periods subsequent to the completion of the acquisition on September 10, 2019. During the year ended December 31, 2019, Artesyn contributed total sales of \$220.3 million and net income of \$7.1 million, including interest and other expense associated with the financing of the transaction.

**NOTE 3. REVENUE**

**Revenue Recognition**

We recognize revenue when we have satisfied our performance obligations which typically occurs when control of the products or services has been transferred to our customers. The transaction price is based upon the standalone selling price. In most transactions, we have no obligations to our customers after the date products are shipped, other than pursuant to warranty obligations. Shipping and handling fees billed to customers, if any, are recognized as revenue. The related shipping and handling costs are recognized in cost of sales. Support services include warranty and non-warranty repair services, upgrades, and refurbishments on the products we sell. Repairs that are covered under our standard warranty do not generate revenue.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
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**Nature of goods and services**

***Products***

Advanced Energy provides highly engineered, mission-critical, precision power conversion, measurement, and control solutions to our global customers. We design, manufacture, sell and support precision power products that transform electrical power into various usable forms. Our power conversion products refine, modify, and control the raw electrical power from a utility and convert it into power that is predictable, repeatable, and customizable.

Our products enable thin film manufacturing processes such as plasma enhanced chemical and physical deposition and etch for various semiconductor and industrial products, industrial thermal applications for material and chemical processes, and specialty power for critical industrial technology applications. We also supply thermal instrumentation products for advanced temperature measurement and control in these markets. As a result of the Artesyn acquisition, we now sell precision power conversion products into the Telecom and Networking, Data Center Computing (including hyperscale), and Industrial and Medical markets.

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 our products. We principally serve OEMs and end customers in the semiconductor, flat panel display, high voltage, solar panel, Telecom and Networking, Data Center Computing, Industrial and Medical markets. Our advanced power products are used in diverse markets, applications, and processes including the manufacture of capital equipment for semiconductor device manufacturing, thin film applications for thin film renewables and architectural glass, and for other thin film applications including flat panel displays, and industrial coatings. Our embedded power products are used in a wide range of applications, such as 5G, data center (including hyperscale) and other industrial and medical applications.

***Services***

Our services group offers warranty and after-market 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 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 in ten countries, including the United States, the PRC, Japan, Korea, Taiwan, Germany, Ireland, Singapore, Israel, and Great Britain. Support services include warranty and non-warranty repair services, upgrades, and refurbishments on the products we sell.

As part of our ongoing service business, we satisfy our service obligations under preventative maintenance contracts and extended warranties which had previously been offered on our discontinued inverter products. Any up-front fees received for extended warranties or maintenance plans are deferred. Revenue under these arrangements is recognized ratably over the underlying terms as we do not have historical information which would allow us to project the estimated service usage pattern at this time.

In May 2019, we sold our grid-tied central inverter repair and service operation to a third party. In connection with this sale, approximately \$22.0 million of deferred revenue related to extended warranties and service contracts, were transferred to the buyer. See *Note 4. Disposed and Discontinued Operations* for additional information in relation to this sale. We have deferred revenue related to our extended warranties and service contract totaling \$8.7 million as of December 31, 2020 and \$9.2 million as of December 31, 2019. We are expected to recognize this revenue ratably through year 2031.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
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**Disaggregation of Revenue**

The following table presents our sales by product line, inclusive of both products and services, which includes certain reclassification to prior comparative periods to conform to our current year presentation:

	Years Ended December 31,		
	2020	2019	2018
Semiconductor Equipment	\$ 611,864	\$ 403,018	\$ 533,770
Industrial and Medical	313,646	245,992	185,122
Data Center Computing	322,539	91,438	—
Telecom and Networking	167,777	48,500	—
<b>Total</b>	<b>\$ 1,415,826</b>	<b>\$ 788,948</b>	<b>\$ 718,892</b>

The following table presents our sales by geographic region:

	Years Ended December 31,					
	2020		2019		2018	
North America	\$ 687,814	48.6 %	\$ 373,634	47.4 %	\$ 372,834	51.8 %
Asia	606,893	42.9	295,155	37.4	250,574	34.9
Europe	117,990	8.3	119,427	15.1	94,793	13.2
Other	3,129	0.2	732	0.1	691	0.1
<b>Total</b>	<b>\$ 1,415,826</b>	<b>100.0 %</b>	<b>\$ 788,948</b>	<b>100.0 %</b>	<b>\$ 718,892</b>	<b>100.0 %</b>

The following table presents our net sales by extended warranty and service contracts recognized over time and our product and service revenue recognized at a point in time:

	Years Ended December 31,		
	2020	2019	2018
Product and service revenue recognized at point in time	\$ 1,414,982	\$ 786,918	\$ 715,055
Extended warranty and service contracts recognized over time	844	2,030	3,837
<b>Total</b>	<b>\$ 1,415,826</b>	<b>\$ 788,948</b>	<b>\$ 718,892</b>

**NOTE 4. DISPOSED AND DISCONTINUED OPERATIONS**

***Disposed Operations***

In May 2019, we sold our grid-tied central solar inverter services business to Bold Renewables Holdings, LLC ("Bold") for \$1.00 dollar and the assumption by Bold of our initial product warranty and our extended warranty service obligations. In connection with this transaction, we entered into a Loan and Security Agreement with Bold (the "Loan and Security Agreement"). Under the Loan and Security Agreement, we loaned Bold an aggregate \$5.3 million between May 2019 and the first quarter of 2020. Under the terms of the Loan and Security Agreement and for the next ten years, we have made an additional \$2.75 million available for borrowing, subject to the satisfaction of certain operating and liquidity covenants by Bold. The borrowings under the Loan and Security Agreement bear interest at 0% for the first seven years and 5% thereafter. Additionally, the Loan and Security Agreement provides for early payment discounts of 50% during the first three years, 45% for years four and five and 40% thereafter up to 30 days prior to the maturity of the Loan and Security Agreement. A discount of \$2.3 million has been recognized as a reduction to our gain recognized on the sale. As a result of the transaction, we reduced our discontinued operations liabilities by approximately \$10.9 million that were related to initial product warranty and reduced our other liabilities by approximately \$22.0 million that were related to extended warranty service obligations as well as reduced other assets and liabilities associated with the continuing grid-tied central solar inverter service and repair business. Accordingly, a \$14.8 million non-cash gain was

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
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recognized in Other income (expense) from continuing operations and an \$8.6 million non-cash gain, net of tax expense of \$2.4 million, was recognized in "Income (loss) from discontinued operations."

***Discontinued Operations***

In December 2015, we completed the wind down of engineering, manufacturing, and sales of our solar inverter product line (the "inverter business"). Accordingly, the results of our inverter business have been reflected as "Income (loss) from discontinued operations, net of income taxes" on our Consolidated Statements of Operations for all periods presented herein.

The effect of our sales of extended inverter warranties to our customers continues to be reflected in deferred revenue in our Consolidated Balance Sheets. Deferred revenue for extended inverter warranties and the associated costs of warranty service will be reflected in Sales and Cost of goods sold, respectively, from continuing operations in future periods in our Consolidated Statement of Operations, as the deferred revenue, is earned and the associated services are rendered. Extended warranties related to the inverter product line are no longer offered.

The significant items included in "Income (loss) from discontinued operations, net of income taxes" are as follows:

	<u>Years Ended December 31,</u>	
	<u>2020</u>	<u>2019</u>
Sales	\$ —	\$ —
Cost of sales	—	(901)
Total operating expense	620	1,022
Operating income (loss) from discontinued operations	(620)	(121)
Other income (expense)	65	10,895
Income (loss) from discontinued operations before income taxes	(555)	10,774
Provision (benefit) for income taxes	(134)	2,294
Income (loss) from discontinued operations, net of income taxes	<u>\$ (421)</u>	<u>\$ 8,480</u>

Assets and Liabilities of discontinued operations are not significant.

**NOTE 5. INCOME TAXES**

The geographic distribution of pretax income from continuing operations is as follows:

	<u>Years Ended December 31,</u>		
	<u>2020</u>	<u>2019</u>	<u>2018</u>
Domestic	\$ 17,526	\$ (20,597)	\$ 22,325
Foreign	140,621	87,791	150,051
	<u>\$ 158,147</u>	<u>\$ 67,194</u>	<u>\$ 172,376</u>

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
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The provision for income taxes from continuing operations is summarized as follows:

	<b>Years Ended December 31,</b>		
	<b>2020</b>	<b>2019</b>	<b>2018</b>
<b>Current:</b>			
Federal	\$ 5,475	\$ (9,627)	\$ 1,423
State	1,927	882	12
Foreign	16,216	18,429	13,772
Total current provision	<u>\$ 23,618</u>	<u>\$ 9,684</u>	<u>\$ 15,207</u>
<b>Deferred:</b>			
Federal	\$ (312)	\$ 3,822	\$ 4,021
State	1,270	(178)	2,363
Foreign	(1,580)	(2,629)	3,636
Total deferred provision (benefit)	<u>(622)</u>	<u>1,015</u>	<u>10,020</u>
<b>Total provision for income taxes</b>	<u><u>\$ 22,996</u></u>	<u><u>\$ 10,699</u></u>	<u><u>\$ 25,227</u></u>

The Company's effective tax rates differ from the U.S. federal statutory rate of 21% for the three years ended December 31, 2020 primarily due to the benefit of earnings in foreign jurisdictions which are subject to lower tax rates, offset by net U.S. tax on foreign operations and withholding taxes. The principal causes of the difference between the federal statutory rate and the effective income tax rate for each of the years below are as follows:

	<b>Years Ended December 31,</b>		
	<b>2020</b>	<b>2019</b>	<b>2018</b>
Income taxes per federal statutory rate	\$ 33,211	\$ 14,111	\$ 36,199
State income taxes, net of federal deduction	2,793	10	2,372
U.S. tax on foreign operations	9,666	5,805	6,943
Foreign derived intangible income deduction	(4,070)	–	(261)
Tax effect of foreign operations	(20,527)	(13,086)	(19,162)
Uncertain tax position	(3,215)	(4,487)	(3,088)
Unremitted earnings	(567)	1,624	2,564
Tax credits	(2,292)	(2,088)	(1,484)
Change in valuation allowance	(1,175)	7,222	(1,306)
Withholding taxes	4,265	6,500	1,371
Other permanent items, net	4,907	(4,912)	1,079
<b>Total provision for income taxes</b>	<u><u>\$ 22,996</u></u>	<u><u>\$ 10,699</u></u>	<u><u>\$ 25,227</u></u>

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
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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:

	<b>Years Ended December 31,</b>	
	<b>2020</b>	<b>2019</b>
<b>Deferred tax assets</b>		
Stock-based compensation	\$ 2,130	\$ 1,757
Net operating loss and tax credit carryforwards	57,590	86,879
Interest expense limitation	7,344	7,620
Pension obligation	14,297	13,473
Excess and obsolete inventory	3,722	3,217
Accrued restructuring	2,468	—
Deferred revenue	3,048	3,305
Employee bonuses and commissions	5,388	2,537
Depreciation and amortization	28,786	29,015
Operating lease liabilities	20,267	23,451
Other	8,925	9,685
Deferred tax assets	<u>153,965</u>	<u>180,939</u>
Less: Valuation allowance	(46,702)	(76,206)
Net deferred tax assets	<u>107,263</u>	<u>104,733</u>
<b>Deferred tax liabilities</b>		
Depreciation and amortization	40,266	41,549
Unremitted earnings	4,173	4,740
Operating lease right-of-use assets	18,731	22,774
Other	3,380	2,966
Deferred tax liabilities	<u>66,550</u>	<u>72,029</u>
Net deferred tax assets	<u>\$ 40,713</u>	<u>\$ 32,704</u>

Of the \$40.7 million and \$32.7 million net deferred tax asset on December 31, 2020 and 2019, respectively, \$50.8 million and \$42.7 million is reflected as a net non-current deferred tax asset and \$10.1 million and \$10.0 million is reflected as a long-term liability on December 31, 2020 and 2019, respectively.

As of December 31, 2020, the Company has recorded a valuation allowance on \$4.2 million of its U.S. domestic deferred tax assets, largely attributable to state carryforward attributes that are expected to expire before sufficient income can be realized in those jurisdictions. The remaining valuation allowance on deferred tax assets approximates \$42.5 million and is associated primarily with operations in Germany, Hong Kong, and Switzerland. As of December 31, 2020, there is not sufficient positive evidence to conclude that such deferred tax assets, presently reduced by a valuation allowance, will be recognized. The December 31, 2020 valuation allowance balance reflects a decrease of \$29.5 million during the year. The change in the valuation allowance is primarily due to the dissolution of an Austrian entity, refinements in the determination of Artesyn attributes acquired in 2019, and the netting of Section 382 limited attributes that will never be available for utilization with their valuation allowance, partially offset by increases due to foreign exchange movements.

As of December 31, 2020, the Company had U.S., foreign and state tax loss carryforwards of \$70.3 million, \$129.6 million, and \$117.7 million, respectively. Additionally, the Company had \$0.2 million and \$30.5 million of capital loss and interest expense limitation carryforwards, respectively. Finally, the Company had U.S. and state tax credit carryforwards of \$1.3 million and \$1.7 million, respectively. The U.S. and state net operating losses, tax credits, and interest expense limitation are subject to various utilization limitations under Section 382 of the Internal Revenue Code and applicable state laws. These Section 382 limited attributes have various expiration periods through 2036 or, in

**ADVANCED ENERGY INDUSTRIES, INC.**  
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the case of the interest expense limitation amount, no expiration period. Much of the foreign jurisdiction, and \$8.0 million of the federal net operating loss carry forwards, have no expiration period.

We operate under a tax holiday in Singapore and China. These tax holidays are in effect through June 30, 2027 and December 31, 2022, respectively. The tax holiday is conditional upon our meeting certain employment and investment thresholds. The impact of the tax holidays decreased foreign taxes by \$13.0 million and \$4.0 million for 2020 and 2019, respectively. The benefit of the tax holiday on earnings per diluted share was \$0.34 and \$0.12 for 2020 and 2019, respectively.

As of December 31, 2020, we have undistributed earnings of certain foreign subsidiaries of approximately \$58.9 million that we have indefinitely invested, and on which we have not recognized deferred taxes. Estimating the amount of potential tax is not practicable because of the complexity and variety of assumptions necessary to compute the tax.

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:

	Years Ended December 31,		
	2020	2019	2018
Balance at beginning of period	\$ 13,009	\$ 13,162	\$ 15,990
Additions based on tax positions taken during a prior period	219	484	94
Additions based on tax positions taken during a prior period – acquisitions	—	4,479	757
Additions based on tax positions taken during the current period	—	—	—
Reductions based on tax positions taken during a prior period	—	(4,295)	(153)
Reductions related to a lapse of applicable statute of limitations	(3,555)	(821)	(3,144)
Reductions related to a settlement with taxing authorities	—	—	(382)
Balance at end of period	<u>\$ 9,673</u>	<u>\$ 13,009</u>	<u>\$ 13,162</u>

The unrecognized tax benefits of \$9.7 million, if recognized, will impact the Company's effective tax rate. 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 \$3.2 million and \$3.0 million of accrued interest and penalties on December 31, 2020 and 2019, respectively. We expect the total amount of tax contingencies will decrease by approximately \$3.5 million in 2021 based on statute of limitation expiration.

With few exceptions, the Company is no longer subject to federal, state, or foreign income tax examinations by tax authorities for years before 2017.

**NOTE 6. 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 our diluted EPS is similar to the computation of our basic EPS except that 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 our outstanding stock options and restricted stock units had been converted to common shares, and if such assumed conversion is dilutive.

**ADVANCED ENERGY INDUSTRIES, INC.**  
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The following is a reconciliation of the weighted-average shares outstanding used in the calculation of basic and diluted earnings per share:

	<b>Years Ended December 31,</b>		
	<b>2020</b>	<b>2019</b>	<b>2018</b>
Income from continuing operations	\$ 135,151	\$ 56,495	\$ 147,149
Income from continuing operations attributable to noncontrolling interest	55	34	86
Income from continuing operations attributable to Advanced Energy Industries, Inc.	<u>\$ 135,096</u>	<u>\$ 56,461</u>	<u>\$ 147,063</u>
Basic weighted-average common shares outstanding	38,314	38,281	39,081
Assumed exercise of dilutive stock options and restricted stock units	228	214	271
Diluted weighted-average common shares outstanding	<u>38,542</u>	<u>38,495</u>	<u>39,352</u>
Continuing operations:			
Basic earnings per share	\$ 3.53	\$ 1.47	\$ 3.76
Diluted earnings per share	\$ 3.51	\$ 1.47	\$ 3.74

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

	<b>Years Ended December 31,</b>		
	<b>2020</b>	<b>2019</b>	<b>2018</b>
Restricted stock units	—	—	2

**Share Repurchase**

In September 2015, our Board of Directors authorized a program to repurchase up to \$150.0 million of our common stock over a thirty-month period. In November 2017, our Board of Directors approved an extension of the share repurchase program to December 2019 from its original maturity of March 2018. In May 2018, our Board of Directors approved a \$50 million increase in its authorization to repurchase shares of our common stock under this same program.

On December 18, 2019, our Board of Directors authorized the removal of the expiration date to the Company's share repurchase program and increased the authorized amount by \$25.1 million. As of December 31, 2020, the Company is authorized for the future repurchase of shares of our common stock of up to a total of \$38.4 million.

In order to execute the repurchase of shares of our common stock, the Company periodically enters into stock repurchase agreements. The Company has repurchased the following shares of common stock:

	<b>Years Ended December 31,</b>		
	<b>2020</b>	<b>2019</b>	<b>2018</b>
<b>(in thousands, except per share amounts)</b>			
Amount paid to repurchase shares	\$ 11,630	\$ —	\$ 95,125
Number of shares repurchased	244	—	1,696
Average repurchase price per share	\$ 47.75	\$ —	\$ 56.07

There were no shares repurchased from related parties. All shares repurchased were recognized as a reduction to Additional paid-in capital. Repurchased shares were retired and assumed the status of authorized and unissued shares.



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**NOTE 7. FAIR VALUE MEASUREMENTS**

The following tables present information about the Company’s assets and liabilities measured at fair value on a recurring basis.

Description	Balance Sheet Classification	December 31, 2020			Total Fair Value
		Level 1	Level 2	Level 3	
<b>Assets:</b>					
Certificates of deposit	Marketable securities	\$ —	\$ 2,654	\$ —	\$ 2,654
Total assets measured at fair value on a recurring basis		<u>\$ —</u>	<u>\$ 2,654</u>	<u>\$ —</u>	<u>\$ 2,654</u>
<b>Liabilities:</b>					
Contingent consideration	Other current liabilities	\$ —	\$ —	\$ 2,009	\$ 2,009
Contingent consideration	Other long-term liabilities	—	—	2,940	2,940
Interest rate swaps	Other long-term liabilities	—	2,811	—	2,811
Total liabilities measured at fair value on a recurring basis		<u>\$ —</u>	<u>\$ 2,811</u>	<u>\$ 4,949</u>	<u>\$ 7,760</u>

Description	Balance Sheet Classification	December 31, 2019			Total Fair Value
		Level 1	Level 2	Level 3	
<b>Assets:</b>					
Certificates of deposit	Marketable securities	\$ —	\$ 2,614	\$ —	\$ 2,614
Total assets measured at fair value on a recurring basis		<u>\$ —</u>	<u>\$ 2,614</u>	<u>\$ —</u>	<u>\$ 2,614</u>
<b>Liabilities:</b>					
Contingent consideration	Other long-term liabilities	\$ —	\$ —	\$ 1,377	\$ 1,377
Total liabilities measured at fair value on a recurring basis		<u>\$ —</u>	<u>\$ —</u>	<u>\$ 1,377</u>	<u>\$ 1,377</u>

We determine the fair value of interest rate swaps by estimating the net present value of the expected cash flows based on market rates and associated yield curves, adjusted for non-performance credit risk, as applicable. See *Note 8. Derivative Financial Instruments* for additional information. The fair value of contingent consideration is determined by estimating the net present value of the expected cash flows based on the probability of expected payment.

For all periods presented, there were no transfers into or out of Level 3.

**NOTE 8. DERIVATIVE FINANCIAL INSTRUMENTS**

We are impacted by changes in foreign currency exchange rates. We may manage these risks through the use of derivative financial instruments, primarily forward contracts with banks. These forward contracts manage the exchange rate risk associated with assets and liabilities denominated in nonfunctional currencies. These derivative instruments are not designated as hedges; however, they do offset the fluctuations of our assets and liabilities due to foreign exchange rate changes. These forward contracts are typically for one-month periods. As of December 31, 2020, and 2019, we did not have any currency exchange rate contracts outstanding.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
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Gains and losses related to foreign currency exchange contracts were offset by corresponding gains and losses on the revaluation of the underlying assets and liabilities. Both are included as a component of Other income (expense), net, in our Consolidated Statements of Operations.

In April 2020, the Company executed interest rate swap contracts with independent financial institutions to partially reduce the variability of cash flows in LIBOR indexed debt interest payments on our Term Loan Facility (under the Company's existing Credit Agreement dated as of September 10, 2019). These transactions are accounted for as cash flow hedging instruments.

The interest rate swap contracts fixed 85% of the outstanding principal balance on our term loan to a total interest rate of 1.271%. This is comprised of 0.521% average fixed rate per annum in exchange for a variable interest rate based on one-month USD-LIBOR-BBA plus the credit spread in the Company's existing Credit Agreement, which is 75 basis points at current leverage ratios.

The following table summarizes the notional amount of the Company's qualified hedging instruments:

	December 31, 2020	December 31, 2019
Interest rate swap contracts	\$ 273,219	\$ —

On December 31, 2020, Accumulated other comprehensive loss on the Consolidated Balance Sheets includes \$2.1 million, net of tax, related to changes in fair value on the interest rate swap contracts.

See *Note 7. Fair Value Measurements* for information regarding fair value of derivative instruments.

As a result of the use of derivative financial instruments, the Company is exposed to the risk that counterparties to derivative contracts may fail to meet their contractual obligations. The Company manages counterparty credit risk in derivative contracts by reviewing counterparty creditworthiness on a regular basis and limiting exposure to any single counterparty.

**NOTE 9. ACCOUNTS AND OTHER RECEIVABLE, NET**

Accounts and other receivable are recorded at net realizable value. Components of accounts and other receivable, net of reserves, are as follows:

	December 31, 2020	December 31, 2019
Amounts billed, net	\$ 213,560	\$ 227,528
Unbilled receivables	21,618	19,036
Total receivables, net	<u>\$ 235,178</u>	<u>\$ 246,564</u>

Amounts billed, net consist of amounts that have been invoiced to our customers in accordance with terms and conditions and are shown net of an allowance for credit losses. These receivables are all short term in nature and do not include any financing components.

Unbilled receivables consist of amounts where we have satisfied our contractual obligations related to inventory stocking contracts with customers. Such amounts typically become billable to the customer upon their consumption of the inventory managed under the stocking contracts. We anticipate that substantially all unbilled receivables will be invoiced and collected over the next twelve months. These contracts do not include any financing components.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
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The following table summarizes the changes in expected credit losses:

Balance as of December 31, 2019	\$ 7,745
Additions	368
Deductions - write-offs, net of recoveries	(511)
Balance as of December 31, 2020	<u>\$ 7,602</u>

**NOTE 10. INVENTORIES**

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

	December 31,	
	2020	2019
Parts and raw materials	\$ 141,337	\$ 134,816
Work in process	13,702	10,269
Finished goods	66,307	84,934
Total	<u>\$ 221,346</u>	<u>\$ 230,019</u>

**NOTE 11. PROPERTY AND EQUIPMENT, NET**

Property and equipment, net is comprised of the following:

	December 31,	
	2020	2019
Buildings and land	\$ 1,776	\$ 1,693
Machinery and equipment	115,404	108,945
Computer and communication equipment	26,623	29,106
Furniture and fixtures	4,352	4,119
Vehicles	262	262
Leasehold improvements	42,984	33,041
Construction in process	3,693	9,089
	195,094	186,255
Less: Accumulated depreciation	(80,363)	(78,146)
Property and equipment, net	<u>\$ 114,731</u>	<u>\$ 108,109</u>

The following table summarizes depreciation expense. All depreciation expense is recorded in income from continuing operations.

	Years Ended December 31,		
	2020	2019	2018
Depreciation expense	\$ 27,641	\$ 13,979	\$ 7,818

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

**NOTE 12. GOODWILL**

The following table summarizes the changes in goodwill:

Balance as of December 31, 2018	\$ 101,900
Measurement period adjustments to purchase price allocation	(41,996)
Additions from acquisition	143,262
Foreign currency translation	(234)
Balance as of December 31, 2019	\$ 202,932
Measurement period adjustments to purchase price allocation	1,957
Additions from acquisition	1,749
Foreign currency translation	3,345
Balance as of December 31, 2020	<u>\$ 209,983</u>

Additions and adjustments are the result of finalizing the Artesyn acquisition and other allocations. Refer to *Note 2. Business Acquisitions.*

**NOTE 13. INTANGIBLE ASSETS**

Intangible assets consisted of the following:

	<u>Gross Carrying Amount</u>	<u>Accumulated Amortization</u>	<u>Net Carrying Amount</u>
<b>December 31, 2020</b>			
Technology	\$ 85,075	\$ (24,999)	\$ 60,076
Customer relationships	114,171	(26,880)	87,291
Trademarks and other	27,021	(5,449)	21,572
Total	<u>\$ 226,267</u>	<u>\$ (57,328)</u>	<u>\$ 168,939</u>
<b>December 31, 2019</b>			
Technology	\$ 83,368	\$ (14,250)	\$ 69,118
Customer relationships	108,995	(18,197)	90,798
Trademarks and other	26,888	(2,793)	24,095
Total	<u>\$ 219,251</u>	<u>\$ (35,240)</u>	<u>\$ 184,011</u>

At December 31, 2020, the weighted average remaining useful life of intangibles subject to amortization was approximately 10.5 years.

Amortization expense related to intangible assets is as follows:

	<u>Years Ended December 31,</u>		
	<u>2020</u>	<u>2019</u>	<u>2018</u>
Amortization expense	\$ 20,129	\$ 12,168	\$ 5,774

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
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Estimated amortization expense related to intangibles is as follows:

<u>Year Ending December 31,</u>	
2021	\$ 20,565
2022	20,276
2023	20,257
2024	17,334
2025	12,822
Thereafter	77,685
<b>Total</b>	<b>\$ 168,939</b>

**NOTE 14. RESTRUCTURING COSTS**

During 2018, we committed to a restructuring plan to optimize our manufacturing footprint and to improve our operating efficiencies and synergies related to our recent acquisitions. For the year ended December 31, 2020, we incurred severance costs primarily related to the transition and exit of our facility in Shenzhen, PRC, and actions associated with synergies related to the Artesyn acquisition.

The table below summarizes the restructuring charges:

	<u>Years Ended December 31,</u>			<u>Cumulative Cost</u>
	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>Through December 31,</u>
				<u>2020</u>
Severance and related charges	\$ 9,632	\$ 3,042	\$ 4,239	\$ 16,913
Facility relocation and closure charges	3,534	1,996	—	5,530
<b>Total restructuring charges</b>	<b>\$ 13,166</b>	<b>\$ 5,038</b>	<b>\$ 4,239</b>	<b>\$ 22,443</b>

The following table summarizes our restructuring liabilities on December 31, 2020:

	<u>Balance at</u>	<u>Cost</u>	<u>Cost Paid</u>	<u>Effect of</u>	<u>Balance at</u>
	<u>December 31,</u>	<u>Incurred</u>	<u>or</u>	<u>Changes in</u>	<u>December 31,</u>
	<u>2019</u>	<u>and</u>	<u>Otherwise</u>	<u>Exchange</u>	<u>2020</u>
		<u>Charged to</u>	<u>Settled</u>	<u>Rates</u>	
		<u>Expense</u>			
<b>Total restructuring liabilities</b>	<b>\$ 2,172</b>	<b>\$ 13,166</b>	<b>\$ (4,714)</b>	<b>\$ 17</b>	<b>\$ 10,641</b>

As of December 31, 2020, and 2019, the accrued restructuring liabilities related primarily to severance and related charges.

**NOTE 15. WARRANTIES**

Provisions of our sales agreements include customary product warranties, ranging from 12 months to 24 months after shipment. The estimated cost of our warranty obligation is recorded when revenue is recognized and is based upon our historical experience by product, and configuration.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

Our estimated warranty obligation is included in Other accrued expenses in our Consolidated Balance Sheets. Changes in our product warranty obligation are as follows:

	<b>Years Ended December 31,</b>		
	<b>2020</b>	<b>2019</b>	<b>2018</b>
Balances at beginning of period	\$ 6,413	\$ 2,084	\$ 2,312
Warranty acquired in business combinations	15	4,818	305
Increases to accruals	2,996	1,752	1,606
Warranty expenditures	(4,688)	(2,249)	(2,127)
Effect of changes in exchange rates	44	8	(12)
Balances at end of period	<u>\$ 4,780</u>	<u>\$ 6,413</u>	<u>\$ 2,084</u>

**NOTE 16. LEASES**

The Company leases manufacturing and office space under non-cancelable operating leases. Some of these leases contain provisions for landlord funded leasehold improvements, which are recorded as a reduction to right-of-use ("ROU") assets and the related operating lease liabilities. For leases containing an option to renew, we regularly evaluate the renewal options and when they are reasonably certain of exercise, we include the renewal period in our lease terms, along with the ROU assets and operating lease liabilities. In many cases, we have lease terms that are less than one year, and therefore, we have elected the practical expedient to exclude these short-term leases from our ROU assets and operating lease liabilities. New leases are negotiated and executed to meet business objectives on an on-going basis.

Our leases do not provide an implicit rate. Accordingly, we use our incremental borrowing rate based on the information available at the lease commencement date in determining the present value of the lease payments. We have a centrally managed treasury function; therefore, we apply a portfolio approach for determining the incremental borrowing rate applicable to the lease term.

Components of operating lease cost were as follows:

	<b>Year Ended December 31,</b>	
	<b>2020</b>	<b>2019</b>
Operating lease cost	\$ 22,920	\$ 11,052
Short-term and variable lease cost	1,895	4,726
Total operating lease cost	<u>\$ 24,815</u>	<u>\$ 15,778</u>

Maturities of our operating lease liabilities on December 31, 2020 are as follows:

<b>Year Ending December 31,</b>	
2021	\$ 21,126
2022	16,177
2023	12,979
2024	11,593
2025	10,133
Thereafter	74,635
Total lease payments	<u>146,643</u>
Less: Interest	(34,058)
Present value of lease liabilities	<u>\$ 112,585</u>

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

We have one lease agreement that commences in March 2021 with total payments of \$3.5 million over five years. Other information related to leases, including supplemental cash flow information, consists of:

	<u>Year Ended December 31,</u>	
	<u>2020</u>	<u>2019</u>
Weighted average remaining lease term (in years)	10.65	7.50
Weighted average discount rate	4.63 %	4.05 %
Cash paid for operating lease liabilities	\$ 21,877	\$ 12,101
Right-of-use assets obtained in exchange for operating lease liabilities <sup>(1)</sup>	\$ 33,741	\$ 84,551

(1) Included in 2019 are the right-of-use assets of \$60.1 million obtained in connection with the acquisition of Artesyn in September 2019. Subsequent measurement period adjustments that occurred in the year ended December 31, 2020 reduced this amount to \$54.4 million. See *Note 2. Business Acquisitions* for more details.

**NOTE 17. EMPLOYEE RETIREMENT PLANS AND POSTRETIREMENT BENEFITS**

**Defined Contribution 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, 2020, 2019, and 2018 our contribution for participants in our 401(k) plan was based on matching 50% of contributions made by employees up to 6% of the employee's compensation.

During the years ended December 31, 2020, 2019, and 2018 we recognized total defined contribution plan costs of \$2.6 million, \$1.6 million, and \$1.4 million, respectively.

**Defined Benefit Plan**

We maintain defined benefit pension plans for certain of our non-U.S. employees in the U.K., Germany, and Philippines. Each plan is managed locally and in accordance with respective local laws and regulations.

To measure the expense and related benefit obligation, various assumptions are made including discount rates used to value the obligation, expected return on plan assets used to fund these expenses and estimated future inflation rates. These assumptions are based on historical experience as well as facts and circumstances. An actuarial analysis is used to measure the expense and liability associated with pension benefits.

The information provided below includes one pension plan which is part of discontinued operations. As such, all related liabilities and expenses are reported in discontinued operations in the Company's Consolidated Balance Sheets and Consolidated Statements of Operations for all periods presented.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

The Company’s projected benefit obligation and plan assets for defined benefit pension plans and the related assumptions used to determine the related liabilities are as follows:

	<b>Years Ended December 31,</b>	
	<b>2020</b>	<b>2019</b>
Projected benefit obligation, beginning of year	\$ 83,262	\$ 33,178
Acquisition	—	48,350
Service cost	1,068	272
Interest cost	1,716	1,211
Actuarial (gain) loss	7,591	(193)
Benefits paid	(1,199)	(1,779)
Translation adjustment	5,302	2,223
Projected benefit obligation, end of year	<u>97,740</u>	<u>83,262</u>
Fair value of plan assets, beginning of year	14,903	13,433
Acquisitions	—	102
Actual return on plan assets	682	380
Contributions	1,827	644
Benefits paid	(993)	(1,176)
Actuarial gain	180	1,064
Translation adjustment	694	456
Fair value of plan assets, end of year	<u>17,293</u>	<u>14,903</u>
Funded status of plan	<u>\$ (80,447)</u>	<u>\$ (68,359)</u>

The components of net periodic pension benefit cost recognized in our Consolidated Statements of Operations for the periods presented are as follows:

	<b>Years Ended December 31,</b>		
	<b>2020</b>	<b>2019</b>	<b>2018</b>
Service cost	\$ 1,068	\$ 272	\$ 841
Interest cost	1,716	1,211	802
Expected return on plan assets	(683)	(615)	(665)
Amortization of actuarial gains and losses	459	411	478
Net periodic pension cost	<u>\$ 2,560</u>	<u>\$ 1,279</u>	<u>\$ 1,456</u>

Assumptions used in the determination of the net periodic pension cost are:

	<b>Years Ended December 31,</b>		
	<b>2020</b>	<b>2019</b>	<b>2018</b>
Discount rate	1.8 %	2.7 %	2.8 %
Expected long-term return on plan assets	3.7 %	4.6 %	4.8 %



**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

The fair value of the Company's qualified pension plan assets by category are as follows:

	December 31, 2020			
	Level 1	Level 2	Level 3	Total
Multi-Asset Fund	\$ —	\$ 5,149	\$ —	\$ 5,149
Diversified Growth Fund	—	5,134	—	5,134
Corporate Bonds	—	4,906	—	4,906
Insurance Contracts	—	—	1,109	1,109
Cash	995	—	—	995
<b>Total</b>	<b>\$ 995</b>	<b>\$ 15,189</b>	<b>\$ 1,109</b>	<b>\$ 17,293</b>

	December 31, 2019			
	Level 1	Level 2	Level 3	Total
Multi-Asset Fund	\$ —	\$ 4,825	\$ —	\$ 4,825
Diversified Growth Fund	—	4,855	—	4,855
Index-Linked Gilts	—	1,934	—	1,934
Corporate Bonds	—	2,090	—	2,090
Insurance Contracts	—	—	1,045	1,045
Cash	154	—	—	154
<b>Total</b>	<b>\$ 154</b>	<b>\$ 13,704</b>	<b>\$ 1,045</b>	<b>\$ 14,903</b>

On December 31, 2020, our plan's assets of \$17.3 million were invested in five separate funds including a multi-asset fund (29.8%), a diversified growth fund (29.7%), corporate bonds (28.4%), and insurance contracts (6.4%). The asset and growth funds aim to generate an 'equity-like' return over an economic cycle with significantly reduced volatility relative to equity markets and have scope to use a diverse range of asset classes, including equities, bonds, cash, and alternatives, e.g., property, infrastructure, high yield bonds, floating rate debt, private, equity, hedge funds and currency. These investments are intended to provide a degree of protection against changes in the value of our plan's liabilities related to changes in long-term expectations for interest rates and inflation expectations.

Expected future payments under defined benefit pension plans, based on foreign exchange rates as of December 31, 2020, are as follows:

**Expected Future Benefit Payments**

2021	\$ 2,255
2022	1,972
2023	2,184
2024	2,891
2025	2,301
2026 - 2030	49,098

**NOTE 18. STOCK-BASED COMPENSATION**

As of December 31, 2020, we had two active stock-based incentive compensation plan: the 2017 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. Our stock plans are administered by the Board of Directors Compensation Committee. On December 31, 2020, there were 3.0 million shares reserved and 2.3 million shares available for future grant under our stock-based incentive plans.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
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On May 4, 2017, the stockholders approved the Company’s 2017 Omnibus Incentive Plan ("the 2017 Plan") and all shares that were then available for issuance under the 2008 Omnibus Incentive Plan are now available for issuance under the 2017 Plan. The 2017 Plan and 2008 Plan provide 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 issued may be issued as performance-based awards to align stock compensation awards to the attainment of annual or long-term performance goals. As of December 31, 2020, there were 2.1 million shares available for grant under the 2017 Plan.

The Company grants restricted stock units and performance stock units. The grant date fair values of restricted stock units and performance stock units are based on the closing market price of our common stock on the grant date. Our restricted stock units vest based on continued service. Our performance stock units vest based on achievement of certain performance goals and certification of performance achievement by the Compensation Committee of the Board of Directors. Stock-based compensation expense, net of forfeitures, is recognized on a straight-line basis over the requisite service period. For performance stock units, compensation expense is updated for the Company’s expected performance level against performance goals at the end of each reporting period, which involves judgment as to achievement of certain performance metrics.

*Stock-based Compensation Expense*

We recognize stock-based compensation expense based on the fair value of the awards issued and the functional area of the employee receiving the award. Stock-based compensation was as follows:

	Years Ended December 31,		
	2020	2019	2018
Stock-based compensation expense	\$ 12,272	\$ 7,327	\$ 9,703

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 stock options and restricted stock units ("RSU's") were approximately 5%, 10% and 10% for the years ended December 31, 2020, 2019 and 2018, respectively.

*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 RSUs were as follows:

	2020	
	Shares	Weighted-Average Grant Value
RSUs outstanding at beginning of period	534	\$ 56.56
RSUs granted	342	59.51
RSUs vested	(152)	57.14
RSUs forfeited	(116)	58.10
RSUs outstanding at end of period	608	\$ 58.15

The total intrinsic value of RSUs converted to shares for the years ended December 31, 2020, 2019 and 2018 were \$9.2 million, \$8.3 million, and \$13.6 million, respectively. As of December 31, 2020, there was \$7.8 million of total unrecognized compensation cost, net of expected forfeitures related to non-vested RSUs granted, which is expected to be recognized through November 2023, with a weighted-average remaining vesting period of 1.0 years.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

*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 either a three or four-year vesting schedule or performance-based vesting as determined at the time of grant. Stock option awards generally have a term of ten years.

Changes in our outstanding stock options were as follows:

	2020	
	Shares	Weighted-Average Exercise Price
Options outstanding at beginning of period	185	\$ 21.56
Options exercised	(33)	13.43
Options forfeited	—	—
Options expired	(5)	15.43
Options outstanding at end of period	147	\$ 23.63

The total intrinsic value of options exercised for the years ended December 31, 2020, 2019 and 2018 was \$1.9 million, \$1.6 million and \$4.1 million, respectively. All options outstanding on December 31, 2020 are vested and have aggregate intrinsic value of \$10.8 million and weighted-average remaining contractual life of 3.9 years.

The following table summarizes information about the stock options outstanding on December 31, 2020:

Range of Exercise Prices	Options Outstanding and Exercisable		
	Number Outstanding	Weighted-Average Remaining Contractual Life	Weighted-Average Exercise Price
\$9.51 to \$12.44	5	0.67 years	\$ 11.18
\$18.77	43	3.75 years	18.77
\$26.32	99	4.10 years	26.32
\$9.51 to \$26.32	147	3.89 years	\$ 23.63

*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, stockholders approved an increase from 500,000 to 1,000,000 shares authorized for sale under our ESPP. Employees below the Vice President level 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 15% 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. On December 31, 2020, 0.2 million 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, 2020, there was \$0.4 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 \$0.9 million for the year ended December 31, 2020 and \$0.5 million for the year ended December 31, 2019, and \$0.4 million for the year ended December 31, 2018.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

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:

	Years Ended December 31,		
	2020	2019	2018
Risk-free interest rates	0.10% - 0.18% %	1.62% - 2.31 %	2.10% - 2.56 %
Expected dividend yield rates	— %	— %	— %
Expected term	0.5 years	0.5 years	0.5 years
Expected volatility	70.1 %	41.3 %	38.0 %

The risk-free interest rate is based on the six-month U.S. Treasury Bill at the time of the grant. We utilize our historical experience in determining the expected term of our stock options and volatility of our common stock. We have not historically issued dividends.

**NOTE 19. 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. The Company is currently not a party to any legal action that the Company believes would reasonably have a material adverse impact on its business, financial condition, results of operations or cash flows.

**NOTE 20. GEOGRAPHIC AND SIGNIFICANT CUSTOMER INFORMATION**

The following table summarizes sales, and percentages of sales, by customers that individually accounted for 10% or more of our sales:

	Years Ended December 31,					
	2020		2019		2018	
Applied Materials, Inc.	\$ 248,350	17.5 %	\$ 164,724	20.9 %	\$ 258,027	35.9 %
Lam Research	141,778	10.0 %	88,251	11.2 %	109,005	15.2 %

The following table summarizes the accounts receivable balances, and percentages of the total accounts receivable, for customers that individually accounted for 10% or more of accounts receivable:

	December 31,			
	2020		2019	
Applied Materials, Inc.	\$ 33,402	14.2 %	\$ 36,849	14.9 %
Nidec Motor Corporation	24,344	10.4 %	38,071	15.4 %

Our sales to Applied Materials, Inc., Lam Research Corp., and Nidec Corporation include precision power products used in semiconductor processing and solar and flat panel display. No other customer accounted for 10% or more of our sales or accounts receivable balances during these periods.

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

The following table summarizes long-lived assets by geographic area:

	December 31,	
	2020	2019
United States	\$ 253,115	\$ 239,511
Asia	283,549	301,020
Europe	60,847	59,925
Total	<u>\$ 597,511</u>	<u>\$ 600,456</u>

Long-lived assets include property and equipment, operating lease right-of-use assets, goodwill, and other intangible assets.

**NOTE 21. CREDIT FACILITY**

In September 2019, in connection with the Artesyn Acquisition Agreement, the Company entered into a credit agreement ("Credit Agreement") that provided aggregate financing of \$500.0 million, consisting of a \$350.0 million senior unsecured term loan facility (the "Term Loan Facility") and a \$150.0 million senior unsecured revolving facility the ("Revolving Facility"). Both the Term Loan Facility and Revolving Facility mature on September 10, 2024.

The Term Loan Facility and Revolving Facility bear interest, at the option of the Company, at a rate based on a reserve adjusted Eurodollar Rate or a Base Rate, as defined in the Credit Agreement, plus an applicable margin. Additionally, the Revolving Facility is subject to an unused line fee. As of December 31, 2020, the effective interest rate for the Revolving Facility and Term Loan Facility was 1.26%, and the effective rate for the unused line fee was 0.10%. As of December 31, 2020, the Company had \$150.0 million available to withdraw on the Revolving Facility and was in compliance with all covenants.

The fair value of the Company's outstanding debt approximates the carrying value of \$322.0 million as of December 31, 2020.

In connection with entering into the Credit Agreement, the Company terminated the Loan Agreement, as amended (the "Loan Agreement") which previously provided a revolving line of credit of up to \$150.0 million subject to certain funding conditions. The Company recognized additional interest expense for the remaining unused line of credit fees at the time of termination of the Loan Agreement.

The debt obligation on our Consolidated Balance Sheets consists of the following:

	December 31, 2020	December 31, 2019
Debt:		
Term Loan Facility	\$ 323,750	\$ 341,250
Less: debt issuance costs	(1,704)	(2,223)
Total debt	322,046	339,027
Less current portion of long-term debt	(17,500)	(17,500)
Total long-term debt	<u>\$ 304,546</u>	<u>\$ 321,527</u>

**ADVANCED ENERGY INDUSTRIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS – (continued)**  
**(in thousands, except per share amounts)**

Contractual maturities of the Company's debt obligations, excluding amortization of debt issuance costs, as of are as December 31, 2020 follows:

<b>Year Ending December 31,</b>	<b>Amount</b>
2021	\$ 17,500
2022	17,500
2023	17,500
2024	271,250
<b>Total</b>	<b>\$ 323,750</b>

Interest expense and unused line of credit fees were recorded in Other income (expense), net, in our Consolidated Statements of Operations as follows:

	<b>Years Ended December 31,</b>		
	<b>2020</b>	<b>2019</b>	<b>2018</b>
Interest expense	\$ 5,080	\$ 2,994	\$ —
Amortization of debt issuance costs	519	186	—
Unused line of credit fees and other	153	236	228
<b>Total interest expense</b>	<b>\$ 5,752</b>	<b>\$ 3,416</b>	<b>\$ 228</b>

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

Not applicable.

**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 (Yuval Wasserman, Chief Executive Officer) and Principal Financial Officer (Paul Oldham, Chief Financial Officer and Executive Vice President), 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, 2020. 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.

In September 2019, we acquired Artesyn Embedded Technologies, Inc.'s embedded power business ("Artesyn"), as discussed in *Note 2. Business Acquisitions* in Item 8 "Financial Statements and Supplementary Data." The objectives of Artesyn established internal controls over financial reporting is consistent, in all material respects, with Advanced Energy's objectives. We have completed a comprehensive review of Artesyn's internal control over financial reporting and implemented changes to better align and integrate Artesyn's reporting and controls with the rest of Advanced Energy.

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, 2020, using the criteria described in *Internal Control-Integrated Framework (2013)* 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, 2020.

Ernst & Young 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 an attestation report, included herein, on the effectiveness of our internal control over financial reporting as of December 31, 2020.

### **Changes in Internal Control over Financial Reporting**

There was no change in our internal control over financial reporting that occurred during 2020 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

### **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.

### **REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

To the Stockholders and the Board of Directors of Advanced Energy Industries, Inc.

#### **Opinion on Internal Control Over Financial Reporting**

We have audited Advanced Energy Industries, Inc.'s internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Advanced Energy Industries, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Consolidated Balance Sheets of the Company as of December 31, 2020 and 2019, the related Consolidated Statements of Operations, Comprehensive Income, Stockholders' Equity, and Cash Flows for each of the two years in the period ended December 31, 2020, and the related notes and our report dated February 23, 2021 expressed an unqualified opinion thereon.

#### **Basis for Opinion**

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 Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. 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.

#### **Definition and Limitations of Internal Control Over Financial Reporting**

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



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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.

/s/ Ernst & Young LLP  
Denver, Colorado  
February 23, 2021

**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 2021 Annual Meeting of Stockholders (the "2021 Proxy Statement"), as set forth below. The 2021 Proxy Statement will be filed with the Securities and Exchange Commission within 120 days after the end of our fiscal year.

**ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE**

The information set forth in the 2021 Proxy Statement under the heading "Proposal No. 1/Election of Directors" is incorporated herein by reference.

The Company has adopted a Code of Ethical Conduct that applies to all of the Company's employees, including the Company's Chief Executive Officer and Chief Financial Officer and other persons performing similar functions. The Company has posted a copy of the Code of Ethical Conduct on its website at [www.advancedenergy.com](http://www.advancedenergy.com), and such Code of Ethical Conduct is available, in print, without charge, to any stockholder who requests it from the Company's Secretary. The Company intends to satisfy the disclosure requirements under Item 5.05 of Form 8-K regarding amendments to, or waivers from, the Code of Ethical Conduct by posting such information on its website at [www.advancedenergy.com](http://www.advancedenergy.com). The Company is not including the information contained on its website as part of, or incorporating it by reference into, this report.

**Executive Officers**

Our executive officers, their positions, and their ages as of December 31, 2020 were as follows:

Yuval Wasserman, 66, has served as President and Chief Executive Officer, and as a director of Advanced Energy since October 2014. Mr. Wasserman joined us in August 2007 as Senior Vice President, Sales, Marketing and Service. In October 2007, Mr. Wasserman 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. Mr. Wasserman was on the Board of Directors of Synchroness, Inc., an outsourced engineering and product development company, from 2010 to 2017 when it was sold, and joined the Board of Directors of FARO Technologies, Inc., a publicly traded manufacturer of three-dimensional ("3D") measurement, imaging and realization systems, in December 2017. Mr. Wasserman is a National

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Association of Corporate Directors ("NACD") Governance Fellow. Mr. Wasserman has a BSc degree in chemical engineering from Ben Gurion University in Israel.

Paul Oldham, 57, joined the Company in May 2018 as its Executive Vice President and Chief Financial Officer. Previously Mr. Oldham served as the Senior Vice President of Administration, Chief Financial Officer and Corporate Secretary of Electro Scientific Industries, Inc., a developer and manufacturer of laser-based production equipment ("ESI"), from February 17, 2016 until December 4, 2017, and as the Vice President of Administration, Chief Financial Officer and Corporate Secretary of ESI from January 7, 2008 until February 16, 2016. Prior to joining ESI, Mr. Oldham was employed at Tektronix, Inc., a test, measurement, and monitoring company, since 1988, where he held several senior leadership positions, including Vice President Finance and Corporate Controller, Vice President - Treasurer and Investor Relations and European Operations Controller. Mr. Oldham has a bachelor's degree in Accounting and an MBA in accounting and finance from Brigham Young University.

Thomas O. McGimpsey, 59, joined the Company in April 2009 and currently serves as its Chief Administration Officer, Executive Vice President of Corporate Development & Corporate Secretary. Mr. McGimpsey was previously the Executive Vice President – General Counsel, Government Affairs & Corporate Secretary. Mr. McGimpsey was also the interim Chief Financial Officer from January to May in 2018, the Corporate Development ("M&A") Officer from 2011 to 2015 and he managed the IT Department from 2010 to 2013, all while serving as General Counsel. Prior to joining the Company, Mr. McGimpsey was Vice President of Operations at First Data Corporation from February 2008 to April 2009. During 2007, Mr. McGimpsey was a consultant and legal advisor to various companies. Prior to that, Mr. McGimpsey was the Executive Vice President of Business Development & Chief Legal Officer for McDATA Corporation from July 2000 to January 2007 when the company was sold. From February 1998 until its sale in June 2000, Mr. McGimpsey held the position of Director and Senior Corporate Attorney at US WEST, Inc. From 1991 to 1998, Mr. McGimpsey was in private practice at national law firms. From 1984 to 1988, Mr. McGimpsey was a Senior Engineer for Software Technology, Inc. (a Harris company). Mr. McGimpsey has been on the Board of Directors of CPP, Inc., an international engineering services company, since August 2015 and has been a Commissioner on the Colorado Commission on Higher Education since July 2015. Mr. McGimpsey received his MBA (with distinction) from Colorado State University, his Juris Doctor degree from the University of Colorado and his B.S. degree in Computer Science from Embry-Riddle Aeronautical University. Mr. McGimpsey was a National Association of Corporate Directors ("NACD") Board Leadership Fellow and is licensed to practice law in New York, Colorado, Florida and before the U.S. Supreme Court.

Dana Huth, 59, is Advanced Energy's Executive Vice President & Chief Revenue Officer. Prior, Mr. Huth served as President of Artesyn Embedded Power from May 2019 until September 2019 when acquired by Advanced Energy in September 2019. Before leading Embedded Power, Mr. Huth served as President of consumer business and global sales at Artesyn Embedded Technologies from January 2014 to May 2019, and as President of global sales, key accounts and distribution at Emerson Embedded Power from January 2008 to January 2014. At Motorola, Mr. Huth held senior management positions from February 2004 to January 2008, including Vice President of worldwide sales and market development, Vice President of global accounts, and Vice President of sales for the Asia Pacific region and Japan. Mr. Huth also spent more than 19 years with Avnet, Inc., one of the world's largest value-added distributors and systems integrators of electronic components, computer products, and embedded technology. He held various positions which included Senior Vice President and leading Avnet's global partnership with IBM.

**ITEM 11. EXECUTIVE COMPENSATION**

The information set forth in the 2021 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 2021 Proxy Statement under the headings "Security Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information" is incorporated herein by reference.

### Securities Authorized for Issuance under Equity Compensation Plans

The following table summarizes information about the equity incentive compensation plans as of December 31, 2020. All outstanding awards in the table shown below relate to our common stock.

<b>Plan Category</b>	<b>(A) Number of securities to be issued upon exercise of outstanding options, warrants and rights</b>	<b>(B) Weighted average price of outstanding options, warrants and rights</b>	<b>(C) Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column A)</b>
Equity compensation plans approved by security holders	146,614	\$ 23.63	2,286,448 <sup>(1)</sup>
Equity compensation plans not approved by security holders	—	—	—
<b>Total</b>	<b>146,614</b>	<b>\$ 23.63</b>	<b>2,286,448</b>

<sup>(1)</sup> This number includes 200,409 shares available for future issuance under the Employee Stock Purchase Plan

### ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

Not applicable.

### ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information set forth in the 2021 Proxy Statement under the caption "Ratification of the Appointment of Ernst & Young LLP as Advanced Energy's Independent Registered Public Accounting Firm for 2021" 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:

See Index to Financial Statements at Item 8 herein.

2. Financial Statement Schedules for the years ended December 31, 2020, 2019 and 2018

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

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(B) Exhibits:

- 2.1 [Agreement and Plan of Merger by and among Advanced Energy Industries, Inc., Eclipse Merger Sub, Inc., LumaSense Technologies Holdings, Inc., and Shareholder Representative Services LLC, dated July 26, 2018. \(13\)\\*\\*](#)
- 2.2 [Stock Purchase Agreement by and among Advanced Energy Industries, Inc., Artesyn Embedded Technologies, Inc., Pontus Intermediate Holdings II, LLC and Pontus Holdings, LLC, dated May 14, 2019. \(16\)\\*\\*](#)
- 2.3 [First Amendment to the Stock Purchase Agreement by and among Advanced Energy Industries, Inc., Artesyn Embedded Technologies, Inc., Pontus Intermediate Holdings II, LLC and Pontus Holdings, LLC, dated September 9, 2019. \(18\)\\*\\*](#)
- 3.1 [Amended and Restated Certificate of Incorporation of Advanced Energy Industries, Inc. \(17\)](#)
- 3.2 [Second Amended and Restated By-Laws of Advanced Energy Industries, Inc. \(21\)](#)
- 4.1 Form of Specimen Certificate for Common Stock. (1)
- 4.2 [Description of Advanced Energy Industries, Inc. Securities. \(19\)](#)
- 10.1 [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. \(2\)](#)
- 10.2 Form of Indemnification Agreement. (1)
- 10.3 [Form of Director Indemnification Agreement. \(4\)](#)
- 10.4 [Form of Notice of Grant for Restricted Stock Unit. \(7\)\\*](#)
- 10.5 [Form of Restricted Stock Unit Agreement. \(7\)\\*](#)
- 10.6 [Form of Notice of Grant of Stock Option. \(7\)\\*](#)
- 10.7 [Form of Incentive Stock Option Agreement. \(7\)\\*](#)
- 10.8 [Form of Non-Qualified Stock Option Agreement. \(7\)\\*](#)
- 10.9 [Form of LTI Notice of Grant. \(7\)\\*](#)
- 10.10 [Form of LTI Performance Stock Option Agreement pursuant to the 2008 Omnibus Incentive Plan. \(7\)\\*](#)
- 10.11 [Form of LTI Performance Stock Unit Agreement pursuant to the 2008 Omnibus Incentive Plan. \(7\)\\*](#)
- 10.12 [Form of 2020 Short-Term Incentive Plan. \(19\)\\*](#)
- 10.13 [2017 Long-Term Incentive \(LTI\) Plan. \(10\)\\*](#)
- 10.14 [2017 Short-Term Incentive \(STI\) Plan. \(11\)\\*](#)
- 10.15 [2017 Omnibus Incentive Plan. \(10\)\\*](#)

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- 10.16 [2008 Omnibus Incentive Plan, as amended May 4, 2010. \(5\)\\*](#)
- 10.17 [Employee Stock Purchase Plan. \(1\)\\*](#)
- 10.18 [Offer Letter, dated September 28, 2014, by and among Advanced Energy Industries, Inc. and Yuval Wasserman. \(8\)\\*](#)
- 10.19 [Global Supply Agreement by and between Advanced Energy Industries, Inc. and Applied Materials, Inc. dated August 29, 2005. \(3\)+](#)
- 10.20 [Shipping Amendment to the Global Supply Agreement by and between Advanced Energy Industries, Inc. and Applied Materials, Inc. dated August 29, 2005. \(3\)+](#)
- 10.21 [Bridge Amendment to the Global Supply Agreement by and between Advanced Energy Industries, Inc. and Applied Materials, Inc. dated January 28, 2011. \(6\)+](#)
- 10.22 [Fixed Dollar Accelerated Share Repurchase Transaction, dated November 6, 2015, between Advanced Energy Industries, Inc. and Morgan Stanley & Co. LLC. \(9\)](#)
- 10.23 [Offer Letter to Paul Oldham, dated March 26, 2018. \(12\)\\*](#)
- 10.24 [Form of Executive Change in Control and General Severance Agreement. \(14\)](#)
- 10.25 [Credit Agreement, dated September 10, 2019, by and among Advanced Energy Industries, Inc., Bank of America N.A. as the Administrative Agent, Bank of America N.A., Bank of the West and HSBC Bank USA, N.A. as the Joint Lead Arrangers and Joint Book Runners, and Citibank N.A., as the Co-Manager. \(18\)](#)
- 10.26 [ISDA 2002 Master Agreement, by and between Advanced Energy Industries, Inc. and HSBC Bank USA, National Association, dated as of April 2, 2020 \(the "HSBC ISDA Master Agreement"\). \(20\)](#)
- 10.27 [ISDA 2002 Master Agreement, by and between Advanced Energy Industries, Inc. and Citibank, N.A., dated as of April 7, 2020 \(the "Citibank ISDA Master Agreement"\). \(20\)](#)
- 10.28 [Schedule to the HSBC ISDA Master Agreement. \(20\)](#)
- 10.29 [Schedule to the Citibank ISDA Master Agreement. \(20\)](#)
- 10.30 [Rate Swap Transaction Confirmation, by and between Advanced Energy Industries, Inc. and HSBC Bank USA, National Association, dated April 7, 2020. \(20\)](#)
- 10.31 [Rate Swap Transaction Confirmation, by and between Advanced Energy Industries, Inc. and Citibank, N.A., dated April 9, 2020. \(20\)](#)
- 10.32 [Amendment dated January 11, 2021 to the Schedule to the ISDA 2002 Master Agreement dated April 2, 2020 between HSBC Bank USA, National Association and Advanced Energy Industries, Inc.](#)
- 16.1 [Letter from Grant Thornton LLP. \(15\)](#)
- 21.1 [Subsidiaries of Advanced Energy Industries, Inc.](#)
- 23.1 [Consent of Grant Thornton LLP, Independent Registered Public Accounting Firm.](#)

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23.2	<a href="#">Consent of Ernst &amp; Young LLP, Independent Registered Public Accounting Firm.</a>
31.1	<a href="#">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.</a>
31.2	<a href="#">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.</a>
32.1	<a href="#">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.</a>
32.2	<a href="#">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.</a>
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL with applicable taxonomy extension information contained in Exhibits 101)

- 
- (1) Incorporated by reference to the Registrant's Registration Statement on Form S-1 (File No. 33-97188), filed September 21, 1995.
  - (2) 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.
  - (3) 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.
  - (4) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed December 14, 2009.
  - (5) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2010 (File No. 000-26966), filed March 2, 2011.
  - (6) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2011 (File No. 000-26966), filed May 6, 2011.
  - (7) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966) filed May 10, 2013.
  - (8) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966) filed October 1, 2014.
  - (9) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966) filed November 6, 2015.
  - (10) Incorporated by reference to Appendix A of the Registrant's Proxy Statement for the Registrant's 2017 Annual Meeting of Stockholders (File No. 000-26966), filed March 14, 2017.
  - (11) Incorporated by reference to Appendix B of the Registrant's Proxy Statement for the Registrant's 2017 Annual Meeting of Stockholders (File No. 000-26966), filed March 14, 2017.
  - (12) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed March 29, 2018.

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- (13) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed July 30, 2018.
- (14) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed August 6, 2018.
- (15) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed March 27, 2019.
- (16) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed May 15, 2019.
- (17) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 (File No. 000-26966), filed August 5, 2019.
- (18) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed September 10, 2019.
- (19) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2019 (File No. 000-26966), filed March 2, 2020.
- (20) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed April 10, 2020.
- (21) Incorporated by reference to the Registrant's Current Report on Form 8-K (File No. 000-26966), filed May 20, 2020.

\* Compensation Plan

\*\* Schedules have been omitted pursuant to Item 601(b)(2) of Regulation S-K.

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

**ITEM 16. FORM 10-K SUMMARY**

None.

## 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/ Yuval Wasserman

Yuval Wasserman

Chief Executive Officer

Date: February 23, 2021

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.

<b>Signatures</b>	<b>Title</b>	<b>Date</b>
<u>/s/ Yuval Wasserman</u> Yuval Wasserman	Chief Executive Officer and Director (Principal Executive Officer)	February 23, 2021
<u>/s/ Paul Oldham</u> Paul Oldham	Chief Financial Officer and Executive Vice President (Principal Financial and Accounting Officer)	February 23, 2021
<u>/s/ Grant H. Beard</u> Grant H. Beard	Chairman of the Board	February 23, 2021
<u>/s/ Frederick A. Ball</u> Frederick A. Ball	Director	February 23, 2021
<u>/s/ Anne DelSanto</u> Anne DelSanto	Director	February 23, 2021
<u>/s/ Tina M. Donikowski</u> Tina M. Donikowski	Director	February 23, 2021
<u>/s/ Ronald C. Foster</u> Ronald C. Foster	Director	February 23, 2021
<u>/s/ Edward C. Grady</u> Edward C. Grady	Director	February 23, 2021
<u>/s/ Lanesha Minnix</u> Lanesha Minnix	Director	February 23, 2021
<u>/s/ Thomas M. Rohrs</u> Thomas M. Rohrs	Director	February 23, 2021
<u>/s/ John A. Roush</u> John A. Roush	Director	February 23, 2021



**AMENDMENT**  
**Dated as of January 11, 2021**

**to the**  
**SCHEDULE**

**to the**

**ISDA 2002 MASTER AGREEMENT**

**dated as of April 2, 2020**

**between**

**HSBC Bank USA, National  
Association**

**and**

**Advanced Energy Industries, Inc.**

**(“Party A”)**

**(“Party B”)**

This Amendment (this “Amendment”) to the Schedule (the “Schedule”) to the ISDA 2002 Master Agreement referenced above (the “Agreement”, which term has the meaning assigned thereto in such ISDA 2002 Master Agreement) is effective as of January 11, 2021 (the “Amendment Date”).

Party A and Party B desire to amend the Schedule as hereinafter set forth. In consideration of the mutual agreements herein contained, Party A and Party B hereby agree as follows:

1. **Amendment to the Schedule.** As of the Amendment Date:

(a) Part 5(m) of the Schedule is amended by inserting the following new clause (ii) after the existing clause (i) and before the existing clause (ii), and by renumbering the remaining clauses from “(ii), (iii), (iv)” to “(iii), (iv), (v)”:

“(ii) Part 6 of this Schedule;” .

(b) The Schedule is amended by adding the following new Part 6:

**“Part 6.**

**Additional Terms for Foreign Exchange and Foreign Exchange Option Transactions**

(a) ***Incorporation of Definitions; Inconsistency.***

(i) The 1998 FX and Currency Option Definitions (the “**FX Definitions**”), published by the International Swaps and Derivatives Association, Inc., the Emerging Markets Traders Association and The Foreign Exchange Committee, are hereby incorporated by reference with respect to FX Transactions (as defined in the FX Definitions) and Currency Option Transactions (as defined in the FX Definitions), except as otherwise specifically provided herein or in the relevant Confirmation. Terms defined in the FX Definitions shall have the same meanings in this Part 6.

- (ii) In the event of any inconsistency between any of the following documents with respect to an FX Transaction or Currency Option Transaction, the relevant document first listed shall prevail: (i) a Confirmation, (ii) Part 6 of this Schedule, (iii) the remainder of this Schedule, (iv) the printed form of ISDA 2002 Master Agreement, (v) the FX Definitions, and (vi) the 2006 ISDA Definitions.
- (b) **Scope.** Unless otherwise agreed in writing by the parties, each FX Transaction and Currency Option Transaction entered into between the parties before, on or after the date of this Agreement shall be a Transaction under this Agreement and shall be part of, subject to and governed by this Agreement. FX Transactions and Currency Option Transactions shall be part of, subject to and governed by this Agreement even if the Confirmation in respect thereof does not state that such FX Transaction or Currency Option Transaction is subject to or governed by this Agreement or does not otherwise reference this Agreement.

When an FX Transaction or a Currency Option is confirmed by means of exchange of electronic messages on an electronic messaging system or other document or other confirming evidence exchanged between the parties confirming such Transaction, such messages, document or evidence will constitute a Confirmation for the purposes of this Agreement even where not so specified therein.

- (c) **Amendment of 1998 FX and Currency Option Definitions.** Each party agrees that the 1998 FX Definitions are amended as follows:
  - (i) Section 2.1 of the 1998 FX Definitions is amended by adding the following as Section 2.1(b):

**“Currency Obligation.** “Currency Obligation” means the undertaking of a party hereunder to receive or deliver an amount of currency, including a netted Currency Obligation, and including any Currency Obligation previously entered into by the parties.”
  - (ii) by deleting the final sentence of Section 3.6(a) thereof and substituting the following therefor:

“A Currency Option Transaction may be exercised in whole or in part. If a Currency Option Transaction is exercised in part, the unexercised portion shall not be extinguished thereby but shall remain a Currency Option Transaction to the extent of such unexercised portion until the earlier of (i) the expiration of the Currency Option Transaction or (ii) an exercise of the Currency Option Transaction that leaves no remaining unexercised portion thereof.”
  - (iii) with respect to Currency Options, Section 3.4 of the FX Definitions is hereby amended by the addition of the following as a new Section 3.4 (c) of the FX Definitions:

**“(c) Non-Receipt of Premium on Premium Payment Date.** If any Premium is not received on the Premium Payment Date, the Seller may elect (i) to accept a late payment of such Premium; (ii) to give written notice of such non-payment and, if such payment shall not be received within one (1) Local Business Day of such notice, treat the related Currency Option Transaction as

void; or (iii) to give written notice of such non-payment and, if such payment shall not be received within one (1) Local Business Day of such notice, treat such non-payment as an Event of Default under Section 5(a)(i) of the ISDA Master Agreement. If the Seller elects to act under either clause (i) or (ii) of the preceding sentence, the Buyer shall pay all out-of-pocket costs and actual damages incurred in connection with such unpaid or late Premium or void Currency Option Transaction, including, without limitation, interest on such Premium in the same currency as such Premium at the then prevailing market rate and any other costs or expenses incurred by the Seller in covering its obligations (including, without limitation, a delta hedge) with respect to such Currency Option Transaction.”

(d) **Netting and Related Provisions.** Section 2(c) of this Agreement shall not apply to FX Transactions or Currency Option Transactions. In lieu thereof, the following shall apply:

(i) **Netting, Discharge and Termination of FX Transactions.** The following provisions shall apply to FX Transactions:

If (A) an FX Transaction is entered into between the parties that creates a Currency Obligation in the same currency and for the same Settlement Date as a then existing Currency Obligation between the parties, and (B) prior to the Settlement Date, the parties agree to net such Currency Obligations, then such Currency Obligations shall automatically and without further action be netted, such that a net amount and payment obligation will be determined in respect of the amounts payable under each such Currency Obligation, and the party having the obligation to deliver the greater aggregate amount of currency shall be obligated to deliver the excess of such greater aggregate currency amount over such lesser aggregate currency amount.

(ii) **Netting, Discharge and Termination with Respect to Currency Option Transactions.** The following provisions shall apply to Currency Option Transactions:

Any Call or Put written by a party will automatically be terminated and discharged, in whole or in part, as applicable, against a Call or a Put, respectively, having the same identical terms, written by the other party, if agreed to by the parties at the time of the subsequent Call or Put; and, upon the occurrence of such termination or discharge, neither party shall have any further obligation to the other party in respect of the parts so terminated and discharged (except for the obligation of either party to pay any Premium due, but not paid, thereunder); and the remaining portion of any Currency Option Transaction, which is partially discharged and terminated, shall continue to be a Currency Option Transaction under this Agreement.

(e) **Payment Instructions.** All payments to be made hereunder in respect of FX and Currency Option Transactions shall be made in accordance with standing payment instructions provided by the parties from time to time in writing (or as otherwise specified in a Confirmation).

(f) **Notice of Exercise.** Article 3, Section 3.5(g) of the FX Definitions is amended by the deletion of the word “facsimile,” in the fourth line thereof.

(g) **Definitions.** Section 14 of this Agreement is hereby amended as follows:

The definition of “**Terminated Transactions**” shall be deemed to include Currency Obligations.”

**2. Representations.** Each of Party A and Party B make the basic representations set forth in Section 3(a)(i)-(iv) of the Agreement, except that all references to “this Agreement” (or words or phrases of similar meaning) shall be deemed to be references to this Amendment and to the Agreement as amended hereby.

**3. Miscellaneous.**

- (a) This Amendment may be executed and delivered in counterparts (through e-mail, facsimile transmission or otherwise in writing), each such counterpart shall be deemed an original, and all such counterparts, together, shall constitute a single agreement.
- (b) This Amendment constitutes the entire agreement of the parties with respect to its subject matter and supersedes all oral communications and prior writings with respect thereto. Upon execution and delivery of this Amendment, the Schedule shall be modified and amended in accordance with the terms herein and shall continue in full force and effect.
- (c) This Amendment shall be governed by and construed in accordance with the laws of the State of New York without reference to choice of law doctrine.
- (d) The headings used in this Amendment are for convenience of reference only and are not to affect the construction of or to be taken into consideration in interpreting this Amendment. All capitalized terms used herein which are not defined herein shall have the meanings set forth in the Agreement.

IN WITNESS WHEREOF, the parties have executed this Amendment on the respective dates specified below with effect from the Amendment Date.

**HSBC Bank USA, National Association**

**Advanced Energy Industries, Inc.**

*Party A*

*Party B*

By: .....

By: .....

Name:

Name: Paul Oldham

Title:

Title: EVP & Chief Financial Officer

Date:

Date: January \_\_, 2021



## SUBSIDIARIES OF THE REGISTRANT

Name	Jurisdiction of Incorporation or Organization
Advanced Energy Industries	China
Advanced Energy Industries (Shenzhen) Co., Ltd. (manufacturing)	China
Advanced Energy Industries AE - Israel Ltd.	Israel
Advanced Energy Industries GmbH	Germany
Advanced Energy Industries Limited	Hong Kong
Advanced Energy Industries U.K. Limited	United Kingdom
Advanced Energy Industries, Inc., Shanghai	China
Advanced Energy Japan K.K	Japan
Advanced Energy Services Pte. Ltd.	Singapore
Advanced Energy Singapore, Pte. Ltd.	Singapore
Advanced Energy Taiwan, Ltd.	Taiwan
Advanced Energy Xi'an Co., Ltd.	China
Advanced Energy Industries (Malaysia) SDN. BHD.	Malaysia
AE Korea, Ltd.	South Korea
AE Power Singapore Pte Ltd.	Singapore
AEI Canada, Inc.	Canada
AEI Finance GmbH & Co., KG	Germany
AEI Finance Ltd.	Hong Kong
AEI Finance Verwaltungs GmbH	Germany
AEI Holdings, GmbH	Germany
AEI Irish Holdings Ltd.	Ireland
AEI Korea Services, Ltd.	South Korea
AEI Power GmbH	Germany
AEI Power India Pvt. Ltd.	India
AEI US Subsidiary, LLC	Delaware
AES Global Holdings PTE Ltd.	Singapore
Artesyn Embedded Technologies (Hong Kong) Limited	Hong Kong
Artesyn Embedded Technologies (Hong Kong) Limited – South Korea	South Korea
Artesyn Embedded Technologies GmbH	Germany
Artesyn Embedded Technologies Philippines, Inc.	Philippines
Artesyn Embedded Technologies, Inc	Florida
Artesyn Technologies Asia-Pacific Ltd.	Hong Kong
Astec Agencies Ltd.	Hong Kong
Astec Agencies Ltd (Philippines)	Philippines
Astec Agencies Ltd. (Taiwan)	Taiwan
Astec America, LLC	Delaware
Astec Custom Power (Singapore) Pte. Ltd.	Singapore

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Astec Electronics Company Ltd.	China
Astec Electronics Company Ltd. (Beijing Branch)	China
Astec Electronics Company Ltd. (Shanghai Branch)	China
Astec Electronics Company Ltd. (Xi'an Branch)	China
Astec Europe Ltd.	United Kingdom
Astec Europe Ltd. (Austria Branch)	Austria
Astec Europe Ltd. (Italy Branch)	Italy
Astec Europe Ltd. (Ireland Branch)	Ireland
Astec International Ltd.	Hong Kong
Astec Power Philippines, Inc.	Philippines
Astec Power Supply Company Ltd.	China
Embedded Computing & Power Private Ltd.	India
Excelsys Group Ltd.	Ireland
Excelsys Holdings Ltd.	Ireland
Excelsys Technologies Ltd.	Ireland
Fuyogo Limited	Hong Kong
HiTek DB Pension Scheme Trustees Ltd.	England
HiTek Power GmbH	Germany
HiTek Power Ltd.	United Kingdom
LumaSense Equipment India Pvt. Ltd. Co.	India
LumaSense Europe GmbH	Germany
LumaSense Sensor GmbH	Germany
LumaSense Technologies A/S	Denmark
LumaSense Technologies B.V.	Netherlands
LumaSense Technologies GmbH	Germany
LumaSense Technologies Holdings, Inc.	Delaware
LumaSense Technologies SARL	France
LumaSense Technologies, Inc.	Delaware
Microware Manufacturing Ltd.	United Kingdom
Sekidenko, Inc.	Washington
Siren Acquisition Sub, Inc.	New York
Solvix GmbH	Switzerland
Solvix LLC	Colorado
Stourbridge Holdings (UK), Ltd.	United Kingdom
String Inverter Repair Services, LLC	Colorado
Tamio Limited	Hong Kong
T.J. Acquisition Subsidiary, Inc.	New York
Trek Holding Co., Ltd.	Japan
Trek Japan K.K.	Japan
Trek, Inc.	New York
Ultra Volt Group, Inc.	Delaware
Ultra Volt, Inc.	New York

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Versatile Power, Inc.

Wankia Limited

Zhongshan Artesyn Technologies Co., Ltd.

California

Hong Kong

China

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CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our report dated February 21, 2019, with respect to the consolidated financial statements for the year ended December 31, 2018, included in the Annual Report of Advanced Energy Industries, Inc. on Form 10-K for the year ended December 31, 2020. We consent to the incorporation by reference of said report in the Registration Statements of Advanced Energy Industries, Inc. on Forms S-3, as amended (File Nos. 333-167027, 333-110534, 333-87720, 333-72748, 333-47114, 333-37378, 333-87455, 333-87459, and 333-34039) and on Forms S-8 (File Nos. 333-01616, 333-04073, 333-46705, 333-57233, 333-65413, 333-79425, 333-79429, 333-62760, 333-69148, 333-69150, 333-87718, 333-105367, 333-105366, 333-105365, 333-129859, 333-129858, 333-147289, 333-152865, 333-167741, 333-168519, and 333-221376).

/s/ GRANT THORNTON LLP

Denver, Colorado

February 23, 2021

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**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in the following Registration Statements of Advanced Energy Industries, Inc.:

Registration Statements on Form S-3:

1. No. 333-167027;
2. No. 333-110534;
3. No. 333-87459; and
4. No. 333-34039

Registration Statements on Form S-8:

1. No. 333-221376;
2. No. 333-168519;
3. No. 333-167741;
4. No. 333-152865;
5. No. 333-129858;
6. No. 333-105367;
7. No. 333-87718;
8. No. 333-69150;
9. No. 333-69148;
10. No. 333-62760;
11. No. 333-79429;
12. No. 333-79425;
13. No. 333-65413;
14. No. 333-57233;
15. No. 333-46705;
16. No. 333-04073; and
17. No. 333-01616

of our reports dated February 23, 2021, with respect to the consolidated financial statements of Advanced Energy Industries, Inc. and the effectiveness of internal control over financial reporting of Advanced Energy Industries, Inc. included in this Annual Report (Form 10-K) of Advanced Energy Industries, Inc. for the year ended December 31, 2020.

/s/ Ernst & Young LLP

Denver, Colorado  
February 23, 2021

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## SECTION 302 CERTIFICATION OF CHIEF EXECUTIVE OFFICER

I, Yuval Wasserman, certify that:

1. I have reviewed this annual report on Form 10-K for the period ended December 31, 2020 of Advanced Energy Industries, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
  - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 23, 2021

/s/ Yuval Wasserman  
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Yuval Wasserman  
Chief Executive Officer

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## SECTION 302 CERTIFICATION OF CHIEF FINANCIAL OFFICER

I, Paul Oldham, certify that:

1. I have reviewed this annual report on Form 10-K for the period ended December 31, 2020 of Advanced Energy Industries, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
  - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 23, 2021

/s/ Paul Oldham

Paul Oldham

Chief Financial Officer & Executive Vice President

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**WRITTEN STATEMENT OF CHIEF EXECUTIVE OFFICER  
FURNISHED PURSUANT TO SECTION 906  
OF THE SARBANES-OXLEY ACT OF 2002 (18 U.S.C. SECTION 1350)  
AND FOR THE PURPOSE OF COMPLYING WITH RULE 13a-14(b)  
OF THE SECURITIES EXCHANGE ACT OF 1934**

The undersigned, the Chief Executive Officer of Advanced Energy Industries, Inc. (the “Company”), hereby certifies that to his knowledge on the date hereof:

- a) the Annual Report on Form 10-K of the Company for the year ended December 31, 2020 filed on the date hereof with the Securities and Exchange Commission (the “Report”) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- b) information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 23, 2021

/s/ Yuval Wasserman

\_\_\_\_\_  
Yuval Wasserman

Chief Executive Officer

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

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**WRITTEN STATEMENT OF CHIEF FINANCIAL OFFICER  
FURNISHED PURSUANT TO SECTION 906  
OF THE SARBANES-OXLEY ACT OF 2002 (18 U.S.C. SECTION 1350)  
AND FOR THE PURPOSE OF COMPLYING WITH RULE 13a-14(b)  
OF THE SECURITIES EXCHANGE ACT OF 1934**

The undersigned, the Chief Financial Officer of Advanced Energy Industries, Inc. (the “Company”), hereby certifies that to his knowledge on the date hereof:

- a) the Annual Report on Form 10-K of the Company for the year ended December 31, 2020 filed on the date hereof with the Securities and Exchange Commission (the “Report”) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- b) information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 23, 2021

/s/ Paul Oldham

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Paul Oldham

Chief Financial Officer & Executive Vice President

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

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