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 June 30, 2023

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, Colorado	**80202**
(Address of principal executive offices)	(Zip Code)

(970) 407-6626
(Registrant's telephone number, including area code)

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 July 31, 2023, there were 37,651,044 shares of the registrant's common stock, par value $0.001 per share, outstanding.

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

PART I FINANCIAL INFORMATION

ITEM 1. UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS

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

	June 30, 2023	December 31, 2022
ASSETS		
Current assets:		
Cash and cash equivalents	$ 455,252	$ 458,818
Accounts and other receivables, net	258,752	300,683
Inventories	392,349	376,012
Other current assets	46,850	53,001
Total current assets	1,153,203	1,188,514
Property and equipment, net	159,025	148,462
Operating lease right-of-use assets	93,994	100,177
Other assets	85,500	84,056
Intangible assets, net	175,493	189,526
Goodwill	282,692	281,433
TOTAL ASSETS	$ 1,949,907	$ 1,992,168
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 149,259	$ 170,467
Accrued payroll and employee benefits	59,927	82,733
Other accrued expenses	44,190	76,750
Customer deposits and other	14,633	26,322
Current portion of long-term debt	20,000	20,000
Current portion of operating lease liabilities	15,421	16,771
Total current liabilities	303,430	393,043
Long-term debt, net	343,516	353,262
Operating lease liabilities	87,780	94,460
Pension benefits	45,518	44,031
Other long-term liabilities	44,384	41,105
Total liabilities	824,628	925,901
Commitments and contingencies (Note 17)		
Stockholders' equity:		
Preferred stock, $0.001 par value, 1,000 shares authorized, none issued and outstanding	—	—
Common stock, $0.001 par value, 70,000 shares authorized; 37,650 and 37,429 issued and outstanding at June 30, 2023 and December 31, 2022, respectively	38	37
Additional paid-in capital	147,221	134,640
Accumulated other comprehensive income	12,281	16,320
Retained earnings	965,739	915,270
Total stockholders' equity	1,125,279	1,066,267
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$ 1,949,907	$ 1,992,168

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 June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Sales, net	$ 415,508	$ 440,949	$ 840,548	$ 838,408
Cost of sales	268,428	278,791	538,357	531,934
Gross profit	147,080	162,158	302,191	306,474
Operating expenses:				
Research and development	51,413	48,009	103,023	91,623
Selling, general, and administrative	55,613	55,022	110,971	104,340
Amortization of intangible assets	7,075	6,523	14,137	12,032
Restructuring	3,154	(161)	4,197	1,057
Total operating expenses	117,255	109,393	232,328	209,052
Operating income	29,825	52,765	69,863	97,422
Other income (expense), net	2,425	3,249	1,875	2,407
Income from continuing operations, before income taxes	32,250	56,014	71,738	99,829
Provision for income taxes	4,795	11,203	12,531	18,156
Income from continuing operations	27,455	44,811	59,207	81,673
Income (loss) from discontinued operations, net of income taxes	(315)	180	(1,146)	82
Net income	$ 27,140	$ 44,991	$ 58,061	$ 81,755
Income from continuing operations attributable to noncontrolling interest	-	21	-	7
Net income attributable to Advanced Energy Industries, Inc.	$ 27,140	$ 44,970	$ 58,061	$ 81,748
Basic weighted-average common shares outstanding	37,573	37,520	37,524	37,535
Diluted weighted-average common shares outstanding	37,803	37,710	37,804	37,754
Earnings per share:				
Continuing operations:				
Basic earnings per share	$ 0.73	$ 1.19	$ 1.58	$ 2.18
Diluted earnings per share	$ 0.73	$ 1.19	$ 1.57	$ 2.16
Discontinued operations:				
Basic loss per share	$ (0.01)	$ —	$ (0.03)	$ —
Diluted loss per share	$ (0.01)	$ —	$ (0.03)	$ —
Net income:				
Basic earnings per share	$ 0.72	$ 1.20	$ 1.55	$ 2.18
Diluted earnings per share	$ 0.72	$ 1.19	$ 1.54	$ 2.17

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 June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Net income	$ 27,140	$ 44,991	$ 58,061	$ 81,755
Other comprehensive income (loss), net of income taxes				
Foreign currency translation	(1,533)	(8,679)	(1,729)	(12,771)
Change in fair value of cash flow hedges	(201)	2,026	(2,018)	7,939
Minimum pension benefit retirement liability	(292)	269	(292)	414
Comprehensive income	$ 25,114	$ 38,607	$ 54,022	$ 77,337
Comprehensive income attributable to noncontrolling interest	—	21	—	7
Comprehensive income attributable to Advanced Energy Industries, Inc.	$ 25,114	$ 38,586	$ 54,022	$ 77,330

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, except per share amounts)

	Advanced Energy Industries, Inc. Stockholders' Equity						
	Common Stock						
	Shares	Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Retained Earnings	Non-controlling Interest	Total Stockholders' Equity
Balances, December 31, 2021	37,589	$ 38	$ 115,706	$ (1,216)	$ 756,323	$ 645	$ 871,496
Stock issued from equity plans	52	—	(2,430)	—	—	—	(2,430)
Stock-based compensation	—	—	3,906	—	—	—	3,906
Share repurchases	(82)	—	(254)	—	(6,340)		(6,594)
Dividends declared ($0.10 per share)	—	—	—	—	(3,789)	—	(3,789)
Other comprehensive income	—	—	—	1,966	—	—	1,966
Net income (loss)	—	—	—	—	36,778	(14)	36,764
Balances, March 31, 2022	37,559	38	116,928	750	782,972	631	901,319
Stock issued from equity plans	63	—	763	—	—	—	763
Stock-based compensation	—	—	5,016	—	—	—	5,016
Share repurchases	(230)	(1)	(725)	—	(16,293)	—	(17,019)
Dividends declared ($0.10 per share)	—	—	—	—	(3,806)		(3,806)
Other comprehensive loss	—	—	—	(6,384)	—	—	(6,384)
Net income	—	—	—	—	44,970	21	44,991
Balances, June 30, 2022	37,392	$ 37	$ 121,982	$ (5,634)	$ 807,843	$ 652	$ 924,880
Balances, December 31, 2022	37,429	$ 37	$ 134,640	$ 16,320	$ 915,270	$ —	$ 1,066,267
Stock issued from equity plans	100	—	(1,991)	—	—	—	(1,991)
Stock-based compensation	—	—	6,543	—	—	—	6,543
Dividends declared ($0.10 per share)	—	—	—	—	(3,814)	—	(3,814)
Other comprehensive loss	—	—	—	(2,013)	—	—	(2,013)
Net income	—	—	—	—	30,921	—	30,921
Balances, March 31, 2023	37,529	37	139,192	14,307	942,377	—	1,095,913
Stock issued from equity plans	121	1	606	—	—	—	607
Stock-based compensation	—	—	7,423	—	—	—	7,423
Dividends declared ($0.10 per share)	—	—	—	—	(3,778)	—	(3,778)
Other comprehensive loss	—	—	—	(2,026)	—	—	(2,026)
Net income	—	—	—	—	27,140	—	27,140
Balances, June 30, 2023	37,650	$ 38	$ 147,221	$ 12,281	$ 965,739	$ —	$ 1,125,279

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)

	Six Months Ended June 30,	
	2023	**2022**
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income	$ 58,061	$ 81,755
Less: income (loss) from discontinued operations, net of income taxes	(1,146)	82
Income from continuing operations, net of income taxes	59,207	81,673
Adjustments to reconcile net income to net cash from operating activities:		
Depreciation and amortization	32,966	28,877
Stock-based compensation	14,738	8,986
Benefit for deferred income taxes	(786)	(1,977)
Loss on disposal and sale of assets	192	374
Changes in operating assets and liabilities, net of assets acquired		
Accounts and other receivable, net	46,044	(27,790)
Inventories	(17,688)	(52,109)
Other assets	2,859	(5,402)
Accounts payable	(17,448)	2,491
Other liabilities and accrued expenses	(64,580)	12,418
Net cash from operating activities from continuing operations	55,504	47,541
Net cash from operating activities from discontinued operations	(3,090)	55
Net cash from operating activities	52,414	47,596
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of investments	(3,128)	—
Purchases of property and equipment	(33,623)	(25,476)
Acquisitions, net of cash acquired	—	(145,779)
Net cash from investing activities	(36,751)	(171,255)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Payments on long-term borrowings	(10,000)	(10,000)
Dividend payments	(7,592)	(7,595)
Purchase and retirement of common stock	—	(23,578)
Net payments related to stock-based awards	(1,384)	(1,667)
Net cash from financing activities	(18,976)	(42,840)
EFFECT OF CURRENCY TRANSLATION ON CASH AND CASH EQUIVALENTS	(253)	(5,188)
NET CHANGE IN CASH AND CASH EQUIVALENTS	(3,566)	(171,687)
CASH AND CASH EQUIVALENTS, beginning of period	458,818	544,372
CASH AND CASH EQUIVALENTS, end of period	$ 455,252	$ 372,685
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:		
Cash paid for interest	$ 5,291	$ 2,461
Cash paid for income taxes	$ 38,008	$ 9,982

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. DESCRIPTION OF BUSINESS AND BASIS OF PRESENTATION

Advanced Energy Industries, Inc., a Delaware corporation, and its consolidated 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 coming from either the utility or the building facility and convert it into various types of highly controllable, usable power that is predictable, repeatable, and customizable to meet the necessary requirements for powering a wide range of complex equipment.

Our plasma power solutions enable innovation in complex semiconductor and thin film plasma processes such as dry etch and deposition. Our broad portfolio of high and low voltage power products is used in a wide range of applications, such as semiconductor equipment, industrial production, medical and life science equipment, data centers computing, networking, and telecommunications. We also supply related sensing, controls, and instrumentation products primarily for advanced measurement and calibration of power and temperature for multiple industrial markets. Our network of global service support centers provides repair services, calibration, conversions, upgrades, refurbishments, and used equipment to companies using our products.

In management's opinion, the accompanying unaudited consolidated financial statements contain all adjustments, consisting of normal, recurring adjustments, necessary to present fairly Advanced Energy's financial position as of June 30, 2023, and the results of our operations and cash flows for the three and six months ended June 30, 2023 and 2022.

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 year ended December 31, 2022 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, the disclosure of contingent liabilities at the date of the financial statements, and the reported amounts of revenue and expenses during the reporting period. The significant estimates, assumptions, and judgments include, but are not limited to:

- excess and obsolete inventory;
- pension obligations;
- acquisitions and asset valuations; and
- income taxes and other provisions.

Significant Accounting Policies

Our accounting policies are described in Note 1 to our audited consolidated financial statements in our Annual Report on Form 10-K for the year ended December 31, 2022.

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, will not have a material impact on the consolidated financial statements upon adoption.

(In thousands, except per share data)

New Accounting Standards Adopted

The FASB issued the following ASUs that we adopted in the current year:

Issuance Date	ASU	Title
March 2020	2020-04	Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting
January 2021	2021-01	Reference Rate Reform (Topic 848): Scope
December 2022	2022-06	Reference Rate Reform (Topic 848): Deferral of the Sunset Date of Topic 848

This collective guidance provides optional expedients and exceptions for applying U.S. GAAP to contract modifications and hedging relationships, subject to meeting certain criteria that reference LIBOR or another reference rate that is expected to be discontinued.

Our Credit Facility (refer to *Note 18. Credit Facility*) and interest rate swap agreements (refer to *Note 7. Derivative Financial Instruments*) referenced the one-month USD LIBOR rate. On March 31, 2023, we executed agreements with our debt holders and the counterparties to our interest rate swap agreements to transition the benchmark interest rate from LIBOR to the one-month-USD Term Secured Overnight Financing Rate (“SOFR”). The impact of this transition and the adoption of the above guidance was not material to our consolidated financial statements.

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

NOTE 2. ACQUISITIONS

SL Power Electronics Corporation

On April 25, 2022, we acquired 100% of the issued and outstanding shares of capital stock of SL Power Electronics Corporation ("SL Power"), which is based in Calabasas, California. We accounted for this transaction as a business combination. This acquisition added complementary products to Advanced Energy's medical power offerings and extends our presence in several advanced industrial markets.

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

Cash paid for acquisition	$ 145,693
Less cash acquired	(3,484)
Total fair value of purchase consideration	$ 142,209

We allocated the purchase price consideration to the assets acquired and liabilities assumed based on their estimated fair values as of the acquisition date, with the excess allocated to goodwill.

	Fair Value
Current assets and liabilities, net	$ 12,329
Property and equipment	3,567
Operating lease right-of-use assets	4,640
Deferred taxes and other liabilities	(2,326)
Intangible assets	57,600
Goodwill	71,039
Operating lease liability	(4,640)
Total fair value of net assets acquired	$ 142,209

The following table summarizes the intangible assets acquired:

	Fair Value	Amortization Method	Useful Life (in years)
Customer relationships	$ 50,500	Straight-line	10
Technology	7,100	Straight-line	5
Total	$ 57,600		

To estimate the fair value of intangible assets, we used a multi-period excess earnings approach for the customer relationships and a relief from royalty approach for developed technology. Goodwill represents SL Power's assembled workforce and the expected operating synergies from combining operations. We expect virtually all of the goodwill to be deductible for tax purposes.

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

NOTE 3. REVENUE

Disaggregation of revenue

The following tables present additional information regarding our revenue:

Revenue by Market

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Semiconductor Equipment	$ 173,177	$ 228,797	$ 367,386	$ 431,754
Industrial and Medical	127,603	104,951	250,623	187,849
Data Center Computing	59,076	69,161	118,735	145,399
Telecom and Networking	55,652	38,040	103,804	73,406
Total	$ 415,508	$ 440,949	$ 840,548	$ 838,408

Revenue by Region

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
North America	$ 171,516	$ 206,117	$ 352,458	$ 388,838
Asia	186,498	180,181	365,681	342,228
Europe	56,213	49,851	118,779	96,516
Other	1,281	4,800	3,630	10,826
Total	$ 415,508	$ 440,949	$ 840,548	$ 838,408

Revenue by Significant Countries

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
United States	$ 147,109	$ 174,293	$ 300,615	$ 333,035
China	53,192	41,438	90,648	86,130
All others	215,207	225,218	449,285	419,243
Total	$ 415,508	$ 440,949	$ 840,548	$ 838,408

We attribute sales to individual countries and regions based on the customer's ship to location. Apart from the United States and China, no revenue attributable to any individual country exceeded 10% of our total consolidated revenues in the three and six months ended June 30, 2023 and 2022.

Revenue by Category

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Product	$ 369,881	$ 403,977	$ 749,155	$ 766,853
Services	45,627	36,972	91,393	71,555
Total	$ 415,508	$ 440,949	$ 840,548	$ 838,408

Remaining Performance Obligations

Our remaining performance obligations primarily relate to customer purchase orders for products we have not yet shipped. We expect to fulfill the majority of these performance obligations within one year.

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

NOTE 4. INCOME TAXES

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Income from continuing operations, before income taxes	$ 32,250	$ 56,014	$ 71,738	$ 99,829
Provision for income taxes	$ 4,795	$ 11,203	$ 12,531	$ 18,156
Effective tax rate	14.9 %	20.0 %	17.5 %	18.2 %

Our effective tax rates differ from the U.S. federal statutory rate of 21% for the three and six months ended June 30, 2023 and 2022, respectively, primarily due to the benefit of earnings in foreign jurisdictions which are subject to lower tax rates, as well as tax credits, partially offset by net U.S. tax on foreign operations. The effective tax rate for the three and six months ended June 30, 2023 was lower than the same periods in 2022 primarily due to the impact of beneficial discrete items in the three months ended June 30, 2023 relative to unfavorable discrete items recorded in the three months ended June 30, 2022.

NOTE 5. EARNINGS PER SHARE

We compute basic earnings per share ("EPS") by dividing income available to common stockholders by the weighted-average number of common shares outstanding during the period. The diluted EPS computation is similar to basic EPS except we increase the denominator to include the number of additional common shares that would have been outstanding (using the treasury stock method) if our outstanding stock options and restricted stock units had been converted to common shares (when such conversion is dilutive).

The following table summarizes our earnings per share:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Income from continuing operations	$ 27,455	$ 44,811	$ 59,207	$ 81,673
Less: income from continuing operations attributable to noncontrolling interest	—	21	—	7
Income from continuing operations attributable to Advanced Energy Industries, Inc.	$ 27,455	$ 44,790	$ 59,207	$ 81,666
Basic weighted-average common shares outstanding	37,573	37,520	37,524	37,535
Assumed exercise of dilutive stock options and restricted stock units	230	190	280	219
Diluted weighted-average common shares outstanding	37,803	37,710	37,804	37,754
Continuing operations:				
Basic earnings per share	$ 0.73	$ 1.19	$ 1.58	$ 2.18
Diluted earnings per share	$ 0.73	$ 1.19	$ 1.57	$ 2.16

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

Share Repurchase

To execute the repurchase of shares of our common stock, we periodically enter into stock repurchase agreements. The following table summarizes these repurchases:

(in thousands, except per share amounts)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022
Amount paid or accrued to repurchase shares	$ —	$ 17,019	$ —	$ 23,613
Number of shares repurchased	—	230	—	312
Average repurchase price per share	$ —	$ 74.12	$ —	$ 75.68

There were no shares repurchased from related parties. Repurchased shares were retired and assumed the status of authorized and unissued shares.

At June 30, 2023, the remaining amount authorized by the Board of Directors for future share repurchases was $199.3 million with no time limitation.

NOTE 6. FAIR VALUE MEASUREMENTS

The following tables present information about our assets and liabilities measured at fair value on a recurring basis.

		June 30, 2023			
Description	Balance Sheet Classification	Level 1	Level 2	Level 3	Total Fair Value
Certificates of deposit	Other current assets	$ —	$ 175	$ —	$ 175
Foreign currency forward contracts	Other current liabilities	—	(68)	—	(68)
Interest rate swaps	Other assets	—	12,630	—	12,630
Net assets measured at fair value on a recurring basis		$ —	$ 12,737	$ —	$ 12,737

		December 31, 2022			
Description	Balance Sheet Classification	Level 1	Level 2	Level 3	Total Fair Value
Certificates of deposit	Other current assets	$ —	$ 2,128	$ —	$ 2,128
Interest rate swaps	Other assets	—	15,310	—	15,310
Net assets measured at fair value on a recurring basis		$ —	$ 17,438	$ —	$ 17,438

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

(In thousands, except per share data)

NOTE 7. DERIVATIVE FINANCIAL INSTRUMENTS

Changes in foreign currency exchange rates impact us. 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. Typically, we execute these derivative instruments for one-month periods and do not designate them as hedges; however, they do partially offset the economic fluctuations of certain of our assets and liabilities due to foreign exchange rate changes.

The following table summarizes the notional amount of outstanding foreign currency forward contracts:

	June 30, 2023	December 31, 2022
Foreign currency forward contracts	$ 81,403	$ —

Gains and losses related to foreign currency exchange contracts were offset by corresponding gains and losses on the revaluation of the underlying assets and liabilities. Both are included as a component of other income (expense), net in our Consolidated Statements of Operations.

In April 2020, we 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 our existing Credit Agreement dated September 10, 2019, as amended, refer to *Note 18. Credit Facility*). On March 31, 2023, we executed agreements with our debt holders and the counterparties to our interest rate swap agreements to transition the benchmark interest rate from LIBOR to SOFR. The interest rate swap contracts expire on September 10, 2024 and are accounted for as cash flow hedging instruments.

The interest rate swap contracts fix a portion of the outstanding principal balance on our Term Loan Facility to a total interest rate of 1.172%. This is comprised of a 0.322% average fixed rate per annum in exchange for a variable interest rate based on SOFR plus the credit spread in our existing Credit Agreement (see *Note 18. Credit Facility*), which is 75 basis points at current leverage ratios plus a LIBOR to SOFR transitional rate adjustment of 0.10%.

The following table summarizes the notional amount of our qualified hedging instruments:

	June 30, 2023	December 31, 2022
Interest rate swap contracts	$ 229,469	$ 238,219

The following table summarizes the amounts recorded in accumulated other comprehensive income on the Consolidated Balance Sheets for qualifying hedges.

	June 30, 2023	December 31, 2022
Interest rate swap contract gains	$ 9,707	$ 11,779

See *Note 6. Fair Value Measurements* for information regarding fair value of derivative instruments.

As a result of using derivative financial instruments, we are exposed to the risk that counterparties to contracts could fail to meet their contractual obligations. We manage this credit risk by reviewing counterparty creditworthiness on a regular basis and limiting exposure to any single counterparty.

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

NOTE 8. ACCOUNTS AND OTHER RECEIVABLES, NET

We record accounts and other receivables at net realizable value. The following table summarizes the changes in expected credit losses related to receivables:

December 31, 2022	$ 1,814
Additions	123
Deductions - write-offs, net of recoveries	(251)
Foreign currency translation	8
June 30, 2023	$ 1,694

NOTE 9. INVENTORIES

We value inventories at the lower of cost or net realizable value and computed on a first-in, first-out basis. Components of inventories were as follows:

	June 30, 2023	December 31, 2022
Parts and raw materials	$ 292,430	$ 286,955
Work in process	18,080	23,002
Finished goods	81,839	66,055
Total	$ 392,349	$ 376,012

NOTE 10. PROPERTY AND EQUIPMENT, NET

Property and equipment, net is comprised of the following:

	Estimated Useful Life (in years)	June 30, 2023	December 31, 2022
Buildings, machinery, and equipment	5 to 25	$ 180,331	$ 165,673
Computer equipment, furniture, fixtures, and vehicles	3 to 5	39,926	36,281
Leasehold improvements	2 to 10	70,937	63,103
Construction in process		19,396	18,226
		310,590	283,283
Less: Accumulated depreciation		(151,565)	(134,821)
Property and equipment, net		$ 159,025	$ 148,462

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Depreciation expense	$ 9,368	$ 8,466	$ 18,829	$ 16,845

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

NOTE 11. GOODWILL

The following table summarizes the changes in goodwill:

December 31, 2022	$ 281,433
Measurement period adjustments	353
Foreign currency translation	906
June 30, 2023	$ 282,692

NOTE 12. INTANGIBLE ASSETS

Intangible assets consisted of the following:

	June 30, 2023		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Technology	$ 97,659	$ (53,838)	$ 43,821
Customer relationships	168,116	(51,809)	116,307
Trademarks and other	27,122	(11,757)	15,365
Total	$ 292,897	$ (117,404)	$ 175,493

	December 31, 2022		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Technology	$ 97,237	$ (47,196)	$ 50,041
Customer relationships	167,631	(44,774)	122,857
Trademarks and other	27,036	(10,408)	16,628
Total	$ 291,904	$ (102,378)	$ 189,526

At June 30, 2023, the weighted average remaining useful life of intangibles subject to amortization was approximately 8.8 years.

Amortization expense related to intangible assets is as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Amortization expense	$ 7,075	$ 6,523	$ 14,137	$ 12,032

Estimated amortization expense related to intangibles is as follows:

Year Ending December 31,	
2023 (remaining)	$ 14,153
2024	25,212
2025	20,997
2026	19,282
2027	17,372
Thereafter	78,477
Total	$ 175,493

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

NOTE 13. RESTRUCTURING COSTS

In the fourth quarter of 2022, we approved a restructuring plan (the "2022 Plan"), which is expected to further improve our operating efficiencies and drive the realization of synergies from business combinations by consolidating our operations, optimizing our factory footprint, including moving certain production into our higher volume factories, and reducing redundancies. We anticipate the 2022 Plan will be substantially completed, and associated expenses will be incurred, by early 2024.

In 2018, we committed to a restructuring plan (the "2018 Plan") to optimize our manufacturing footprint and improve operating efficiencies and synergies related to business combinations. We incurred severance costs primarily related to the transition and exit of our facility in Shenzhen, China and actions associated with synergies related to the acquisition of Artesyn Embedded Technologies, Inc.'s embedded power business. The Shenzhen facility closed in the first quarter of 2023, and the 2018 Plan is substantially complete.

The tables below summarize the charges related to our restructuring plans:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Severance and related charges	$ 3,154	$ (161)	$ 4,197	$ 712
Facility relocation and closure charges	—	—	—	345
Total restructuring charges	$ 3,154	$ (161)	$ 4,197	$ 1,057

	Cumulative Cost Through June 30, 2023		
	2022 Plan	2018 Plan	Total
Severance and related charges	$ 9,921	$ 21,125	$ 31,046
Facility relocation and closure charges	—	7,160	7,160
Total restructuring charges	$ 9,921	$ 28,285	$ 38,206

Our restructuring liabilities are included in other accrued expenses in our Consolidated Balance Sheets. Changes in restructuring liabilities were as follows:

	2022 Plan	2018 Plan	Total
December 31, 2022	$ 5,788	$ 1,422	$ 7,210
Costs incurred and charged to expense	4,133	64	4,197
Costs paid or otherwise settled	(4,343)	(887)	(5,230)
June 30, 2023	$ 5,578	$ 599	$ 6,177

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

NOTE 14. WARRANTIES

Our sales agreements include customary product warranty provisions, which generally range from 12 to 24 months after shipment. We record the estimated warranty obligations cost when we recognize revenue. This estimate is based on historical experience by product and configuration.

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

December 31, 2022	$	5,702
Net increases to accruals		1,375
Warranty expenditures		(2,229)
Effect of changes in exchange rates		(16)
June 30, 2023	$	4,832

NOTE 15. LEASES

Components of operating lease cost were as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Operating lease cost	$ 5,656	$ 5,729	$ 11,336	$ 11,448
Short-term and variable lease cost	987	1,249	2,070	2,339
Total operating lease cost	$ 6,643	$ 6,978	$ 13,406	$ 13,787

Maturities of our operating lease liabilities are as follows:

Year Ending December 31,		
2023 (remaining)	$	10,010
2024		19,006
2025		15,544
2026		13,813
2027		12,110
Thereafter		58,431
Total lease payments		128,914
Less: Interest		(25,713)
Present value of lease liabilities	$	103,201

The following tables present additional information about our lease agreements:

	June 30, 2023	December 31, 2022
Weighted average remaining lease term (in years)	8.8	8.9
Weighted average discount rate	4.7 %	4.6 %

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Cash paid for operating leases	$ 5,824	$ 5,471	$ 11,668	$ 11,097
Right-of-use assets obtained in exchange for operating lease liabilities	$ 2,420	$ 7,681	$ 2,628	$ 12,222

(In thousands, except per share data)

NOTE 16. STOCK-BASED COMPENSATION

The Compensation Committee of our Board of Directors administers our stock plans. As of June 30, 2023, we have two active stock-based incentive compensation plans: the 2023 Omnibus Incentive Plan (“the 2023 Plan”) and the Employee Stock Purchase Plan (“ESPP”). The 2023 Plan was approved on April 27, 2023. We issue all new equity compensation grants under these two plans; however, outstanding awards previously issued under inactive plans will continue to vest and remain exercisable in accordance with the terms of the respective plans.

The 2023 Plan provides for the grant of stock options, stock appreciation rights, restricted stock, stock units, unrestricted stock, and dividend equivalent rights. Any of the awards issued may be issued as performance-based awards to align stock compensation awards to the attainment of annual or long-term performance goals.

The following table summarizes information related to our stock-based incentive compensation plans:

	June 30, 2023
Shares available for future issuance under the 2023 Omnibus Incentive Plan	2,383
Shares available for future issuance under the Employee Stock Purchase Plan	598

Generally, we grant restricted stock units (“RSUs”) with a three-year time-based vesting schedule. Certain RSUs contain performance-based or market-based vesting conditions in addition to the time-based vesting requirements. RSUs are generally granted with a grant date fair value based on the market price of our stock on the date of grant.

Generally, we grant stock option awards 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. Stock option awards generally have a term of ten 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 June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Stock-based compensation expense	$ 7,937	$ 5,058	$ 14,738	$ 8,986

Changes in our RSUs were as follows:

	Six Months Ended June 30, 2023	
	Number of RSUs	Weighted-Average Grant Date Fair Value
RSUs outstanding at beginning of period	803	$ 78.46
RSUs granted	320	$ 96.03
RSUs vested	(193)	$ 84.97
RSUs forfeited	(38)	$ 75.83
RSUs outstanding at end of period	892	$ 83.33

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

Changes in our stock options were as follows:

	Six Months Ended June 30, 2023	
	Number of Options	Weighted-Average Exercise Price per Share
Options outstanding at beginning of period	151	$ 55.48
Options exercised	(62)	$ 24.67
Options outstanding at end of period	89	$ 76.69

NOTE 17. COMMITMENTS AND CONTINGENCIES

We are involved in disputes and legal actions arising in the normal course of our business. While we currently believe that the amount of any ultimate loss would not be material to our financial position, the outcome of these actions is inherently difficult to predict. In the event of an adverse outcome, the ultimate loss could have a material adverse effect on our financial position or reported results of operations. An unfavorable decision in intellectual property litigation also could require material changes in production processes and products or result in our inability to ship products or components found to have violated third-party intellectual property rights. We accrue loss contingencies in connection with our commitments and contingencies, including litigation, when it is probable that a loss has occurred, and the amount of the loss can be reasonably estimated. We are not currently a party to any legal action that we believe would reasonably have a material adverse impact on our business, financial condition, results of operations or cash flows.

NOTE 18. CREDIT FACILITY

Our credit agreement ("Credit Agreement") consists of a senior unsecured term loan facility ("Term Loan Facility") and a senior unsecured revolving facility ("Revolving Facility"). Both mature on September 9, 2026.

On March 31, 2023, we executed agreements pursuant to the Credit Agreement to transition the benchmark interest rate from LIBOR to SOFR. The impact of this transition was not material to our consolidated financial statements.

The following table summarizes borrowings under our Credit Agreement and the associated interest rate.

	June 30, 2023		
	Balance	Interest Rate	Unused Line Fee
Term Loan Facility subject to a fixed interest rate due to interest rate swap	$ 229,469	1.172%	—
Term Loan Facility subject to a variable interest rate	135,531	5.952%	—
Revolving Facility subject to a variable interest rate	—	5.952%	0.10%
Total borrowings under the Credit Agreement	$ 365,000		

For more information on the interest rate swap that fixes the interest rate for a portion of our Term Loan Facility, see *Note 7. Derivative Financial Instruments*. The Term Loan Facility and Revolving Facility bear interest, at our option, at a rate based on the Base Rate or SOFR, as defined in the Credit Agreement, plus an applicable margin.

For all periods presented, we were in compliance with the Credit Agreement covenants. The following table summarizes our availability to withdraw on the Revolving Facility.

	June 30, 2023	December 31, 2022
Available capacity on Revolving Facility	$ 200,000	$ 200,000

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

In addition to the available capacity on the Revolving Facility, prior to the maturity date of our Credit Agreement, we may also request an increase to the financing commitments in either the Term Loan Facility or Revolving Facility by an aggregate amount not to exceed $115.0 million.

The fair value of the Term Loan Facility approximates the outstanding balance of $365.0 million as of June 30, 2023.

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

	June 30, 2023	December 31, 2022
Term Loan Facility	$ 365,000	$ 375,000
Less: debt discount	(1,484)	(1,738)
Total debt	363,516	373,262
Less current portion of long-term debt	(20,000)	(20,000)
Total long-term debt	$ 343,516	$ 353,262

Contractual maturities of our debt obligations, excluding amortization of debt issuance costs, are as follows:

Year Ending December 31,	
2023 (remaining)	$ 10,000
2024	20,000
2025	20,000
2026	315,000
Total	$ 365,000

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Interest expense	$ 2,701	$ 1,338	$ 5,290	$ 2,460
Amortization of debt issuance costs	131	142	263	277
Unused line of credit fees and other	51	47	101	101
Total interest expense	$ 2,883	$ 1,527	$ 5,654	$ 2,838

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 year ended December 31, 2022, which was filed with the SEC on February 17, 2023.

Special Note on Forward-Looking Statements

This Quarterly Report on Form 10-Q 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," "enable," "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.

Risks and uncertainties to which our forward-looking statements are subject include:

- macroeconomic risks, including supply chain cost increases and other inflationary pressures; recession; economic volatility and cyclicality; the length, severity, or nature of any market deterioration or improvement; changes in financial markets; higher interest rates; labor shortages and expense; foreign currency fluctuations and pricing controls;
- political and geographical risks, including trade and export controls, war, terrorism, international disputes and geopolitical tensions, natural disasters, public health issues, and industrial accidents;
- sufficiency and availability of components and materials;
- our level of and ability to manage backlog orders;
- our ability to develop new products expeditiously and be successful in the design win process with our customers;
- the ability to stay on the leading edge of innovation, and obtain and defend necessary intellectual property protections;
- the ability to protect our trade secrets and confidential information from misappropriation or infringement;
- our future sales;
- our future profitability;
- our competition;
- market acceptance of, and demand for, our products;
- the fair value of our assets and financial instruments;
- research and development expenses;
- selling, general, and administrative expenses;
- sufficiency and availability of capital resources;
- ability to obtain equity or debt financing on favorable terms;
- capital expenditures;

- our production and operations strategy;
- our share repurchase program;
- our tax assets and liabilities;
- our other commitments and contingent liabilities;
- adequacy of our reserve for excess and obsolete inventory;
- unanticipated costs in fulfilling our warranty obligations (including of solar inventers or other discontinued businesses), and adequacy of our warranty reserves;
- adequacy of reserves for bad debt, sales returns, and other reserves or impairments;
- our estimates of the fair value of assets acquired;
- restructuring activities and expenses;
- our acquisition, divestiture, and joint venture activities;
- the integration of our acquisitions;
- industry and market trends; and
- cost fluctuations and pressures, including prices of components, commodities and raw materials, and costs of labor, transportation, energy, and insurance.

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. Factors that could contribute to these differences or prove our forward-looking statements, by hindsight, to be overly optimistic or unachievable include the factors described in Part I, Item 1A in our Annual Report on Form 10-K for the year ended December 31, 2022. Other factors might also contribute to the differences between our forward-looking statements and our actual results. We assume no obligation to update any forward-looking statement or provide the reasons why our actual results might differ.

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 coming from either the utility or the building facility and convert it into various types of highly controllable, usable power that is predictable, repeatable, and customizable to meet the necessary requirements for powering a wide range of complex equipment. Many of our products enable customers to reduce or optimize their energy consumption through increased power conversion efficiency, power density, power coupling, and process control across a wide range of applications.

Our plasma power solutions enable innovation in complex semiconductor and thin film plasma processes such as dry etch and deposition. Our broad portfolio of high and low voltage power products is used in a wide range of applications, such as semiconductor equipment, industrial production, medical and life science equipment, data center computing, networking, and telecommunications. We also supply related sensing, control, and instrumentation products primarily for advanced measurement and calibration of power and temperature for multiple industrial markets. Our network of global service support centers provides repair services, calibration, conversions, upgrades, refurbishments, and used equipment to companies using our products.

Advanced Energy is organized on a global, functional basis and operates in the single segment for power electronics conversion products. Within this segment, our products are sold into the Semiconductor Equipment, Industrial and Medical, Data Center Computing, and Telecom and Networking markets.

On April 25, 2022, we acquired 100% of the issued and outstanding shares of capital stock of SL Power Electronics Corporation ("SL Power"), which is based in Calabasas, California. See *Note 2. Acquisitions* in Part I, Item 1 "Unaudited Consolidated Financial Statements." This acquisition added complementary products to Advanced Energy's medical power offerings and extends our presence in several advanced industrial markets.

The demand environment in each of our markets is impacted by various market trends, customer buying patterns, design wins, macroeconomic conditions, and other factors. Fulfilling demand was difficult in 2022, as we were constrained by supply chain shortages for critical integrated circuits, resulting in longer lead times for our products. Some of these supply constraints continued into 2023. We implemented measures to improve the supply of critical materials and components and to mitigate the impact of these higher input costs, and these actions have enabled us to better meet customer demand. Due to improved component supply, lead times for our products declined, which resulted in our 12-month backlog normalizing from $875.3 million at the end of 2022 to $644.7 million at the end of the second quarter of 2023. Since the fourth quarter of 2022, demand in some of our markets has declined, most notably due to the semiconductor cyclical downturn and reduced investments in the data center market. Moreover, our ability to fulfill demand continues to be limited by ongoing supply constraints for some products. In addition, although the amounts are lower than in 2022, we continue to pay premiums for some critical parts, which are partially reimbursed by our customers. While we expect these premiums to abate by the end of 2023, it is not clear how quickly the global supply constraints will fully recover, the extent to which our mitigating actions will be successful, or to what extent we can recover our higher costs.

Semiconductor Equipment Market

The Semiconductor Equipment market is driven by the long-term growing need for more semiconductor production capacity and new process technologies. While the semiconductor and semiconductor equipment industries are inherently cyclical, over the long-term, integrated circuit content is growing across many industries driven by increased demand for processing, storing, and transmitting the growing amount of data. To meet the growing demand, the chip industry continues to invest in production capacity for both leading-edge and trailing-edge node logic devices, the latest memory devices, back-end test, and advanced wafer-level packaging. The industry's transition to advanced technology nodes and to increased layers in memory devices require an increased number of plasma-based etch and deposition process tools and higher content of our advanced power solutions per tool. As etch and deposition processes become more challenging due to shrinking device geometry and increasing aspect ratios in advanced 3D devices, more advanced Radio Frequency ("RF") and Direct Current ("DC") plasma generation technologies are needed. We strive to provide a broad range of best-in-class, industry-leading RF and DC power solutions. Beyond etch and deposition processes, growing complexity at advanced nodes also drives a higher number of other process steps across the wafer fab, including inspection, metrology, thermal, ion implantation, and semiconductor test and assembly, 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 usable life of our customers' capital equipment for additional technology generations. Our strategy in the Semiconductor Equipment market is to defend our proprietary positions in our core applications by capturing new design and product generations, growing our market position in applications where we have lower market share, such as remote plasma source and dielectric etch, and leveraging our product portfolio in areas including embedded power, high voltage power systems, and critical sensing and controls to grow our market share and content at our original equipment manufacturer ("OEM") customers.

The Semiconductor Equipment market experienced demand growth driven by investments in both leading and trailing edge semiconductor capacity throughout the first three quarters of 2022. Starting in the fourth quarter of 2022, the market entered a downturn due to deteriorating macroeconomic conditions, overcapacity in the market for memory devices, general semiconductor inventory digestion resulting in falling fab utilization and reduced fab expansion plans, and new U.S. export restrictions to China for certain semiconductor equipment. During the first half of 2023, these factors continued to impact our demand, backlog, and revenue, and they are expected to continue throughout 2023. We believe long-term drivers for demand growth in this market will eventually resume, due to the need to invest in new fab capacity to support growing demand for semiconductor devices in a wide range of applications, the continued transition to next generation processing nodes, increased complexity of advanced processes requiring more complex and innovative power solutions, and the regionalization of some semiconductor capacity.

Industrial and Medical Markets

Advanced Energy serves the Industrial and Medical market with mission-critical power components that deliver high reliability, precise, low noise or differentiated power to the equipment they serve. Growth in the Industrial and Medical market is driven by investment in complex manufacturing processes or automation, increased adoption of smart power, sensing, and control solutions across many industrial applications, new investments in clean and sustainable technologies, and growing investment in medical devices and life science equipment. Our customers in the Industrial and Medical market are primarily global and regional original equipment manufacturers, who incorporate incorporating our advanced power, embedded power, and measurement products into a wide variety of equipment used in applications, such as advanced material fabrication, medical devices, analytical instrumentation, test and measurement equipment, robotics, industrial production, and large-scale connected light-emitting diode applications. Examples of products sold into the Industrial and Medical market include high voltage and low voltage power supplies used in applications such as medical devices, scientific instrumentation and industrial equipment, power control modules and thermal instrumentation products for material fabrication, production process control, and many precision industrial sensing applications. Our strategy in the Industrial and Medical market is to expand our product offerings and channel reach, leveraging common platforms, derivatives, and customizations to further penetrate a broader set of applications.

During 2022, we saw increased demand in the Industrial and Medical market as our customers increased investments in their production capacity and the medical technology industry recovered from the pandemic-related slowdown. Although overall customer demand increased, supply constraints of critical components limited our ability to fulfill product shipments at the level of customer demand and resulted in increased backlog. During the first half of 2023, we saw continued demand across a number of industrial and medical applications, and we were able to secure additional critical components, enabling us to deliver record quarterly revenues in both the first and second quarter of 2023 in this market. However, it is unclear how the macroeconomic conditions, including higher interest rates and potential recession, may affect our revenue in the remainder of 2023. In addition, product delivery and revenue levels will also be dependent on our ability to secure supply of critical components.

Data Center Computing Markets

Advanced Energy serves the Data Center Computing market with industry leading power conversion products and technologies, which we sell to OEMs and original design manufacturers (“ODMs”) of data center server and storage systems, 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 traditional enterprise on-premises computing to the data center, driving investments in data center infrastructure. Beyond the cloud, demand for edge computing is also growing, driven by the need for faster processing, lower latency, and higher data security at edge applications. In addition, the data center industry has begun transitioning from 12 Volt to 48 Volt infrastructure in server racks to improve overall power efficiency. Advanced Energy benefits from these trends by being an industry leader in providing high-efficiency 48 Volt server power solutions to the data center industry. Further, the rapid growth and adoption of artificial intelligence and machine learning are accelerating demand for server and storage racks with increased power density and higher efficiency, which complements Advanced Energy’s strengths. With a growing presence at both cloud service providers and industry-leading data center server and storage vendors, our strategy in the Data Center and Computing market is to penetrate selected customers and applications based on our differentiated capabilities and competitive strengths in power density, efficiency, and controls.

In the first half of 2023, we saw reduced revenues due to slowing demand in the server and storage market on customers delaying investments and ongoing supply constraints limiting our ability to meet the full demand. It is not clear how long these supply chain constraints will persist or how quickly those customers will return to their historical level of investments.

Telecom and Networking Markets

Our customers in the Telecom and Networking market include many leading vendors of wireless infrastructure equipment, telecommunication equipment and computer networking. The wireless telecom market continues to evolve with more advanced mobile standards. 5G wireless technology promises to drive substantial growth opportunities for the telecom industry as it enables new advanced applications such as autonomous vehicles and virtual/augmented reality. Telecom service providers are investing in 5G infrastructure, and this trend is expected to drive demand for our products into the Telecom and Networking market. In datacom, demand is driven by networking investments by telecom service providers and enterprises upgrading their networks, as well as cloud service providers and data centers investing in their networks for increased bandwidth. Our strategy in the Telecom and Networking market is to optimize our portfolio of products to more differentiated applications, and to focus on 5G infrastructure applications.

During the first half of 2023, substantially improved supply of critical components allowed us to partially fulfill outstanding demand from the prior year and drove strong revenue growth in the Telecom and Networking market. However, leading companies in this market have reported end user market weakness, and it is not clear if we can sustain the first half 2023 revenue level through the remainder of 2023.

Results of Continuing Operations

The analysis presented below is organized to provide the information we believe will be helpful for understanding of our historical performance and relevant trends going forward and 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.

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Sales	$ 415,508	$ 440,949	$ 840,548	$ 838,408
Gross profit	147,080	162,158	302,191	306,474
Operating expenses	117,255	109,393	232,328	209,052
Operating income from continuing operations	29,825	52,765	69,863	97,422
Other income (expense), net	2,425	3,249	1,875	2,407
Income from continuing operations, before income taxes	32,250	56,014	71,738	99,829
Provision for income taxes	4,795	11,203	12,531	18,156
Income from continuing operations	$ 27,455	$ 44,811	$ 59,207	$ 81,673

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Sales	100.0 %	100.0 %	100.0 %	100.0 %
Gross profit	35.4	36.8	36.0	36.6
Operating expenses	28.2	24.8	27.6	24.9
Operating income from continuing operations	7.2	12.0	8.3	11.6
Other income (expense), net	0.6	0.7	0.2	0.3
Income from continuing operations, before income taxes	7.8	12.7	8.5	11.9
Provision for income taxes	1.2	2.5	1.5	2.2
Income from continuing operations	6.6 %	10.2 %	7.0 %	9.7 %

Table of Contents

SALES, NET

The following tables summarize net sales and percentages of net sales, by markets (in thousands):

	Three Months Ended June 30,		Change 2023 v. 2022	
	2023	2022	Dollar	Percent
Semiconductor Equipment	$ 173,177	$ 228,797	$ (55,620)	(24.3)%
Industrial and Medical	127,603	104,951	22,652	21.6 %
Data Center Computing	59,076	69,161	(10,085)	(14.6)%
Telecom and Networking	55,652	38,040	17,612	46.3 %
Total	$ 415,508	$ 440,949	$ (25,441)	(5.8)%

	Six Months Ended June 30,		Change 2023 v. 2022	
	2023	2022	Dollar	Percent
Semiconductor Equipment	$ 367,386	$ 431,754	$ (64,368)	(14.9)%
Industrial and Medical	250,623	187,849	62,774	33.4 %
Data Center Computing	118,735	145,399	(26,664)	(18.3)%
Telecom and Networking	103,804	73,406	30,398	41.4 %
Total	$ 840,548	$ 838,408	$ 2,140	0.3 %

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Semiconductor Equipment	41.7 %	51.9 %	43.7 %	51.5 %
Industrial and Medical	30.7	23.8	29.8	22.4
Data Center Computing	14.2	15.7	14.1	17.3
Telecom and Networking	13.4	8.6	12.4	8.8
Total	100.0 %	100.0 %	100.0 %	100.0 %

OPERATING EXPENSES

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

	Three Months Ended June 30,			
	2023		2022	
Research and development	$ 51,413	12.4 %	$ 48,009	10.9 %
Selling, general, and administrative	55,613	13.4	55,022	12.5
Amortization of intangible assets	7,075	1.7	6,523	1.5
Restructuring charges	3,154	0.8	(161)	-
Total operating expenses	$ 117,255	28.2 %	$ 109,393	24.8 %

	Six Months Ended June 30,			
	2023		2022	
Research and development	$ 103,023	12.3 %	$ 91,623	10.9 %
Selling, general, and administrative	110,971	13.2	104,340	12.4
Amortization of intangible assets	14,137	1.7	12,032	1.4
Restructuring charges	4,197	0.5	1,057	0.1
Total operating expenses	$ 232,328	27.6 %	$ 209,052	24.9 %

SALES AND BACKLOG

Total Sales

Sales decreased $25.4 million, or 5.8%, to $415.5 million for the three months ended June 30, 2023 and increased $2.1 million, or 0.3%, to $840.5 million for the six months ended June 30, 2023 as compared to the same periods in the prior year.

Improved material availability and capacity allowed us to better meet overall demand and reduce backlog across our markets, which enabled us to partially mitigate the impact of the market decline in the Semiconductor and Data Center markets. Although the supply environment has improved, revenues in the first half of 2023 were also impacted by supply constraints for certain integrated circuits and other components, which limited our ability to fulfill product shipments to meet our total demand.

Backlog

The following table summarizes our backlog (in thousands):

	June 30, 2023	December 31, 2022	Change from Year End	
			Dollar	Percent
Backlog	$ 644,672	$ 875,346	$ (230,674)	(26.4)%

Backlog represents outstanding orders for products we expect to deliver within the next 12 months. Backlog at June 30, 2023 decreased from the end of 2022 due primarily to lower demand in some of our markets and improved lead times, which allowed our customers to reduce placing new orders for products with targeted deliveries in the later part of the 12-month backlog period.

We believe the current backlog levels provide some level of revenue protection should demand decrease due to macroeconomic factors. We continue to expect to bring our backlog back to a more normalized range of $400 million to $500 million over the next several quarters as parts availability improves and lead times are reduced.

Backlog at any particular date is not necessarily indicative of actual sales which may be generated for any succeeding period and may be adversely impacted by factors such as decreased demand or cancellations or export controls. In addition, there is uncertainty of the timing of when backlog can convert into revenue due to continuing supply constraints. Our customers can typically cancel, change, or delay product purchase commitments with little or no notice.

Sales by Market

Sales in the Semiconductor Equipment market decreased $55.6 million, or 24.3%, to $173.2 million for the three months ended June 30, 2023 and $64.4 million, or 14.9%, to $367.4 million for the six months ended June 30, 2023 as compared to the same periods in the prior year. The decrease in sales compared to the same periods in the prior year was primarily due to a cyclical downturn in the semiconductor industry and the U.S. export controls restricting shipments of equipment to Chinese semiconductor customers. The revenue decline in the first half was partially mitigated by strong service revenues, growth in certain applications such as high voltage power supplies, and reduction of backlog as customers returned to normalized inventory level.

Sales in the Industrial and Medical market increased $22.7 million, or 21.6%, to $127.6 million for the three months ended June 30, 2023 and $62.8 million, or 33.4%, to $250.6 million for the six months ended June 30, 2023 as compared to the same periods in the prior year. The increase in sales compared to the same periods in the prior year was primarily due to continued demand for our portfolio of products across several industrial and medical applications and improved material availability.

Sales in the Data Center Computing market decreased $10.1 million, or 14.6%, to $59.1 million for the three months ended June 30, 2023 and $26.7 million, or 18.3%, to $118.7 million for the six months ended June 30, 2023 as compared to the same periods in the prior year. The decrease in Data Center Computing market sales was due to slowing demand with some of our data center customers and supply constraints of certain components to meet our full demand.

Sales in the Telecom and Networking market increased $17.6 million, or 46.3%, to $55.7 million for the three months ended June 30, 2023 and $30.4 million, or 41.4%, to $103.8 million for the six months ended June 30, 2023 as compared to the same periods in the prior year. The increase in sales was primarily due to substantially improved material availability, allowing us to partially fulfill outstanding demand from the prior year.

GROSS PROFIT

For the three months ended June 30, 2023, gross profit decreased $15.1 million to $147.1 million, or 35.4% of revenue, as compared to $162.2 million, or 36.8% of revenue, in the same period in the prior year. For the six months ended June 30, 2023, gross profit decreased $4.3 million to $302.2 million, or 36.0% of revenue, as compared to $306.5 million, or 36.6% of revenue, in the same period in the prior year.

The decrease in gross profit as a percentage of revenue for the three and six months ended June 30, 2023 is largely due to the decline in sales, unfavorable product mix, and higher operating costs based on investments made in 2022, partially offset by lower premiums and related recoveries for securing critical parts.

OPERATING EXPENSE

Research and Development

We perform R&D of products to develop new or emerging applications, technological advances to provide higher performance, lower cost, or other attributes that we may expect to advance our customers' products. We believe that continued development of technological applications, as well as enhancements to existing products and related software to support customer requirements, are critical for us to compete in the markets we serve. Accordingly, we devote significant personnel and financial resources to the development of new products and the enhancement of existing products, and we expect these investments to continue.

R&D expenses increased $3.4 million to $51.4 million for the three months ended June 30, 2023 and increased $11.4 million to $103.0 million for the six months ended June 30, 2023 as compared to the same periods in the prior year. The increase in research and development expense is primarily driven by increased headcount and compensation costs of $3.2 million for the three months ended June 30, 2023 and $7.5 million for the six months ended June 30, 2023, both of which are partially due to the SL Power acquisition.

In addition, we incurred higher program and material costs as we invest in new programs to maintain and increase our technological leadership and provide solutions to our customers' evolving needs of $0.2 million for the three months ended June 30, 2023 and $3.9 million for the six months ended June 30, 2023.

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, corporate development, and human resource functions.

Selling, general and administrative ("SG&A") expenses increased $0.6 million to $55.6 million for the three months ended June 30, 2023 and increased $6.6 million to $111.0 million for the six months ended June 30, 2023 as compared to the same periods in the prior year. The increase in SG&A is primarily related to increased headcount and associated costs, including sales commissions and stock-based compensation.

Amortization of Intangibles

Amortization expense increased $0.6 million to $7.1 million during the three months ended June 30, 2023 and increased $2.1 million to $14.1 million for the six months ended June 30, 2023 as compared to the same periods in the prior year. The increase was primarily driven by incremental amortization of acquired intangible assets from the SL Power acquisition. For additional information, see *Note 2. Acquisitions* and *Note 12. Intangible Assets* in Part I, Item 1 "Unaudited Consolidated Financial Statements."

Restructuring

In the fourth quarter of 2022, we approved a restructuring plan (the "2022 Plan"), which is expected to further improve our operating efficiencies and drive the realization of synergies from our business combinations by consolidating our operations, optimizing our factory footprint, including moving certain production into our higher volume factories, and reducing redundancies. The majority of these actions impact our factory operations and should partially mitigate the impact of lower volumes on gross margins. We anticipate the 2022 Plan will be substantially completed, and associated expenses will be incurred, by early 2024.

In 2018, we committed to a restructuring plan (the "2018 Plan") to optimize our manufacturing footprint and to improve our operating efficiencies and synergies related to business combinations. We incurred severance costs primarily related to the transition and exit of our facility in Shenzhen, China and actions associated with synergies related to the acquisition of Artesyn Embedded Technologies, Inc.'s embedded power business ("Artesyn"). This plan is substantially complete with the closure of our Shenzhen facility in February 2023. For additional information, see *Note 13. Restructuring Costs* in Part I, Item 1 "Unaudited Consolidated Financial Statements."

OTHER INCOME (EXPENSE), NET

Other income (expense), net consists primarily of interest income and expense, foreign exchange gains and losses, gains and losses on sales of fixed assets, and other miscellaneous items.

Other income (expense), net decreased $0.8 million to $2.4 million for the three months ended June 30, 2023, and decreased $0.5 million to $1.9 million for the six months ended June 30, 2023 as compared to the same periods in the prior year. The decrease in income between periods is primarily a result of higher unrealized foreign exchange losses and an increase in interest expense due to a higher interest rate on the portion of our Term Loan Facility subject to a variable interest rate (see *Note 18. Credit Facility* in Part I, Item 1 "Unaudited Consolidated Financial Statements."). This was partially offset by higher interest income on our cash because of higher interest rates.

PROVISION FOR INCOME TAXES

The following table summarizes tax expense (in thousands) and the effective tax rate for our income from continuing operations:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Income from continuing operations, before income taxes	$ 32,250	$ 56,014	$ 71,738	$ 99,829
Provision for income taxes	$ 4,795	$ 11,203	$ 12,531	$ 18,156
Effective tax rate	14.9 %	20.0 %	17.5 %	18.2 %

Our effective tax rates differ from the U.S. federal statutory rate of 21% for the three and six months ended June 30, 2023 and 2022, respectively, primarily due to the benefit of earnings in foreign jurisdictions which are subject to lower tax rates, as well as tax credits, partially offset by net U.S. tax on foreign operations. The effective tax rate for the three and six months ended June 30, 2023 was lower than the same periods in 2022 primarily due to the impact of beneficial discrete items in the three months ended June 30, 2023 relative to unfavorable discrete items recorded in the three months ended June 30, 2022.

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.

Non-GAAP Results

Management uses non-GAAP operating income and non-GAAP earnings per share ("EPS") to evaluate business performance without the impacts of certain non-cash charges and other charges which are not part of our usual operations. We use these non-GAAP measures to assess performance against business objectives, make business decisions, including developing budgets and forecasting future periods. In addition, management's incentive plans include these non-GAAP measures as criteria for achievements. These non-GAAP measures are not in accordance with U.S. GAAP and may differ from non-GAAP methods of accounting and reporting used by other companies. However, we believe these non-GAAP measures provide additional information that enables readers to evaluate our business from the perspective of management. The presentation of this additional information should not be considered a substitute for results prepared in accordance with U.S. GAAP.

The non-GAAP results presented below exclude the impact of non-cash related charges, such as stock-based compensation and amortization of intangible assets. In addition, they exclude discontinued operations and other non-recurring items such as acquisition-related costs and restructuring expenses, as they are not indicative of future performance. The tax effect of our non-GAAP adjustments represents the anticipated annual tax rate applied to each non-GAAP adjustment after consideration of their respective book and tax treatments.

Reconciliation of non-GAAP measure Operating expenses and operating income from continuing operations, excluding certain items (in thousands)	**Three Months Ended June 30,**		**Six Months Ended June 30,**	
	2023	**2022**	**2023**	**2022**
Gross profit from continuing operations, as reported	$ 147,080	$ 162,158	$ 302,191	$ 306,474
Adjustments to gross profit:				
Stock-based compensation	589	402	972	633
Facility expansion, relocation costs and other	60	1,187	1,017	2,471
Acquisition-related costs	97	64	150	(438)
Non-GAAP gross profit	147,826	163,811	304,330	309,140
Non-GAAP gross margin	35.6%	37.1%	36.2%	36.9%
Operating expenses from continuing operations, as reported	117,255	109,393	232,328	209,052
Adjustments:				
Amortization of intangible assets	(7,075)	(6,523)	(14,137)	(12,032)
Stock-based compensation	(7,348)	(4,656)	(13,766)	(8,353)
Acquisition-related costs	(1,165)	(4,159)	(2,043)	(5,827)
Restructuring	(3,154)	161	(4,197)	(1,057)
Non-GAAP operating expenses	98,513	94,216	198,185	181,783
Non-GAAP operating income	$ 49,313	$ 69,595	$ 106,145	$ 127,357
Non-GAAP operating margin	11.9%	15.8%	12.6%	15.2%

Reconciliation of non-GAAP measure Income from continuing operations, excluding certain items (in thousands, except per share amounts)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022
Income from continuing operations, less non-controlling interest, net of income taxes	$ 27,455	$ 44,790	$ 59,207	$ 81,666
Adjustments:				
Amortization of intangible assets	7,075	6,523	14,137	12,032
Acquisition-related costs	1,262	4,223	2,193	5,389
Facility expansion, relocation costs, and other	60	1,187	1,017	2,471
Restructuring	3,154	(161)	4,197	1,057
Unrealized foreign currency gain	(2,266)	(5,569)	(1,213)	(6,854)
Acquisition-related costs and other included in other income (expense), net	—	85	—	85
Tax effect of non-GAAP adjustments	(1,051)	(752)	(2,172)	(1,821)
Non-GAAP income, net of income taxes, excluding stock-based compensation	35,689	50,326	77,366	94,025
Stock-based compensation, net of taxes	6,191	3,946	11,495	6,971
Non-GAAP income, net of income taxes	$ 41,880	$ 54,272	$ 88,861	$ 100,996
Non-GAAP diluted earnings per share	$ 1.11	$ 1.44	$ 2.35	$ 2.68

Reconciliation of non-GAAP measure Per share earnings excluding certain items	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022
Diluted earnings per share from continuing operations, as reported	$ 0.73	$ 1.19	$ 1.57	$ 2.16
Add back:				
Per share impact of non-GAAP adjustments, net of tax	0.38	0.25	0.78	0.52
Non-GAAP earnings per share	$ 1.11	$ 1.44	$ 2.35	$ 2.68

Impact of Inflation

In previous years, inflation did not have a material impact on our operations. However, more recently, we have experienced inflationary pressure from price increases in select components driven by factors such as higher global demand, supply chain disruptions, higher labor expenses, and increased freight costs. In this environment, we are actively working with our customers to adjust pricing that helps offset the inflationary pressure on the cost of our components. We have also been able to recover some premiums on pricing related to securing scarce materials with our customers, thus limiting the financial impact of inflationary pressures.

Liquidity and Capital Resources

Liquidity

Adequate liquidity and cash generation is important to the execution of our strategic initiatives. Our ability to fund our operations, acquisitions, capital expenditures, and product development efforts may depend on our ability to generate cash from operating activities, which is subject to future operating performance, as well as general economic, financial, competitive, legislative, regulatory, and other conditions, some of which may be beyond our control. Our primary sources of liquidity are our available cash, investments, cash generated from current operations, and available borrowing capacity under the Revolving Facility (defined in *Note 18. Credit Facility* in Part I, Item 1 “Unaudited Consolidated Financial Statements”).

The following table summarizes our cash, cash equivalents, and marketable securities (in thousands):

	June 30, 2023
Cash and cash equivalents	$ 455,252
Marketable securities	175
Total cash, cash equivalents, and marketable securities	$ 455,427

We believe the above sources of liquidity will be adequate to meet anticipated working capital needs, anticipated levels of capital expenditures, contractual obligations, debt repayment, share repurchase programs, and dividends for the next 12 months and on a long-term basis. In addition, we may, depending upon the number or size of additional acquisitions, seek additional debt or equity financing from time to time; however, such additional financing may not be available on acceptable terms, if at all.

Credit Facility

For information on our Credit Facility, see *Note 18. Credit Facility* and *Note 7. Derivative Financial Instruments* in Part I, Item 1 "Unaudited Consolidated Financial Statements."

The following table summarizes borrowings under our Credit Facility and the associated interest rate (in thousands, except for interest rates).

	June 30, 2023		
	Balance	Interest Rate	Unused Line Fee
Term Loan Facility subject to a fixed interest rate due to interest rate swap	$ 229,469	1.172%	—
Term Loan Facility subject to a variable interest rate	135,531	5.952%	—
Revolving Facility subject to a variable interest rate	—	5.952%	0.10%
Total borrowings under the Credit Agreement	$ 365,000		

As of June 30, 2023, we had $200.0 million in available funding under the Revolving Facility. The Term Loan Facility requires quarterly repayments of $5.0 million plus accrued interest, with the remaining balance due in September 2026.

In addition to the available capacity on the Revolving Facility, prior to the maturity date of our Credit Agreement, we may also request an increase to the financing commitments in either the Term Loan Facility or Revolving Facility by an aggregate amount not to exceed $115.0 million.

Dividends

During the three months ended June 30, 2023, we paid quarterly cash dividends of $0.10 per share, totaling $3.8 million. We currently anticipate that a cash dividend of $0.10 per share will continue to be paid on a quarterly basis, although the declaration of any future cash dividend is at the discretion of the Board of Directors (the "Board") and will depend on our financial condition, results of operations, capital requirements, business conditions, and other factors.

Share Repurchase

To execute the repurchase of shares of our common stock, we periodically enter into stock repurchase agreements. The following table summarizes these repurchases:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands, except per share amounts)	2023	2022	2023	2022
Amount paid or accrued to repurchase shares	$ —	$ 17,019	$ —	$ 23,613
Number of shares repurchased	—	230	—	312
Average repurchase price per share	$ —	$ 74.12	$ —	$ 75.68

At June 30, 2023, the remaining amount authorized by the Board for future share repurchases was $199.3 million with no time limitation.

Cash Flows

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

	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022
Net cash from operating activities from continuing operations	$ 55,504	$ 47,541
Net cash from operating activities from discontinued operations	(3,090)	55
Net cash from operating activities	52,414	47,596
Net cash from investing activities	(36,751)	(171,255)
Net cash from financing activities	(18,976)	(42,840)
Effect of currency translation on cash and cash equivalents	(253)	(5,188)
Net change in cash and cash equivalents	(3,566)	(171,687)
Cash and cash equivalents, beginning of period	458,818	544,372
Cash and cash equivalents, end of period	$ 455,252	$ 372,685

Net Cash From Operating Activities

Net cash from operating activities from continuing operations for the six months ended June 30, 2023, was $55.5 million, as compared to $47.5 million for the same period in the prior year. The increase of $8.0 million in net cash flows from operating activities as compared to the same period in the prior year is primarily due to a favorable decrease in net operating assets driven primarily by a decrease in accounts receivable and inventories. This was partially offset by a decrease in accounts payable and accrued expenses and lower net income from continuing operations.

Net Cash From Investing Activities

Net cash from investing activities for the six months ended June 30, 2023 was ($36.8) million, primarily driven by the following:

- ($33.6) million in purchases of property and equipment largely driven by investments in our manufacturing footprint and capacity; and
- ($3.1) million in purchases of investments

Net cash from investing for the six months ended June 30, 2022 was ($171.3) million, primarily driven by the following:

- ($25.5) million in purchases of property and equipment largely driven by investments in our manufacturing footprint and capacity; and
- ($145.8) million for business combinations.

Net Cash From Financing Activities

Net cash from financing activities for the six months ended June 30, 2023 was ($19.0) million and included the following:

- ($10.0) million for repayment of long-term debt;
- ($7.6) million for dividend payments; and
- ($1.4) million in net payments related to stock-based award activities.

Net cash from financing activities for the six months ended June 30, 2022 was ($42.8) million and included the following:

- ($23.6) million related to repurchases of our common stock;
- ($10.0) million for repayment of long-term debt;
- ($7.6) million for dividend payments; and
- ($1.7) million in net payments related to stock-based award activities.

Effect of Currency Translation on Cash

During the six months ended June 30, 2023, foreign currency translation had a minimal impact on cash. See "Foreign Currency Exchange Rate Risk" in Part I, Item 3 of this Form 10-Q for more information.

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. Summary of Operations and Significant Accounting Policies and Estimates* to the consolidated financial statements in our Annual Report on Form 10-K for the year ended December 31, 2022, 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, 2022, include:

- estimates for the valuation of assets and liabilities acquired in business combinations;
- accounting for income taxes;
- inputs to actuarial models that measure our pension obligations; 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 exposure to interest rate risk from our investments and Credit Facility. We also have exposure to foreign exchange rate risk related to our foreign operations and foreign currency transactions.

See the "Risk Factors" set forth in Part I, Item 1A of our Annual Report on Form 10-K and Part II 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, 2022.

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 reported financial results of operations, including the reported value of our assets and liabilities, are also impacted by changes in foreign currency exchange rates. Assets and liabilities of substantially all 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 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.

The functional currencies of our worldwide facilities primarily include the United States Dollar (USD), Euro, South Korean Won, New Taiwan Dollar, Japanese Yen, Pound Sterling, and Chinese Yuan. Our purchasing and sales activities are primarily denominated in the USD, Japanese Yen, Euro, and Chinese Yuan.

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

As currencies fluctuate against each other we are exposed to foreign currency exchange rate risk on sales, purchasing transactions, and labor. Exchange rate fluctuations could require us to increase prices to foreign customers, which could result in lower net sales. 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. Changes in the relative buying power of our customers may impact sales volumes.

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

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

Interest Rate Risk

Our market risk exposure relates primarily to changes in interest rates on our Credit Facility. The following table summarizes borrowings (in thousands) under our Credit Facility and the associated interest rate.

	June 30, 2023		
	Balance	Interest Rate	Unused Line Fee
Term Loan Facility subject to a fixed interest rate due to interest rate swap	$ 229,469	1.172%	—
Term Loan Facility subject to a variable interest rate	135,531	5.952%	—
Revolving Facility subject to a variable interest rate	—	5.952%	0.10%
Total borrowings under the Credit Agreement	$ 365,000		

For more information on the Term Loan Facility see *Note 18. Credit Facility* in Part I, Item 1 "Unaudited Consolidated Financial Statements." For more information on the interest rate swap that fixes the interest rate for a portion of our Term Loan Facility, see *Note 7. Derivative Financial Instruments* in Part I, Item 1 "Unaudited Consolidated Financial Statements." The Term Loan Facility and Revolving Facility bear interest, at our option, at a rate based on the Base Rate or SOFR, as defined in the Credit Agreement, plus an applicable margin.

Our interest payments are impacted by interest rate fluctuations. With respect to the portion of our Credit Facility that is subject to a variable interest rate, a hypothetical increase of 100 basis points (1%) in interest rates would have a $1.4 million annual impact on our interest expense. A change in interest rates does not have a material 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.

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 ("Exchange 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 Exchange Act is accumulated and communicated to management, including our Principal Executive Officer (Stephen D. Kelley, President and Chief Executive Officer) and Principal Financial Officer (Paul Oldham, Executive Vice President and 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, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of June 30, 2023. The conclusions of the Chief Executive Officer and Chief Financial Officer from this evaluation were communicated to the Audit and Finance Committee. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. We intend to continue to review and document our disclosure controls and procedures, including our internal controls over 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.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the 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. Although it is not possible to predict the outcome of these matters, we believe that the results of these proceedings will not have a material adverse effect on our financial condition, results of operations, or liquidity.

ITEM 1A. RISK FACTORS

Information concerning our risk factors is contained in Part I, Item 1A, “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2022. The risks described in our Annual Report on Form 10-K are not the only risks that we face; additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition, or operating results. There have been no material changes to the risk factors previously disclosed in our Annual Report on Form 10-K.

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

To execute the repurchase of shares of our common stock, we periodically enter into stock repurchase agreements. We did not have any repurchases in the six months ended June 30, 2023. The following table summarizes actions by our Board of Directors in relation to the stock repurchase program:

Date	Action
September 2015	Authorized a program to repurchase up to $150.0 million of our common stock
May 2018	Approved a $50.0 million increase in the repurchase program
December 2019	Authorized the removal of the expiration date and increased the balance available for the repurchase program by $25.1 million
July 2021	Approved an increase to the repurchase program, which authorized Advanced Energy Industries, Inc. to repurchase up to $200.0 million with no time limitation
July 2022	Approved an increase to the repurchase program from its remaining authorization of $102.4 million, to repurchase up to $200.0 million with no time limitation

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None

ITEM 4. MINE SAFETY DISCLOSURES

None

Table of Contents

ITEM 5. OTHER INFORMATION

On June 13, 2023, Anne DelSanto, a member of our Board of Directors, adopted a Rule 10b5-1 trading arrangement that is intended to satisfy the affirmative defense of Rule 10b5-1(c) for the sale of up to 1,776 shares of our common stock during the period from October 1, 2023 through September 5, 2024. During the three months ended June 30, 2023, no other director or officer adopted or terminated a Rule 10b5-1 trading arrangement or non-Rule 10b5-1 trading arrangement, as each term is defined in Item 408(a) of Regulation S-K.

At its regularly scheduled meeting on July 27, 2023, the Compensation Committee of our Board reviewed and approved non-material changes to the Company’s Amended and Restated Deferred Compensation Plan that curtail eligibility of special bonuses (as defined in the Plan) for deferral under the Plan. For additional information, refer to Exhibit 10.1 in Part II, Item 6 “Exhibits” below.

Table of Contents

ITEM 6. EXHIBITS

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

Exhibit Number	Description	Incorporated by Reference Form	File No.	Exhibit	Filing Date
10.1	Advanced Energy Amended and Restated Deferred Compensation Plan Amended and Restated Effective as of August 1, 2023				Filed herewith
10.2	Advanced Energy Industries, Inc. 2023 Omnibus Incentive Plan, effective April 27, 2023.	8-K	000-26966	10.1	April 28, 2023
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.				Filed herewith
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.				Filed herewith
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.				Filed herewith
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.				Filed herewith
101.INS	Inline 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.				Filed herewith
101.SCH	Inline XBRL Taxonomy Extension Schema Document.				Filed herewith
101.CAL	Inline XBRL Taxonomy Extension Calculation Link base Document.				Filed herewith
101.DEF	Inline XBRL Taxonomy Extension Definition Link base Document.				Filed herewith
101.LAB	Inline XBRL Taxonomy Extension Label Link base Document.				Filed herewith
101.PRE	Inline XBRL Taxonomy Extension Presentation Link base Document.				Filed herewith
104	Cover Page Interactive Data File – formatted in Inline XBRL and contained in Exhibit 101.				Filed herewith

Table of Contents

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: August 3, 2023

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

Exhibit 10.1

AE DEFERRED COMPENSATION PLAN

Amended and Restated Effective as of August 1, 2023

TABLE OF CONTENTS

TABLE OF CONTENTS

AE DEFERRED COMPENSATION PLAN

Advanced Energy Industries, Inc., a Delaware corporation (the “Company”), established the AE Deferred Compensation Plan (the “Plan”), originally effective December 1, 2021 (the “Effective Date”), and hereby amends and restates the Plan in its entirety effective as of August 1, 2023.

ARTICLE I
PURPOSE AND DEFINITIONS

1.1 Purpose . The Company adopts the Plan for the purpose of providing a select group of management or highly compensated employees of the Company the opportunity to defer the receipt of Compensation otherwise payable to such employees in accordance with the terms of the Plan. The Plan is intended to, and shall be interpreted to, comply in all respects with Code Section 409A and those provisions of ERISA applicable to an unfunded plan maintained primarily to provide deferred compensation for a select group of management or highly compensated employees.

1.2 Definitions. The following capitalized terms, when used in this Plan, have the meanings set forth below:

Annual Bonus: A Participant’s Annual Bonus or other incentive compensation provided for under a performance-based bonus or incentive arrangement, excluding Commission. As of the Effective Date, the Short-Term Incentive (STI) Plan has been approved for inclusion in this Plan as an Annual Bonus. An Annual Bonus may be determined by the Committee to constitute “performance-based compensation” under Treas. Reg. §1.409A-1(e)) earned with respect to one calendar year, provided that the performance period for such bonus amount is at least twelve (12) months long.

Base Salary: A Participant’s annual base salary, excluding incentive and discretionary bonuses, commissions, reimbursements and other non-regular remuneration, received from the Company, prior to reduction for any salary deferrals under benefit plans sponsored by the Company, including but not limited to, plans established under Code Section 125 or Code Section 401(k).

Beneficiary: The person, persons or entity designated as such pursuant to Section 8.1.

Board: The Board of Directors of the Company.

Code: The Internal Revenue Code of 1986, as amended, as interpreted by Treasury regulations and applicable authorities promulgated thereunder.

Commission: “Sales commission compensation” as defined in Treas. Reg. §1.409A-2(a)(12).

Committee:	The person or persons appointed by the Board to administer the Plan in accordance with Article IX, provided, that if the Board does not appoint a Committee, the Board shall act as the Committee.
Company 401(k) Plan:	Advanced Energy Industries, Inc. 401(k) Profit Sharing Plan, as may be amended from time to time.
Compensation:	All amounts eligible for deferral for a particular Plan Year under Section 3.1.
Deferral Account:	The bookkeeping account or accounts established under this Plan pursuant to ARTICLE IV and maintained by the Company in the names of the respective Participants, to which all amounts deferred under the Plan and earnings on such amounts shall be credited, and from which all amounts distributed under the Plan shall be debited.
Disability or Disabled:	Consistent with the requirements of Code Section 409A, that the Participant is (a) unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or can be expected to last for a continuous period of not less than 12 months, or (b) by reason of any medically determinable physical or mental impairment which can be expected to result in death or can be expected to last for a continuous period of not less than 12 months, receiving income replacement benefits for a period of not less than three months under an accident and health plan covering employees of the Company. For purposes of this Plan, a Participant shall be deemed Disabled if determined to be totally disabled by the Social Security Administration. A Participant shall also be deemed Disabled if determined to be disabled in accordance with the applicable disability insurance program of the Company, provided that the definition of “disability” applied under such disability insurance program complies with the requirements of this definition.
Disability Claim:	A claim related to any distribution or rights to which a Participant or other claimant may be entitled in connection with the Participant’s Disability, as described in Section 9.2(b)(3).
Eligible Executive:	Each individual who, according to the books and records of the Company meets all of the following criteria, as determined by the Committee: (i) is a member of a select group of highly compensated or management employees, (ii) holds a L1 or above leadership position with the Company; (iii) maintains full-time employment status, and (iv) is designated as eligible by the Board or Committee.

Employer: (a) Except as otherwise provided in part (b) of this definition, the Company and/or any of its subsidiaries (now in existence or hereafter formed or acquired) that have been selected by the Committee to participate in the Plan and have adopted the Plan as a participating Employer.

b) For the purpose of determining whether a Participant has experienced a Separation from Service, the term "Employer" shall mean:

(i) the entity for which the Participant performs services and with respect to which the legally binding right to compensation deferred under this Plan arises; and

(ii) all other entities with which the entity described above would be aggregated and treated as a single employer under Code Section 414(b) (controlled group of corporations) and Code Section 414(c) (a group of trades or businesses, whether or not incorporated, under common control), as applicable. In order to identify the group of entities described in the preceding sentence, the Committee shall use an ownership threshold of at least 50% as a substitute for the 80% minimum ownership threshold that appears in, and otherwise must be used when applying, the applicable provisions of (A) Code Section 1563 for determining a controlled group of corporations under Code Section 414(b), and (B) Treas. Reg. §1.414(c)-2 for determining the trades or businesses that are under common control under Code Section 414(c).

ERISA: The Employee Retirement Income Security Act of 1974, as amended, including Department of Labor and Treasury regulations and applicable authorities promulgated thereunder.

Fund or Funds: One or more of the investments selected by the Committee pursuant to Section 5.2 of the Plan.

Fund Subaccounts: Subaccounts of a Participant's Deferral Account, each of which corresponds to a Fund.

Interest Rate: For each Fund, the rate of return derived from the net gain or loss on the assets of such Fund, as determined by the Committee.

Participant: Any Eligible Executive who becomes a Participant in this Plan in accordance with ARTICLE II.

Participant Election: The forms or procedures by which a Participant makes elections with respect to (a) voluntary deferrals of his/her Compensation, (b) the Funds, which shall act as the basis for crediting of interest on Deferral Account balances, and (c) the form and timing of distributions from Deferral Accounts. Participant Elections may take the form of an electronic communication followed by appropriate confirmation according to specifications established by the Committee.

Payment Date: The date by which a total distribution of the distributable amount shall be made or the date by which installment payments of the distributable amount shall commence, which shall be the first day of the month following the month in which the event triggering the distribution occurs; or, in the case of a Scheduled In-Service Distribution, the first day of the month following the date indicated by the Participant for the elected Scheduled In-Service Distribution. Notwithstanding the foregoing:

(a) the Payment Date shall not be before the earliest date or after the latest date on which benefits may be distributed under Code Section 409A without violation of the provisions thereof, as reasonably determined by the Committee;

(b) the Payment Date for a Scheduled In-Service Distribution may not be earlier than the date specified by the Committee pursuant to Section 6.5(a); and

(c) to the extent required under Code Section 409A, any amount that otherwise would be payable to a Participant who is a "specified employee" of the Company, as determined by the Company in accordance with Code Section 409A, during the six-month period following such Participant's Separation from Service, shall be suspended until the lapse of such six-month period (or, if earlier, the date of death of the Participant). The amount that otherwise would be payable to such Participant during such period of suspension shall be paid in a single payment within 30 days following the end of such six-month period (or, if such day is not a business day, on the next succeeding business day) or within 30 days following the death of the Participant during such six-month period, provided that the death of the Participant during such six-month period shall not cause the acceleration of any amount that otherwise would be payable on any date during such six-month period following the date of the Participant's death.

Payment Delay Period: Has the meaning described in Section 6.2(b)

Plan Year The calendar year.

Performance Year: To the extent that the Annual Bonus constitutes "performance-based compensation" under Treas. Reg. §1.409A-1(e), the calendar year used to measure the amount of Annual Bonus or Special Bonus (if applicable and as permitted under the Plan) to which a Participant may become entitled under a performance-based bonus or incentive arrangement.

Separation from Service: A Separation from Services provided by a Participant to his or her Employer, whether voluntarily or involuntarily, other than by reason of death or Disability, as determined by the Committee in accordance with Treas. Reg. §1.409A-1(h). For a Participant who provides services to an Employer as an employee, a Separation from Service shall occur when such Participant has experienced a termination of employment with the Employer. A Participant shall be considered to have experienced a termination of employment when the facts and circumstances indicate that the Participant and his or her Employer reasonably anticipate that either (i) no further services will be performed for the Employer after a certain date, or (ii) that the level of bona fide services the Participant will perform for the Employer after such date (whether as an employee or as an independent contractor) will permanently decrease to no more than 20% of the average level of bona fide services performed by such Participant (whether as an employee or an independent contractor) over the immediately preceding 36-month period (or the full period of services to the Employer if the Participant has been providing services to the Employer less than 36 months).

If a Participant is on military leave, sick leave, or other bona fide leave of absence, the employment relationship between the Participant and the Employer shall be treated as continuing intact, provided that the period of such leave does not exceed six (6) months, or if longer, so long as the Participant retains a right to reemployment with the Employer under an applicable statute or by contract. If the period of a military leave, sick leave, or other bona fide leave of absence exceeds six (6) months and the Participant does not retain a right to reemployment under an applicable statute or by contract, the employment relationship shall be considered to be terminated for purposes of this Plan as of the first day immediately following the end of such 6-month period. In applying the provisions of this paragraph, a leave of absence shall be considered a bona fide leave of absence only if there is a reasonable expectation that the Participant will return to perform services for the Employer.

Scheduled In-Service Distribution: A scheduled in-service distribution date elected by the Participant for distribution of amounts from a specified Deferral Account, including earnings thereon, which distribution shall be made provided that the Participant has not experienced a Separation from Service, as provided under Section 6.5.

Share Award: The number of bookkeeping units of cash-settled or share-settled incentive awards expressed in the form of common stock of the Company, if any, that the Company awards to an Eligible Executive, including without limitation cash-settled or share-settled restricted stock units and performance stock units, and any dividend equivalent rights thereunder. Notwithstanding the foregoing, no award, unit or right shall constitute a Share Award for purposes of this Plan unless it has been granted pursuant to the Advanced Energy Industries, Inc. 2017 Omnibus Incentive Plan (approved on May 4, 2017 and as amended from time to time), or any successor plan thereto that has been duly approved by the Company's stockholders.

Special Bonus: A Participant's bonus or other incentive compensation provided for as a one-time cash bonus or award, including, without limitation, a retention bonus or management-by-objectives bonus, specifically approved for inclusion in this Plan by the Committee, but not including an Annual Bonus, Commission, signing bonus, recognition spot bonus, or Share Award. Notwithstanding anything in this Plan to the contrary, effective as of August 1, 2023, Special Bonuses for services performed on or after January 1, 2024 shall not be eligible for deferral under this Plan.

Unforeseeable Emergency: A severe financial hardship to the Participant resulting from an illness or accident of the Participant, the Participant's spouse, or a dependent (as defined in Code Section 152, without regard to Code Sections 152(b)(1), (b)(2), and (d)(1)(B)) of the Participant, loss of the Participant's property due to casualty, or other similar extraordinary and unforeseeable circumstances arising as a result of events beyond the control of the Participant, but shall in all events correspond to the meaning of the term "unforeseeable emergency" under Treas. Reg. §1.409A-3(i)(3). No Unforeseeable Emergency shall be deemed to exist to the extent that the financial hardship is or may be relieved (a) through reimbursement or compensation by insurance or otherwise, (b) by borrowing from commercial sources on reasonable commercial terms to the extent that this borrowing would not itself cause a severe financial hardship, (c) by cessation of deferrals under the Plan, or (d) by liquidation of the Participant's other assets to the extent that this liquidation would not itself cause severe financial hardship. The Committee shall determine whether the circumstances of the Participant constitute an Unforeseeable Emergency.

ARTICLE II
PARTICIPATION

2.1 Enrollment Requirements. As a condition to participation, each Eligible Executive shall complete, execute and return to the Committee the appropriate Participant Elections, as well as such other documentation and information as the Committee reasonably requests, by the deadline(s) established by the Committee. In addition, the Committee shall establish from time to time such other enrollment requirements as it determines, in its sole discretion, are necessary. If an Eligible Executive fails to meet all requirements established by the Committee within the period required, that Eligible Executive shall not be eligible to participate in the Plan during such Plan Year.

2.2 Commencement of Participation. Each Eligible Executive shall commence participation in the Plan on the date that the Committee determines that the Eligible Executive has met all enrollment requirements set forth in this Plan and required by the Committee, including returning all required documents to the Committee within the specified time period.

ARTICLE III
DEFERRAL ELECTIONS

3.1 Elections to Defer Compensation. An Eligible Executive shall be entitled to defer Compensation, including Base Salary, Commission, Annual Bonus, Special Bonus, and/or Share Awards (if so permitted by the Committee and the terms of the Plan), in accordance with and subject to the conditions of this Article III, by filing with the Committee Participant Election(s) in such form and manner and at such time permitted under this Article III as the Committee shall prescribe. Notwithstanding the foregoing, effective as of July 24, 2023, Eligible Executives shall not be entitled to defer Special Bonuses for services performed on or after January 1, 2024 under this Plan. The Participant Election(s) and accompanying explanatory materials prescribed by the Committee for describing the time within which such elections may be made shall be treated as part of the Plan.

3.2 Deferral Amount. Elections to defer Compensation shall take the form of a whole percentage (less applicable payroll withholding requirements for Social Security and income taxes and employee benefit plans, as determined in the sole and absolute discretion of the Committee) of up to a maximum of 80% of Base Salary, 100% of any Commission, 100% of any Annual Bonus, and 100% of any Special Bonus (if applicable and permitted under the Plan). Share Awards may be deferred as determined by the Committee in its sole discretion.

3.3 Time and Duration of Election. The time for making any deferral election shall be as follows:

(a) Election to Defer Base Salary, Commission and Special Bonus. A Participant who is an Eligible Executive as of the first day of any Plan Year beginning on or after the Effective Date may elect to defer his or her Base Salary and/or Special Bonus (if applicable and permitted under the Plan) for such Plan Year, by election no later than December 1 of the immediately preceding Plan Year (or such later date as the Committee may authorize in its discretion, but not later than December 31 of such immediately preceding Plan Year), based on procedures established by the Committee. Notwithstanding the foregoing, no Special Bonus deferral elections shall be permitted with respect to any Plan Year beginning on or after January 1, 2024. A Participant who is an Eligible Executive as of the first day of any Plan Year beginning on or after the Effective Date may elect to defer his or her Commission attributable to services provided in such Plan Year (as determined under Treas. Reg. §1.409A-2(a)(12)(i)) by election no later than December 1 of the immediately preceding Plan Year (or such later date as the Committee may authorize in its discretion, but not later than December 31 of such immediately preceding Plan Year), based on procedures established by the Committee.

(b) Election to Defer Annual Bonus. A Participant who is an Eligible Executive as of the first day of any Plan Year beginning on or after the Effective Date may elect to defer his or her Annual Bonus for such Plan Year, by election no later than December 1 of the immediately preceding Plan Year (or such later date as the Committee may authorize in its discretion, but not later than December 31 of such immediately preceding Plan Year), based on procedures established by the Committee. Notwithstanding the foregoing, to the extent that the Annual Bonus constitutes "performance-based compensation" under Treas. Reg. §1.409A-1(e), the Committee may (but shall not be obligated to) establish a different deferral election deadline, which in no event shall be later than the earlier of: (1) such time that the amount of the Annual Bonus is "readily ascertainable" pursuant to Treas. Reg. §1.409A-2(a)(8), or (2) June 30 of the Performance Year for such Annual Bonus; provided that the Participant has been performing services continuously from the later of the beginning of such Performance Year or the date the performance criteria for such Annual Bonus are established through the date the deferral election is made.

(c) New Participant Deferral Elections. An Eligible Executive who first becomes eligible to participate in the Plan as of the Effective Date or after the beginning of any Plan Year, as determined in accordance with Treas. Reg. §1.409A-2(a)(7) and the "plan aggregation" rules provided in Treas. Reg. §1.409A-1(c)(2), may be permitted to make an election to defer:

(1) the portion of Base Salary and Commission attributable to services to be performed after such election (in the instance of Commission, determinable pursuant to Treas. Reg. §1.409A-2(a)(12)(i)); and/or

(2) the portion of Annual Bonus and/or Special Bonus (if applicable and permitted under the Plan) equal to the total of such Annual Bonus or Special Bonus multiplied by the ratio of the number of days remaining in the performance period after the election over the total number of days in the performance period applicable to the Participant;

in either case, provided that the Participant submits Participant Election(s) on or before the deadline established by the Committee, which in no event shall be later than 30 days after the Participant first becomes eligible to participate in the Plan and, with respect to Participant Election(s) to defer Annual Bonus or Special Bonus (if applicable and permitted under the Plan) that constitute "performance-based compensation" under Treas. Reg. §1.409A-1(e)), if so determined by the Committee, in no event shall be later than such time that the amount of such Annual Bonus or Special Bonus is readily ascertainable. Notwithstanding the foregoing, effective as of August 1, 2023, no deferral elections shall be permitted with respect to any Special Bonus for services performed on or after January 1, 2024.

(d) Deferral of Share Awards. A Participant may defer Share Awards as set forth in the applicable Participant Election provided by the Company to the Participant, only if such deferral is permitted by the Committee in its sole discretion. A Participant Election provided by the Company for a Share Award shall only be applicable to that Share Award. Notwithstanding and without limitation of the foregoing, any Participant Election with respect to a Share Award shall be submitted no later than December 1 (or such later date as the Committee may authorize in its discretion, but not later than December 31) of the Plan Year immediately preceding the year of grant of such Share Award, based on procedures established by the Committee; unless the Committee has determined, in its sole discretion, that one of the following exceptions applies, has notified the Participant of the applicable election period, procedures, and deadline for filing such Participant Election, and such election complies in all respects with the requirements of Treas. Reg. § 1.409A-2:

(1) If the Participant is an Eligible Executive described in Section 3.3(e) above, the Participant may be permitted to make an election by submitting a Participant Election (in accordance with procedures established by the Committee) as specified in Section 3.3(e) above, applied as if references to "Base Salary" or "Annual Bonus," were references to the Share Award;

(2) To the extent that a Share Award constitutes "performance-based compensation" under Treas. Reg. §1.409A-1(e) based on services performed over a period of at least 12 months, the Participant may be permitted to make an election by submitting a Participant Election (in accordance with procedures established by the Committee) no later than the earlier of: (1) such time that the amount of the Share Award is "readily ascertainable" pursuant to Treas. Reg. § 1.409A-2(a)(8), or (2) the date that is six (6) months before the end of the performance period for such Share Award; provided that the Participant has been performing services continuously from the later of the beginning of such performance period or the date the performance criteria for such Share Award are established through the date the deferral election is made;

(3) With respect to a Share Award that constitutes a "forfeitable right" under Treas. Reg. §1.409A-2(a)(5) (i) to which the Participant has a legally binding right to payment in a subsequent year, and (ii) that is subject to a forfeiture condition requiring the Participant's continued services for a period of at least 12 months from the date the Participant obtains the legally binding right, the Participant may be permitted to make an election by submitting a Participant Election (in accordance with procedures established by the Committee) no later than the 30th day after the Participant obtains the legally binding right to the Share Award, provided that the election is made at least 12 months in advance of the earliest date at which the forfeiture condition could lapse; provided that if the Share Award provides for a waiver of the forfeiture condition upon the Participant's death, disability or upon a change in control, and such event occurs before the end of the 12 month minimum forfeiture period, the Participant's elective deferral election is valid only if the election is timely under the Plan without regard to this Section 3.3(d)(3);

(4) A Share Award that meets the definition of a "short-term deferral" described in Treas. Reg. § 1.409A-1(b)(4) may be deferred in accordance with the rules of Section 6.1(b), applied as if the date the substantial risk of forfeiture (as defined in Treas. Reg. § 1.409A-1(d)) lapses is the date payments were originally scheduled to commence, in compliance with Treas. Reg. § 1.409A-2(a)(4), provided that the Committee may permit for deferred amounts to be payable upon a change in control (as defined in Treas. Reg. § 1.409A-3(i)(5)) without regard to the requirement contained in Section 6.1(b)(2), as permissible under Treas. Reg. § 1.409A-2(a)(4).

(e) Irrevocability. A Participant's deferral election under this Article III shall be irrevocable after the last date prescribed under Section 3.3 for the making of such election;

provided, however, that the Committee in its discretion may cancel a deferral election, in accordance with Code Section 409A, in the event of (1) a Participant becoming "disabled" under the meaning in Treas. Reg. §1.409A-3(j)(4)(xii), (2) an Unforeseeable Emergency, or (3) a hardship distribution pursuant to Treas. Reg. §1.401(k)-1(d)(3).

(f) Duration of Compensation Deferral Election. A deferral election made for any Plan Year shall be applicable only for that Plan Year.

ARTICLE IV
COMPANY CONTRIBUTIONS

4.1 Offset Contributions. The Company will credit to each Participant's Deferral Account the amount equal to the employer matching contribution that would have been made for the Participant to the Company 401(k) Plan but that could not be made because of the application of Code Sections 401(a)(17) and 415(c). Any such credit shall be made to a Participant's Deferral Account not later than the latest due date on which any contributions could be made to the Company 401(k) Plan for such Plan Year.

4.2 Discretionary Contributions. The Company may credit to each Participant's Deferral Account the amount, if any, that the Committee determines in its sole discretion to contribute for any Plan Year, which may include, without limitation, a credit with respect to the amount of employer matching contribution that each Participant was unable to be credited under the Company 401(k) Plan as a result of voluntary deferrals to this Plan being excluded from the applicable definition of compensation used under the Company 401(k) Plan to figure participant deferrals under such Company 401(k) Plan. Any discretionary credits under this paragraph shall be determined by the Committee in its sole discretion. If a Participant Separates from Service during a Plan Year, the Company may adjust the contribution or the Deferral Account balance as of the date of termination so that the discretionary credit for the Plan Year of termination reflects only the portion of the Plan Year during which the Participant was employed by the Company. No Participant will have any right to receive a contribution in any Plan Year, irrespective of any contributions made on behalf of the Participant or any other Participant in any past or succeeding years.

ARTICLE V
DEFERRAL ACCOUNTS

5.1 Deferral Accounts. The Committee shall establish and maintain such Deferral Accounts as are necessary for each Participant under the Plan. Each Participant's Deferral Account shall be further divided into Fund Subaccounts, each of which corresponds to a Fund designated pursuant to Section 5.3. A Participant's Deferral Account shall be credited as follows:

(a) As soon as reasonably possible after amounts are withheld and deferred from a Participant's Compensation, the Committee shall credit the Fund Subaccounts of the Participant's Deferral Account an amount equal to Compensation deferred by the Participant in accordance with the designation under Section 5.3; the Committee shall also credit to the Fund Subaccounts of the Participant's Deferral Account the Company contributions described in Sections 4.1 and 4.2 above;

(b) Each business day, each Fund Subaccount of a Participant's Deferral Account shall be credited with earnings or losses in an amount equal to that determined by multiplying the balance credited to such Fund Subaccount as of the prior day, less any distributions valued as of the end of the prior day, by the Interest Rate for the corresponding Fund as determined by the Committee pursuant to Section 5.3;

(c) In the event that a Participant elects a Scheduled In-Service Distribution for a given Plan Year's deferral of Compensation, all amounts attributed to the deferral of Compensation for such Plan Year shall be accounted for in a manner which allows separate accounting for the deferral of Compensation and investment gains and losses associated with amounts allocated to each such separate Scheduled In-Service Distribution; and

(d) At the discretion of the Committee, shares of Company common stock underlying Share Awards deferred by a Participant under the Plan may be credited with cash or stock dividends paid by the Company in respect of a share of Company common stock. Any such cash or stock dividends may be credited to the Participant's Deferral Account, or may be deemed reinvested by the Committee in additional Share Awards based on the fair market value of a share of Company common stock on the applicable dividend payment date (as determined by the Committee in accordance with the Code) and rounded down to the nearest whole share, and the Participant's Deferral Account shall be credited accordingly.

5.2 Committee Selection of Investment Funds. The Committee shall select from time to time, in its sole and absolute discretion, investment funds, which may be based on Company stock, free-standing, components of variable life insurance policies, or any other underlying investment selected by the Committee, to serve as Funds in which a Participant may deem his or her Deferral Accounts invested pursuant to Section 5.3. The Interest Rate of each such investment shall be used to determine the amount of earnings or losses to be credited to the Participant's Deferral Account under Section 5.1. The Participant's choice among investments shall be solely for purposes of calculation of the Interest Rate on Accounts. The Company shall have no obligation to set aside or invest amounts as directed by the Participant and, if the Company elects to invest amounts as directed by the Participant, the Participant shall have no more right to such investments than any other unsecured general creditor.

5.3 Participant Fund Election. At the time of entering the Plan and/or of making a deferral election under the Plan, or at such other time as provided by the Committee, the Participant shall designate, according to such procedures and restrictions as may be promulgated by the Committee, the Funds in which the Participant's Deferral Accounts shall be deemed to be invested for purposes of determining the amount of earnings and losses to be credited to each Deferral Account. The Participant may specify that all or any percentage of his or her Deferral Accounts shall be deemed to be invested, in whole percentage increments, in one or more of the Funds selected as alternative investments under the Plan from time to time by the Committee pursuant to Section 5.2, subject to any restrictions and procedures established by the Committee. If a Participant fails to make an election among the Funds as described in this Section, the Participant's Account balance shall automatically be allocated into the default Fund(s) selected by the Committee. A Participant may change any designation made under this Section as permitted by the Committee by filing a revised election, on a Participant Election provided by the Committee. Notwithstanding the foregoing, the Committee, in its sole discretion, may impose limitations on the frequency with which or time at which one or more of the Funds elected in accordance with this Section may be added or deleted by such Participant; furthermore, the Committee, in its sole discretion, may impose limitations on the frequency with which or time at which the Participant may change the portion of his or her Deferral Account balance allocated to each previously or newly elected Fund.

5.4 Trust. The Company shall be responsible for the payment of all benefits under the Plan. At its discretion, the Company may (but shall not be obligated to) establish one or more grantor trusts for the purpose of providing for payment of benefits under the Plan. Such trust or trusts may be irrevocable, but the assets thereof shall be subject to the claims of the Company's creditors. Benefits paid to the Participant from any such trust or trusts shall be considered paid by the Company for purposes of meeting the obligations of the Company under the Plan.

5.5 Statement of Accounts. The Committee shall provide each Participant with electronic statements at least quarterly setting forth the Participant's Deferral Account balance as of the end of each applicable period.

5.6 Vesting of Deferral Accounts. The Participant shall be vested at all times in all amounts credited to the Participant's Deferral Account(s).

ARTICLE VI
DISTRIBUTIONS

6.1 Distribution Elections.

(a) Initial Election. At the time of making a deferral election under the Plan, the Participant shall designate the time and form of distribution of deferrals made pursuant to such election (together with any earnings credited thereon) from among the alternatives specified under this Article VI for the applicable distribution. Notwithstanding the foregoing, all amounts credited to each Participant's Deferral Account by the Company pursuant to Article IV will not be subject to any elections and will be distributed in accordance with Section 6.6.

(b) Modification of Election. A distribution election with respect to previously deferred amounts may only be changed pursuant to the terms and conditions specified in Code Section 409A and this Section. Except as permitted under Code Section 409A, no acceleration of a distribution is permitted. A subsequent election shall be permitted only if all of the following requirements are met:

(1) the new election does not take effect until at least twelve (12) months after the date on which the new election is made;

(2) the new election delays payment for at least five (5) years from the date that payment would otherwise have been made, absent the new election, unless otherwise permitted by Treas. Reg. §1.409A-2(b)(1)(ii); and

(3) the new election is made not less than twelve (12) months before the date on which payment would have been made (or, in the case of installment payments, the first installment payment would have been made) absent the new election.

Participants may make a subsequent election only while employed by the Company, and may only make a single subsequent election with respect to any deferral election. A Beneficiary of a deceased Participant is not permitted to make a subsequent election under this Section. Election changes made pursuant to this Section shall be made in accordance with rules established by the Committee and shall comply with all requirements of Code Section 409A and applicable authorities.

6.2 Distributions of Employee Deferrals Upon Separation from Service.

(a) Timing and Form of Distributions of Employee Deferrals Upon Separation from Service. Except as otherwise provided herein (including if a Participant fails to make a timely distribution election in accordance with Section 6.1) in the event of a Participant's Separation from Service, the distributable amount credited to the Participant's Deferral Accounts attributable to deferral elections pursuant to ARTICLE III shall be paid in one lump sum payment on the first Payment Date following the expiration of six (6) months from Participant's Separation from Service, unless: (i) the Participant has made a distribution election on a timely basis to receive decrementing counter annual installments over a period of up to ten (10) years following Separation from Service, (ii) distributions to the Participant have commenced as of the Participant's Separation from Service pursuant to a Scheduled In-Service Distribution Election, in which case those Scheduled In-Service Distributions shall continue in effect, (iii) all distributable amounts have already been paid out to Participant pursuant to a lump sum payment election upon Death or Disability, or (iv) otherwise required by the application of Section 3.3(d)(4) or Section 6.1(b).

(b) Payment Delay Period. A Participant may elect for payment of the lump sum payment or first annual installment (as applicable) payable pursuant to the first sentence of Section 6.2(a) to be made on the first Payment Date following the expiration of a period beginning on the date of Participant's Separation from Service and ending on a date chosen by Participant that is between six (6) months and three (3) years from such Separation from Service (the "Payment Delay Period"), or such longer period if required by the application of Section 3.3(d)(4) or Section 6.1(b). In the case of annual installment distributions, subsequent installments shall be made in each successive year by the first of the month in which the first annual installment was made.

6.3 Distributions of Employee Deferrals Upon Disability.

(a) Prior to Commencement of Benefits. In the event of a Participant's Disability prior to commencement of a benefit described in this ARTICLE IV, if timely elected by the Participant in accordance with ARTICLE III and Section 6.1, the Participant may receive the distributable amount credited to the Participant's Deferral Accounts attributable to deferral elections pursuant to ARTICLE III in a lump sum payment on the Payment Date following the Participant's Disability, regardless of the form of payment otherwise designated by the Participant pursuant to Section 6.2(a) or Section 6.5(a).

(b) After Commencement of Benefits. In the event of a Participant's Disability after commencement of a benefit described in this ARTICLE VI, if timely elected by the Participant in accordance with ARTICLE III and Section 6.1, the Participant may receive the remaining distributable amount credited to the Participant's Deferral Accounts attributable to deferral elections pursuant to ARTICLE III in a lump sum payment of cash on the Payment Date following the Participant's Disability, regardless of the form of payment otherwise designated by the Participant pursuant to Section 6.2(a) or Section 6.5(a).

6.4 Distributions of Employee Deferrals Upon Death.

(a) Prior to Commencement of Benefits. In the event of a Participant's death prior to commencement of a benefit described in this Article VI, if timely elected by the Participant in accordance with ARTICLE III and Section 6.1, the Participant's Beneficiary may receive the distributable amount credited to the Participant's Deferral Accounts attributable to deferral elections pursuant to ARTICLE III in a lump sum payment of cash on the Payment Date following the Participant's death, regardless of the form of payment otherwise designated by the Participant pursuant to Section 6.2(a) or Section 6.5(a).

(b) After Commencement of Benefits. In the event of a Participant's death after commencement of a benefit described in this Article VI, if timely elected by the Participant in accordance with ARTICLE III and Section 6.1, the Participant's Beneficiary may receive the remaining distributable amount credited to the Participant's Deferral Accounts attributable to deferral elections pursuant to ARTICLE III in a lump sum payment of cash on the Payment Date following the Participant's death, regardless of the form of payment otherwise designated by the Participant pursuant to Section 6.2(a) or Section 6.5(a).

6.5 Scheduled In-Service Distributions of Employee Deferrals.

(a) Scheduled In-Service Distribution Election. Participants shall be entitled to elect to receive a Scheduled In-Service Distribution from a Deferral Account of amounts attributable to deferral elections pursuant to ARTICLE III. If a Participant has a Separation from Service with the Company prior to commencement of payment of the Scheduled In-Service Distribution, distribution will not be made pursuant to this Section 6.5(a) but will instead be made pursuant to Section 6.2(a) above. In the case of a Participant who has elected to receive a Scheduled In-Service Distribution, such Participant shall receive the distributable amount, with respect to the specified deferrals, including earnings thereon, which have been elected by the Participant to be subject to such Scheduled In-Service Distribution election. The Committee shall determine the earliest commencement date that may be elected by the Participant for each Scheduled In-Service Distribution and such date shall be indicated on the Participant Election, provided that such date may not be earlier than three (3) years from the date of the respective election (or such longer period as required under Section 3.3(d)(4) or Section 6.1(b)). The Participant may elect to receive the Scheduled In-Service Distribution in a single lump sum or in decrementing counter annual installments over a period of up to ten (10) years. The lump sum payment or first annual installment (as applicable) payable pursuant to foregoing sentence will be made on the first Payment Date following the commencement date elected by Participant. A Participant may delay and change the form of a Scheduled In-Service Distribution, provided such extension complies with the requirements of Section 6.1(b).

(b) Relationship to Other Benefits. In the event that distribution of a Participant's Deferral Account is triggered under Sections 6.2, 6.3, or 6.4 prior to commencement of a Scheduled In-Service Distribution, the amounts subject to such Scheduled In-Service

Distribution shall not be distributed under this Section 6.5, but rather shall be distributed in accordance with the other applicable Section of this Article VI.

6.6 Distribution of Company Contributions. Notwithstanding anything to the contrary in this Article VI, all amounts credited to each Participant's Deferral Account by the Company pursuant to Article VI shall be paid in one lump sum payment on the first Payment Date following the expiration of six (6) months from Participant's Separation from Service. For the avoidance of doubt, no Company contributions under this Plan shall be subject to Participant election pursuant to this Article VI.

6.7 Form of Distribution. Generally, distributions from the Plan shall be made in the form of cash, unless the Committee determines that such distributions shall be made in property.

6.8 Timing of Distribution. Payment of all distributions from the Plan shall be made on the first of the month or as soon as administratively practicable following such date, provided that in no instance shall a distribution be made later than the tenth of the month, in compliance with Treas. Reg. §1.409A-3(d).

6.9 Distribution of Small Benefit. Notwithstanding any initial election under Section 6.1(a), modification of election in Section 6.1(b), or any other provision of the Plan to the contrary, if the amount credited to the Participant's Deferral Account, plus the Participant's vested interest in any other plan or plans required to be aggregated with this Plan under Code Section 409A, is equal to or less than the applicable dollar amount under Section 402(g)(1)(B) of the Code (which is $22,500 for 2023), the Committee may, in its sole discretion, direct that such amount (and such other interest(s)) be distributed to the Participant (or Beneficiary, as applicable) in one lump-sum payment, provided that such exercise of discretion is evidenced in writing no later than the date of such payment.

6.10 Unforeseeable Emergency. Upon a finding that the Participant has suffered an Unforeseeable Emergency, in accordance with Code Section 409A and Treas. Reg. §1.409A-3(i)(3), the Committee may, at the request of the Participant, accelerate distribution of benefits and/or approve cancellation of deferral elections under the Plan, subject to the following conditions:

(a) the request to take an Unforeseeable Emergency distribution shall be made by filing a form provided by and filed with the Committee prior to the end of any calendar month;

(b) upon a finding that the Participant has suffered an Unforeseeable Emergency under Code Section 409A, the Committee may, at the request of the Participant, accelerate distribution of benefits and/or approve cancellation of current deferral elections (pursuant to Section 3.3(e)) under the Plan in the amount reasonably necessary to alleviate such Unforeseeable Emergency; the amount distributed pursuant to this Section with respect to the Unforeseeable Emergency shall not exceed the amount necessary to satisfy such Unforeseeable Emergency, plus amounts necessary to pay taxes reasonably anticipated as a result of the distribution, after taking into account the extent to which such hardship is or may be relieved through reimbursement or compensation by insurance or otherwise or by liquidation of the

Participant's assets (to the extent the liquidation of such assets would not itself cause severe financial hardship); and

(c) the amount (if any) determined by the Committee as an Unforeseeable Emergency distribution shall be paid in a single cash lump sum as soon as practicable after the end of the calendar month in which the Unforeseeable Emergency determination is made by the Committee.

ARTICLE VII
BENEFICIARY DESIGNATIONS AND OTHER PAYEES

7.1 Beneficiaries.

(a) Beneficiary Designation. The Participant shall have the right, at any time, to designate any person or persons as Beneficiary (both primary and contingent) to whom payment under the Plan shall be made in the event of the Participant's death. No consent of the Participant's spouse or any other person is required for the Participant to name a Beneficiary. The Beneficiary designation shall be effective when it is submitted to and acknowledged by the Committee during the Participant's lifetime in the format prescribed by the Committee.

(b) Absence of Valid Designation. If a Participant fails to designate a Beneficiary, as provided above, or if every person designated as Beneficiary predeceases the Participant or dies prior to complete distribution of the Participant's benefits, then the Participant's estate shall be deemed to be the Beneficiary and the Committee shall direct the distribution of such benefits to the Participant's estate.

7.2 Payments to Minors. In the event any amount is payable under the Plan to a minor, payment shall not be made to the minor, but instead such payment shall be made (a) to that person's living parent(s) to act as custodian or (b) if that person's parents are then divorced, and one parent is the sole custodial parent, to such custodial parent, to act as custodian. If no parent is living and the Committee decides not to select another custodian to hold the funds for the minor, then payment shall be made to the duly appointed and currently acting guardian of the estate for the minor or, if no guardian of the estate for the minor is duly appointed and currently acting within 60 days after the date the amount becomes payable, payment shall be deposited with the court having jurisdiction over the estate of the minor.

7.3 Payments on Behalf of Persons Under Incapacity. In the event that any amount becomes payable under the Plan to a person who, in the sole judgment of the Committee, is considered by reason of physical or mental condition to be unable to give a valid receipt therefore, the Committee may direct that such payment be made to any person found by the Committee, in its sole judgment, to have assumed the care of such person. Any payment made pursuant to such determination shall constitute a full release and discharge of any and all liability of the Committee and the Company under the Plan.

ARTICLE VIII
LEAVE OF ABSENCE

8.1 Paid Leave of Absence. If a Participant is authorized by the Company to take a paid leave of absence from the employment of the Company, and such leave of absence does not constitute a Separation from Service, (a) the Participant shall continue to be considered eligible for the benefits provided under the Plan, and (b) deferrals shall continue to be withheld during such paid leave of absence in accordance with Article III.

8.2 Unpaid Leave of Absence. If a Participant is authorized by the Company to take an unpaid leave of absence from the employment of the Company for any reason, and such leave of absence does not constitute a Separation from Service, such Participant shall continue to be eligible for the benefits provided under the Plan. During the unpaid leave of absence, the Participant shall not be allowed to make any additional deferral elections. However, if the Participant returns to employment, the Participant may elect to defer for the Plan Year following his or her return to employment and for every Plan Year thereafter while a Participant in the Plan, provided such deferral elections are otherwise allowed and a Participant Election is delivered to and accepted by the Committee for each such election in accordance with Article III above.

ARTICLE IX
ADMINISTRATION

9.1 Committee. The Plan shall be administered by a Committee appointed by the Board; provided, that if the Board does not appoint a Committee, the Board shall act as the Committee. The Committee shall have the exclusive right and full discretion (a) to appoint agents, designees and delegates to act on its behalf, (b) to select and establish Funds, (c) to interpret the Plan, (d) to decide any and all matters arising hereunder (including the right to remedy possible ambiguities, inconsistencies, or admissions), (e) to make, amend and rescind such rules as it deems necessary for the proper administration of the Plan, and (f) to make all other determinations and resolve all questions of fact necessary or advisable for the administration of the Plan, including determinations regarding eligibility for benefits payable under the Plan. All interpretations of the Committee with respect to any matter hereunder shall be final, conclusive and binding on all persons affected thereby. No member of the Committee or agent thereof shall be liable for any determination, decision, or action made in good faith with respect to the Plan. The Company will indemnify and hold harmless the members of the Committee and its agents from and against any and all liabilities, costs, and expenses incurred by such persons as a result of any act, or omission, in connection with the performance of such persons' duties, responsibilities, and obligations under the Plan, other than such liabilities, costs, and expenses as may result from the bad faith, willful misconduct, or criminal acts of such persons.

9.2 Claims Procedure.

(a) Filing of a Claim. Any Participant, Beneficiary, or any duly authorized representative may file a claim for a Plan benefit to which the claimant believes that he or she is entitled. Such a claim must be in writing and delivered to the Committee in person or by certified mail, postage prepaid.

(b) Initial Determination of Claim.

(1) Committee Discretion. The Committee will have full discretion to deny or grant any claim in whole or in part.

(2) Claims (Other than Disability Claims). For all claims other than Disability Claims, within 90 days after receipt of such claim, the Committee will send to the claimant by certified mail, postage prepaid, notice of the granting or denying, in whole or in part, of such claim, unless special circumstances require an extension of time for processing the claim. In no event may the extension exceed 90 days from the end of the initial period. If such extension is necessary, the claimant will be given a notice to this effect prior to the expiration of the initial 90 day period. If the Committee fails to notify the claimant either that his or her claim has been granted or that it has been denied in whole or in part within the initial 90 day period or prior to the expiration of an extension, if applicable, then the claim shall be deemed to have been denied as of the last day of the applicable period, and the claimant then may request a review of his or her claim.

(3) Disability Claims. If a claim is related to any distribution or rights to which a Participant or other claimant may be entitled in connection with the Participant's Disability ("Disability Claim") then, as soon as reasonable but within 45 days after receipt of such claim, the Committee will send to the claimant by certified mail, postage prepaid, notice of the granting or denying, in whole or in part of such claim. This period within which the Committee must provide such notice may be extended twice, for up to 30 days per extension, provided that the Committee (i) determines that an extension is needed and beyond the control of the Plan, and (ii) notifies the claimant prior to the expiration of the initial 45 day period or of the first 30-day extension period. In the case of any extension request, the notice of extension shall specifically explain the standards on which entitlement to a benefit is based, the unresolved issues that prevent a decision on the claim, and the additional information needed to resolve those issues, and the claimant shall be afforded at least 45 days within which to provide the specified information. If the Committee fails to notify the claimant either that his or her claim has been granted or that it has been denied in whole or in part within the initial 45 day period or prior to the expiration of an extension, if applicable, then the claim shall be deemed to have been denied as of the last day of the applicable period, and the claimant then may request a review of his or her claim. The Committee must ensure that all Disability Claims and appeals are adjudicated in a manner designed to ensure the independence and impartiality of the persons involved in making the Disability determination.

(c) Duty of Committee Upon Denial of Claim.

(1) Claims (Other than Disability Claims). The Committee will provide to every claimant who is denied a claim for benefits notice setting forth, in a manner calculated to be understood by the claimant, the following:

(i) The specific reason or reasons for the denial;

(ii) Specific reference to pertinent Plan provisions on which the denial is based;

(iii) A description of any additional material or information necessary for the claimant to perfect the claim and an explanation of why such material is necessary; and

(iv) Appropriate information as to the steps to be taken if the claimant wishes to submit his or her claim for review.

(2) Disability Claims. The Committee will provide to every claimant whose Disability Claim is denied a notice written in a culturally and linguistically appropriate manner, including information on how to access non-English language services provided by the Plan. The notice of the denial shall set forth the information contained in Section 9.2(c)(1) as well as set forth:

(i) An explanation of the basis for any disagreement with:

(1) the views of the health care professional(s) who treated or evaluated the claimant;

(2) the views of medical experts whose advice was obtained on behalf of the Plan in connection with the denial of the claimant's Disability Claim; and

(3) a disability determination made by the Social Security Administration;

(ii) Either the specific internal rules or standards the Plan relied upon in denying the Disability Claim, or alternatively, a statement that such rules or standards do not exist;

(iii) A statement that the claimant is entitled to receive, upon request and free of charge all documents and records relevant to the claimant's Disability Claim; and

(iv) A statement of any Plan limitation periods, including the expiration date, that apply to the claimant's right to bring a civil action under Section 502(a) of ERISA.

(d) Request for Review of Claim Denial.

(1) Review of Claims (Other than Disability Claims). If any claim, other than a Disability Claim, is denied, the claimant or the claimant's duly authorized representative, upon written application to the Committee in person or by certified mail, postage prepaid, may request a review of such denial, may review pertinent documents, and may submit issues and comments in writing. A claimant must file such written request for review with the Committee within 60 days after the receipt by the claimant of a notice denying the initial claim or within 60 days after the claim is deemed to be denied. Upon its receipt of the request for review, the Committee will notify the Company of the request. Upon its receipt of notice of a request for review, the Company will appoint a person other than a member of the Committee to be the claims

reviewer. The decision on review shall be rendered not later than 60 days after the Committee's receipt of the claimant's request for review, unless special circumstances require an extension of time for processing, in which case the 60 day period may be extended to 120 days if notice is provided to the claimant in writing within the initial 60 day period stating the reason for the extension. If notice of the decision on the review is not furnished in accordance with this subsection (1), the claim will be deemed denied and the claimant will be permitted to exercise his or her right to legal remedy pursuant to Section 9.2(f).

(2) Review of Disability Claims. If a Disability Claim is denied, the claimant or the claimant's duly authorized representative, upon written application to the Committee in person or by certified mail, postage prepaid, may request a review of such denial, may review pertinent documents, and may submit issues and comments in writing. A claimant must file such written request for review with the Committee within 180 days after the receipt by the claimant of a notice denying the initial claim or within 180 days after the claim is deemed to be denied. Upon its receipt of the request for review, the Committee will notify the Company of the request and the Company will appoint a person other than a member of the Committee to be the claims reviewer. Upon its receipt of the request for review, the Committee must provide the claimant, free of charge, and as soon as possible, any new or additional evidence considered or the rationale in connection with the Disability Claim. Such information must be provided in advance of the date on which the notice of the denial of the appeal is required to be provided, as discussed below in Section 9.2(e)(1), in order to give the claimant a reasonable opportunity to respond prior to that date. The decision on review shall be rendered not later than 45 days after the Committee's receipt of the claimant's request for review, unless special circumstances require an extension of time for processing, in which case the 45 day period may be extended to 90 days if notice is provided to the claimant in writing within the initial 45 day period stating the reason for the extension. If notice of the decision on the review is not furnished in accordance with this subsection (2), the claim will be deemed denied and the claimant will be permitted to exercise his or her right to legal remedy pursuant to Section 9.2(f).

(e) Claims Reviewer. The Committee will deliver to the claims reviewer all documents pertinent to the review. The claims reviewer will make a prompt decision on the review. The decision on review will be written in a manner calculated to be understood by the claimant, and will include specific reasons for the decision and specific references to the pertinent Plan provisions on which the decision is based.

(1) For Disability Claims, the Committee shall provide written notification of its decision to the claimant in a culturally and linguistically appropriate manner, including information on how to access non-English language services provided by the Plan. The notification shall include the information required to be included in the notice of the denial discussed in Section 9.2(c)(2). The decision (regardless of whether it is adverse to the claimant) shall be made within a reasonable time period but not later than 45 days after receipt of the claimant's request for review, unless the claims reviewer determines that special circumstances require an extension of time to process the claim. If such an extension is required, written notice of the extension must be furnished to the claimant before the end of the initial 45 day period, explaining the special circumstances and the time and date a determination can be expected. In no event shall the extension exceed a period of 45 days from the end of the initial period.

(f) Legal Remedy. After exhaustion of the claims procedure as provided under this Plan, nothing will prevent any person from pursuing any other legal remedy.

(1) For Disability Claims.

(i) If the Plan fails to strictly adhere to all the procedures of this Section 9.2 with respect to a Disability Claim, and unless subsection (ii) applies, the claimant is deemed to have exhausted the administrative remedies available under the Plan and is entitled to pursue any available remedies under Section 502(a) of ERISA. Under such circumstances, the Disability Claim or appeal is deemed denied on review without the exercise of discretion by an appropriate fiduciary.

(ii) A claimant will not be deemed to have exhausted the administrative remedies available under the Plan if:

(1) The violations of the procedure are de minimis and do not cause, and are not likely to cause, prejudice or harm to the claimant, and

(2) The Committee demonstrates that the violation was for good cause or due to matters beyond the control of the claims reviewer and that the violation occurred in the context of an ongoing, good faith exchange of information between the claims reviewer and the claimant.

This subsection (ii) is not available if the violation is a part of a pattern or practice of violations by the Plan. The claimant may request a written explanation of the violation from the Committee and the Committee must provide such explanation within 10 days, including a specific description of its basis, if any, for asserting that the violation should not cause the procedures to be deemed exhausted. If a court rejects the claimant's request for immediate review on the basis that the Plan met the standards for the exception under subsection (ii), the Disability Claim shall be considered as refiled on appeal upon the Committee's receipt of the decision of the court, and the Committee must provide the claimant with notice of the resubmission within a reasonable period of time after the receipt of the court's decision.

ARTICLE X
MISCELLANEOUS

10.1 Termination of Plan. The Company may terminate the Plan at any time. In the event of a Plan termination, no new deferral elections shall be permitted. However, after the Plan termination the Deferral Account balances of such Participants shall continue to be credited with deferrals attributable to any deferral election that was in effect prior to the Plan termination to the extent necessary to comply with Code Section 409A, and additional amounts shall continue to be credited or debited to such Participants' Account balances pursuant to Article V. In addition, following a Plan termination, Participant Account balances shall remain in the Plan and shall not be distributed until such amounts become eligible for distribution in accordance with the other applicable provisions of the Plan. Notwithstanding the preceding sentence, to the extent permitted by Treas. Reg. §1.409A-3(j)(4)(ix) or as otherwise permitted under Code Section 409A, the Company may provide that upon termination of the Plan, all Deferral Account balances of the

Participants shall be distributed, subject to and in accordance with any rules established by the Company deemed necessary to comply with Code Section 409A.

10.2 Amendment. The Company may, at any time, amend or modify the Plan in whole or in part. Notwithstanding the foregoing, no amendment or modification shall be effective to decrease the value of a Participant's vested Account balance in existence at the time the amendment or modification is made.

10.3 Unsecured General Creditor. The benefits paid under the Plan shall be paid from the general assets of the Company, and the Participant and any Beneficiary or their heirs or successors shall be no more than unsecured general creditors of the Company with no special or prior right to any assets of the Company for payment of any obligations hereunder. It is the intention of the Company that this Plan be unfunded for purposes of ERISA and the Code.

10.4 Restriction Against Assignment. The Company shall pay all amounts payable hereunder only to the person or persons designated by the Plan and not to any other person or entity. No part of a Participant's Accounts shall be liable for the debts, contracts, or engagements of any Participant, Beneficiary, or their successors in interest, nor shall a Participant's Accounts be subject to execution by levy, attachment, or garnishment or by any other legal or equitable proceeding, nor shall any such person have any right to alienate, anticipate, sell, transfer, commute, pledge, encumber, or assign any benefits or payments hereunder in any manner whatsoever. No part of a Participant's Accounts shall be subject to any right of offset against or reduction for any amount payable by the Participant or Beneficiary, whether to the Company or any other party, under any arrangement other than under the terms of this Plan.

10.5 Withholding. The Participant shall make appropriate arrangements with the Company for satisfaction of any federal, state or local income tax withholding requirements, Social Security and other employee tax or other requirements applicable to the granting, crediting, vesting or payment of benefits under the Plan. There shall be deducted from each payment made under the Plan or any other Compensation payable to the Participant (or Beneficiary) all taxes that are required to be withheld by the Company in respect to such payment or this Plan. To the extent permissible under Code Section 409A, the Company shall have the right to reduce any payment (or other Compensation) by the amount of cash sufficient to provide the amount of said taxes.

10.6 Code Section 409A. The Company intends that the Plan comply with the requirements of Code Section 409A (and all applicable Treasury Regulations and other guidance issued thereunder) and shall be operated and interpreted consistent with that intent.

10.7 Effect of Payment. Any payment made in good faith to a Participant or the Participant's Beneficiary shall, to the extent thereof, be in full satisfaction of all claims against the Committee, its members, and the Company.

10.8 Errors in Account Statements, Deferrals or Distributions. In the event an error is made in an Account statement, such error shall be corrected on the next statement following the date such error is discovered. In the event of an operational error, including, but not limited to, errors involving deferral amounts, overpayments or underpayments, such operational error shall be corrected in a manner consistent with and as permitted by any correction procedures established under Code Section 409A. If any portion of a Participant's Account(s) under this Plan is required to be included in income by the Participant prior to receipt due to a failure of this Plan to comply with the requirements of Code Section 409A, the Committee may determine that such Participant shall receive a distribution from the Plan in an amount equal to the lesser of (i) the portion of his or her Account required to be included in income as a result of the failure of the Plan to comply with the requirements of Code Section 409A, or (ii) the unpaid vested Account balance.

10.9 Domestic Relations Orders. Notwithstanding any provision in this Plan to the contrary, in the event that the Committee receives a domestic relations order, as defined in Code Section 414(p)(1)(B), pursuant to which a court has determined that a spouse or former spouse of a Participant has an interest in the Participant's benefits under the Plan, the Committee shall have the right to immediately distribute the spouse's or former spouse's vested interest in the Participant's benefits under the Plan to such spouse or former spouse to the extent necessary to fulfill such domestic relations order, provided that such distribution is in accordance with the requirements of Code Section 409A.

10.10 Employment Not Guaranteed. Nothing contained in the Plan, nor any action taken hereunder, shall be construed as a contract of employment or as giving any Participant any right to continue the provision of services in any capacity whatsoever to the Company.

10.11 No Guarantee of Tax Consequences. The Company, Board, and Committee make no commitment or guarantee to any Participant that any federal, state or local tax treatment will apply or be available to any person eligible for benefits under the Plan and assume no liability whatsoever for the tax consequences to any Participant.

10.12 Successors of the Company. The rights and obligations of the Company under the Plan shall inure to the benefit of, and shall be binding upon, the successors and assigns of the Company.

10.13 Notice. Any notice or filing required or permitted to be given to the Company or the Participant under this Agreement shall be sufficient if in writing and hand-delivered, or sent by registered or certified mail, in the case of the Company, to the principal office of the Company, directed to the attention of the Committee, and in the case of the Participant, to the last known address of the Participant indicated on the employment records of the Company. Such notice shall be deemed given as of the date of delivery or, if delivery is made by mail, as of the date shown on the postmark on the receipt for registration or certification. Notices to the Company may be permitted by electronic communication according to specifications established by the Committee.

10.14 Headings. Headings and subheadings in this Plan are inserted for convenience of reference only and are not to be considered in the construction of the provisions hereof.

10.15 Gender, Singular and Plural. All pronouns and any variations thereof shall be deemed to refer to the masculine, feminine, or neuter, as the identity of the person or persons may require. As the context may require, the singular may be read as the plural and the plural as the singular.

10.16 Governing Law. The Plan is intended to be an unfunded plan maintained primarily to provide deferred compensation benefits for a select group of "management or highly compensated employees” within the meaning of Sections 201, 301 and 401 of ERISA and therefore to be exempt from Parts 2, 3 and 4 of Title I of ERISA. To the extent any provision of, or legal issue relating to, this Plan is not fully preempted by federal law, such issue or provision shall be governed by the laws of the State of Delaware.

IN WITNESS WHEREOF, the undersigned duly authorized officer of the Company has approved the adoption of this Plan on behalf of the Company.

ADVANCED ENERGY INDUSTRIES, INC.

By: /s/ Rory O’Byrne

Print Name: Rory O’Byrne

Title: SVP Human Resources

Date: August 1, 2023

EXHIBIT 31.1

I, Stephen D. Kelley, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q for the period ended June 30, 2023 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: August 3, 2023

/s/ Stephen D. Kelley
Stephen D. Kelley
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 June 30, 2023 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: August 3, 2023

/s/ Paul Oldham
Paul Oldham
Chief Financial Officer and 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 June 30, 2023, 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: August 3, 2023

/s/ Stephen D. Kelley
Stephen D. Kelley
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 June 30, 2023, 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: August 3, 2023

/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.