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

FORM 10-Q

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

For the quarterly period ended September 30, 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	**84-0846841**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
1595 Wynkoop Street, Suite 800, Denver, CO	**80202**
(Address of principal executive offices)	(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	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.001 par value	**AEIS**	**NASDAQ Global Select Market**

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

Indicate by check mark whether the registrant has submitted electronically, 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.

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 is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☑

As of November 2, 2020, there were 38,272,715 shares of the registrant's Common Stock, par value $0.001 per share, outstanding.

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PART I FINANCIAL INFORMATION

ITEM 1. UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS

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

	September 30, 2020	December 31, 2019
ASSETS		
Current assets:		
Cash and cash equivalents	$ 428,977	$ 346,441
Marketable securities	2,601	2,614
Accounts and other receivable, net	240,147	246,564
Inventories	257,374	230,019
Income taxes receivable	13,042	4,245
Other current assets	36,335	36,855
Total current assets	978,476	866,738
Property and equipment, net	109,975	108,109
Operating lease right-of-use assets	108,810	105,404
Deposits and other assets	19,313	22,556
Goodwill	206,559	202,932
Intangible assets, net	169,250	184,011
Deferred income tax assets	50,136	42,656
TOTAL ASSETS	$ 1,642,519	$ 1,532,406
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 159,332	$ 170,671
Income taxes payable	14,074	9,687
Accrued payroll and employee benefits	67,757	51,545
Other accrued expenses	46,282	41,691
Customer deposits and other	14,332	10,926
Current portion of long-term debt	17,500	17,500
Current portion of operating lease liabilities	17,243	18,312
Total current liabilities	336,520	320,332
Long-term debt	308,794	321,527
Operating lease liabilities	97,604	90,538
Pension benefits	70,156	68,169
Deferred income tax liabilities	10,128	9,952
Uncertain tax positions	16,686	16,055
Long-term deferred revenue	7,357	8,011
Other long-term liabilities	26,541	20,562
Total liabilities	873,786	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; 38,272 and 38,358 issued and outstanding at September 30, 2020 and December 31, 2019, respectively	38	38
Additional paid-in capital	101,485	104,849
Accumulated other comprehensive loss	(3,827)	(5,897)
Retained earnings	670,456	577,724
Advanced Energy stockholders' equity	768,152	676,714
Noncontrolling interest	581	546
Total stockholders' equity	768,733	677,260
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$ 1,642,519	$ 1,532,406

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

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

	Three Months Ended September 30, 2020	Three Months Ended September 30, 2019	Nine Months Ended September 30, 2020	Nine Months Ended September 30, 2019
Sales, net:				
Product	$ 358,257	$ 148,138	$ 959,388	$ 366,443
Services	31,264	26,989	85,469	84,237
Total sales, net	389,521	175,127	1,044,857	450,680
Cost of sales:				
Product	220,149	87,536	606,750	204,450
Services	15,587	14,100	41,787	42,873
Total cost of sales	235,736	101,636	648,537	247,323
Gross profit	153,785	73,491	396,320	203,357
Operating expenses:				
Research and development	36,807	24,546	107,432	67,675
Selling, general and administrative	51,481	36,401	145,646	93,027
Amortization of intangible assets	5,049	3,002	15,064	6,849
Restructuring expense	1,494	152	7,940	3,620
Total operating expenses	94,831	64,101	276,082	171,171
Operating income	58,954	9,390	120,238	32,186
Other income (expense), net	(6,558)	1,361	(11,655)	17,649
Income from continuing operations, before income taxes	52,396	10,751	108,583	49,835
Provision for income taxes	6,783	3,495	15,293	3,819
Income from continuing operations	45,613	7,256	93,290	46,016
Income (loss) from discontinued operations, net of income taxes	50	375	(421)	8,690
Net income	$ 45,663	$ 7,631	$ 92,869	$ 54,706
Income from continuing operations attributable to noncontrolling interest	36	10	35	29
Net income attributable to Advanced Energy Industries, Inc.	$ 45,627	$ 7,621	$ 92,834	$ 54,677
Basic weighted-average common shares outstanding	38,325	38,313	38,322	38,258
Diluted weighted-average common shares outstanding	38,528	38,489	38,531	38,457
Earnings per share:				—
Continuing operations:				—
Basic earnings per share	$ 1.19	$ 0.19	$ 2.43	$ 1.20
Diluted earnings per share	$ 1.18	$ 0.19	$ 2.42	$ 1.20
Discontinued operations:				
Basic earnings (loss) per share	$ —	$ 0.01	$ (0.01)	$ 0.23
Diluted earnings (loss) per share	$ —	$ 0.01	$ (0.01)	$ 0.23
Net income:				
Basic earnings per share	$ 1.19	$ 0.20	$ 2.42	$ 1.43
Diluted earnings per share	$ 1.19	$ 0.20	$ 2.41	$ 1.42

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

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Net income	$ 45,663	$ 7,631	$ 92,869	$ 54,706
Other comprehensive income (loss), net of income taxes				
Foreign currency translation	5,267	(4,849)	4,706	(6,281)
Change in fair value of cash flow hedges	170	—	(2,674)	—
Minimum benefit retirement liability	(116)	92	38	102
Comprehensive income	$ 50,984	$ 2,874	$ 94,939	$ 48,527
Comprehensive income attributable to noncontrolling interest	36	10	35	29
Comprehensive income attributable to Advanced Energy Industries, Inc.	$ 50,948	$ 2,864	$ 94,904	$ 48,498

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

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

	Common Stock						
	Shares	Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Income	Retained Earnings	Non-controlling Interest	Total Stockholders’ Equity
Balances, December 31, 2018	38,164	$ 38	$ 97,418	$ (3,449)	$ 512,783	$ 512	$ 607,302
Stock issued from equity plans	72	—	(1,707)	—	—	—	(1,707)
Stock-based compensation	—	—	3,199	—	—	—	3,199
Other comprehensive income (loss)	—	—	—	(2,028)	—	—	(2,028)
Net income	—	—	—	—	15,370	8	15,378
Balances, March 31, 2019	38,236	$ 38	$ 98,910	$ (5,477)	$ 528,153	$ 520	$ 622,144
Stock issued from equity plans	69	—	665	—	—	—	665
Stock-based compensation	—	—	937	—	—	—	937
Other comprehensive income (loss)	—	—	—	606	—	—	606
Net income	—	—	—	—	31,686	11	31,697
Balances, June 30, 2019	38,305	$ 38	$ 100,512	$ (4,871)	$ 559,839	$ 531	$ 656,049
Stock issued from equity plans	27	—	328	—	—	—	328
Stock-based compensation	—	—	917	—	—	—	917
Other comprehensive income (loss)	—	—	—	(4,757)	—	—	(4,757)
Net income	—	—	—	—	7,621	10	7,631
Balances, September 30, 2019	38,332	$ 38	$ 101,757	$ (9,628)	$ 567,460	$ 541	$ 660,168
Balances, December 31, 2019	38,358	$ 38	$ 104,849	$ (5,897)	$ 577,724	$ 546	$ 677,260
Adoption of new accounting standards	—	—	—	—	(102)	—	(102)
Stock issued from equity plans	64	—	(2,171)	—	—	—	(2,171)
Stock-based compensation	—	—	3,048	—	—	—	3,048
Stock buyback	(170)	—	(7,248)	—	—	—	(7,248)
Other comprehensive income (loss)	—	—	—	(2,907)	—	—	(2,907)
Net income	—	—	—	—	18,063	15	18,078
Balances at March 31, 2020	38,252	$ 38	$ 98,478	$ (8,804)	$ 595,685	$ 561	$ 685,958
Stock issued from equity plans	73	—	779	—	—	—	779
Stock-based compensation	—	—	2,837	—	—	—	2,837
Other comprehensive income (loss)	—	—	—	(344)	—	—	(344)
Net income	—	—	—	—	29,144	(16)	29,128
Balances at June 30, 2020	38,325	$ 38	$ 102,094	$ (9,148)	$ 624,829	$ 545	$ 718,358
Stock issued from equity plans	20	—	(59)	—	—	—	(59)
Stock-based compensation	—	—	3,781	—	—	—	3,781
Stock buyback	(73)	—	(4,331)	—	—	—	(4,331)
Other comprehensive income (loss)	—	—	—	5,321	—	—	5,321
Net income	—	—	—	—	45,627	36	45,663
Balances, September 30, 2020	38,272	$ 38	$ 101,485	$ (3,827)	$ 670,456	$ 581	$ 768,733

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

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

	Nine Months Ended September 30, 2020	2019
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income	$ 92,869	$ 54,706
Income (loss) from discontinued operations, net of income taxes	(421)	8,690
Income from continuing operations, net of income taxes	93,290	46,016
Adjustments to reconcile net income to net cash provided by (used in) operating activities:		
Depreciation and amortization	35,433	15,301
Stock-based compensation expense	9,666	5,053
Provision (benefit) for deferred income taxes	(7,849)	2,825
Gain on sale of central inverter service business	—	(14,804)
Discount on notes receivable	721	—
Net loss on disposal of assets	678	104
Changes in operating assets and liabilities, net of assets acquired:		
Accounts and other receivable, net	8,670	(23,292)
Inventories	(26,983)	(7,217)
Other assets	5,039	13,695
Accounts payable	(12,971)	23,676
Other liabilities and accrued expenses	30,964	(17,779)
Income taxes	(1,626)	(14,720)
Net cash from operating activities from continuing operations	135,032	28,858
Net cash from operating activities from discontinued operations	(659)	317
Net cash from operating activities	134,373	29,175
CASH FLOWS FROM INVESTING ACTIVITIES:		
Proceeds from sale of marketable securities	3	—
Proceeds from sale of property and equipment	103	1,742
Acquisitions, net of cash acquired	(1,127)	(365,798)
Issuance of notes receivable	(1,000)	(2,800)
Purchases of property and equipment	(25,232)	(15,681)
Net cash from investing activities from continuing operations	(27,253)	(382,537)
Net cash from investing activities from discontinued operations	—	—
Net cash from investing activities	(27,253)	(382,537)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Net proceeds from long-term borrowings	—	347,486
Payments on long-term borrowings	(13,125)	(4,375)
Purchase and retirement of common stock	(11,579)	—
Net payments related to stock-based award activities	(1,451)	(714)
Net cash from financing activities from continuing operations	(26,155)	342,397
Net cash from financing activities from discontinued operations	—	—
Net cash from financing activities	(26,155)	342,397
EFFECT OF CURRENCY TRANSLATION ON CASH	1,571	(3,185)
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	82,536	(14,150)
CASH AND CASH EQUIVALENTS, beginning of period	346,441	354,552
CASH AND CASH EQUIVALENTS, end of period	428,977	340,402
Less cash and cash equivalents from discontinued operations	—	—
CASH AND CASH EQUIVALENTS FROM CONTINUING OPERATIONS, end of period	$ 428,977	$ 340,402
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:		
Cash paid for interest	$ 4,261	$ 1,049
Cash paid for income taxes	16,079	15,372
Cash received for refunds of income taxes	821	1,537

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

ADVANCED ENERGY INDUSTRIES, INC.
NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS
(In thousands, except per share data)

NOTE 1. BASIS OF PRESENTATION

Advanced Energy Industries, Inc., a Delaware corporation, and its wholly-owned subsidiaries ("we," "us," "our," "Advanced Energy," or the "Company") 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, analytical instrumentation and 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 the Artesyn Embedded Power business, which added new power products and technologies used in networking and computing, data center including hyperscale, and 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.

In the opinion of management, the accompanying Unaudited Consolidated Financial Statements contain all adjustments, consisting of normal, recurring adjustments, necessary to present fairly the financial position of the Company as of September 30, 2020, and the results of our operations and cash flows for the three and nine months ended September 30, 2020 and 2019.

The Unaudited Consolidated Financial Statements included herein have been prepared pursuant to the rules and regulations of the Securities and Exchange Commission ("SEC"). Certain information and footnote disclosures normally included in financial statements prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") have been omitted pursuant to such rules and regulations. These Unaudited Consolidated Financial Statements should be read in conjunction with the audited Consolidated Financial Statements and Notes thereto contained in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 and other financial information filed with the SEC.

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 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, 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.

Critical Accounting Policies

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 income (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 at 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 22, Credit Facility*, for additional information. The fair value of contingent consideration and other acquired assets and liabilities associated with the acquisition of the Embedded Power business, are based on Level 3 inputs.

New Accounting Standards

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

Recently issued accounting pronouncements 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 effective for fiscal years 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.

Recently adopted accounting pronouncements

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 fiscal years, and interim periods within those years, beginning after December 15, 2019. We adopted ASU 2016-13 in the first quarter of fiscal year 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.

The Company’s principal customers are original equipment manufacturers 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, the Company assesses credit risks for its customers as a single group. The Company evaluates collection risk and establishes its 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.

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 fiscal years 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 fiscal year 2020. The impact of the adoption of ASU 2018-13 was not material to our Consolidated Financial Statements.

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 the 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 fiscal year 2020. The impact of the adoption of ASU 2019-12 was not material to our Consolidated Financial Statements.

NOTE 2. BUSINESS ACQUISITIONS

Artesyn’s Embedded Power Business

In September 2019, we completed the acquisition of Artesyn Embedded Technologies, Inc.’s (“Artesyn”) Embedded Power business pursuant to the Stock Purchase Agreement, dated May 14, 2019 as amended (the “Acquisition Agreement”). Pursuant to the Acquisition Agreement, we acquired all 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 22. Credit Facility* for additional details related to the credit agreement.

(in thousands except per share data)

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, including data centers and 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 for the acquisition is as follows:

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

The following table summarizes the final fair values of the assets acquired and liabilities assumed from the acquisition, along with the measurement period adjustments that occurred during the quarter:

	Preliminary Fair Value	Measurement Period Adjustments	Final Fair Value
Accounts and other receivable, net	$ 132,466	$ —	$ 132,466
Inventories	156,407	—	156,407
Property and equipment	63,321	—	63,321
Operating lease right-of-use assets	54,439	—	54,439
Goodwill	117,762	(2,764)	114,998
Intangible assets	124,000	—	124,000
Other assets	63,863	(649)	63,214
Total assets acquired	712,258	(3,413)	708,845
Accounts payable	152,635	—	152,635
Operating lease liability	54,515	—	54,515
Pension liability	48,315	—	48,315
Deferred income tax liabilities	5,870	(4,175)	1,695
Other liabilities	86,648	(5,199)	81,449
Total liabilities assumed	347,983	(9,374)	338,609
Total fair value of net assets acquired	$ 364,275	$ 5,961	$ 370,236

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

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

Goodwill and intangible assets are recorded in the functional currency of the entity and are subject to changes due to translation at each balance sheet date. The goodwill 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. During the quarter, Advanced Energy settled the adjustment for 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.

(in thousands except per share data)

Pro forma results for Advanced Energy Inc. giving effect to the Artesyn Embedded Power Business Transactions

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 at the beginning of fiscal year 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 three and nine months ended September 30, 2019 combines Advanced Energy's results with the pre-acquisition results of Artesyn for that period.

The following tables present our unaudited pro forma results for the acquisition of Artesyn:

	Three Months Ended September 30, 2019		Nine Months Ended September 30, 2019	
	As Reported	Pro Forma	As Reported	Pro Forma
Total sales	$ 175,127	$ 293,658	$ 450,680	$ 864,522
Net income attributable to Advanced Energy Industries, Inc.	$ 7,621	$ 12,577	$ 54,677	$ 54,622
Earnings per share:				
Basic earnings per share	$ 0.20	$ 0.33	$ 1.43	$ 1.43
Diluted earnings per share	$ 0.20	$ 0.33	$ 1.42	$ 1.42

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 after the completion of the acquisition on September 10, 2019. Artesyn contributed total sales of $188.8 million and net income of $14.9 million for the three months ended September 30, 2020, and $502.5 million in total sales and net income of $23.5 million for the nine months ended September 30, 2020.

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.

Practical Expedients

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.

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, including hyperscale, and new medical and industrial 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 original equipment manufacturers ("OEM") and end customers in the semiconductor, flat panel display, high voltage, solar panel, telecom and networking, data center, medical, and other industrial capital equipment 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, including 5G, datacenter 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 comprising both direct and indirect activities, through partnership with local distributors, primarily in the United States ("U.S."), the People's Republic of China ("PRC"), Japan, South Korea, Taiwan, Malaysia, Israel, Philippines, Germany, Singapore and United Kingdom.

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 contracts totaling $8.7 million as of September 30, 2020 and $9.2 million as of December 31, 2019. We are expected to recognize between $0.2 million and $1.1 million per year in revenue through year 2031.

(in thousands except per share data)

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:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Semiconductor Equipment	$ 167,058	$ 96,426	$ 446,107	$ 277,911
Industrial & Medical	87,013	55,187	219,877	149,255
Data Center Computing	87,741	13,498	257,240	13,498
Telecom & Networking	47,709	10,016	121,633	10,016
Total	$ 389,521	$ 175,127	$ 1,044,857	$ 450,680

The following table presents our sales by geographic region:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
North America	$ 190,629	$ 83,632	$ 504,719	$ 203,531
Asia	180,660	66,157	462,388	175,554
Europe	17,886	25,008	76,070	70,526
Other	346	330	1,680	1,069
Total	$ 389,521	$ 175,127	$ 1,044,857	$ 450,680

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:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Product and service revenue recognized at point in time	$ 389,306	$ 174,827	$ 1,044,255	$ 448,964
Extended warranty and service contracts recognized over time	215	300	602	1,716
Total	$ 389,521	$ 175,127	$ 1,044,857	$ 450,680

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 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".

(in thousands except per share data)

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:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Sales	$ —	$ —	$ —	$ —
Cost of sales	—	(700)	—	(900)
Total operating expense	128	133	533	514
Operating income (loss) from discontinued operations	(128)	567	(533)	386
Other income (expense)	151	(84)	(1)	10,835
Income (loss) from discontinued operations before income taxes	23	483	(534)	11,221
Provision (benefit) for income taxes	(27)	108	(113)	2,531
Income (loss) from discontinued operations, net of income taxes	$ 50	$ 375	$ (421)	$ 8,690

Assets and Liabilities of discontinued operations within the Consolidated Balance Sheets are comprised of the following:

	September 30, 2020	December 31, 2019
Cash and cash equivalents	$ —	$ —
Accounts and other receivables, net	—	—
Inventories	23	30
Other current assets	23	30
Other assets	—	—
Deferred income tax assets	269	269
Deposits and other assets	269	269
Accounts payable and other accrued expenses	137	—
Accrued warranty	894	914
Other accrued expenses	1,031	914
Accrued warranty	310	698
Other liabilities	215	189
Other long-term liabilities	$ 525	$ 887

ADVANCED ENERGY INDUSTRIES, INC.
NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
(in thousands except per share data)

NOTE 5. INCOME TAXES

The following table sets out the tax expense and the effective tax rate for our income from continuing operations:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Income from continuing operations, before income taxes	$ 52,396	$ 10,751	$ 108,583	$ 49,835
Provision for income taxes	$ 6,783	$ 3,495	$ 15,293	$ 3,819
Effective tax rate	12.9 %	32.5 %	14.1 %	7.7 %

Our effective tax rates differ from the U.S. federal statutory rate of 21% for the three and nine months ended September 30, 2020 and 2019, respectively, primarily due to the benefit of earnings in foreign jurisdictions which are subject to lower tax rates, partially offset by additional global intangible low-taxed income tax (“GILTI”) in the U.S. The effective tax rate for the first nine months of 2020 was higher than the same period in 2019 primarily due to the absence of a favorable discrete tax item in 2019 related to the release of liabilities for uncertain tax positions in the first quarter of 2019. The lower effective tax rate in the three months ended September 30, 2020 was primarily due to the absence of unfavorable discrete tax items in 2019 related to the Artesyn acquisition and a change in the indefinite reinvestment assertion.

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.

The following is a reconciliation of the weighted-average shares outstanding used in the calculation of basic and diluted EPS:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Income from continuing operations	$ 45,613	$ 7,256	$ 93,290	$ 46,016
Income from continuing operations attributable to noncontrolling interest	36	10	35	29
Income from continuing operations attributable to Advanced Energy Industries, Inc.	$ 45,577	$ 7,246	$ 93,255	$ 45,987
Basic weighted-average common shares outstanding	38,325	38,313	38,322	38,258
Assumed exercise of dilutive stock options and restricted stock units	203	176	209	199
Diluted weighted-average common shares outstanding	38,528	38,489	38,531	38,457
Continuing operations:				
Basic earnings per share	$ 1.19	$ 0.19	$ 2.43	$ 1.20
Diluted earnings per share	$ 1.18	$ 0.19	$ 2.42	$ 1.20

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Restricted stock units	—	4	—	1

Stock Buyback

In September 2015, our Board of Directors authorized a program to repurchase up to $150.0 million of our stock over a thirty-month period. 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 Company 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 September 30, 2020, the Company had $38.4 million authorized for the future repurchase of shares of our common stock.

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:

(in thousands, except per share amounts)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Amount paid to repurchase shares	$ 4,331	$ —	$ 11,579	$ —
Number of shares repurchased	73	—	243	—
Average repurchase price per share	$ 59.70	$ —	$ 47.70	$ —

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.

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.

		September 30, 2020			
Description	Balance Sheet Classification	Level 1	Level 2	Level 3	Total Fair Value
Assets:					
Certificates of deposit	Marketable securities	$ —	$ 2,601	$ —	$ 2,601
Total assets measured at fair value on a recurring basis		$ —	$ 2,601	$ —	$ 2,601
Liabilities:					
Contingent consideration	Other long-term liabilities	$ —	$ —	$ 3,359	$ 3,359
Interest rate swaps	Other long-term liabilities	—	3,466	—	3,466
Total liabilities measured at fair value on a recurring basis		$ —	$ 3,466	$ 3,359	$ 6,825

ADVANCED ENERGY INDUSTRIES, INC.
NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
(in thousands except per share data)

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

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 based on 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 September 30, 2020, and December 31, 2019, we did not have any currency exchange rate contracts outstanding.

During the three and nine months ended September 30, 2020 and 2019 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 Unaudited 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:

	September 30, 2020	December 31, 2019
Interest rate swap contracts	$ 277,594	$ —

(in thousands except per share data)

At September 30, 2020, Accumulated other comprehensive loss on the unaudited consolidated balance sheet includes $2.7 million, net of tax, related to changes in fair value on the interest rate swap contracts. The following table summarizes activity related to qualified hedging instruments:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Gain (loss) recognized in Other comprehensive income (loss), net of tax	$ 170	$ —	$ (2,674)	$ —

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

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

	September 30, 2020	December 31, 2019
Amounts billed, net	$ 221,447	$ 227,528
Unbilled receivables	18,700	19,036
Total receivables, net	$ 240,147	$ 246,564

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.

The following table summarizes the changes in expected credit losses:

December 31, 2019	$ 7,745
Additions	407
Deductions - write-offs, net of recoveries	(482)
September 30, 2020	$ 7,670

(in thousands except per share data)

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:

	September 30, 2020	December 31, 2019
Parts and raw materials	$ 155,217	$ 134,816
Work in process	17,147	10,269
Finished goods	85,010	84,934
Total	$ 257,374	$ 230,019

NOTE 11. PROPERTY AND EQUIPMENT

Property and equipment, net is comprised of the following:

	September 30, 2020	December 31, 2019
Buildings and land	$ 1,654	$ 1,693
Machinery and equipment	107,038	108,945
Computer and communication equipment	25,258	29,106
Furniture and fixtures	4,203	4,119
Vehicles	261	262
Leasehold improvements	41,590	33,041
Construction in process	12,259	9,089
	192,263	186,255
Less: Accumulated depreciation	(82,288)	(78,146)
Property and equipment, net	$ 109,975	$ 108,109

Depreciation expense is recorded in continuing operations and allocated within Cost of sales, Research and development expense and Selling, general and administrative expense in our Unaudited Consolidated Statements of Operations as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Depreciation expense	$ 7,188	$ 3,903	$ 20,369	$ 8,452

NOTE 12. GOODWILL

The following table summarizes the changes in goodwill:

December 31, 2019	$ 202,932
Measurement period adjustments to purchase price allocation	1,957
Foreign currency translation	1,670
September 30, 2020	$ 206,559

(in thousands except per share data)

NOTE 13. INTANGIBLE ASSETS

Intangible assets consisted of the following:

September 30, 2020	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Technology	$ 83,882	$ (22,012)	$ 61,870
Customer relationships	109,514	(24,302)	85,212
Trademarks and other	26,892	(4,724)	22,168
Total	$ 220,288	$ (51,038)	$ 169,250

December 31, 2019	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
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	$ 219,251	$ (35,240)	$ 184,011

Amortization expense related to intangible assets is as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Amortization expense	$ 5,049	$ 3,002	$ 15,064	$ 6,849

Estimated amortization expense related to intangibles is as follows:

Year Ending December 31,	
2020 (remaining)	$ 5,049
2021	20,093
2022	19,815
2023	19,796
2024	16,926
Thereafter	87,571
Total	$ 169,250

NOTE 14. RESTRUCTURING COSTS

During 2019, 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 three and nine months ended September 30, 2020, we incurred severance costs primarily related to the transition and exit of our facility in Shenzhen, People's Republic of China, and actions associated with synergies related to the Artesyn acquisition. The table below summarizes the restructuring charges:

	Three Months Ended September 30, 2020	Nine Months Ended September 30, 2020	Cumulative Cost Through September 30, 2020
Severance and related charges	$ 202	$ 5,207	$ 12,487
Facility relocation and closure charges	1,292	2,733	4,730
Total restructuring charges	$ 1,494	$ 7,940	$ 17,217

(in thousands except per share data)

The following table summarizes our restructuring liabilities at September 30, 2020:

	Balance at December 31, 2019	Cost Incurred and Charged to Expense	Cost Paid or Otherwise Settled	Effect of Changes in Exchange Rates	Balance at September 30, 2020
Total restructuring liabilities	$ 2,172	$ 7,940	$ (3,339)	$ 18	$ 6,791

As of December 31, 2019 and September 30, 2020 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 following installation. The estimated cost of our warranty obligation is recorded when revenue is recognized and is based upon our historical experience by product and configuration.

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Balances at beginning of period	$ 6,072	$ 3,263	$ 6,413	$ 2,084
Warranty acquired in business combinations	—	3,618	—	4,818
Increases to accruals	1,097	286	2,608	890
Warranty expenditures	(1,458)	(414)	(3,325)	(1,045)
Effect of changes in exchange rates	10	(11)	25	(5)
Balances at end of period	$ 5,721	$ 6,742	$ 5,721	$ 6,742

NOTE 16. LEASES

We lease 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:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Operating lease cost	$ 4,806	$ 2,733	$ 14,500	$ 6,583
Short-term and variable lease cost	1,504	1,165	4,151	2,854
Total operating lease cost	$ 6,310	$ 3,898	$ 18,651	$ 9,437

(in thousands except per share data)

Maturities of our operating lease liabilities at September 30, 2020 are as follows:

Year Ending December 31,	
2020 (remaining)	$ 5,669
2021	20,609
2022	15,818
2023	12,689
2024	11,356
Thereafter	83,531
Total lease payments	149,672
Less: Interest	(34,825)
Present value of lease liabilities	$ 114,847

Other information related to leases, including supplemental cash flow information, consists of:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Cash paid for operating leases	$ 5,934	$ 2,936	$ 17,336	$ 8,850
Right-of-use assets obtained in exchange for operating lease liabilities[(1)]	$ 9,586	$ 56,319	$ 34,064	$ 113,874

(1) In the three months ended March 31, 2019, we implemented ASC 842, *Leases*. The previously reported amount includes leases existing on January 1, 2019. In the three months ended September 30, 2019, we obtained $56.3 million in right-of-use assets in connection with the Artesyn acquisition.

The weighted average remaining lease term and discount rate related to our lease liabilities as of September 30, 2020 were 10.8 years and 4.5%, respectively. As of September 30, 2019, the weighted average remaining lease term and discount rate related to our lease liabilities were 8.7 years and 4.0%, respectively.

NOTE 17. PENSION LIABILITY

In connection with the acquisitions of HiTek Power Group, LumaSense and Artesyn's Embedded Power business, we assumed the liabilities of their pension plans. 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. We are committed to make annual fixed payments of $0.8 million into the HiTek Power Limited Pension Scheme through April 30, 2024, and then $1.7 million from May 1, 2024 through November 30, 2033. We are obligated to fund the other pension liabilities each year as incurred.

The net pension liability in our Consolidated Balance Sheets is as follows:

	September 30, 2020	December 31, 2019
Pension liability	$ 70,156	$ 68,359

(in thousands except per share data)

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The following table sets forth the components of net periodic pension cost:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Service cost	$ 269	$ 124	$ 791	$ 124
Interest cost	470	274	1,449	668
Expected return on plan assets	(151)	(160)	(441)	(496)
Amortization of actuarial gains and losses	116	90	344	323
Net periodic pension cost	$ 704	$ 328	$ 2,143	$ 619

NOTE 18. STOCK-BASED COMPENSATION

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 provides for the grant of stock options, stock appreciation rights, restricted stock, stock units (including deferred stock units), unrestricted stock, and dividend equivalent rights. Any of the awards issued under the 2017 Plan may be issued as performance-based awards to align compensation awards to the attainment of annual or long-term performance goals. As of September 30, 2020, there were 2.8 million shares reserved and 2.0 million shares available for grant under the 2017 Plan.

Restricted stock units ("RSU's") are generally granted with a grant date fair value equal to the market price of our stock at the date of grant and with generally a three or four-year vesting schedule or performance-based vesting as determined at the time of grant.

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 10 years.

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:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Stock-based compensation expense	$ 3,781	$ 917	$ 9,666	$ 5,053

Changes in the outstanding RSU awards were as follows:

	Nine Months Ended September 30, 2020	
	Number of RSUs	Weighted-Average Grant Date Fair Value
RSUs outstanding at beginning of period	534	$ 56.56
RSUs granted	336	$ 59.33
RSUs vested	(150)	$ 57.16
RSUs forfeited	(38)	$ 59.38
RSUs outstanding at end of period	682	$ 57.97

(in thousands except per share data)

Changes in our outstanding stock options were as follows:

	Nine Months Ended September 30, 2020	
	Number of Options	Weighted-Average Exercise Price per Share
Options outstanding at beginning of period	185	$ 21.56
Options exercised	(32)	$ 13.39
Options forfeited	—	$ —
Options expired	(4)	$ 15.58
Options outstanding at end of period	149	$ 23.48

NOTE 19. COMMITMENTS AND CONTINGENCIES

We have firm purchase commitments and agreements with various suppliers to ensure the availability of components. Purchase commitments as of September 30, 2020 are approximately $178.1 million. Our policy with respect to all purchase commitments is to record losses, if any, when they are probable and reasonably estimable. We continuously monitor these commitments for exposure to potential losses and will record a provision for losses when it is deemed necessary.

We are involved in disputes and legal actions arising in the normal course of our business. There have been no material developments in legal proceedings in which we are involved during the three and nine months ended September 30, 2020.

NOTE 20. RELATED PARTY TRANSACTIONS

Members of our Board of Directors hold various executive positions and serve as directors at other companies, including companies that are our customers. We engaged in the following transactions with companies related to members of our Board of Directors, as described below:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Sales to related parties	$ 2	$ 287	$ 2	$ 1,299
Number of related party customers	1	1	1	1

	September 30, 2020	December 31, 2019
Accounts receivable from related parties	$ 2	$ —
Number of related party customers	1	1

We did not have any outstanding accounts payable with our related parties as of September 30, 2020 or December 31, 2019.

(in thousands except per share data)

NOTE 21. SIGNIFICANT CUSTOMER INFORMATION

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

	Three Months Ended September 30,			
	2020		2019	
Applied Materials, Inc.	$ 65,740	16.9 %	$ 38,957	22.2 %
LAM Research	$ 40,798	10.5 %	$ 21,991	12.6 %

	Nine Months Ended September 30,			
	2020		2019	
Applied Materials, Inc.	$ 181,129	17.3 %	$ 108,978	24.2 %
LAM Research	*	* %	$ 61,364	13.6 %

* Customer's balance was less than 10% of the total sales balance.

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:

	September 30 2020		December 31, 2019	
Applied Materials, Inc.	$ 39,015	16.2 %	$ 36,849	14.9 %
Nidec Motor Corporation	*	* %	38,071	15.4 %

* Customer's balance was less than 10% of the total accounts receivable balance.

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

NOTE 22. 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 Revolving Facility and Term Loan Facility bear interest, at the option of the Company, at a rate based on a reserve adjusted "Eurodollar Rate" or "Base Rate" plus an applicable margin. Additionally, the Revolving Facility is subject to an unused line fee. As of September 30, 2020, the unused line fee was 0.10%. As of September 30, 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 its carrying value of $326.3 million as of September 30, 2020.

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(in thousands except per share data)

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

	September 30, 2020	December 31, 2019
Debt:		
Term Loan Facility	$ 328,125	$ 341,250
Less: debt issuance costs	(1,831)	(2,223)
Total debt	326,294	339,027
Less current portion of long-term debt	(17,500)	(17,500)
Total long-term debt	$ 308,794	$ 321,527

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

Year Ending December 31,	Amount
2020 (remaining)	$ 4,375
2021	17,500
2022	17,500
2023	17,500
2024	271,250
Total	$ 328,125

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Interest expense	$ 778	$ 703	$ 4,021	$ 703
Amortization of debt issuance costs	129	45	392	45
Unused line of credit fees and other	38	60	114	179
Total interest expense	$ 945	$ 808	$ 4,527	$ 927

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This management discussion and analysis should be read in conjunction with our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, which was filed with the SEC on March 2, 2020.

Special Note on Forward-Looking Statements

The following discussion contains, in addition to historical information, forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Statements in this report that are not historical information are forward-looking statements. For example, statements relating to our beliefs, expectations and plans are forward-looking statements, as are statements that certain actions, conditions or circumstances will continue. The inclusion of words such as "anticipate," "expect," "estimate," "can," "may," "might," "continue," "enables," "plan," "intend," "should," "could," "would," "likely," "potential," or "believe," as well as statements that events or circumstances "will" occur or continue, indicate forward-looking statements. Forward-looking statements involve risks and uncertainties, which are difficult to predict and many of which are beyond our control. Therefore, actual results could differ materially and adversely from those expressed in any forward-looking statements. Neither we nor any other person assumes responsibility for the accuracy and completeness of such forward-looking statements and readers are cautioned not to place undue reliance on forward-looking statements.

For additional information regarding factors that may affect our actual financial condition, results of operations and accuracy of our forward-looking statements, see the information under the caption "Risk Factors" in Part II, Item 1A of this Quarterly Report on Form 10-Q and, in our Annual Report on Form 10-K for the year ended December 31, 2019. We undertake no obligation to revise or update any forward-looking statements for any reason.

BUSINESS AND MARKET 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. Our recently launched PowerInsight software product uses data analytics and advanced algorithms to provide our customers with actionable information, such as predictive failure, preventive maintenance, and process performance. Advanced Energy is organized on a global, functional basis and operates in a single segment structure for power electronics conversion 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 in September of 2019, we also provide information on an organic and inorganic basis to improve comparability during the interim periods.

During the first nine months of 2020 we saw the continued spread of COVID-19 which grew into a global pandemic. Our first priority is 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 additional investments to comply with government guidelines. During the first and second quarter of 2020, 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, maintain social distancing and implement health and safety procedures. Additionally, the availability of materials, parts and subcomponents needed for production was also impacted during the first nine months of 2020.

During the third quarter, customer demand was strong in all the markets we serve. Although, some of our manufacturing facilities continued to operate at reduced capacity, we have been able to adjust our production to meet the needs of our customers while following appropriate safety protocols for our employees.

Although COVID-19 has impacted our revenues and manufacturing efficiency over the course of the fiscal year, 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 the first nine months of 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, revenue, gross profit, net profit, and cash generation) or liquidity. Please see the information under the caption “Risk Factors” in Part II, in Item 1A of this Quarterly Report on Form 10-Q and, in our Annual Report on Form 10-K for the year ended December 31, 2019, for additional discussion on the potential impacts of COVID-19 to the future operations of our business.

Recent Acquisition

In September 2019, we completed the acquisition of Artesyn Embedded Technologies, Inc.’s (“Artesyn”) Embedded Power business. 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 hyperscale data centers, 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 in Part I, Item 1 "Unaudited Consolidated Financial Statements."

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 targeting 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 experienced a period of weakening equipment investment. Starting from the third quarter of 2019, demand from semiconductor equipment markets improved as investments by advanced logic and foundry chipmakers and by Chinese semiconductor fabricators returned. In the past twelve months, demand for semiconductor equipment has continued to grow through the third quarter of 2020 driven by foundry logic and some memory investments. Based on limited visibility and uncertainty arising from the COVID-19 pandemic and its impact on the global economy and supply chain, geopolitical uncertainty, and overall levels of investment at our customers, it is difficult to determine the extent to which the increased demand for semiconductor equipment will continue.

Industrial & Medical Markets

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

In Industrial & Medical markets, we remain focused on taking our products into new applications and geographic regions across Asia, Europe, and North America. Our acquisition of LumaSense in September 2018 expanded our presence in pyrometry and other temperature measurement applications and has contributed to our year-to-date growth in industrial technology applications as compared to the prior year. With the acquisition of Artesyn in September 2019, we have substantially expanded our reach in Industrial & Medical markets with a broad range of products and applications. In addition, the acquisition meaningfully increased our distribution channel by adding a broad set of distributors, global channel partners and regional manufacturer representatives. Revenue for industrial & medical products improved in the third quarter of 2020 after lower revenues in the first half of 2020 primarily due to production and supply chain delays related to COVID-19 that pushed shipments into the third quarter. Additionally, we saw modest improvement in industrial markets as our customers' manufacturing facilities were able to increase capacity after governmental restrictions were relaxed during the quarter.

Data Center Computing Markets

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 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 the first nine months in 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 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 third quarter of 2020 but was offset by higher demand from enterprise computing customers, which had been cyclically down in the first half of 2020.

Telecom & Networking Markets

The acquisition of Artesyn in September 2019 provided Advanced Energy with a portfolio of products and technologies that are used across the Telecommunications & Networking markets. 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 vehicle and virtual/augmented reality. Telecom service providers have started to invest in 5G, and this trend is expected to drive demand for our products into the Telecom & Networking markets over time. 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; however, we saw modest market growth off these reduced levels in the third quarter of 2020.

Revenue increased sequentially in the third quarter primarily as a result of modest improvement in market conditions and improved manufacturing capacity amid COVID-19.

The analysis presented below is organized to provide the information we believe will be helpful for understanding our historical performance and relevant trends going forward. This discussion should be read in conjunction with our Unaudited Consolidated Financial Statements in Part I, Item 1 of this report, including the notes thereto. Also included in the following analysis are measures that are not in accordance with U.S. GAAP. A reconciliation of the non-GAAP measures to U.S. GAAP is provided below.

Results of Continuing Operations

The following tables set forth certain data, and the percentage of sales each item reflects, derived from our Unaudited Consolidated Statements of Operations for the periods indicated (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Sales	$ 389,521	$ 175,127	$ 1,044,857	$ 450,680
Gross profit	153,785	73,491	396,320	203,357
Operating expenses	94,831	64,101	276,082	171,171
Operating income from continuing operations	58,954	9,390	120,238	32,186
Other income (expense), net	(6,558)	1,361	(11,655)	17,649
Income from continuing operations before income taxes	52,396	10,751	108,583	49,835
Provision for income taxes	6,783	3,495	15,293	3,819
Income from continuing operations, net of income taxes	$ 45,613	$ 7,256	$ 93,290	$ 46,016

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Sales	100.0 %	100.0 %	100.0 %	100.0 %
Gross profit	39.5	42.0	37.9	45.1
Operating expenses	24.3	36.6	26.4	38.0
Operating income from continuing operations	15.1	5.4	11.5	7.1
Other income (expense), net	(1.7)	0.7	(1.1)	4.0
Income from continuing operations before income taxes	13.4	6.1	10.4	11.1
Provision for income taxes	1.7	2.0	1.5	0.9
Income from continuing operations, net of income taxes	11.7 %	4.1 %	8.9 %	10.2 %

SALES

The following tables summarize net sales and percentages of net sales, by markets:

	Three Months Ended September 30,		Change 2020 v. 2019	
	2020	2019	Dollar	Percent
Semiconductor Equipment	$ 167,058	$ 96,426	$ 70,632	73.2 %
Industrial & Medical	87,013	55,187	31,826	57.7
Data Center Computing	87,741	13,498	74,243	550.0
Telecom & Networking	47,709	10,016	37,693	376.3
Total	$ 389,521	$ 175,127	$ 214,394	122.4 %

	Nine Months Ended September 30,		Change 2020 v. 2019	
	2020	2019	Dollar	Percent
Semiconductor Equipment	$ 446,107	$ 277,911	$ 168,196	60.5 %
Industrial & Medical	219,877	149,255	70,622	47.3
Data Center Computing	257,240	13,498	243,742	1,805.8
Telecom & Networking	121,633	10,016	111,617	1,114.4
Total	$ 1,044,857	$ 450,680	$ 594,177	131.8 %

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Semiconductor Equipment	42.9 %	55.1 %	42.7 %	61.7 %
Industrial & Medical	22.3	31.5	21.0	33.1
Data Center Computing	22.5	7.7	24.6	3.0
Telecom & Networking	12.2	5.7	11.6	2.2
Total	100.0 %	100.0 %	100.0 %	100.0 %

Total Sales

Sales increased $214.4 million, or 122.4%, to $389.5 million for the three months ended September 30, 2020 and $594.2 million, or 131.8% for the nine months ended September 30, 2020 as compared to the same periods in 2019. Revenue for the three and nine months ended September 30, 2020 was benefited by $188.8 million and $502.5 million, respectively, in inorganic sales from the September 2019 acquisition of Artesyn. Inorganic revenue for the three and nine months ended September 30, 2019 was $40.9 million. Organic sales for the three months ended September 30, 2020, increased $66.5 million as compared to the same period in 2019, principally due to increased demand in the semiconductor capital equipment market offset partially by a lower demand in the industrial market given slower global growth compounded by the impact of COVID-19.

Sales in the semiconductor equipment market increased $70.6 million, or 73.2%, for the three months ended September 30, 2020 and $168.2 million, or 60.5%, for the nine months ended September 30, 2020 as compared to the same periods in 2019 when semiconductor equipment volume was at a low point as a result of various market factors in the semiconductor industry. The increase in sales during the first nine months of 2020 is due to an increase in demand for deposition and etch equipment, particularly related to foundry/logic applications, timing of new technology investment, and capacity additions for advanced memory applications.

Sales in the industrial and medical market increased $31.8 million, or 57.7%, for the three months ended September 30, 2020 and $70.6 million, or 47.3%, for the nine months ended September 30, 2020 as compared to the same periods in 2019. Inorganic revenue contributed $52.4 million and $120.1 million, for the three and nine months ended September 30, 2020, respectively. Organic sales in the industrial and medical markets decreased ($4.2) million, or (10.8)% and decreased ($33.1) million, or (24.9)%, for the three and nine months ended September 30, 2020, respectively, as compared to the same periods in 2019. The decrease in industrial and medical organic sales was primarily due to the impacts from COVID-19 resulted in on-going macro uncertainty, partially offset by increased orders for certain medical equipment, and supply chain constraints limiting the ability to produce and ship products.

Sales in the data center computing market increased $74.2 million for the three months ended September 30, 2020 and $243.7 million for the nine months ended September 30, 2020 as compared to the same periods in 2019. The increase in data center computing sales is due to the addition of new market verticals through inorganic growth. Our revenue growth in the data center computing market is being driven by growth in Hyperscale customers, share gain, and increased demand for cloud and data services accelerated by the impact of COVID-19.

Sales in the telecom and networking market increased $37.7 million for the three months ended September 30, 2020 and increased $111.6 million for the nine months ended September 30, 2020 as compared to the same periods in 2019. The increase in telecom and networking sales is due to the addition of new market 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 three months ended September 30, 2020, and over time 5G infrastructure investments and upgrades to enterprise networks are expected to drive growth in this market.

Backlog

Our backlog was $281.5 million at September 30, 2020 as compared to $280.1 million at June 30, 2020 and $258.9 million at December 31, 2019. During the first six months of 2020 backlog increased primarily due to strong demand for semiconductor equipment and data center computing equipment, combined with supply and capacity constraints due to COVID-19. We were able to resolve many of these constraints related to COVID-19 delays in the third quarter with the increased throughput offset by increasing demand sequentially, resulting in flat backlog compared to June 30, 2020.

GROSS PROFIT

For the three months ended September 30, 2020, gross profit increased $80.3 million to $153.8 million, or 39.5% of sales, as compared to gross profit of $73.5 million, or 42.0% of sales, for the same period in 2019. For the nine months ended September 30, 2020, gross profit increased $193.0 million to $396.3 million, or 37.9% of sales, as compared to gross profit of $203.4 million, or 45.1% of sales, for the same period in 2019. The decrease in gross profit as a percent of revenue is predominately due to the addition of inorganic product mix, which carry lower gross margins, offset partially by manufacturing volume efficiencies and improved portfolio mix across our markets, as well as, improvement in warranty and freight costs. Gross profit for the three and nine months ended September 30, 2020 includes $49.6 million and $118.4 million, respectively, from our acquisition of Artesyn. The impact of COVID-19 on our gross profit for the three and nine months ended September 30, 2020 approximated $0.5 million and $3.2 million, respectively. Many of these costs are expected to continue for the foreseeable future.

OPERATING EXPENSES

Operating expenses increased $30.7 million to $94.8 million, or 24.3% of sales, for the three months ended September 30, 2020 from $64.1 million, or 36.6% of sales, for the same period in 2019. Operating expenses increased $104.9 million to $276.1 million, or 26.4% of sales, for the nine months ended September 30, 2020 from $171.2 million, or 38.0% of sales, for the same period in 2019. The increase in operating expenses is primarily due to the acquisition of Artesyn, which added $29.8 million and $87.8 million for the three and nine months ended September 30, 2020, respectively, as well as increased investment in research and development, variable and stock compensation and facility costs, partially offset by savings from decreased professional fees and initial synergy activities.

The following tables summarize our operating expenses (in thousands) and as a percentage of sales for the periods indicated:

	Three Months Ended September 30,			
	2020		**2019**	
Research and development	$ 36,807	9.4 %	$ 24,546	14.0 %
Selling, general, and administrative	51,481	13.2	36,401	20.8
Amortization of intangible assets	5,049	1.3	3,002	1.7
Restructuring charges	1,494	0.4	152	0.1
Total operating expenses	$ 94,831	24.3 %	$ 64,101	36.6 %

	Nine Months Ended September 30,			
	2020		**2019**	
Research and development	$ 107,432	10.3 %	$ 67,675	15.0 %
Selling, general, and administrative	145,646	13.9	93,027	20.7
Amortization of intangible assets	15,064	1.4	6,849	1.5
Restructuring charges	7,940	0.8	3,620	0.8
Total operating expenses	$ 276,082	26.4 %	$ 171,171	38.0 %

Research and Development

We perform research and development of products for new or emerging applications, technological changes 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 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.

Research and development expenses increased $12.3 million for the three months ended September 30, 2020 and increased $39.8 million for the nine months ended September 30, 2020 compared to the same period in 2019. Research and development expenses for the three and nine months ended September 30, 2020 includes $12.3 million and $35.4 million, respectively, from the acquisition of Artesyn. Artesyn related research and development expenses increased by $7.4 million and $26.3 million, respectively, in the three and nine months ended September 30, 2020 compared to the same periods in 2019. The remaining increase in research and development expense is related to increased headcount and associated costs, outside technical services and material costs as we invest 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 increased $15.1 million for the three months ended September 30, 2020 and increased $52.6 million for the nine months ended September 30, 2020 compared to the same period in 2019. Selling, general and administrative expenses for the three and nine months ended September 30, 2020 includes $13.8 million and $40.7 million, respectively, from the acquisition of Artesyn. Artesyn related SG&A expenses increased by $6.8 million and $27.5 million, respectively, in the three and nine months ended September 30, 2020, compared to the same periods in 2019. Organic SG&A expenses increased by $8.2 million and $25.1 million for the three and nine months ended September 30. 2020, respectively, compared to the same periods in 2019. The increase in organic SG&A costs are related to increased headcount and associated costs, variable compensation expenses including stock compensation expense, partially offset by a reduction in professional services and initial synergies from our recent acquisitions. Additionally, the nine months ended September 30, 2019 included a favorable tax settlement of $1.0 million.

Amortization of Intangibles

Amortization expense increased $2.0 million to $5.0 million during the three months ended September 30, 2020 and increased $8.2 million to $15.1 million during the nine months ended September 30, 2020 compared to the same periods in 2019. The increase during the three and nine months ended September 30, 2020 is primarily driven by incremental amortization of new intangible assets related to the acquisition of Artesyn.

Restructuring

In connection with the restructuring actions management previously put in place to optimize our manufacturing footprint to lower-cost regions, and manufacturing and operating synergies related to our recent acquisitions, during the three and nine months ended September 30, 2020, we recognized $1.5 million and $7.9 million, respectively, in restructuring charges primarily related to employee termination benefits and other lease optimization costs. The nine months ended September 30, 2020, includes approximately $5.3 million of employee termination benefits related to the transition and exit of our facility in Shenzhen, PRC.

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. For the three and nine months ended September 30, 2020, other income (expense), net was ($6.6) million and ($11.7), respectively, compared to other income (expense), net of $1.4 million and $17.6 million for the same periods in 2019. For the nine months ended September 30, 2019, a gain on the sale of our central inverter service and repair business of $14.8 million is included. The remaining change between periods is primarily due to increased interest expense related to our September 2019 term note, decreased interest income as rates have declined, and increased foreign exchange losses primarily related to a weaker dollar.

Provision for Income Taxes

Our effective tax rates differ from the U.S. federal statutory rate of 21% for the three and nine months ended September 30, 2020 and 2019, respectively, primarily due to the benefit of earnings in foreign jurisdictions which are subject to lower tax rates, partially offset by additional GILTI in the U.S. The effective tax rate for the first nine months of 2020 was higher than the same period in 2019 primarily due to the absence of a favorable discrete tax item in 2019 related to the release of liabilities for uncertain tax positions in the first quarter of 2019. The lower effective tax rate in the three months ended September 30, 2020 was primarily due to the absence of unfavorable discrete tax items in 2019 related to the Artesyn acquisition and a change in the indefinite reinvestment assertion.

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

Results of Discontinued Operations

We completed the wind down of our inverter engineering, manufacturing, and sales product lines in December 2015. Accordingly, the inverter product lines are presented as a discontinued operation for all periods presented herein. Extended warranties previously sold for the inverter product line are reflected in deferred revenue from continuing operations in our Unaudited Consolidated Balance Sheets and will be reflected in continuing operations in future periods as the deferred revenue is earned and the associated services are rendered.

Income from discontinued operations, net of income taxes are as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Sales	$ —	$ —	$ —	$ —
Cost of sales	—	(700)	—	(900)
Total operating expense	128	133	533	514
Operating income (loss) from discontinued operations	(128)	567	(533)	386
Other income (expense)	151	(84)	(1)	10,835
Income (loss) from discontinued operations before income taxes	23	483	(534)	11,221
Provision (benefit) for income taxes	(27)	108	(113)	2,531
Income (loss) from discontinued operations, net of income taxes	$ 50	$ 375	$ (421)	$ 8,690

Operating income from discontinued operations for the three and nine months ended September 30, 2020 and 2019 includes the effect of legal fees incurred in connection with the defense of product warranty claims, adjustment of warranty obligations and foreign exchange gain or (loss).

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, as well as discontinued operations, and non-recurring items such as acquisition-related costs and restructuring expenses. Beginning in Q2 2020, Advanced Energy's non-GAAP measures exclude non-cash unrealized foreign currency gains or losses that result from remeasurement to functional currency long-term obligations related to pension and operating lease liabilities as the remeasurement does not represent current economic exposure and is unrelated to our overall operating performance. These long-term obligations were acquired in connection with the Artesyn acquisition and the Company previously used derivatives to hedge the exposure; however, the Company has determined it will no longer hedge these non-economic exposures. 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.

Reconciliation of Non-GAAP measure - operating expenses and operating income from continuing operations, excluding certain items (in thousands)	**Three Months Ended September 30,**		**Nine Months Ended September 30,**	
	2020	**2019**	**2020**	**2019**
Gross profit from continuing operations, as reported	$ 153,785	$ 73,491	$ 396,320	$ 203,357
Adjustments to gross profit:				
Stock-based compensation	67	77	445	365
Facility expansion, relocation costs and other	1,095	1,342	3,608	1,662
Acquisition-related costs	—	1,506	5,356	1,506
Non-GAAP gross profit	154,947	76,416	405,729	206,890
Non-GAAP gross margin	39.8%	43.6%	38.8%	45.9%
Operating expenses from continuing operations, as reported	94,831	64,101	276,082	171,171
Adjustments:				
Amortization of intangible assets	(5,049)	(3,002)	(15,064)	(6,849)
Stock-based compensation	(3,714)	(840)	(9,221)	(4,688)
Acquisition-related costs	(5,214)	(6,398)	(10,597)	(9,440)
Facility expansion, relocation costs and other	(415)	(223)	(1,770)	(297)
Restructuring charges	(1,494)	(152)	(7,940)	(3,620)
Non-GAAP operating expenses	78,945	53,486	231,490	146,277
Non-GAAP operating income	$ 76,002	$ 22,930	$ 174,239	$ 60,613
Non-GAAP operating margin	19.5%	13.1%	16.7%	13.4%

Reconciliation of Non-GAAP measure - income from continuing operations, excluding certain items (in thousands)	Three Months Ended September 30, 2020	Three Months Ended September 30, 2019	Nine Months Ended September 30, 2020	Nine Months Ended September 30, 2019
Income from continuing operations, less non-controlling interest, net of income taxes	$ 45,577	$ 7,246	$ 93,255	$ 45,987
Adjustments:				
Amortization of intangible assets	5,049	3,002	15,064	6,849
Acquisition-related costs[1]	5,565	7,875	16,304	10,917
Facility expansion, relocation costs and other[2]	1,784	1,565	5,652	1,959
Restructuring charges	1,494	152	7,940	3,620
Unrealized foreign currency (gain) loss	3,540	—	4,598	—
Central inverter services business sale	—	—	—	(14,804)
Tax effect of non-GAAP adjustments	(2,115)	326	(6,080)	2,011
Non-GAAP income, net of income taxes, excluding stock-based compensation	60,894	20,166	136,733	56,539
Stock-based compensation, net of taxes	2,892	702	7,425	3,887
Non-GAAP income, net of income taxes	$ 63,786	$ 20,868	$ 144,158	$ 60,426
Non-GAAP diluted earnings per share	$ 1.66	$ 0.54	$ 3.74	$ 1.57

(1) For the three and nine months ended September 30, 2020, and 2019, Acquisition-related costs include an expense of $351 and a gain of $29, respectively, which was recognized in Other income (expense), net.

(2) For the three and nine months ended September 30, 2020, Facility expansion, relocation costs and other includes a $274 noncash fixed asset write-off, which was recognized in Other income (expense), net.

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. From time to time, we may also reduce prices to customers to decrease sales prices due to reductions in the cost structure of our products from cost improvement initiatives and decreases in component part prices.

Liquidity and Capital Resources

LIQUIDITY

Adequate liquidity and cash generation are important to the execution of our strategic initiatives and to operate effectively in uncertain environments. Our ability to fund our operations, acquisitions, capital expenditures, service debt requirement 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, cash generated from current operations and our credit facility noted below.

At September 30, 2020, we had $431.6 million in cash, cash equivalents, and marketable securities.

In connection with the Artesyn acquisition in 2019, the Company entered into a credit agreement (the “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 the Revolving Facility mature on September 10, 2024. At September 30, 2020, we had $150.0 million in available funding under the Revolving Facility. The Term Loan Facility requires quarterly repayments of $4.4 million, plus accrued interest, with the remaining balance due in September 2024. For more information on the Credit Facility, see *Note 22. Credit Facility* in Part I, Item 1 "Unaudited Consolidated Financial Statements."

On April 6, 2020 and April 7, 2020, the Company executed interest rate swap transactions in an aggregate notional amount of $286.3 million with various financial institutions. The initial notional amount of the interest rate swap transactions represents 85% of the outstanding principal balance of the Term Loan Facility debt under the Company's existing Credit Agreement, dated as of September 10, 2019, and provides for the Company to pay an average fixed rate of 0.521% per annum in exchange for a variable interest rate based on one-month USD-LIBOR-BBA. The total cost to the Company is the base rate plus the credit spread in the Credit Agreement, which is currently 75 basis points at current leverage ratios, for a total interest rate of 1.271%.

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

On December 18, 2019, our Board of Directors authorized the removal of the expiration date from the share repurchase program and increased the balance available for stock repurchase by $25.1 million. As of September 30, 2020, the Company was authorized to repurchase shares of the Company's common stock of up to a total of $38.4 million.

To execute the repurchase of shares of common stock, the Company periodically enters into stock repurchase agreements. During the three and nine months ended September 30, 2020 and 2019, the Company has repurchased the following shares of common stock (in thousands, except per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Amount paid to repurchase shares	$ 4,331	$ —	$ 11,579	$ —
Number of shares repurchased	73	—	243	—
Average repurchase price per share	$ 59.70	$ —	$ 47.70	$ —

We believe our current cash levels, available borrowing capacity under the Revolving Facility, as well as expected cash generation from future operations, will be adequate to meet our working capital requirements, debt repayment and capital expenditures, contractual obligations, share repurchase programs, and additional acquisitions on long-term and short-term basis. We may, however, depending upon the number or size of additional acquisitions, seek additional financing from time to time.

CASH FLOWS

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

	Nine Months Ended September 30,	
	2020	2019
Net cash from operating activities from continuing operations	$ 135,032	$ 28,858
Net cash from operating activities from discontinued operations	(659)	317
Net cash from operating activities	134,373	29,175
Net cash from investing activities from continuing operations	(27,253)	(382,537)
Net cash from financing activities from continuing operations	(26,155)	342,397
EFFECT OF CURRENCY TRANSLATION ON CASH	1,571	(3,185)
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	82,536	(14,150)
CASH AND CASH EQUIVALENTS, beginning of period	346,441	354,552
CASH AND CASH EQUIVALENTS, end of period	$ 428,977	$ 340,402

2020 CASH FLOWS COMPARED TO 2019

Net cash from operating activities

Net cash from operating activities from continuing operations for the nine months ended September 30, 2020 was $135.0 million, as compared to $28.9 million for the same period in 2019. The increase of $106.1 million in net cash flows from operating activities, as compared to the same period in 2019, is due to increased profitability as a result of overall increases in sales primarily in the semiconductor equipment market resulting in increased earnings from continuing operations and incremental cash flow from inorganic operations.

Net cash from investing activities

Net cash from investing activities for the nine months ended September 30, 2020 was ($27.3) million and predominantly related to investment in capacity and facilities as we continue to integrate certain locations. Net cash from investing activities for the nine months ended September 30, 2019 was ($382.5) million and includes ($365.8) million for the acquisition of Artesyn.

Net cash from financing activities

Net cash from financing activities for the nine months ended September 30, 2020 was ($26.2) million and included ($13.1) million for repayment of long-term debt and ($11.6) million for the repurchase of shares. Net cash from financing activities for the nine months ended September 30, 2019 was $342.4 million and includes the net proceeds of $347.5 million for debt issued in connection with the acquisition of Artesyn.

Effect of currency translation on cash

During the nine months ended September 30, 2020, currency translation had a $1.6 million favorable impact as compared to a ($3.2) million unfavorable impact during the same period in 2019 primarily due to the weakened U.S. dollar. Our foreign operations 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"), Canadian Dollar ("CAD"), Swiss Franc ("CHF"), Chinese Yuan ("CNY"), Danish Krone ("DKK"), Euro ("EUR"), Pound Sterling ("GBP"), Israeli New Shekel ("ILS"), Indian Rupee ("INR"), Japanese Yen ("JPY"), Philippines Peso ("PHP"), South Korean Won ("KRW"), Singapore Dollar ("SGD") and New Taiwan Dollar ("TWD"). Our purchasing and sales activities are primarily denominated in USD, CNY, EUR, and JPY.

The change in these key currency rates are as follows:

		Nine Months Ended September 30,	
From	**To**	**2020**	**2019**
CAD	USD	(2.6)%	2.9 %
CHF	USD	5.0 %	(1.1)%
CNY	USD	2.4 %	(3.7)%
DKK	USD	4.9 %	(4.6)%
EUR	USD	4.5 %	(4.6)%
GBP	USD	(2.4)%	(3.4)%
ILS	USD	0.6 %	7.9 %
INR	USD	(3.2)%	(1.4)%
JPY	USD	2.9 %	1.9 %
KRW	USD	(1.0)%	(7.1)%
PHP	USD	4.6 %	— %
SGD	USD	(1.6)%	(1.4)%
TWD	USD	3.4 %	(1.5)%

Critical Accounting Policies and Estimates

The preparation of financial statements and related disclosures in conformity with U.S. GAAP requires us to make judgments, assumptions and estimates that affect the amounts reported in the Consolidated Financial Statements and accompanying notes. *Note 1. Operation and Summary of Significant Accounting Policies and Estimates* to the Consolidated Financial Statements in our Annual Report on Form 10-K for the year ended December 31, 2019 describes the significant accounting policies and methods used in the preparation of our Consolidated Financial Statements. Our critical accounting estimates, discussed in the Management's Discussion and Analysis of Financial Condition and Results of Operations in Part II, Item 7 of our Annual Report on Form 10-K for the year ended December 31, 2019, include estimates for allowances for doubtful accounts, determining useful lives for depreciation and amortization, the valuation of assets and liabilities acquired in business combinations, assessing the need for impairment charges for identifiable intangible assets and goodwill, establishing warranty reserves, accounting for income taxes, and assessing excess and obsolete inventories. Such accounting policies and estimates require significant judgments and assumptions to be used in the preparation of the Consolidated Financial Statements and actual results could differ materially from the amounts reported based on variability in factors affecting these estimates.

ITEM 3. 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, and 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. 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 September 30, 2020, our investments consisted of certificates of deposit, with maturities of less than 1 year and money market deposits (see *Note 7. Fair Value* in Part 1, Item 1 "Unaudited Consolidated Financial Statements"). As a measurement of the sensitivity of our portfolio and if our investment portfolio balances remain constant, a hypothetical decrease of one percentage point in interest rates would decrease annual pre-tax earnings by an immaterial amount.

As of September 30, 2020, we had $328.1 million of total borrowings under our term loan facility. $50.5 million is subject to a variable interest rate based on a reserve adjusted Eurodollar Rate or a Base Rate plus an applicable margin and $277.6 million is subject to 1.271% fixed interest rate due to our use of interest rate swaps See *Note 8, Derivative Financial Instruments* in our unaudited consolidated financial statements for additional information.

Our interest payments are impacted by interest rate fluctuations. With respect the portion of our Credit Facility that is subject a variable interest rate, a hypothetical increase of 100 basis points (1%) in interest rates would increase our commitments by an immaterial amount.

A change in interest rates does not have an impact upon our future earnings and cash flow for fixed rate debt. However, increases in interest rates could impact our ability to refinance existing maturities and acquire additional debt on favorable terms.

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. Our purchasing and sales activities are primarily denominated in USD, CNY, EURO, and JPY. 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 therefore may impact our view of their attractiveness.

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 many 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.

From time to time, we may enter foreign currency exchange rate contracts with banks to hedge against changes in foreign currency exchange rates on assets and liabilities expected to be settled at a future date. Market risk arises from the potential adverse effects on the value of derivative instruments that result from a change in foreign currency exchange rates. We attempt to mitigate 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 these contract instruments for risk management purposes only. We do not enter or issue derivatives for trading or speculative purposes.

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 exchange rates.

See the "Risk Factors" set forth in Part I, Item 1A of our Annual Report on Form 10-K and Part II, Item 1A of this Form 10-Q for more information about the market risks to which we are exposed. There have been no material changes in our exposure to market risk from December 31, 2019.

ITEM 4. 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 ("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), 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 September 30, 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.

We completed a review of Artesyn's internal control over financial reporting and implemented changes to better align their reporting and controls with the rest of Advanced Energy.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the fiscal quarter covered by this Form 10-Q that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

We are involved in disputes and legal actions arising in the normal course of our business. There have been no material developments in legal proceedings in which we are involved for the three and nine months ended September 30, 2020 and 2019. For a description of previously reported legal proceedings refer to Part I, Item 3, "Legal Proceedings" of our Annual Report on Form 10-K for the year ended December 31, 2019.

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 significant 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-Q and other reports we file with the Securities and Exchange Commission.

COVID-19 and the Impact on our Business

As we have grown our locations worldwide, our risk to regional and worldwide viruses and diseases has also grown. For example, the continuing spread in 2020 of COVID-19 and related 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 grow and restrictions remain in place or are reinstituted, 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. Our customers may also delay orders should our products be included as a subsystem into their systems. In addition, much of our workforce is now working remotely. While we have been successful in transitioning to this environment, the long-term impact on productivity and innovation is not 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.

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 impacting imports and exports. The U.S. government has adopted changes, and intends to adopt further changes, to trade policy and in some cases, to renegotiate, or potentially terminate, certain existing bilateral or multi-lateral trade agreements. It has initiated the imposition of additional tariffs on certain foreign goods, including steel and aluminum, semiconductor manufacturing equipment and spare parts thereof. 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 US 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 has issued a list 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. 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 expectations for the expert of controlled goods to Hong Kong.

Examples of government actions are tariffs on steel and aluminum product imports announced by the U.S. Department of Commerce and tariffs on four lists of products originating in China by the United States Trade Representative (“USTR”). These lists issued by the USTR added an additional 25% tariffs on certain semiconductor equipment and parts originating in China that are sold by us or used in our business in the United States. Any increase in the cost of importing such goods and parts, or limitations on us or our customers could adversely affect revenue, decrease our margins, reduce the competitiveness of our products, or inhibit our ability to sell products or purchase necessary parts, which could have a material adverse effect on our business results, results of operations, or financial condition.

On April 28, 2020 the U.S. Department of Commerce issued new rules that (1) expand the definition of military end use and (2) eliminate the applicability of certain license exceptions for exports to countries on Country Group D of Supplement No. 1 to part 740 of the Export Administration Regulations. These changes expand export license requirements for U.S. companies to sell certain items to companies in China that have operations that could support military end uses, even if the items sold by the U.S. companies are for civilian end use and they reduce the applicability of license exceptions for exports to those countries listed on Country Group D, including China. Additionally, amendments to General Prohibition Three (Foreign-Produced Direct Product Rule) and the Entity List were effective May 15, 2020. These amendments expand the restrictions on the sale of foreign-made goods that are based on U.S. technology, and software located outside the United States to companies on the U.S. Entity List, and regulate the use of U.S. origin semiconductor manufacturing equipment that produces semiconductor devices for companies on the U.S. Entity List. The rule changes for export controls may reduce or impair our customers’ ability to sell products internationally, which could in turn decrease the demand for our products and have a material adverse effect on our revenues and profitability. At this time, the additional proposed rule changes are not anticipated to impact the Company’s sales of non-U.S. products; however, any unpredicted rule changes could adversely affect our business results, operations, or financial condition.

On June 24, 2020, the U.S. Department of Defense (DOD) released a list of companies that it has determined to be owned or controlled by China’s People’s Liberation Army and the list was subsequently expanded on August 28, 2020. The Company currently conducts business transactions with a limited number of entities on the list. At this time, no sanctions have been imposed on the companies on the list, however, sanctions may be imposed by executive order without notice. Imposition of sanctions on suppliers to the Company may adversely affect our business operations in China, overall Company results or our financial condition.

On July 14, 2020, the President signed an executive order on Hong Kong normalization. The executive order states that the US has determined that the Special Administrative Region of Hong Kong is no longer sufficiently autonomous to justify being treated as separate from China. Among the areas impacted by the removal of Hong Kong’s preferential status are export controls and immigration. The executive order requires exporters to obtain export licenses for controlled U.S. goods shipped to Hong Kong and Hong Kong nationals employed by the Company will now require a visa to visit the U.S. The Company expects these changes to have minimal impact.

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.

We cannot predict future trade policy, the terms of any renegotiated trade agreements or additional imposed tariffs and their impact on our business. 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.

Our product lines are manufactured only at 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 and networking and data center computing products are manufactured in Zhongshan, PRC, Rosario, Philippines and Santa Rosa, Philippines. Some of Artesyn’s Embedded Power business’ products are contract manufactured by the carved-out former Artesyn consumer group at their Luoding, China facility. Each facility is under operating lease and interruptions in operations could be caused by early termination of existing leases by landlords or failure by landlords to renew existing leases upon expiration, including the possibility that suitable operating locations may not be available in proximity to existing facilities which could result in labor or supply chain risks. 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 our productivity at such site and could prevent us from meeting our customers’ requirements in a timely manner, or at all. For example, the spread of COVID-19 and related government actions have resulted in temporary shut-downs of our facilities and may impact availability of materials supply and manufacturing employees, particularly in our foreign operations. Any potential losses from such occurrences could significantly affect our relationship with customers, operations, and results of operations for a prolonged period. As a result, we are investing in additional production options in Malaysia. We believe this investment will help to mitigate our exposure to regional risks, improve our business continuity profile and lower costs over time.

Our restructuring and other cost reduction efforts have included transitioning manufacturing operations to our facility in Shenzhen from other manufacturing facilities, such as Fort Collins, Colorado and Littlehampton, United Kingdom, which renders us increasingly reliant upon our Shenzhen facility. We have been notified that we will be required to relocate our Shenzhen, PRC manufacturing facility by December 2021. A disruption in manufacturing at our Shenzhen facility, from whatever cause, could have a significantly adverse effect on our ability to fulfill customer orders, our ability to maintain customer relationships, our costs to manufacture our products and, as a result, our results of operations and financial condition. To mitigate these risks, we are investing in a dual manufacturing facility in Penang, Malaysia that will be capable of manufacturing our semiconductor and other products. We have begun pilot production for qualification and while the facility opened in the first quarter of 2020, it may take additional time to realize the facility’s full production capacity given the impact of COVID-19.

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.

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

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

This reliance involves several risks, including the following:

- the inability to obtain an adequate supply of required parts, components, or subassemblies;
- supply shortages, if a sole or limited source provider ceases operation;
- the need to fund the operating losses of a sole or limited source provider;
- reduced control over pricing and timing of delivery of raw materials and parts, components, or subassemblies;
- the need to qualify alternative suppliers;
- suppliers that may provide parts, components or subassemblies that are defective, contain counterfeit goods or are otherwise misrepresented to us in terms of form, fit or function;
- the inability of our suppliers to develop technologically advanced products to support our growth and development of new products;
- the impact of geopolitical issues or tariffs that could affect the cost and availability of required parts, components, or subassemblies; and
- the recent impact of COVID-19 has affected our global supply chain, resulting in many suppliers operating at partial capacity or being shut down at certain points in time.

From time to time, our sole or limited source suppliers have given us notice that they are ending supply of critical parts, components, and subassemblies that are required for us to deliver product. If we cannot qualify alternative suppliers before ending supply of critical parts from the sole or limited source suppliers, we may be required to make a last-time-buy(s) and take possession of material amounts of inventory in advance of customer demand. In some instances, the last-time-buy materials required to be purchased may be for several years which in turn exposes us to additional excess and obsolescence risk. If we cannot qualify alternative suppliers before the last-time-buy materials are utilized in our products or legacy inverter warranty operations, we may be unable to deliver further product or legacy inverter warranty service to our customers.

Qualifying alternative suppliers could be time consuming and lead to delays in, or prevention of delivery of products to our customers, as well as increased costs. If we are unable to qualify additional suppliers and manage relationships with our existing and future suppliers successfully, if our suppliers experience financial difficulties including bankruptcy, or if our suppliers cannot meet our performance or quality specifications or timing requirements, we may experience shortages, delays, or increased costs of raw materials, parts, components, or subassemblies. This in turn could limit or prevent our ability to manufacture and ship our products, which could materially and adversely affect our relationships with our current and prospective customers and our business, financial condition, and results of operations.

The markets we operate in are highly competitive.

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

We are highly dependent on our intellectual property.

Our success depends significantly on our proprietary technology. We attempt to protect our intellectual property rights through patents and non-disclosure agreements; however, we might not be able to protect our technology, and 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. The cost of applying for patents in foreign countries and translating the applications into foreign languages requires us to carefully select the inventions for which we apply for patent protection and the countries in which we seek such protection. Generally, our efforts to obtain international patents have been concentrated in the European Union and certain industrialized countries in Asia, including Korea, Japan, and Taiwan. If we are unable to protect our intellectual property successfully, our business, financial condition, and results of operations could be materially and adversely affected.

The PRC commercial law is relatively undeveloped compared to the commercial law in the United States. Limited protection of intellectual property is available under PRC law. Consequently, manufacturing our products in the PRC may subject us to an increased risk that unauthorized parties may attempt to copy our products or otherwise obtain or use our intellectual property. We may not be able to protect our intellectual property rights effectively. Additionally, we may not have adequate legal recourse if we encounter infringements of our intellectual property in the PRC.

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

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

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

As a supplier to the global semiconductor equipment, telecom and networking, data center computing and industrial & 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. In addition, we may not be able to respond adequately or quickly to the declines in demand by reducing our costs. We may be required to record significant reserves for excess and obsolete inventory as demand for our products changes.

To meet rapidly changing demand in each of the industries we serve, we must effectively manage our resources and production capacity. During periods of decreasing demand for our products, we must be able to appropriately align our cost structure with prevailing market conditions, effectively manage our supply chain, and motivate and retain key employees. During periods of increasing demand, we must have 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 the nine months of 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 and networking markets are characterized by large program investments, which can cause variations in quarterly or annual revenues. For example, during the first nine months of 2020, our growth in Data Center has been driven by share gains at specific customer accounts. The resulting business levels may not continue to be realized at these levels each quarter.

Deterioration of economic conditions could negatively impact our business.

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

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

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

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 Embedded Technologies, Inc.'s ("Artesyn") Embedded Power business, and we are continuing to combine Artesyn's Embedded Power business with our business. The acquisition of Artesyn's Embedded Power business has significantly increased our embedded power product offerings, increased our exposure to the industrial and medical, datacenter computing, and telecom and networking end markets, and significantly increased the number of employees and facilities.

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 Embedded Power business and operations with ours requires significant management attention, efforts 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 our acquisition of Artesyn's Embedded Power 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;
- continue to realize synergies and cost savings across the organization while managing our existing businesses, contracts and relationships;
- 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;

- effectively manage risks related to Artesyn's foreign operations, including foreign currency risk, geographic risks, and local employee related risks;
- integrate Artesyn into our global tax structure and manage the related impact on our current and future tax rates as a result of the acquisition; and
- identify and retain key Artesyn personnel and transition their critical knowledge;

If we are unable to successfully or timely integrate the operations of Artesyn's Embedded Power 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 incurred and will 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. Although we expect that the elimination of duplicative costs, as well as the realization of other efficiencies related to the integration of the businesses, should allow us to offset transaction and integration-related costs over time, this net benefit may not be achieved in the near term, or at all. Further, we may not realize the expected long-term benefits from the acquisition. Artesyn's Embedded Power 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.

As of September 30, 2020, our total debt was $328.1 million, excluding unamortized debt issuance costs, of which $17.5 million was classified as current. We are contractually obligated to make quarterly payments of $4.4 million, plus accrued interest, with any outstanding balance due in September 2024. 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 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 the Credit Agreement or applicable laws or equity. Any of these events could have a material adverse effect on our business, financial condition, results of operations, and cash flows.

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. In addition, the acquisition of Artesyn added a significant additional footprint in both facilities and resources in China. 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, such as the recent reciprocal consulate closures or additions to the U.S. Entity List, whether or not directly related to our business, could reduce the price of our common stock. These factors may 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.

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

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, 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, and as mentioned above, 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 changes in the 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.

Sales to our customers outside the United States were approximately 71.1% and 55.1% of our total sales for the nine months ended September 30, 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 September 30, 2020;
- changes in tariffs, taxes, and foreign currency exchange rates; and
- the partial or complete shutdown of certain of our facilities and the related impacted on our supply chain and logistics functions as a result of recent government actions in response to COVID-19.

Our profitability and ability to implement our business strategies, maintain market share and compete successfully in international markets will be compromised if we are unable to manage these and other international risks successfully.

Our evolving manufacturing footprint may increase our risk.

The nature of our manufacturing is evolving as we continue to grow by acquisition. Historically, our principal manufacturing location has been in Shenzhen, PRC; however, we have also added specialized manufacturing at our Littlehampton, United Kingdom, Ballerup, Denmark, Frankfurt, Germany, Ronkonkoma and Lockport, New York. From time to time we may be required to, or we may choose to relocate manufacturing or migrate manufacturing of specific products between facilities or to third party manufacturers as part of our cost consolidation efforts. A disruption in supply because of these manufacturing relocations could have a significantly adverse effect on our ability to fulfill customer orders. We have been notified that we will be required to relocate our Shenzhen, PRC manufacturing facility by December 2021. If we do not successfully coordinate the timely manufacturing and distribution of our products during this time, we may have insufficient supply of products to meet customer demand, we could lose sales, we may experience a build-up in inventory, or we may incur additional costs. In addition, we are investing in a second factory in Malaysia to help mitigate business continuity, geopolitical and other risks. If we do not successfully implement this factory it could result in increased expenses and disruption of supply to our customers during the transition period.

In addition, the acquisition of Artesyn's Embedded Power business added significant vertically integrated manufacturing sites in China and the Philippines. These sites represent large fixed costs which are difficult to adjust as economic and other conditions change. If we do not successfully integrate these operations and operate them in an efficient manner, we could experience greater losses in times of revenue reduction.

With the acquisition of Artesyn, our strategy is to optimize and reduce our manufacturing footprint over the next several years primarily in China. Our strategy will require expenditures on facilities, employee severance and other related operations. If we are not successful in this strategy, our manufacturing capability may be impacted and we may not reduce long-term costs as planned.

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

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

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.

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

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

- issue stock that would dilute our current stockholders' percentage ownership;
- pay cash that would decrease our working capital;
- incur debt;
- assume liabilities; or
- incur expenses related to impairment of goodwill and amortization.

Acquisitions and divestitures also involve numerous risks, including:

- problems combining or separating the acquired/divested operations, systems, technologies, or products;
- an inability to realize expected sales forecasts, operating efficiencies or product integration benefits;
- difficulties in coordinating and integrating geographically separated personnel, organizations, systems, and facilities;
- difficulties integrating business cultures;
- unanticipated costs or liabilities;
- diversion of management's attention from our core business;
- adverse effects on existing business relationships with suppliers and customers;
- potential loss of key employees, particularly those of purchased organizations;

- incurring unforeseen obligations or liabilities in connection with either acquisitions or divestitures; and
- the failure to complete acquisitions even after signing definitive agreements which, among other things, would result in the expensing of potentially significant professional fees and other charges in the period in which the acquisition or negotiations are terminated.

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

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

We are subject to income taxes in the U.S. (federal and state) and numerous foreign jurisdictions. Tax laws, regulations, and administrative practices in various jurisdictions may be subject to significant change due to economic, political, and other conditions, and significant judgment is required in evaluating and estimating our provision and accruals for these taxes. There are many transactions that occur during the ordinary course of business for which the ultimate tax determination is uncertain. Our effective tax rates could be adversely affected by earnings being lower than anticipated in jurisdictions where we have lower statutory rates and 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 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. The acquisition of Artesyn may change our mix of earnings in various tax jurisdictions and may impact our overall current or future tax rate.

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.

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

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

Difficulties in obtaining capital and uncertain market conditions may also lead to a reduction of our sales and greater instances of nonpayment. These conditions may similarly affect our key suppliers, which could affect their ability to deliver parts and result in delays for our products. Further, these conditions and uncertainty about future economic conditions could make it challenging for us to forecast our operating results and evaluate the risks that may affect our business, financial condition, and results of operations. As discussed in "Our orders of raw materials, parts, components, and subassemblies are based on demand forecasts," a significant percentage of our inventory purchase commitments are relatively fixed and based, in part, on expectations of future net sales. If a sudden decrease in demand for our products from one or more customers were to occur, the inability to adjust spending quickly enough to compensate for any shortfall would magnify the adverse impact of a shortfall in net sales on our results of operations. Conversely, if market conditions were to unexpectedly improve and demand for our products were to increase suddenly, we might not be able to respond quickly enough, which could have a negative impact on our results of operations and customer relations.

We are exposed to risks associated with derivative financial instruments.

We use derivative financial instruments to manage fluctuations in foreign currency and the interest rate on our debt. Although we review counterparty creditworthiness and attempt to limit exposure to any single counterparty, we are exposed to the risk that counterparties to derivative contracts may fail to meet their contractual obligations.

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 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. 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. In case 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 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.

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

Our sales are primarily made on a purchase order basis, and we generally have no long-term purchase commitments from our customers, which is typical in the industries we serve. As a result, we are limited in our ability to predict the level of future sales or commitments from our current customers, which may diminish our ability to allocate labor, materials, and equipment in the manufacturing process effectively. In addition, we may 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. As a result of recent economic conditions and changes in various markets that we serve, our customers have experienced significant cost pressures. We have observed increased price sensitivity on the part of our customers. If competition against any of our product lines should come to focus solely on price rather than on product performance and technology innovation, we will need to adjust our business strategy and product offerings accordingly, and if we are unable to do so, our business, financial condition, and results of operations could be materially and adversely affected.

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

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

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

Our ten largest customers accounted for 58.2% and 47.8% of our sales for the nine months ended September 30, 2020 and 2019, respectively. A significant decline in sales from our ten largest customers, or the Company's inability to collect on these sales, could materially and adversely impact our business, results of operations and financial condition.

We maintain significant amounts of cash in international locations.

Given the global nature of our business, we have both domestic and international concentrations of cash and investments. The value of our cash, cash equivalents, and marketable securities can be negatively affected by liquidity, credit deterioration, financial results, economic risk, political risk, sovereign risk, or other factors.

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 risk of control failures in the event of non-compliance.

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

Our customers continually exert pressure on us to reduce our prices and extend payment terms. Given the nature of our customer base and the highly competitive markets in which we compete, we may be required to reduce our prices or extend payment terms to remain competitive. We have recently seen pricing pressure from our largest customers due in part to low-cost competition and market consolidation. As a result of the competitive markets we serve, from time to time we may enter into long term pricing agreements with our largest customers that results in reduced product pricing. Such reduced product pricing may result in product margin declines unless we are successful in reducing our product costs ahead of such price reductions. In addition, Artesyn competes in markets that are more price competitive which may include dual or multi sourcing. We believe some of our Asian competitors benefit from local governmental funding incentives and purchasing preferences from end-user customers in their respective countries. Moreover, in order to be successful in the current competitive environment, we are required to accelerate our investment in research & development to meet time-to-market, performance and technology adoption cycle needs of our customers simply in order to compete for design wins, and if successful, receive potential purchase orders. Given such up-front investments we must make and the competitive nature of our markets, we may not be able to reduce our expenses in an amount enough to offset potential margin declines or loss of business and may not be able to meet customer product time-line expectations. The potential decrease in cash flow could materially and adversely impact our financial condition.

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 tax” on our Consolidated Statement of Operations in future periods. We plan to continue supporting inverter customers with service maintenance and repair operations. This includes performing service to fulfill obligations under existing service maintenance contracts. There is no certainty that these can be performed profitably and could be adversely affected by higher than anticipated product failure rates, loss of critical service technician skills, an inability to obtain service parts, customer demands and disputes and cost of repair parts, among other factors. See *Note 4. Disposed and Discontinued Operations* in Part I, Item 1 "Unaudited Consolidated Financial Statements" 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 I, Item 1 "Unaudited Consolidated Financial Statements" contained herein.

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

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

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." The UK and the EU are now in a transitionary period through the end of 2020. Negotiation on the UK's withdrawal from the EU as well as its relationship with the EU going forward, including the terms of trade between the UK and the EU, is unclear. Although it is unknown what those terms will be, it is possible that there will be greater restrictions on imports and exports between the UK and EU countries and increased regulatory complexities. These changes may adversely affect our sales, operations, and financial results. Our operations in the UK may be adversely affected by extreme fluctuations in the UK exchange rates. 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.

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

The PRC government is continually pressured by its trading partners to allow its currency to float in a manner like other major currencies. Any change in the value of the Chinese yuan may impact our ability to control the cost of our products in the world market. Specifically, the decision by the PRC government to allow the yuan to begin to float against the United States dollar could significantly increase the labor and other costs incurred in the operation of our Shenzhen and Zhongshan facilities and the cost of raw materials, parts, components, and subassemblies that we source in the PRC, thereby having a material and adverse effect on our financial condition and results of operations.

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

Our 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 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.

Recent legal developments in Europe have created compliance uncertainty regarding certain transfers of personal data from Europe to the United States. For example, the General Data Protection Regulation ("GDPR"), effective in the EU starting on May 25, 2018, applies to all our activities conducted from an establishment in the EU or related to products and services that we offer to EU users. The GDPR creates a range of new compliance obligations, which could cause us to change our business practices, and will significantly increase financial penalties for noncompliance (including possible fines of up to 4% of global annual turnover for the preceding financial year or €20 million (whichever is higher) for the most serious infringements).

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.

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. Pension Liability* in Part I, Item 1 "Unaudited Consolidated Financial Statements" contained herein.

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

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

Our intangible assets may become impaired.

As of September 30, 2020, we have $206.6 million of goodwill and $169.3 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.

We are subject to numerous governmental regulations.

We are subject to federal, state, local and foreign regulations, including environmental regulations and regulations relating to the design and operation of our products and control systems and regulations governing the import, export and customs duties related to our products. We might incur significant costs as we seek to ensure that our products meet safety and emissions standards, many of which vary across the states and countries in which our products are used. In the past, we have invested significant resources to redesign our products to comply with these directives. Compliance with future regulations, directives, and standards could require us to modify or redesign some products, make capital expenditures, or incur substantial costs. Also, we may incur significant costs in complying with the 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 new implementing rules and regulations, and to prepare numerous studies and reports for Congress. On August 22, 2012, under the Dodd-Frank Act, the SEC adopted new requirements for companies that use certain minerals and metals, known as conflict minerals, in their products, whether or not these products are manufactured by third parties. These requirements 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 over the minerals used in the manufacture of those products. 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.

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

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

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

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

Our 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 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 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

In September 2015, our Board of Directors authorized a program to repurchase up to $150.0 million of our stock over a thirty-month period. 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 the repurchase authorization.

On December 18, 2019, our Board of Directors authorized the removal of the expiration date from the repurchase program and increased the balance available for stock repurchase by $25.1 million. As of September 30, 2020, the Company was authorized to repurchase shares of the Company's 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 following table provides information about the Company's purchases of its equity securities that are registered pursuant to Section 12 of the Exchange Act during the quarter ended September 30, 2020 (in thousands, except per share amounts):

	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Dollar Value of Shares that May Yet be Purchased Under the Plans or Programs
July 1, 2020 - July 31, 2020	—	$ —	—	$ 42,751
August 1, 2020 - August 31, 2020	—	—	—	42,751
September 1, 2020 - September 30, 2020	73	59.70	73	38,420
Total	73	$ 59.70	73	$ 38,420

ITEM 6. EXHIBITS

The exhibits listed in the following Exhibit Index are filed as part of this Quarterly Report on Form 10-Q.

31.1	Certification of the Chief Executive Officer Pursuant to Rule 13a-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of the Chief Financial Officer Pursuant to Rule 13a-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification of the Chief Executive Officer Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification of the Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL 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 in Inline XBRL and contained in Exhibit 101.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

ADVANCED ENERGY INDUSTRIES, INC.

Dated: November 5, 2020

/s/ Paul Oldham
Paul Oldham
Chief Financial Officer & Executive Vice President

EXHIBIT 31.1

I, Yuval Wasserman, certify that:

1. I have reviewed this quarterly report on Form 10-Q for the period ended September 30, 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: November 5, 2020

/s/ Yuval Wasserman
Yuval Wasserman
Chief Executive Officer

EXHIBIT 31.2

I, Paul Oldham, certify that:

1. I have reviewed this quarterly report on Form 10-Q for the period ended September 30, 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: November 5, 2020

/s/ Paul Oldham

Paul Oldham
Chief Financial Officer & Executive Vice President

EXHIBIT 32.1

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

I hereby certify, pursuant to 18 U.S.C. Section 1350, that the accompanying Quarterly Report on Form 10-Q for the period ended September 30, 2020, of Advanced Energy Industries, Inc., fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in the Quarterly Report on Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of Advanced Energy Industries, Inc.

Date: November 5, 2020

/s/ Yuval Wasserman
Yuval Wasserman
Chief Executive Officer

A signed original 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.

EXHIBIT 32.2

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

I hereby certify, pursuant to 18 U.S.C. Section 1350, that the accompanying Quarterly Report on Form 10-Q for the period ended September 30, 2020, of Advanced Energy Industries, Inc., fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in the Quarterly Report on Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of Advanced Energy Industries, Inc.

Date: November 5, 2020

/s/ Paul Oldham
Paul Oldham
Chief Financial Officer & Executive Vice President

A signed original 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.