UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

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

For the quarterly period ended September 30, 2020
or

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

For the transition period from _______________ to _______________

Commission file number 1-4347

ROGERS CORPORATION

(Exact Name of Registrant as Specified in its Charter)

Massachusetts	**06-0513860**
(State or Other Jurisdiction of Incorporation or Organization)	(I. R. S. Employer Identification No.)

2225 W. Chandler Blvd., Chandler, Arizona 85224-6155
(Address of Principal Executive Offices) (Zip Code)

Registrant's telephone number, including area code: **(480) 917-6000**

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, par value $1.00 per share	**ROG**	**New York Stock Exchange**

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, 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 Act). Yes ☐ No ☒

The number of shares outstanding of the registrant's capital stock as of October 26, 2020 was 18,675,798.

ROGERS CORPORATION
FORM 10-Q

September 30, 2020

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Forward-Looking Statements

This Quarterly Report on Form 10-Q contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Refer to "Forward-Looking Statements" in Item 2, Management's Discussion and Analysis of Results of Operations and Financial Position for additional information.

Part I – Financial Information

Item 1. Financial Statements
ROGERS CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)
(Dollars and shares in thousands, except per share amounts)

	Three Months Ended		Nine Months Ended	
	September 30, 2020	September 30, 2019	**September 30, 2020**	September 30, 2019
Net sales	**$ 201,944**	$ 221,842	**$ 591,911**	$ 704,492
Cost of sales	**126,426**	142,975	**380,794**	454,403
Gross margin	**75,518**	78,867	**211,117**	250,089
Selling, general and administrative expenses	**50,230**	40,448	**132,254**	127,349
Research and development expenses	**7,085**	7,830	**22,185**	23,282
Restructuring and impairment charges	**9,413**	580	**9,413**	2,485
Other operating (income) expense, net	**(4)**	124	**(96)**	1,075
Operating income	**8,794**	29,885	**47,361**	95,898
Equity income in unconsolidated joint ventures	**937**	1,498	**3,177**	4,077
Pension settlement charges	**—**	—	**(55)**	—
Other income (expense), net	**1,446**	(918)	**1,294**	(915)
Interest expense, net	**(3,553)**	(1,747)	**(6,539)**	(5,723)
Income before income tax expense	**7,624**	28,718	**45,238**	93,337
Income tax expense	**618**	5,331	**10,453**	17,258
Net income	**$ 7,006**	$ 23,387	**$ 34,785**	$ 76,079
Basic earnings per share	**$ 0.37**	$ 1.26	**$ 1.86**	$ 4.10
Diluted earnings per share	**$ 0.37**	$ 1.25	**$ 1.86**	$ 4.07
Shares used in computing:				
Basic earnings per share	**18,688**	18,581	**18,678**	18,569
Diluted earnings per share	**18,713**	18,724	**18,695**	18,715

ROGERS CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(Unaudited)
(Dollars in thousands)

	Three Months Ended		Nine Months Ended	
	September 30, 2020	September 30, 2019	**September 30, 2020**	September 30, 2019
Net income	**$ 7,006**	$ 23,387	**$ 34,785**	$ 76,079
Foreign currency translation adjustment	**11,269**	(10,187)	**10,004**	(12,262)
Pension and other postretirement benefits:				
Pension settlement benefits, net of tax (Note 4)	**—**	—	**(48)**	—
Actuarial net gain incurred, net of tax (Note 4)	**3**	—	**629**	—
Amortization of loss, net of tax (Note 4)	**66**	172	**199**	485
Derivative instrument designated as cash flow hedge:				
Change in unrealized loss before reclassifications, net of tax (Note 4)	**(638)**	(158)	**(1,504)**	(1,362)
Unrealized loss (gain) reclassified into earnings, net of tax (Note 4)	**2,810**	(32)	**2,476**	(188)
Other comprehensive income (loss)	**13,510**	(10,205)	**11,756**	(13,327)
Comprehensive income	**$ 20,516**	$ 13,182	**$ 46,541**	$ 62,752

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

ROGERS CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
(Unaudited)
(Dollars and shares in thousands, except par value)

	September 30, 2020	December 31, 2019
Assets		
Current assets		
Cash and cash equivalents	**$ 186,123**	$ 166,849
Accounts receivable, less allowance for doubtful accounts of $1,366 and $1,691	**138,611**	122,285
Contract assets	**22,061**	22,455
Inventories	**109,733**	132,859
Prepaid income taxes	**3,406**	4,524
Asbestos-related insurance receivables, current portion	**4,292**	4,292
Other current assets	**10,217**	10,838
Total current assets	**474,443**	464,102
Property, plant and equipment, net of accumulated depreciation of $370,164 and $341,119	**266,104**	260,246
Investments in unconsolidated joint ventures	**12,755**	16,461
Deferred income taxes	**26,907**	17,117
Goodwill	**265,781**	262,930
Other intangible assets, net of amortization	**132,818**	158,947
Pension assets	**4,337**	12,790
Asbestos-related insurance receivables, non-current portion	**74,024**	74,024
Other long-term assets	**14,871**	6,564
Total assets	**$ 1,272,040**	$ 1,273,181
Liabilities and Shareholders' Equity		
Current liabilities		
Accounts payable	**$ 35,886**	$ 33,019
Accrued employee benefits and compensation	**35,991**	29,678
Accrued income taxes payable	**6,235**	10,649
Asbestos-related liabilities, current portion	**5,007**	5,007
Other accrued liabilities	**23,237**	21,872
Total current liabilities	**106,356**	100,225
Borrowings under revolving credit facility	**60,000**	123,000
Pension and other postretirement benefits liabilities	**1,654**	1,567
Asbestos-related liabilities, non-current portion	**80,540**	80,873
Non-current income tax	**15,509**	10,423
Deferred income taxes	**9,497**	9,220
Other long-term liabilities	**11,460**	13,973
Commitments and contingencies (Note 10 and Note 12)		
Shareholders' equity		
Capital stock - $1 par value; 50,000 authorized shares; 18,676 and 18,577 shares issued and outstanding	**18,676**	18,577
Additional paid-in capital	**145,010**	138,526
Retained earnings	**858,487**	823,702
Accumulated other comprehensive loss	**(35,149)**	(46,905)
Total shareholders' equity	**987,024**	933,900
Total liabilities and shareholders' equity	**$ 1,272,040**	$ 1,273,181

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

ROGERS CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)
(Dollars in thousands)

	Nine Months Ended	
	September 30, 2020	September 30, 2019
Operating Activities:		
Net income	**$ 34,785**	$ 76,079
Adjustments to reconcile net income to cash provided by operating activities:		
Depreciation and amortization	**48,562**	37,176
Equity compensation expense	**10,317**	9,294
Deferred income taxes	**(9,987)**	(5,565)
Equity in undistributed income of unconsolidated joint ventures	**(3,177)**	(4,077)
Dividends received from unconsolidated joint ventures	**7,075**	5,375
Pension settlement benefits	**(63)**	—
Pension and other postretirement benefits	**(149)**	(503)
Asbestos-related charges	**—**	67
Loss on sale or disposal of property, plant and equipment	**49**	278
Impairment charges	**386**	1,537
Provision (benefit) for doubtful accounts	**(63)**	16
Changes in assets and liabilities:		
Accounts receivable	**(14,702)**	3,668
Contract assets	**394**	(1,342)
Inventories	**25,008**	(7,788)
Pension and postretirement benefit contributions	**(248)**	(16)
Other current assets	**1,876**	641
Accounts payable and other accrued expenses	**5,236**	(2,552)
Other, net	**8,374**	3,384
Net cash provided by operating activities	**113,673**	115,672
Investing Activities:		
Capital expenditures	**(28,944)**	(38,827)
Proceeds from the sale of property, plant and equipment, net	**—**	9
Return of capital from unconsolidated joint ventures	**—**	2,625
Net cash used in investing activities	**(28,944)**	(36,193)
Financing Activities:		
Proceeds from borrowings under revolving credit facility	**150,000**	—
Repayment of debt principal and finance lease obligations	**(213,299)**	(98,294)
Payments of taxes related to net share settlement of equity awards	**(5,107)**	(7,309)
Proceeds from the exercise of stock options, net	**—**	344
Proceeds from issuance of shares to employee stock purchase plan	**1,373**	1,249
Net cash provided by (used in) financing activities	**(67,033)**	(104,010)
Effect of exchange rate fluctuations on cash	**1,578**	(2,460)
Net increase (decrease) in cash and cash equivalents	**19,274**	(26,991)
Cash and cash equivalents at beginning of period	**166,849**	167,738
Cash and cash equivalents at end of period	**$ 186,123**	$ 140,747
Supplemental Disclosures:		
Accrued capital additions	**$ 1,493**	$ 1,999
Cash paid during the year for:		
Interest, net of amounts capitalized	**$ 4,301**	$ 6,449
Income taxes	**$ 21,645**	$ 16,018

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

ROGERS CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
(Unaudited)
(Dollars and shares in thousands)

	Three Months Ended		Nine Months Ended	
	September 30, 2020	September 30, 2019	**September 30, 2020**	September 30, 2019
Capital Stock				
Balance, beginning of period	**$ 18,668**	$ 18,559	**$ 18,577**	$ 18,395
Shares issued for vested restricted stock units, net of shares withheld for taxes	**1**	2	**86**	139
Stock options exercised	**—**	1	**—**	11
Shares issued for employee stock purchase plan	**7**	8	**13**	15
Shares issued to directors	**—**	2	**—**	12
Balance, end of period	**18,676**	18,572	**18,676**	18,572
Additional Paid-In Capital				
Balance, beginning of period	**141,092**	131,836	**138,526**	132,360
Shares issued for vested restricted stock units, net of shares withheld for taxes	**(79)**	113	**(5,193)**	(7,448)
Stock options exercised	**—**	16	**—**	333
Shares issued for employee stock purchase plan	**702**	647	**1,360**	1,234
Shares issued to directors	**—**	(2)	**—**	(12)
Equity compensation expense	**3,295**	3,151	**10,317**	9,294
Balance, end of period	**145,010**	135,761	**145,010**	135,761
Retained Earnings				
Balance, beginning of period	**851,481**	829,075	**823,702**	776,403
Net income	**7,006**	23,387	**34,785**	76,079
Cumulative-effect adjustment for lease accounting	**—**	—	**—**	(20)
Balance, end of period	**858,487**	852,462	**858,487**	852,462
Accumulated Other Comprehensive Loss				
Balance, beginning of period	**(48,659)**	(81,956)	**(46,905)**	(78,834)
Other comprehensive income (loss)	**13,510**	(10,205)	**11,756**	(13,327)
Balance, end of period	**(35,149)**	(92,161)	**(35,149)**	(92,161)
Total Shareholders' Equity	**$ 987,024**	$ 914,634	**$ 987,024**	$ 914,634

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

Note 1 – Basis of Presentation

As used herein, the terms “Company,” “Rogers,” “we,” “us,” “our” and similar terms mean Rogers Corporation and its consolidated subsidiaries, unless the context indicates otherwise.

The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States (GAAP) for interim financial information. Accordingly, these statements do not include all of the information and footnotes required by GAAP for complete financial statements. In our opinion, the accompanying condensed consolidated financial statements include all normal recurring adjustments necessary for their fair presentation in accordance with GAAP. All significant intercompany balances and transactions have been eliminated.

Interim results are not necessarily indicative of results for a full year. For further information regarding our accounting policies, refer to the audited consolidated financial statements and footnotes thereto included in our Annual Report on Form 10-K for the year ended December 31, 2019. Refer to the discussion below for our restructuring activities significant accounting policy.

We assessed certain accounting matters that generally require consideration of forecasted financial information in context with the information reasonably available to us and the unknown future impacts of COVID-19 as of September 30, 2020 and through the date of this report. The accounting matters assessed included, but were not limited to, our allowance for doubtful accounts, equity compensation, the carrying value of our goodwill, other intangible assets as well as other long-lived assets, financial assets, valuation allowances for tax assets and revenue recognition.

Restructuring Activities

We record charges associated with restructuring activities, such as employee termination benefits, which represent a one-time benefit, when management approves and commits to a plan of termination, or over the future service period, if any. Other costs associated with restructuring activities may include contract termination costs, including costs related to leased facilities to be abandoned or subleased, and facility and employee relocation costs.

Note 2 – Fair Value Measurements

The accounting guidance for fair value measurements establishes a three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value:

- Level 1 – Quoted prices in active markets for identical assets or liabilities.
- Level 2 – Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3 – Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

As a result of our pension termination and settlement efforts in late 2019 and the first half of 2020, we have a pension surplus investment balance, which is now accounted for as an available-for-sale investment as of June 2020. For additional information regarding this balance, refer to “Note 11 – Pension Benefits and Other Postretirement Benefits.” Available-for-sale investments measured at fair value on a recurring basis, categorized by the level of inputs used in the valuation, were as follows:

	Available-for-Sale Investment at Fair Value as of September 30, 2020			
(Dollars in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total**
Pension surplus investment[(1)]	**$ 6,911**	**$ 2,416**	**$ —**	**$ 9,327**

[(1)] This balance was invested in funds comprised of short-term cash and fixed income securities, and was recorded in the “Other long-term assets” line item in the condensed consolidated statements of financial position. As of September 30, 2020, the fair value of this investment approximated its carrying value.

From time to time we enter into various instruments that require fair value measurement, including foreign currency contracts, copper derivative contracts and interest rate swaps. Derivative instruments measured at fair value on a recurring basis, categorized by the level of inputs used in the valuation, were as follows:

	Derivative Instruments at Fair Value as of September 30, 2020			
(Dollars in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total[(1)]**
Foreign currency contracts	**$ —**	**$ (106)**	**$ —**	**$ (106)**
Copper derivative contracts	**$ —**	**$ 2,640**	**$ —**	**$ 2,640**
Interest rate swap contract	**$ —**	**$ —**	**$ —**	**$ —**

	Derivative Instruments at Fair Value as of December 31, 2019			
(Dollars in thousands)	Level 1	Level 2	Level 3	Total[(1)]
Foreign currency contracts	$ —	$ (6)	$ —	$ (6)
Copper derivative contracts	$ —	$ 1,147	$ —	$ 1,147
Interest rate swap contract	$ —	$ (1,254)	$ —	$ (1,254)

[(1)] All balances were recorded in the "Other current assets" or "Other accrued liabilities" line items in the condensed consolidated statements of financial position, except the 2019 interest rate swap balance, which was recorded in the "Other long-term liabilities" line item.

For additional information on derivative contracts, refer to "Note 3 – Hedging Transactions and Derivative Financial Instruments."

Note 3 – Hedging Transactions and Derivative Financial Instruments

We are exposed to certain risks related to our ongoing business operations. The primary risks being managed through our use of derivative instruments are foreign currency exchange rate risk, commodity pricing risk (primarily related to copper) and interest rate risk. We do not use derivative instruments for trading or speculative purposes. The valuation of derivative contracts used to manage each of these risks is described below:

- *Foreign Currency* – The fair value of any foreign currency option derivative is based upon valuation models applied to current market information such as strike price, spot rate, maturity date and volatility, and by reference to market values resulting from an over-the-counter market or obtaining market data for similar instruments with similar characteristics.
- *Commodity* – The fair value of copper derivatives is computed using a combination of intrinsic and time value valuation models, which are collectively a function of five primary variables: price of the underlying instrument, time to expiration, strike price, interest rate and volatility. The intrinsic valuation model reflects the difference between the strike price of the underlying copper derivative instrument and the current prevailing copper prices in an over-the-counter market at period end. The time value valuation model incorporates changes in the price of the underlying copper derivative instrument, the time value of money, the underlying copper derivative instrument's strike price and the remaining time to the underlying copper derivative instrument's expiration date from the period end date.
- *Interest Rates* – The fair value of interest rate swap instruments is derived by comparing the present value of the interest rate forward curve against the present value of the swap rate, relative to the notional amount of the swap. The net value represents the estimated amount we would receive or pay to terminate the agreements. Settlement amounts for an "in the money" swap would be adjusted down to compensate the counterparties for cost of funds, and the adjustment is directly related to the counterparties' credit ratings.

The guidance for the accounting and disclosure of derivatives and hedging transactions requires companies to recognize all of their derivative instruments as either assets or liabilities at fair value in the condensed consolidated statements of financial position. The accounting for changes in the fair value (i.e., gains or losses) of a derivative instrument depends on whether it has been designated and qualifies for hedge accounting treatment as defined under the applicable accounting guidance. For derivative instruments that are designated and qualify for hedge accounting treatment as cash flow hedges (i.e., hedging the exposure to variability in expected future cash flows that is attributable to a particular risk), the effective portion of the gain or loss on the derivative instrument is reported as a component of other comprehensive income (loss) in the condensed consolidated statements of comprehensive income (loss). This gain or loss is reclassified into earnings in the same line item of the condensed consolidated statements of operations associated with the forecasted transaction and in the same period or periods during which the hedged transaction affects earnings. As of September 30, 2019, only our interest rate swap qualified for hedge accounting treatment as a cash flow hedge, and the hedge was highly effective.

Foreign Currency

During the three months ended September 30, 2020, we entered into U.S. dollar, euro, and Korean won forward contracts. We entered into these foreign currency forward contracts to mitigate certain global transactional exposures. These contracts do not qualify for hedge accounting treatment. As a result, any fair value adjustments required on these contracts are recorded in "Other (expense) income, net" in our condensed consolidated statements of operations in the period in which the adjustment occurred.

As of September 30, 2020, the notional values of the remaining foreign currency forward contracts were as follows:

Notional Values of Foreign Currency Derivatives

USD/CNH	$	30,138,505
EUR/USD	€	9,430,781
KRW/USD	₩	11,684,000,000

Commodity

As of September 30, 2020, we had 21 outstanding contracts to hedge exposure related to the purchase of copper in our Power Electronics Solutions (PES) and Advanced Connectivity Solutions (ACS) operating segments. These contracts are held with financial institutions and are intended to offset rising copper prices and do not qualify for hedge accounting treatment. As a result, any fair value adjustments required on these contracts are recorded in "Other (expense) income, net" in our condensed consolidated statements of operations in the period in which the adjustment occurred.

As of September 30, 2020, the volume of our copper contracts outstanding was as follows:

Volume of Copper Derivatives

October 2020 - December 2020	201 metric tons per month
January 2021 - March 2021	256 metric tons per month
April 2021 - June 2021	256 metric tons per month
July 2021 - September 2021	222 metric tons per month

Interest Rates

In March 2017, we entered into an interest rate swap to hedge the variable interest rate on $75.0 million of our $450.0 million revolving credit facility. This transaction was designated as a cash flow hedge and qualified for hedge accounting treatment. We terminated the interest rate swap on September 30, 2020. As a result, we settled the interest rate swap for $2.4 million on October 2, 2020, representing the fair value of the interest rate swap on the date of termination. Both Rogers and the counterparties released each other from all obligation under the interest rate swap agreement, including the obligation to exchange, at specified intervals, the difference between fixed and floating interest amounts calculated by reference to the agreed upon notional principal amount of $75.0 million. As a result of the termination of the interest rate swap, there is an offsetting decrease in the forecasted interest expense, net over the remaining term of the now-terminated interest rate swap, which was set to expire in February 2022. For additional information regarding our revolving credit facility, refer to "Note 9 – Debt."

Effects on Financial Statements

The impacts from our derivative instruments on the statement of operations and statements of comprehensive income (loss) were as follows:

(Dollars in thousands)	**Financial Statement Line Item**	**Three Months Ended** **September 30, 2020**	Three Months Ended September 30, 2019	**Nine Months Ended** **September 30, 2020**	Nine Months Ended September 30, 2019
Foreign Currency Contracts					
Contracts not designated as hedging instruments	Other (expense) income, net	**$ (823)**	$ 181	**$ (1,378)**	$ (406)
Copper Derivative Contracts					
Contracts not designated as hedging instruments	Other (expense) income, net	**$ 1,238**	$ (543)	**$ 1,067**	$ (1,008)
Interest Rate Swap					
Contract designated as hedging instrument	Other comprehensive income (loss)	**$ 2,771**	$ (240)	**$ 1,254**	$ (1,985)

Note 4 – Accumulated Other Comprehensive Loss

The changes in accumulated other comprehensive loss by component were as follows:

(Dollars and accompanying footnotes in thousands)	**Foreign Currency Translation Adjustments**	**Pension and Other Postretirement Benefits(1)**	**Derivative Instrument Designated as Cash Flow Hedge(2)**	**Total**
Balance as of December 31, 2019	**$ (35,478)**	**$ (10,455)**	**$ (972)**	**$ (46,905)**
Other comprehensive income (loss) before reclassifications	**10,004**	**629**	**(1,504)**	**9,129**
Amounts reclassified from accumulated other comprehensive loss	**—**	**151**	**2,476**	**2,627**
Net current-period other comprehensive income (loss)	**10,004**	**780**	**972**	**11,756**
Balance as of September 30, 2020	**$ (25,474)**	**$ (9,675)**	**$ —**	**$ (35,149)**
Balance as of December 31, 2018	$ (30,488)	$ (48,700)	$ 354	$ (78,834)
Other comprehensive loss before reclassifications	(12,262)	—	(1,362)	(13,624)
Amounts reclassified from accumulated other comprehensive loss	—	485	(188)	297
Net current-period other comprehensive income (loss)	(12,262)	485	(1,550)	(13,327)
Balance as of September 30, 2019	$ (42,750)	$ (48,215)	$ (1,196)	$ (92,161)

(1) Net of taxes of $2,154 and $2,368 as of September 30, 2020 and December 31, 2019, respectively. Net of taxes of $9,851 and $9,984 as of September 30, 2019 and December 31, 2018, respectively.

(2) Net of taxes of $0 and $282 as of September 30, 2020 and December 31, 2019, respectively. Net of taxes of $329 and $(106) as of September 30, 2019 and December 31, 2018, respectively.

Note 5 – Inventories

Inventories, which are valued at the lower of cost or net realizable value, consisted of the following:

(Dollars in thousands)	**September 30, 2020**	December 31, 2019
Raw materials	**$ 52,105**	$ 61,338
Work-in-process	**26,452**	30,043
Finished goods	**31,176**	41,478
Total inventories	**$ 109,733**	$ 132,859

Note 6 – Goodwill and Other Intangible Assets

Goodwill

The changes in the net carrying amount of goodwill by operating segment were as follows:

(Dollars in thousands)	Advanced Connectivity Solutions	Elastomeric Material Solutions	Power Electronics Solutions	Other	Total
December 31, 2019	$ 51,694	$ 142,030	$ 66,982	$ 2,224	$ 262,930
Foreign currency translation adjustment	—	(176)	3,027	—	$ 2,851
September 30, 2020	**$ 51,694**	**$ 141,854**	**$ 70,009**	**$ 2,224**	**$ 265,781**

Other Intangible Assets

The gross and net carrying amounts, as well as the accumulated amortization of other intangible assets were as follows:

	September 30, 2020			December 31, 2019		
(Dollars in thousands)	**Gross Carrying Amount**	**Accumulated Amortization**	**Net Carrying Amount**	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Customer relationships	**$ 149,891**	**$ 58,935**	**$ 90,956**	$ 149,317	$ 39,018	$ 110,299
Technology	**82,102**	**50,776**	**31,326**	80,938	45,190	35,748
Trademarks and trade names	**11,986**	**6,676**	**5,310**	11,994	4,361	7,633
Covenants not to compete	**1,340**	**746**	**594**	1,340	505	835
Total definite-lived other intangible assets	**245,319**	**117,133**	**128,186**	243,589	89,074	154,515
Indefinite-lived other intangible asset	**4,632**	**—**	**4,632**	4,432	—	4,432
Total other intangible assets	**$ 249,951**	**$ 117,133**	**$ 132,818**	$ 248,021	$ 89,074	$ 158,947

In the table above, gross carrying amounts and accumulated amortization may differ from prior periods due to foreign exchange rate fluctuations.

Amortization expense was $15.4 million and $4.4 million for the three months ended September 30, 2020 and 2019, respectively, and was $26.7 million and $13.3 million for the nine months ended September 30, 2020 and 2019, respectively. The estimated future amortization expense is $15.4 million for the remainder of 2020 and $12.3 million, $11.8 million, $11.3 million and $9.9 million for 2021, 2022, 2023 and 2024, respectively. The increase in amortization expense for the three and nine months ended September 30, 2020, and decrease in forecasted amortization expense in future years, were due to the acceleration of amortization expense related to our Diversified Silicone Products, Inc. (DSP) customer relationships and trademarks and trade names definite-lived other intangible assets, which were both accelerated to be fully amortized by December 31, 2020. As part of our ongoing assessment of the useful lives of our definite-lived other intangible assets, we reviewed the deterioration of our DSP business and identified significant customer attrition, a sustained substantial decrease in net sales, as well as the planned phase-out of the DSP trademark and trade name by December 2020. Based on these events and circumstances, we concluded an adjustment to the remaining useful lives of our DSP customer relationships and trademarks and trade names definite-lived other intangible assets was warranted.

The weighted average amortization period as of September 30, 2020, by definite-lived other intangible asset class, was as follows:

Definite-Lived Other Intangible Asset Class	**Weighted Average Remaining Amortization Period**
Customer relationships	5.5 years
Technology	4.0 years
Trademarks and trade names	3.8 years
Covenants not to compete	1.3 years
Total definite-lived other intangible assets	**5.0 years**

Note 7 – Earnings Per Share

Basic earnings per share is based on the weighted average number of common shares outstanding. Diluted earnings per share is based on the weighted average number of common shares outstanding and all dilutive potential common shares outstanding.

The following table sets forth the computation of basic and diluted earnings per share:

(Dollars and shares in thousands, except per share amounts)	Three Months Ended		Nine Months Ended	
	September 30, 2020	September 30, 2019	**September 30, 2020**	September 30, 2019
Numerator:				
Net income	**$ 7,006**	$ 23,387	**$ 34,785**	$ 76,079
Denominator:				
Weighted-average shares outstanding - basic	**18,688**	18,581	**18,678**	18,569
Effect of dilutive shares	**25**	143	**17**	146
Weighted-average shares outstanding - diluted	**18,713**	18,724	**18,695**	18,715
Basic earnings per share	**$ 0.37**	$ 1.26	**$ 1.86**	$ 4.10
Diluted earnings per share	**$ 0.37**	$ 1.25	**$ 1.86**	$ 4.07

Dilutive shares are calculated using the treasury stock method and primarily include unvested restricted stock units. Anti-dilutive shares are excluded from the calculation of diluted shares and diluted earnings per share. For the three months ended September 30, 2020 and 2019, 32,501 shares and 3,173 shares were excluded, respectively.

Note 8 – Capital Stock and Equity Compensation

Equity Compensation

Performance-Based Restricted Stock Units

As of September 30, 2020, we had performance-based restricted stock units from 2020, 2019, and 2018 outstanding. These awards generally cliff vest at the end of a three-year measurement period. However, employees whose employment terminates during the measurement period due to death, disability, or, in certain cases, retirement may receive a pro-rata payout based on the number of days they were employed during the measurement period. Participants are eligible to be awarded shares ranging from 0% to 200% of the original award amount, based on certain defined performance measures.

The outstanding awards have one measurement criterion: the three-year total shareholder return (TSR) on our capital stock as compared to that of a specified group of peer companies. The TSR measurement criterion of the awards is considered a market condition. As such, the fair value of this measurement criterion was determined on the grant date using a Monte Carlo simulation valuation model. We recognize compensation expense on all of these awards on a straight-line basis over the vesting period with no changes for final projected payout of the awards. We account for forfeitures as they occur.

The following table sets forth the assumptions used in the Monte Carlo calculation for each material award granted in 2020 and 2019:

	February 12, 2020	June 3, 2019	February 7, 2019
Expected volatility	**41.0%**	39.7%	36.7%
Expected term (in years)	**2.9**	2.6	2.9
Risk-free interest rate	**1.41%**	1.78%	2.43%

Expected volatility – In determining expected volatility, we have considered a number of factors, including historical volatility.

Expected term – We use the vesting period of the award to determine the expected term assumption for the Monte Carlo simulation valuation model.

Risk-free interest rate – We use an implied “spot rate” yield on U.S. Treasury Constant Maturity rates as of the grant date for our assumption of the risk-free interest rate.

Expected dividend yield – We do not currently pay dividends on our capital stock; therefore, a dividend yield of 0% was used in the Monte Carlo simulation valuation model.

A summary of activity of the outstanding performance-based restricted stock units for the nine months ended September 30, 2020 is presented below:

	Performance-Based Restricted Stock Units
Awards outstanding as of December 31, 2019	106,943
Awards granted	87,244
Stock issued	(75,486)
Awards forfeited	(5,866)
Awards outstanding as of September 30, 2020	**112,835**

We recognized $1.6 million and $1.5 million of compensation expense for performance-based restricted stock units for the three months ended September 30, 2020 and 2019, respectively. We recognized $4.3 million and $3.5 million of compensation expense for performance-based restricted stock units for the nine months ended September 30, 2020 and 2019, respectively.

Time-Based Restricted Stock Units

As of September 30, 2020, we had time-based restricted stock unit awards from 2020, 2019, 2018 and 2017 outstanding. The outstanding awards all ratably vest on the first, second and third anniversaries of the original grant date. However, employees whose employment terminates during the measurement period due to death, disability, or, in certain cases, retirement may receive a pro-rata payout based on the number of days they were employed subsequent to the last grant anniversary date. Each time-based restricted stock unit represents a right to receive one share of Rogers' capital stock at the end of the vesting period. The fair value of the award is determined by the market value of the underlying stock price at the grant date. We recognize compensation expense on all of these awards on a straight-line basis over the vesting period. We account for forfeitures as they occur.

A summary of activity of the outstanding time-based restricted stock units for the nine months ended September 30, 2020 is presented below:

	Time-Based Restricted Stock Units
Awards outstanding as of December 31, 2019	101,685
Awards granted	58,288
Stock issued	(48,901)
Awards forfeited	(4,962)
Awards outstanding as of September 30, 2020	**106,110**

We recognized $1.5 million and $1.5 million of compensation expense for time-based restricted stock units for the three months ended September 30, 2020 and 2019, respectively. We recognized $4.6 million and $4.4 million of compensation expense for time-based restricted stock units for the nine months ended September 30, 2020 and 2019, respectively.

Deferred Stock Units

We grant deferred stock units to non-management directors. These awards are fully vested on the date of grant and the related shares are generally issued on the 13-month anniversary of the grant date unless the individual elects to defer the receipt of those shares. Each deferred stock unit results in the issuance of one share of Rogers' capital stock. The grant of deferred stock units is typically done annually during the second quarter of each year. The fair value of the award is determined by the market value of the underlying stock price at the grant date.

A summary of activity of the outstanding deferred stock units for the nine months ended September 30, 2020 is presented below:

	Deferred Stock Units
Awards outstanding as of December 31, 2019	7,150
Awards granted	9,400
Stock issued	(5,100)
Awards outstanding as of September 30, 2020	**11,450**

We recognized no compensation expense related to deferred stock units for the three months ended September 30, 2020 and 2019, respectively. We recognized $1.0 million and $1.1 million of compensation expense for the nine months ended September 30, 2020 and 2019, respectively.

Note 9 – Debt

In February 2017, we entered into a secured five-year credit agreement with JPMorgan Chase Bank, N.A., as administrative agent, and the lenders party thereto (the Third Amended Credit Agreement), which increased the principal amount of our revolving credit facility to up to $450.0 million borrowing capacity, with sublimits for multicurrency borrowings, letters of credit and swing-line notes, and provided an additional $175.0 million accordion feature. Borrowings may be used to finance working capital needs, for letters of credit and for general corporate purposes in the ordinary course of business, including the financing of permitted acquisitions (as defined in the Third Amended Credit Agreement).

All obligations under the Third Amended Credit Agreement are guaranteed by each of our existing and future material domestic subsidiaries, as defined in the Third Amended Credit Agreement (the Guarantors). The obligations are also secured by a Third Amended and Restated Pledge and Security Agreement, dated as of February 17, 2017, entered into by us and the Guarantors which grants to the administrative agent, for the benefit of the lenders, a security interest, subject to certain exceptions, in substantially all of the non-real estate assets of the Guarantors. These assets include, but are not limited to, receivables, equipment, intellectual property, inventory, and stock in certain subsidiaries. All revolving loans are due on the maturity date, February 17, 2022.

Borrowings under the Third Amended Credit Agreement can be made as alternate base rate loans or euro-currency loans. Alternate base rate loans bear interest at a base reference rate plus a spread of 37.5 to 75.0 basis points, depending on our leverage ratio. The base reference rate is the greatest of (a) the prime rate in effect on such day, (b) the Federal Reserve Bank of New York (NYFRB) rate in effect on such day plus ½ of 1% and (c) the adjusted LIBOR for a one month interest period in dollars on such day (or if such day is not a business day, the immediately preceding business day) plus 1%. Euro-currency loans bear interest based on adjusted LIBOR plus a spread of 137.5 to 175.0 basis points, depending on our leverage ratio. Based on our leverage ratio as of September 30, 2020, the spread was 137.5 basis points.

In addition to interest payable on the principal amount of indebtedness outstanding from time to time under the Third Amended Credit Agreement, we are required to pay a quarterly fee of 20 to 30 basis points (based upon our leverage ratio) of the unused amount of the lenders' commitments under the Third Amended Credit Agreement.

The Third Amended Credit Agreement contains customary representations, warranties, covenants, mandatory prepayments and events of default under which our payment obligations may be accelerated. If an event of default occurs, the lenders may, among other things, terminate their commitments and declare all outstanding borrowings to be immediately due and payable together with accrued interest and fees. The financial covenants include requirements to maintain (1) a leverage ratio of no more than 3.25 to 1.00, subject to an election to increase the maximum leverage ratio to 3.50 to 1.00 for three fiscal quarters in connection with a permitted acquisition, and (2) an interest coverage ratio of no less than 3.00 to 1.00.

The Third Amended Credit Agreement generally permits us to pay cash dividends to our shareholders, provided that (i) no default or event of default has occurred and is continuing or would result from the dividend payment and (ii) our leverage ratio does not exceed 2.75 to 1.00. If our leverage ratio exceeds 2.75 to 1.00, we may nonetheless make up to $20.0 million in restricted payments, including cash dividends, during the fiscal year, provided that no default or event of default has occurred and is continuing or would result from the payments. Our leverage ratio did not exceed 2.75 to 1.00 as of September 30, 2020.

In March 2017, we entered into an interest rate swap to hedge the variable interest rate on $75.0 million of our $450.0 million revolving credit facility. This transaction was designated as a cash flow hedge and qualified for hedge accounting treatment. We terminated the interest rate swap on September 30, 2020. As a result, we settled the interest rate swap for $2.4 million on October 2, 2020, representing the fair value of the interest rate swap on the date of termination. Both Rogers and the counterparties released each other from all obligation under the interest rate swap agreement, including the obligation to exchange, at specified intervals, the difference between fixed and floating interest amounts calculated by reference to the agreed upon notional principal amount of $75.0 million.

We borrowed $150.0 million under our revolving credit facility as a precautionary measure in order to increase our cash position and preserve financial flexibility given current uncertainty in the global markets resulting from the COVID-19 pandemic, during the three months ended March 31, 2020. We did not borrow anything further under our revolving credit facility for the three and nine months ended September 30, 2020. We are not required to make any quarterly principal payments under the Third Amended Credit Agreement. However, for the three and nine months ended September 30, 2020, we made $163.0 million and $213.0 million of discretionary principal payments on our revolving credit facility, respectively. We had $60.0 million in outstanding borrowings under our revolving credit facility as of September 30, 2020.

We incurred interest expense on our outstanding debt, net of the impacts of our interest rate swap, of $3.4 million and $1.8 million for the three months ended September 30, 2020 and 2019, respectively, and $6.3 million and $6.1 million for the nine months ended September 30, 2020, and 2019, respectively. We incurred immaterial unused commitment fees for each of the three- and nine-month periods ended September 30, 2020 and 2019.

We had $0.7 million and $1.2 million of outstanding line of credit issuance costs as of September 30, 2020 and December 31, 2019, respectively, which will be amortized over the life of the Third Amended Credit Agreement. We recognized an immaterial amount of amortization expense for each of the three- and nine-month periods ended September 30, 2020 and 2019, related to these deferred costs.

On October 16, 2020, we entered into the Fourth Amended and Restated Credit Agreement with JPMorgan Chase Bank, N.A, as administrative agent, and the lenders party thereto (the Fourth Amended Credit Agreement). The Fourth Amended Credit Agreement amends and restates the Third Amended Credit Agreement, and provides for a revolving credit facility with up to a $450.0 million borrowing capacity, with sublimits for multicurrency borrowings, letters of credit and swing-line notes, in addition to a $175.0 million accordion feature. Borrowings may be used to finance working capital needs, for letters of credit and for general corporate purposes in the ordinary course of business, including the financing of permitted acquisitions (as defined in the Fourth Amended Credit Agreement). The Fourth Amended Credit Agreement extends the maturity, the date on which all amounts borrowed or outstanding under the Fourth Amended Credit Agreement are due, from February 17, 2022 to March 31, 2024.

All obligations under the Fourth Amended Credit Agreement are guaranteed by each of our existing and future material domestic subsidiaries, as defined in the Fourth Amended Credit Agreement (the Guarantors). The obligations are also secured by a Fourth Amended and Restated Pledge and Security Agreement, dated as of October 16, 2020, entered into by us and the Guarantors which grants to the administrative agent, for the benefit of the lenders, a security interest, subject to certain exceptions, in substantially all of our and the Guarantors' non-real estate assets. These assets include, but are not limited to, receivables, equipment, intellectual property, inventory, and stock in certain subsidiaries.

Borrowings under the Fourth Amended Credit Agreement can be made as alternate base rate loans or euro-currency loans. Alternate base rate loans bear interest at a base reference rate plus a spread of 62.5 to 100.0 basis points, depending on our leverage ratio. The base reference rate is the greatest of (a) the prime rate in effect on such day, (b) the NYFRB rate in effect on such day plus ½ of 1%, and (c) the adjusted LIBOR for a one month interest period in dollars on such day (or if such day is not a business day, the immediately preceding business day) plus 1%. Euro-currency loans bear interest based on adjusted LIBOR plus a spread of 162.5 to 200.0 basis points, depending on our leverage ratio.

In addition to interest payable on the principal amount of indebtedness outstanding from time to time under the Fourth Amended Credit Agreement, we are required to pay a quarterly fee of 25 to 35 basis points (based upon our leverage ratio) of the unused amount of the lenders' commitments under the Fourth Amended Credit Agreement.

The Fourth Amended Credit Agreement contains customary representations and warranties, covenants, mandatory prepayments and events of default under which our payment obligations may be accelerated. If an event of default occurs, the lenders may, among other things, terminate their commitments and declare all outstanding borrowings to be immediately due and payable together with accrued interest and fees. The financial covenants include requirements to maintain (1) a total net leverage ratio of no more than 3.25 to 1.00, subject to a one-time election to increase the maximum total net leverage ratio to 3.50 to 1.00 for one fiscal year in connection with a permitted acquisition, and (2) an interest coverage ratio of no less than 3.00 to 1.00. We are permitted to net up to $50.0 million of unrestricted domestic cash and cash equivalents against indebtedness in the calculation of the total net leverage ratio.

Note 10 - Leases

We have a finance lease obligation related to our manufacturing facility in Eschenbach, Germany. Under the terms of the lease agreement, we have an option to purchase the property upon the expiration of the lease in 2021 at a price which is the greater of (i) the then-current market value or (ii) the residual book value of the land including the buildings and installations thereon. Our finance lease obligation related to this facility was $4.4 million and $4.5 million as of September 30, 2020 and December 31, 2019, respectively. The finance lease right-of-use asset balance for this facility was $6.3 million and $6.3 million as of September 30, 2020 and December 31, 2019, respectively. Accumulated amortization related to this finance lease right-of-use asset was $4.2 million and $3.8 million as of September 30, 2020 and December 31, 2019, respectively. The aggregate of all other finance lease obligations, finance lease right-of-use assets and related accumulated amortization, were immaterial as of September 30, 2020 and December 31, 2019.

Amortization expense related to our finance lease right-of-use assets, which is primarily included in the "Cost of sales" line item of the condensed consolidated statements of operations, was immaterial for each of the three- and nine-month periods ended September 30, 2020 and 2019. Interest expense related to our finance lease obligations, which is included in the "Interest expense, net" line item of the condensed consolidated statements of operations, was immaterial for each of the three- and nine-month periods ended September 30, 2020 and 2019. Payments made on the principal portion of our finance lease obligations were immaterial for each of the three- and nine-month periods ended September 30, 2020 and 2019.

We have operating leases primarily related to building space and vehicles. Renewal options are included in the lease term to the extent we are reasonably certain to exercise the option. The exercise of lease renewal options is at our sole discretion. We account for lease components separately from non-lease components. The incremental borrowing rate represents our ability to borrow on a collateralized basis over a similar lease term.

Our expenses and payments for operating leases were as follows:

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Operating leases expense	**$ 846**	$ 843	**$ 2,268**	$ 2,336
Short-term leases expense	**$ 154**	$ 68	**$ 384**	$ 150
Payments on operating lease obligations	**$ 719**	$ 719	**$ 2,187**	$ 2,243

Our assets and liabilities balances related to finance and operating leases reflected in the condensed consolidated statements of financial position were as follows:

(Dollars in thousands)	**Location in Statements of Financial Position**	**September 30, 2020**	December 31, 2019
Finance lease right-of-use assets	Property, plant and equipment, net	**$ 6,307**	$ 6,280
Operating lease right-of-use assets	Other long-term assets	**$ 4,039**	$ 4,656
Finance lease obligations, current portion	Other accrued liabilities	**$ 4,433**	$ 400
Finance lease obligations, non-current portion	Other long-term liabilities	**$ —**	$ 4,140
Total finance lease obligations		**$ 4,433**	$ 4,540
Operating lease obligations, current portion	Other accrued liabilities	**$ 2,135**	$ 2,343
Operating lease obligations, non-current portion	Other long-term liabilities	**$ 2,023**	$ 2,334
Total operating lease obligations		**$ 4,158**	$ 4,677

Net Future Minimum Lease Payments

The following table includes future minimum lease payments under finance and operating leases together with the present value of the net future minimum lease payments as of September 30, 2020:

	Finance			**Operating**		
(Dollars in thousands)	**Leases Signed**	**Less: Leases Not Yet Commenced**	**Total Leases**	**Leases Signed**	**Less: Leases Not Yet Commenced**	**Total Leases**
2020	$ 139	$ —	$ 139	$ 674	$ (2)	$ 672
2021	4,584	(193)	4,391	2,002	(12)	1,990
2022	193	(193)	—	1,096	(17)	1,079
2023	186	(186)	—	454	(15)	439
2024	—	—	—	211	(5)	206
Thereafter	—	—	—	5	—	5
Total lease payments	**5,102**	**(572)**	**4,530**	**4,442**	**(51)**	**4,391**
Less: Interest	(124)	27	(97)	(236)	3	(233)
Present Value of Net Future Minimum Lease Payments	**$ 4,978**	**$ (545)**	**$ 4,433**	**$ 4,206**	**$ (48)**	**$ 4,158**

The following table includes information regarding the lease term and discount rates utilized in the calculation of the present value of net future minimum lease payments:

	Finance Leases	**Operating Leases**
Weighted Average Remaining Lease Term	0.8 years	2.3 years
Weighted Average Discount Rate	3.00%	4.84%

Note 11 – Pension Benefits and Other Postretirement Benefits

Pension and Other Postretirement Benefit Plans

As of December 31, 2019, we had two qualified noncontributory defined benefit pension plans. In June 2020, we completed the remaining settlement efforts for the Rogers Corporation Defined Benefit Pension Plan (following its merger with the Hourly

Employees Pension Plan of Arlon LLC, Microwave Material and Silicone Technologies Divisions, Bear, Delaware (collectively, the Merged Plan)), which had been terminated and substantially settled in late 2019. As of September 30, 2020, only the Rogers Corporation Employees' Pension Plan (the Union Plan), which was frozen and ceased accruing benefits, remained. There are no plans to terminate the Union Plan.

Additionally, we sponsor other postretirement benefit plans, including multiple fully insured or self-funded medical plans and life insurance plans for certain retirees. The measurement date for all plans is December 31st for each respective plan year.

Pension Plan Termination & Settlement

During the second quarter of 2019, following receipt of a determination letter from the Internal Revenue Service (IRS), we amended the Merged Plan to (a) terminate the Merged Plan (subject to discretionary approval by our Chief Executive Officer) and (b) add a lump sum distribution option in connection with the termination of the Merged Plan, if approved. We subsequently provided participants of the Merged Plan an option to elect either a lump sum distribution or an annuity.

On October 17, 2019, our Chief Executive Officer approved the termination of the Merged Plan. A group annuity contract was purchased with an insurance company for all participants who did not elect a lump sum distribution, for $123.3 million, with an initial cash settlement date of October 24, 2019, and a true-up cash settlement date of June 1, 2020. The insurance company became responsible for administering and paying pension benefit payments effective January 1, 2020.

Lump sum distributions of $38.9 million were paid out prior to December 31, 2019. The Merged Plan paid an additional $1.3 million of monthly pension benefit payments subsequent to the annuity purchase date during the transition period ending December 31, 2019.

In addition, we recorded a total non-cash pre-tax settlement charge in connection with the termination of the Merged Plan of $53.2 million during the fourth quarter of 2019, as well as an immaterial non-cash pre-tax settlement benefit during the second quarter of 2020. This net settlement amount recognized included the immediate recognition into expense of the related unrecognized losses within "Accumulated other comprehensive loss" on the consolidated statements of financial position as of the plan termination date. The pension settlement charge during the fourth quarter of 2019 was recognized in the "Pension settlement charges" line item in the consolidated statements of operations, and the pension settlement benefit during the second quarter of 2020 was recognized in the "Pension settlement charges" line item in the condensed consolidated statements of operations.

As of September 30, 2020, the remaining pension surplus investment balance was approximately $9.3 million. We plan on using a portion of the funds to pay plan expenses, and moving the remainder funds from the pension trust to a defined contribution plan trust, where they will be used to fund certain employer contributions and pay plan expenses. On July 27, 2020, we transferred $7.4 million of the pension surplus investment balance to a suspense account held within a trust for the Rogers Employee Savings and Investment Plan, a 401(k) plan for domestic employees.

Components of Net Periodic Benefit (Credit) Cost

The components of net periodic benefit (credit) cost were as follows:

	Pension Benefits				**Other Postretirement Benefits**			
	Three Months Ended September 30,		**Nine Months Ended September 30,**		**Three Months Ended September 30,**		**Nine Months Ended September 30,**	
(Dollars in thousands)	**2020**	2019	**2020**	2019	**2020**	2019	**2020**	2019
Service cost	**$ —**	$ —	**$ —**	$ —	**$ 17**	$ 12	**$ 51**	$ 48
Interest cost	**223**	1,790	**685**	5,359	**10**	14	**30**	44
Expected return of plan assets	**(394)**	(2,187)	**(1,180)**	(6,571)	**—**	—	**—**	—
Amortization of prior service credit	**—**	—	**—**	—	**(28)**	(252)	**(84)**	(758)
Amortization of net loss	**99**	476	**327**	1,386	**—**	—	**—**	—
Settlement benefit	**—**	—	**(63)**	—	**—**	—	**—**	—
Net periodic benefit (credit) cost	**$ (72)**	$ 79	**$ (231)**	$ 174	**$ (1)**	$ (226)	**$ (3)**	$ (666)

Employer Contributions

There were no required or voluntary contributions made to our Merged Plan for the three and nine-month periods ended September 30, 2020 and 2019. Additionally, there were no required or voluntary contributions made to our Union Plan for the three and nine-month periods ended September 30, 2020 and 2019, and we are not required to make additional contributions to this plan for the remainder of 2020.

As there is no funding requirement for the other postretirement benefit plans, we funded these benefit payments as incurred, which were immaterial for each of the three and nine-month periods ended September 30, 2020 and 2019, using cash from operations.

Note 12 – Commitments and Contingencies

We are currently engaged in the following material environmental and legal proceedings:

Voluntary Corrective Action Program

Our location in Rogers, Connecticut is part of the Connecticut Voluntary Corrective Action Program (VCAP). As part of this program, we partnered with the Connecticut Department of Energy and Environmental Protection (CT DEEP) to determine the corrective actions to be taken at the site related to contamination issues. We evaluated this matter and completed internal due diligence work related to the site in the fourth quarter of 2015. Remediation activities on the site are ongoing and are recorded as reductions to the accrual as they are incurred. We incurred $1.7 million of aggregate remediation costs through September 30, 2020, and the accrual for future remediation efforts is $1.0 million.

Asbestos

Overview

We, like many other industrial companies, have been named as a defendant in a number of lawsuits filed in courts across the country by persons alleging personal injury from exposure to products containing asbestos. We have never mined, milled, manufactured or marketed asbestos; rather, we made and provided to industrial users a limited number of products that contained encapsulated asbestos, but we stopped manufacturing these products in the late 1980s. Most of the claims filed against us involve numerous defendants, sometimes as many as several hundred.

The following table summarizes the change in number of asbestos claims outstanding for the nine months ended September 30, 2020:

	Asbestos Claims
Claims outstanding as of January 1, 2020	592
New claims filed	88
Pending claims concluded[1]	(122)
Claims outstanding as of September 30, 2020	**558**

[1] For the nine months ended September 30, 2020, 103 claims were dismissed and 19 claims were settled. Settlements totaled approximately $5.4 million for the nine months ended September 30, 2020.

Impact on Financial Statements

We recognize a liability for asbestos-related contingencies that are probable of occurrence and reasonably estimable. In connection with the recognition of liabilities for asbestos-related matters, we record asbestos-related insurance receivables that are deemed probable.

The liability projection period covers all current and future indemnity and defense costs through 2064, which represents the expected end of our asbestos liability exposure with no further ongoing claims expected beyond that date. This conclusion was based on our history and experience with the claims data, the diminished volatility and consistency of observable claims data, the period of time that has elapsed since we stopped manufacturing products that contained encapsulated asbestos and an expected downward trend in claims due to the average age of our claimants, which is approaching the average life expectancy.

To date, the indemnity and defense costs of our asbestos-related product liability litigation have been substantially covered by insurance. Although we have exhausted coverage under some of our insurance policies, we believe that we have applicable primary, excess and/or umbrella coverage for claims arising with respect to most of the years during which we manufactured and marketed asbestos-containing products. In addition, we have entered into a cost sharing agreement with most of our primary, excess and umbrella insurance carriers to facilitate the ongoing administration and payment of claims covered by the carriers. The cost sharing agreement may be terminated by any party, but will continue until a party elects to terminate it. As of the filing date for this report, the agreement has not been terminated, and no carrier had informed us it intended to terminate the agreement. We expect to continue to exhaust individual primary, excess and umbrella coverages over time, and there is no assurance that such exhaustion will not accelerate due to additional claims, damages and settlements or that coverage will be available as expected. We are responsible for uninsured indemnity and defense costs, and we incurred an immaterial amount of expenses for each of the three- and nine-month periods ended September 30, 2020 and 2019, respectively, related to such costs.

The amounts recorded for the asbestos-related liability and the related insurance receivables are based on facts known at the time and a number of assumptions. However, projecting future events, such as the number of new claims to be filed each year, the average cost of disposing of such claims, the length of time it takes to dispose of such claims, coverage issues among insurers and the continuing solvency of various insurance companies, as well as the numerous uncertainties surrounding asbestos litigation in the United States, could cause the actual liability and insurance recoveries for us to be higher or lower than those projected or recorded.

Changes recorded in the estimated liability and estimated insurance recovery based on projections of asbestos litigation and corresponding insurance coverage, result in the recognition of expense or income.

Our projected asbestos-related liabilities and insurance receivables were as follows:

(Dollars in thousands)	**September 30, 2020**	December 31, 2019
Asbestos-related liabilities	**$ 85,547**	$ 85,880
Asbestos-related insurance receivables	**$ 78,316**	$ 78,316

General

In addition to the above issues, the nature and scope of our business brings us in regular contact with the general public and a variety of businesses and government agencies. Such activities inherently subject us to the possibility of litigation, including environmental and product liability matters that are defended and handled in the ordinary course of business. We have established accruals for matters for which management considers a loss to be probable and reasonably estimable. It is the opinion of management that facts known at the present time do not indicate that such litigation will have a material adverse impact on our results of operations, financial position or cash flows.

Note 13 – Income Taxes

Our effective income tax rate was 8.1% and 18.6% for the three months ended September 30, 2020 and 2019, respectively. The decrease from the third quarter of 2019 was primarily due to the beneficial impact of changes in valuation allowance related to research and development (R&D) credits, partially offset by the increase in current quarter accruals of reserves for uncertain tax positions, higher tax impact on unremitted foreign earnings and profits, and changes in pretax mix across jurisdictions with disparate tax rates. Our effective income tax rate was 23.1% and 18.5% for the nine months ended September 30, 2020 and 2019, respectively. The increase from the first nine months of 2019 was primarily due to the increase in current quarter accruals of reserves for uncertain tax positions, the decrease in excess tax deductions on stock-based compensation and higher tax impact on unremitted foreign earnings and profits, partially offset by the beneficial impact of changes in valuation allowance related to R&D credits and pretax mix across jurisdictions with disparate tax rates.

The total amount of unrecognized tax benefits as of September 30, 2020 was $14.9 million, of which $14.5 million would affect our effective tax rate if recognized.

We recognize interest and penalties related to unrecognized tax benefits through income tax expense. As of September 30, 2020, we had $1.1 million accrued for the payment of interest.

We are subject to taxation in the U.S. and various state and foreign jurisdictions. With few exceptions, we are no longer subject to examinations by tax authorities for years prior to 2015.

Note 14 – Operating Segment Information

Our reporting structure is comprised of the following strategic operating segments: ACS, Elastomeric Material Solutions (EMS) and PES. The remaining operations, which represent our non-core businesses, are reported in the Other operating segment. We believe this structure aligns our external reporting presentation with how we currently manage and view our business internally.

Our ACS operating segment designs, develops, manufactures and sells circuit materials and solutions enabling high-performance and high-reliability connectivity for applications in wireless infrastructure (e.g., power amplifiers, antennas and small cells), automotive (e.g., ADAS, telematics and thermal solutions), aerospace and defense (e.g. antenna systems, communication systems and phased array radar systems), connected devices (e.g., mobile internet devices and thermal solutions) and wired infrastructure (e.g., computing and IP infrastructure) markets.

Our EMS operating segment designs, develops, manufactures and sells engineered material solutions for a wide variety of applications and markets. These include polyurethane and silicone materials used in cushioning, gasketing and sealing, and vibration management applications for general industrial, portable electronics, automotive, electric and hybrid electric vehicles (EV/HEV), mass transit, aerospace and defense, footwear and impact mitigation and printing markets; customized silicones used in flex heater and semiconductor thermal applications for general industrial, portable electronics, automotive, EV/HEV, mass transit, aerospace and defense and medical markets; polytetrafluoroethylene and ultra-high molecular weight polyethylene materials used in wire and cable protection, electrical insulation, conduction and shielding, hose and belt protection, vibration management, cushioning, gasketing and sealing, and venting applications for general industrial, automotive, EV/HEV and aerospace and defense markets.

Our PES operating segment designs, develops, manufactures and sells ceramic substrate materials, busbars and cooling solutions for a variety of applications in EV/HEV, mass transit, clean energy (i.e. variable frequency drives, renewable energy), general industrial, aerospace and defense and wired infrastructure markets. We sell our ceramic substrate materials and cooling solutions under the curamik® trade name and our busbars under the ROLINX® trade name.

Our Other operating segment consists of elastomer components for applications in general industrial market, as well as elastomer floats for level sensing in fuel tanks, motors, and storage tanks applications in the general industrial and automotive markets. We sell our elastomer components under our ENDUR® trade name and our floats under our NITROPHYL® trade name.

The following table presents a disaggregation of revenue from contracts with customers and other pertinent financial information, for the periods indicated; inter-segment sales have been eliminated from the net sales data:

(Dollars in thousands)	Advanced Connectivity Solutions	Elastomeric Material Solutions	Power Electronics Solutions	Other	Total
Three Months Ended September 30, 2020					
Net sales - recognized over time	**$ 219**	**$ 2,612**	**$ 47,827**	**$ 3,568**	**$ 54,226**
Net sales - recognized at a point in time	**63,495**	**83,832**	**100**	**291**	**147,718**
Total net sales	**$ 63,714**	**$ 86,444**	**$ 47,927**	**$ 3,859**	**$ 201,944**
Operating income (loss)	**$ 4,981**	**$ 7,372**	**$ (4,691)**	**$ 1,132**	**$ 8,794**
Three Months Ended September 30, 2019					
Net sales - recognized over time	$ —	$ 3,429	$ 42,906	$ 4,504	$ 50,839
Net sales - recognized at a point in time	78,983	91,511	225	284	171,003
Total net sales	$ 78,983	$ 94,940	$ 43,131	$ 4,788	$ 221,842
Operating income (loss)	$ 13,778	$ 17,995	$ (3,358)	$ 1,470	$ 29,885
Nine Months Ended September 30, 2020					
Net sales - recognized over time	**$ 219**	**$ 8,106**	**$ 139,288**	**$ 10,295**	**$ 157,908**
Net sales - recognized at a point in time	**198,988**	**233,490**	**580**	**945**	**434,003**
Total net sales	**$ 199,207**	**$ 241,596**	**$ 139,868**	**$ 11,240**	**$ 591,911**
Operating income (loss)	**$ 26,067**	**$ 21,884**	**$ (3,929)**	**$ 3,339**	**$ 47,361**
Nine Months Ended September 30, 2019					
Net sales - recognized over time	$ —	$ 9,400	$ 153,827	$ 13,421	$ 176,648
Net sales - recognized at a point in time	251,982	272,196	780	2,886	527,844
Total net sales	$ 251,982	$ 281,596	$ 154,607	$ 16,307	$ 704,492
Operating income (loss)	$ 45,301	$ 46,752	$ (976)	$ 4,821	$ 95,898

Net sales by operating segment and by geographic area were as follows:

(Dollars in thousands)	Net Sales[1]				
Region/Country	Advanced Connectivity Solutions	Elastomeric Material Solutions	Power Electronics Solutions	Other	Total
Three Months Ended September 30, 2020					
United States	**$ 18,058**	**$ 29,733**	**$ 5,901**	**$ 980**	**$ 54,672**
Other Americas	**497**	**2,517**	**36**	**144**	**3,194**
Total Americas	**18,555**	**32,250**	**5,937**	**1,124**	**57,866**
China	**26,641**	**34,016**	**11,229**	**754**	**72,640**
Other APAC	**11,588**	**11,150**	**4,633**	**530**	**27,901**
Total APAC	**38,229**	**45,166**	**15,862**	**1,284**	**100,541**
Germany	**1,973**	**5,450**	**12,074**	**99**	**19,596**
Other EMEA	**4,957**	**3,578**	**14,054**	**1,352**	**23,941**
Total EMEA	**6,930**	**9,028**	**26,128**	**1,451**	**43,537**
Total net sales	**$ 63,714**	**$ 86,444**	**$ 47,927**	**$ 3,859**	**$ 201,944**
Three Months Ended September 30, 2019					
United States	$ 17,671	$ 41,232	$ 8,115	$ 1,237	$ 68,255
Other Americas	807	2,452	11	271	3,541
Total Americas	18,478	43,684	8,126	1,508	71,796
China	37,398	26,461	7,642	908	72,409
Other APAC	13,813	14,385	6,269	675	35,142
Total APAC	51,211	40,846	13,911	1,583	107,551
Germany	4,251	3,868	10,528	171	18,818
Other EMEA	5,043	6,542	10,566	1,526	23,677
Total EMEA	9,294	10,410	21,094	1,697	42,495
Total net sales	$ 78,983	$ 94,940	$ 43,131	$ 4,788	$ 221,842

[1] Net sales are allocated to countries based on the location of the customer. The table above lists individual countries with 10% or more of net sales for the periods indicated.

(Dollars in thousands)	Net Sales[1]				
Region/Country	Advanced Connectivity Solutions	Elastomeric Material Solutions	Power Electronics Solutions	Other	Total
Nine Months Ended September 30, 2020					
United States	**$ 49,907**	**$ 98,373**	**$ 19,562**	**$ 2,666**	**$ 170,508**
Other Americas	**2,122**	**6,634**	**222**	**503**	**9,481**
Total Americas	**52,029**	**105,007**	**19,784**	**3,169**	**179,989**
China	**86,846**	**72,550**	**28,657**	**2,003**	**190,056**
Other APAC	**35,482**	**33,938**	**13,857**	**1,531**	**84,808**
Total APAC	**122,328**	**106,488**	**42,514**	**3,534**	**274,864**
Germany	**8,354**	**13,883**	**40,829**	**292**	**63,358**
Other EMEA	**16,496**	**16,218**	**36,741**	**4,245**	**73,700**
Total EMEA	**24,850**	**30,101**	**77,570**	**4,537**	**137,058**
Total net sales	**$ 199,207**	**$ 241,596**	**$ 139,868**	**$ 11,240**	**$ 591,911**
Nine Months Ended September 30, 2019					
United States	$ 47,014	$ 126,067	$ 23,800	$ 3,606	$ 200,487
Other Americas	2,598	6,725	260	668	10,251
Total Americas	49,612	132,792	24,060	4,274	210,738
China	129,220	72,726	29,989	4,374	236,309
Other APAC	44,980	44,407	18,232	2,244	109,863
Total APAC	174,200	117,133	48,221	6,618	346,172
Germany	12,674	10,775	46,780	447	70,676
Other EMEA	15,496	20,896	35,546	4,968	76,906
Total EMEA	28,170	31,671	82,326	5,415	147,582
Total net sales	$ 251,982	$ 281,596	$ 154,607	$ 16,307	$ 704,492

[1] Net sales are allocated to countries based on the location of the customer. The table above lists individual countries with 10% or more of net sales for the periods indicated.

Revenue from Contracts with Customers

We have contract assets primarily related to unbilled revenue for revenue recognized related to products that are deemed to have no alternative use whereby we have the right to payment. Revenue is recognized in advance of billing to the customer in these circumstances as billing is typically performed at the time of shipment to the customer. The unbilled revenue is included in contract assets on the condensed consolidated statements of financial position.

Contract assets by operating segment were as follows:

(Dollars in thousands)	September 30, 2020	December 31, 2019
Advanced Connectivity Solutions	**$ 186**	$ —
Elastomeric Material Solutions	**1,090**	1,077
Power Electronics Solutions	**19,132**	19,471
Other	**1,653**	1,907
Total contract assets	**$ 22,061**	$ 22,455

We did not have any contract liabilities as of September 30, 2020 or December 31, 2019. No impairment losses were recognized for either of the three or nine-month periods ended September 30, 2020 and 2019, respectively, on any receivables or contract assets arising from our contracts with customers.

Note 15 – Supplemental Financial Information

Restructuring and Impairment Charges

The components of "Restructuring and impairment charges" line item in the condensed consolidated statements of operations, were as follows:

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Restructuring charges	**$ 9,027**	$ (1)	**$ 9,027**	$ 948
Impairment charges	**386**	581	**386**	1,537
Total restructuring and impairment charges	**$ 9,413**	$ 580	**$ 9,413**	$ 2,485

Our PES, ACS and EMS operating segments incurred $6.3 million, $2.9 million and $0.2 million of restructuring and impairment charges, respectively, for the three and nine months ended September 30, 2020.

Restructuring Charges

During the third quarter of 2020, we commenced manufacturing footprint optimization plans involving certain Europe and Asia manufacturing locations, primarily impacting our PES and ACS operating segments, in order to achieve greater cost competitiveness as well as align capacity with end market demand. We expect the majority of the restructuring activities to be completed by the end of the first half of 2021. Severance activity related to the manufacturing footprint optimization plan is presented in the table below for the nine months ended September 30, 2020:

(Dollars in thousands)	**Manufacturing Footprint Optimization Restructuring Severance**
Balance as of December 31, 2019	$ —
Provisions	8,754
Payments	(5)
Foreign currency translation adjustment	(78)
Balance as of September 30, 2020	$ 8,671

In 2018, we made the decision to consolidate our Santa Fe Springs, California operations into our facilities in Carol Stream, Illinois and Bear, Delaware, which was completed as of December 31, 2019. We recorded immaterial expense and $0.9 million of expense for the three and nine months ended September 30, 2019, respectively, related to this facility consolidation.

Impairment Charges

We recognized $0.4 million of impairment charges, primarily related to fixed assets in Belgium, for the three and nine months ended September 30, 2020. We recognized $0.6 million and $1.5 million in impairment charges on certain assets in connection with the Isola USA Corp. (Isola) asset acquisition for the three and nine months ended September 30, 2019, respectively.

Other Operating (Income) Expense, Net

The components of "Other operating (income) expense, net" line item in the condensed consolidated statements of operations, were as follows:

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Lease income	**$ —**	$ (57)	**$ —**	$ (932)
Depreciation on leased assets	**—**	179	**—**	1,729
Loss on sale or disposal of property, plant and equipment	**(4)**	2	**49**	278
Economic incentive grants	**—**	—	**(145)**	—
Total other operating (income) expense, net	**$ (4)**	$ 124	**$ (96)**	$ 1,075

In connection with the transitional leaseback of a portion of the facility and certain machinery and equipment acquired from Isola in August 2018, we recognized lease income of $0.1 million and $0.9 million for the three and nine months ended September 30, 2019, respectively, and related depreciation on leased assets of $0.2 million and $1.7 million, respectively, for the three and nine months ended September 30, 2019.

Interest Expense, Net

The components of "Interest expense, net" line item in the condensed consolidated statements of operations, were as follows:

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Interest on revolving credit facility	**$ 612**	$ 1,873	**$ 3,079**	$ 6,303
Interest rate swap settlements	**2,769**	(40)	**3,191**	(241)
Line of credit fees	**112**	125	**430**	378
Debt issuance amortization costs	**138**	138	**414**	414
Interest on finance leases	**35**	29	**100**	92
Interest income	**(135)**	(398)	**(724)**	(1,262)
Other	**22**	20	**49**	39
Total interest expense, net	**$ 3,553**	$ 1,747	**$ 6,539**	$ 5,723

Note 16 – Recent Accounting Standards

Recently Issued Standards

In March 2020, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting*. This ASU applies only to contracts, hedging relationships, and other transactions that reference LIBOR or another reference rate that is expected to be discontinued after reference rate reform. This ASU provides optional expedients and exceptions to accounting under GAAP for contract modifications that replace a reference rate affected by reference rate reform. The amendments in this update were effective as of March 12, 2020 and we may elect to apply the amendments to contract modifications or hedging relationships entered into through December 31, 2022. We are currently evaluating the potential impact of adopting this guidance on our consolidated financial statements.

Recently Adopted Standards Reflected in Our 2020 Financial Statements

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. This ASU replaces the incurred loss model with a new expected loss impairment model that applies to certain financial assets measured at amortized cost, including trade and other receivables and contract assets. We adopted this update in January 2020 using the modified-retrospective approach, and it did not have a material impact on our condensed consolidated financial statements.

Item 2. Management's Discussion and Analysis of Results of Operations and Financial Position

As used herein, the "Company," "Rogers," "we," "us," "our" and similar terms include Rogers Corporation and its subsidiaries, unless the context indicates otherwise.

Forward-Looking Statements

This Quarterly Report on Form 10-Q includes "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the Exchange Act). Such statements are generally accompanied by words such as "anticipate," "assume," "believe," "could," "estimate," "expect," "foresee," "goal," "intend," "may," "might," "plan," "potential," "predict," "project," "should," "seek," "target" or similar expressions that convey uncertainty as to future events or outcomes. Forward-looking statements are based on assumptions and beliefs that we believe to be reasonable; however, assumed facts almost always vary from actual results, and the differences between assumed facts and actual results could be material depending upon the circumstances. Where we express an expectation or belief as to future results, that expectation or belief is expressed in good faith and based on assumptions believed to have a reasonable basis. We cannot assure you, however, that the stated expectation or belief will occur or be achieved or accomplished. Among the factors that could cause our results to differ materially from those indicated by forward-looking statements are risks and uncertainties inherent in our business including, without limitation:

- the duration and impacts of the novel coronavirus (COVID-19) global pandemic and efforts to contain its transmission, including the effect of these factors on our business, suppliers, customers, end users and economic conditions generally;
- failure to capitalize on, volatility within, or other adverse changes with respect to the Company's growth drivers, including advanced mobility and advanced connectivity, such as delays in adoption or implementation of new technologies;
- uncertain business, economic and political conditions in the United States (U.S.) and abroad, particularly in China, South Korea, Germany, Hungary and Belgium, where we maintain significant manufacturing, sales or administrative operations;
- the trade policy dynamics between the U.S. and China reflected in trade agreement negotiations and the imposition of tariffs and other trade restrictions, including trade restrictions on Huawei Technologies Co., Ltd. (Huawei);
- fluctuations in foreign currency exchange rates;
- our ability to develop innovative products and the extent to which they are incorporated into end-user products and systems;
- the extent to which end-user products and systems incorporating our products achieve commercial success;
- the ability of our sole or limited source suppliers to deliver certain key raw materials, including commodities, to us in a timely and cost-effective manner;
- intense global competition affecting both our existing products and products currently under development;
- business interruptions due to catastrophes or other similar events, such as natural disasters, war, terrorism or public health crises;
- failure to realize, or delays in the realization of, anticipated benefits of acquisitions and divestitures due to, among other things, the existence of unknown liabilities or difficulty integrating acquired businesses;
- our ability to attract and retain management and skilled technical personnel;
- our ability to protect our proprietary technology from infringement by third parties and/or allegations that our technology infringes third party rights;
- changes in effective tax rates or tax laws and regulations in the jurisdictions in which we operate;
- failure to comply with financial and restrictive covenants in our credit agreement or restrictions on our operational and financial flexibility due to such covenants;
- the outcome of ongoing and future litigation, including our asbestos-related product liability litigation;
- changes in environmental laws and regulations applicable to our business; and
- disruptions in, or breaches of, our information technology systems.

Our forward-looking statements are expressly qualified by these cautionary statements, which you should consider carefully, along with the risks discussed in this section and elsewhere in this report, including under the section entitled "Risk Factors" in Part II, Item 1A and in our Annual Report on Form 10-K for the year ended December 31, 2019 (the Annual Report) and our other reports filed with the Securities and Exchange Commission, any of which could cause actual results to differ materially from historical results or anticipated results. We undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, unless required by law.

The following discussion and analysis of our financial condition and results of operations should be read together with our condensed consolidated financial statements and the related notes that appear elsewhere in this Form 10-Q along with our audited consolidated financial statements and the related notes thereto in our Annual Report.

Company Background and Strategy

Rogers Corporation designs, develops, manufactures and sells high-performance and high-reliability engineered materials and components to meet our customers' demanding challenges. We operate three strategic operating segments: Advanced Connectivity Solutions (ACS), Elastomeric Material Solutions (EMS) and Power Electronics Solutions (PES). The remaining operations, which represent our non-core businesses, are reported in our Other operating segment. We have a history of innovation and have established Innovation Centers for our research and development (R&D) activities in Chandler, Arizona, Burlington, Massachusetts, Eschenbach, Germany and Suzhou, China. We are headquartered in Chandler, Arizona. Our growth strategy is based upon the following principles: (1) market-driven organization, (2) innovation leadership, (3) synergistic mergers and acquisitions, and (4) operational excellence. As a market-driven organization, we are focused on growth drivers, including advanced mobility and advanced connectivity. More specifically, in addition to the impact of COVID-19 discussed below, the key medium- to long-term trends currently affecting our business include the increasing use of advanced driver assistance systems (ADAS) and increasing electrification of vehicles, including electric and hybrid electric vehicles (EV/HEV), in the automotive industry and the growth of 5G smartphones in the portable electronics industry. In addition to our focus on advanced mobility and advanced connectivity in the automotive and telecommunications industries, we sell into a variety of other markets including general industrial, connected devices, aerospace and defense, mass transit and renewable energy.

Our sales and marketing approach is based on addressing these trends, while our strategy focuses on factors for success as a manufacturer of engineered materials and components: performance, quality, service, cost, efficiency, innovation and technology. We have expanded our capabilities through organic investment and acquisitions and strive to ensure high quality solutions for our customers. We continue to review and re-align our manufacturing and engineering footprint in an effort to attain a leading competitive position globally. We have established or expanded our capabilities in various locations in support of our customers' growth initiatives.

We seek to enhance our operational and financial performance by investing in research and development, manufacturing and materials efficiencies, and new product initiatives that respond to the needs of our customers. We strive to evaluate operational and strategic alternatives to improve our business structure and align our business with the changing needs of our customers and major industry trends affecting our business.

COVID-19 Update

The global COVID-19 pandemic has affected and continues to affect Rogers' business and operations, although to a lesser extent than the first half of 2020. In response to the outbreak, Rogers prioritized the safety and well-being of its employees—including implementing social distancing initiatives in its facilities, providing remote working arrangements for certain employees, expanding personal protective equipment usage, enhancing plant hygiene processes, and extending employee benefits, which increased our expenses in the quarter—while at the same time taking actions to preserve business continuity. Our non-manufacturing employees transitioned seamlessly to remote working arrangements and are maintaining effective collaboration, both internally and with our customers. In some cases, based on local conditions, non-manufacturing employees have returned to their worksites.

Our China business and operations were the first to be impacted by the virus, with the government temporarily suspending our operations, as well as the operations of most Chinese business, including our Chinese customers and suppliers, at the beginning of February. We resumed production in mid-February and reached full production capacity by early-March.

Our U.S. and European businesses were first impacted later in the first quarter, and the impact continued through the first, second and third quarters, and continues through the date of this filing. In both the U.S. and Europe, we generally maintained operations at close to normal levels, with the additional employee safety precautions implemented at our facilities. We do not believe these additional precautions in the aggregate, had a material impact on our financial performance during the first nine months. In the U.S., exemptions from state-level "shelter in place" directives with respect to numerous sectors, including the Communications, Healthcare and Public Health, Defense Industrial Base, Critical Manufacturing and Information Technology sectors, have largely enabled us to continue our operations while those directives were in place, and as states have continued to reopen during the second and third quarters, and through the date of this filing.

Our operations were not affected by any material shortages, as our inventory and supply chain met our manufacturing requirements. Global demand continued to be impacted in the third quarter by the COVID-19 pandemic, although to a lesser extent than prior quarters. General industrial and mass transit market demand continued to be the most impacted. Demand improved in some markets, such as portable electronics, EV/HEV, aerospace and defense and automotive relative to the second quarter.

We expect that the COVID-19 pandemic will have a continuing but uncertain impact on our business and operations in the short- and medium-term. Due to the above circumstances and as described generally in this Form 10-Q, our results of operations for the three and nine months ended September 30, 2020 are not necessarily indicative of the results to be expected for the full year.

Executive Summary

The following key highlights and factors should be considered when reviewing our results of operations, financial position and liquidity:

- In the third quarter of 2020 as compared to the third quarter of 2019, our net sales decreased 9.0% to $201.9 million, our gross margin increased approximately 180 basis points to 37.4% from 35.6%, and operating income decreased approximately 910 basis points to 4.4% from 13.5%. In the first nine months of 2020 as compared to the first nine months of 2019, our net sales decreased 16.0% to $591.9 million, our gross margin increased approximately 20 basis points to 35.7% from 35.5%, and operating income decreased approximately 560 basis points to 8.0% from 13.6%.
- We made $213.0 million of discretionary principal payments on our revolving credit facility during the second and third quarters of 2020, partially offset by $150.0 million in borrowings under our revolving credit facility during the first quarter of 2020 as a precautionary measure in order to increase our cash position and preserve financial flexibility given current uncertainty in the global markets resulting from the COVID-19 pandemic.
- We terminated the interest rate swap on September 30, 2020. As a result, we settled the interest rate swap for $2.4 million on October 2, 2020, representing the fair value of the interest rate swap on the date of termination. Both Rogers and the counterparties released each other from all obligation under the interest rate swap agreement, including the obligation to exchange, at specified intervals, the difference between fixed and floating interest amounts calculated by reference to the agreed upon notional principal amount of $75.0 million.
- We commenced manufacturing footprint optimization plans involving certain Europe and Asia manufacturing locations, primarily impacting our PES and ACS operating segments, and we recognized $9.0 million of restructuring charges in the third quarter of 2020 related to this project.
- We incurred incremental transaction costs of $0.3 million in the third quarter of 2020 and $4.3 million in the first nine months of 2020, due to COVID-19 pandemic. These costs primarily consist of temporary additional benefits established under our dependent care, premium pay and sick pay programs in response to the COVID-19 pandemic, as well as additional safety supplies. A substantial portion of the additional benefits under these programs expired in mid-June. We expect significantly lower costs during the remainder of 2020, associated with the remaining additional benefits, as well as safety supplies, when compared to the first and second quarters of 2020.
- We recognized an additional $11.7 million of amortization expense in the third quarter of 2020 and $15.6 million in the first nine months of 2020, and will recognize an additional $11.7 million of amortization expense in the fourth quarter of 2020, due to the acceleration of amortization expense related to our Diversified Silicone Products, Inc. (DSP) customer relationships and trademarks and trade names definite-lived other intangible assets, which were both accelerated to be fully amortized by December 31, 2020.

Results of Operations

The following table sets forth, for the periods indicated, selected operations data expressed as a percentage of net sales:

	Three Months Ended		Nine Months Ended	
	September 30, 2020	September 30, 2019	**September 30, 2020**	September 30, 2019
Net sales	**100.0 %**	100.0 %	**100.0 %**	100.0 %
Gross margin	**37.4 %**	35.6 %	**35.7 %**	35.5 %
Selling, general and administrative expenses	**24.9 %**	18.2 %	**22.3 %**	18.1 %
Research and development expenses	**3.5 %**	3.5 %	**3.7 %**	3.3 %
Restructuring and impairment charges	**4.7 %**	0.3 %	**1.6 %**	0.4 %
Other operating (income) expense, net	**(0.1)%**	0.1 %	**0.1 %**	0.1 %
Operating income	**4.4 %**	13.5 %	**8.0 %**	13.6 %
Equity income in unconsolidated joint ventures	**0.5 %**	0.7 %	**0.5 %**	0.6 %
Other income (expense), net	**0.7 %**	(0.5)%	**0.2 %**	(0.2)%
Interest expense, net	**(1.8)%**	(0.8)%	**(1.1)%**	(0.8)%
Income before income tax expense	**3.8 %**	12.9 %	**7.6 %**	13.2 %
Income tax expense	**0.3 %**	2.4 %	**1.7 %**	2.4 %
Net income	**3.5 %**	10.5 %	**5.9 %**	10.8 %

Net Sales and Gross Margin

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Net sales	**$ 201,944**	$ 221,842	**$ 591,911**	$ 704,492
Gross margin	**$ 75,518**	$ 78,867	**$ 211,117**	$ 250,089
Percentage of net sales	**37.4 %**	35.6 %	**35.7 %**	35.5 %

Net sales decreased by 9.0% in the third quarter of 2020 compared to the third quarter of 2019. Our ACS and EMS operating segments had net sales decreases of 19.3% and 8.9%, respectively, while our PES operating segment had a net sales increase of 11.1%. The decrease in net sales was primarily driven by significantly lower net sales in the 4G and 5G wireless infrastructure and automotive markets in our ACS operating segment, lower net sales in the general industrial, mass transit, automotive and consumer markets in our EMS operating segment and lower net sales in the mass transit and variable frequency drives markets in our PES operating segment. The decrease in net sales was partially offset by higher net sales in the aerospace and defense market in our ACS operating segment, higher net sales in the portable electronics and EV/HEV markets in our EMS operating segment and higher net sales in our EV/HEV and renewable energy markets in our PES operating segment. Net sales were favorably impacted by foreign currency impacts of $0.9 million, or 0.4%, due to the appreciation in value of the euro relative to the U.S. dollar.

Net sales decreased by 16.0% in the first nine months of 2020 compared to the first nine months of 2019. Our ACS, EMS and PES operating segments had net sales decreases of 20.9%, 14.2% and 9.5%, respectively. The decrease in net sales was primarily driven by significantly lower net sales in the 4G and 5G wireless infrastructure and automotive markets in our ACS operating segment, lower net sales in the general industrial, mass transit, consumer, portable electronics and automotive markets in our EMS operating segment and lower net sales in the mass transit, variable frequency drives and vehicle electrification markets in our PES operating segment. The decrease in net sales was partially offset by higher net sales in the aerospace and defense market in our ACS operating segment, higher net sales in the EV/HEV market in our EMS operating segment and higher net sales in the EV/HEV and renewable energy markets in our PES operating segment. Net sales were unfavorably impacted by foreign currency impacts of $5.0 million, or 0.7%, due to the depreciation in value of the Chinese renminbi, euro and Korean won relative to the U.S. dollar.

The lower net sales in the 4G and 5G wireless infrastructure markets in our ACS operating segment reflected the waning of 4G infrastructure spending by telecommunications companies in anticipation of 5G, as well as the impacts of the trade restrictions on Huawei, increased competition and design changes by telecommunications equipment original equipment manufacturers

(OEMs), which reduced our materials content in 5G base stations. The lower net sales in the automotive market was largely due to the impacts of COVID-19 pandemic.

The lower net sales in variable frequency drives market in our PES operating segment was due to a slowdown in industrial automation demand through the first nine months of 2020 combined with customer inventory rebalancing, which began in mid-2019, and continued through most of the first half of 2020. The lower year-to-date net sales in vehicle electrification market in our PES operating segment was due to the COVID-19 impacts on the automotive sector in the first half of 2020, partially offset by the initial recovery in the third quarter of 2020.

In our ACS operating segment, we anticipate lower net sales in the 4G and 5G wireless infrastructure markets year-over-year in the fourth quarter of 2020, on both a quarter-to-date and year-to-date basis, while we anticipate higher net sales in the aerospace and defense market year-over-year on a quarter-to-date and year-to-date basis. On a sequential quarter basis, we anticipate lower net sales in the 4G and 5G wireless infrastructure and aerospace and defense markets, while we anticipate higher net sales in the automotive market. The effects of trade tensions, increased competition, lower 5G base station content and the ongoing decline in 4G deployments are creating a great deal of uncertainty around our outlook for wireless infrastructure. As a result, we believe the growth opportunity in wireless infrastructure is substantially reduced going forward. Our expectations of net sales in the aerospace and defense market are primarily due to the alignment of the advanced weaponry requirements with the technical capabilities of our products, partially offset by unfavorable impacts of defense program timing. Our expectations of net sales in the automotive market are primarily due to the anticipation of further recovery of the automotive sector from the impact of the COVID-19 pandemic in the second quarter of 2020.

In our EMS operating segment, we anticipate higher net sales in the EV/HEV and portable electronics markets year-over-year in the fourth quarter of 2020, on a quarter-to-date basis, and we anticipate higher net sales in the EV/HEV market, year-over-year, on a year-to-date basis, while we anticipate lower net sales in the general industrial market year-over-year, on both a quarter-to-date and year-to-date basis. On a sequential quarter basis, we anticipate lower net sales in the EV/HEV and portable electronics market in the fourth quarter of 2020. Our expectations of net sales in the EV/HEV market are primarily due to continued strong demand partially offset by unfavorable variations of ordering patterns. Our expectations of net sales in the portable electronics market are primarily due to an extension of the normal seasonality from the third quarter into the fourth quarter as a result of the COVID-19 pandemic. Our expectations of net sales in the general industrial market are primarily due to impact of the COVID-19 pandemic.

In our PES operating segment, we anticipate higher net sales in the EV/HEV market year-over-year in the fourth quarter of 2020, on both a quarter-to-date and year-to-date basis, while we anticipate lower net sales in the variable frequency drives market year-over-year, on both a quarter-to-date and year-to-date basis. On a sequential quarter basis, we anticipate higher net sales in the EV/HEV market in the fourth quarter of 2020, while we anticipate lower net sales in the variable frequency drives market. Our expectations of net sales in the EV/HEV market in the fourth quarter of 2020 are primarily due to the anticipation of further recovery of the automotive sector from the impact of the COVID-19 pandemic in the second quarter of 2020. Our expectations of the net sales in the variable frequency drives market are primarily due to the anticipated continued effects of the COVID-19 pandemic.

Gross margin as a percentage of net sales increased approximately 180 basis points to 37.4% in the third quarter of 2020 compared to 35.6% in the third quarter of 2019. Gross margin in the third quarter of 2020 was favorably impacted by lower freight, duties and tariffs costs in our ACS operating segment, favorable product mix in our EMS operating segment, lower fixed overhead costs and yield improvements in our ACS, EMS and PES operating segments, as well as higher volume, favorable productivity performance and favorable absorption of fixed overhead costs in our PES operating segment. This was partially offset by lower volume and unfavorable absorption of fixed overhead costs in our ACS and EMS operating segments, unfavorable product mix in our ACS and PES operating segments and an increase in inventory reserve provision in our ACS operating segment.

Gross margin as a percentage of net sales increased approximately 20 basis points to 35.7% in the first nine months of 2020 compared to 35.5% in the first nine months of 2019. Gross margin in the first nine months of 2020 was favorably impacted by lower freight, duties and tariffs costs, lower fixed overhead costs and yield improvements in our ACS, EMS and PES operating segments, including the recognition of a $3.3 million expected recovery of previous duty taxes paid due to a change in Chinese tariff regulations in our ACS operating segment, favorable product mix in our EMS operating segment, as well as favorable productivity performance in our PES operating segment. This was partially offset by lower volume and unfavorable absorption of fixed overhead costs in our ACS, EMS and PES operating segments, an increase in inventory reserve provisions in our ACS and EMS operating segments, as well as unfavorable product mix in our ACS and PES operating segments.

We incurred incremental transaction costs associated with the temporary additional benefits established under our dependent care, premium pay and sick pay programs in response to the COVID-19 pandemic, as well as additional safety supplies. These costs impacted our gross margin by approximately $0.3 million and $3.9 million on a quarter-to-date basis and year-to-date basis, respectively. A substantial portion of the additional benefits under these programs expired in mid-June. We expect significantly lower gross margin impacts during the remainder of 2020, associated with the remaining additional benefits, as well as safety supplies, when compared to the first and second quarters of 2020.

Selling, General and Administrative Expenses

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Selling, general and administrative expenses	**$ 50,230**	$ 40,448	**$ 132,254**	$ 127,349
Percentage of net sales	**24.9 %**	18.2 %	**22.3 %**	18.1 %

Selling, general and administrative (SG&A) expenses increased 24.2% in the third quarter of 2020 from the third quarter of 2019, primarily due to an $11.0 million increase in other intangible assets amortization, a $0.6 million increase in professional services a $0.4 million increase in total compensation and benefits and a $0.3 million increase in software costs, partially offset by a $1.1 million decrease in travel and entertainment expenses, a $0.3 million decrease in advertising expenses, a $0.3 million decrease in depreciation, a $0.2 million decrease in commissions expense and a $0.2 million decrease in recruiting/relocation/training expenses.

SG&A expenses increased 3.9% in the first nine months of 2020 from the first nine months of 2019, primarily due to a $13.5 million increase in other intangible assets amortization and a $1.9 million increase in professional services, partially offset by a $3.2 million decrease in travel and entertainment expenses, a $2.0 million decrease in total compensation and benefits, a $1.2 million decrease in advertising expenses, a $1.1 million decrease in depreciation, a $0.9 million decrease in commissions expense, a $0.8 million decrease in recruiting/relocation/training expenses, a $0.5 million decrease in environmental charges and a $0.3 million decrease in software costs.

The increase in amortization expense for the three and nine months ended September 30, 2020 was due to the acceleration of amortization expense related to our DSP customer relationships and trademarks and trade names definite-lived other intangible assets, which were both accelerated to be fully amortized by December 31, 2020 due to an adjustment to their remaining useful lives. We recognized an additional $11.7 million of amortization expense in the third quarter of 2020 and $15.6 million in the first nine months of 2020, and will recognize an additional $11.7 million of amortization expense in the fourth quarter of 2020. The increases in amortization expense in 2020 are offset by decreases in forecasted amortization expense in future years. For additional information, refer to "Note 6 – Goodwill and Other Intangible Assets" to the condensed consolidated financial statements in Part I, Item 1 of this Form 10-Q.

The decrease in travel and entertainment and recruiting/relocation/training expenses, on both a quarter-to-date and year-to-date basis, was primarily driven by the impacts of COVID-19.

Research and Development Expenses

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Research and development expenses	**$ 7,085**	$ 7,830	**$ 22,185**	$ 23,282
Percentage of net sales	**3.5 %**	3.5 %	**3.7 %**	3.3 %

R&D expenses decreased 9.5% in the third quarter of 2020 from the third quarter of 2019 due to decreases in laboratory expenses as well as travel and entertainment expenses, partially offset by increases in total compensation and benefits. R&D expenses decreased 4.7% in the first nine months of 2020 from the first nine months of 2019 due to decreases in laboratory expenses as well as travel and entertainment expenses, partially offset by increases in total compensation and benefits.

Restructuring and Impairment Charges and Other Operating (Income) Expense, Net

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Restructuring and impairment charges	**$ 9,413**	$ 580	**$ 9,413**	$ 2,485
Other operating (income) expense, net	**$ (4)**	$ 124	**$ (96)**	$ 1,075

We incurred restructuring charges associated with our manufacturing footprint optimization plans involving certain Europe and Asia manufacturing locations. We recognized $9.0 million of restructuring charges related to these restructuring projects for the three and nine months ended September 30, 2020.

We incurred restructuring charges associated with the consolidation of our Santa Fe Springs, California operations with the Company's facilities in Carol Stream, Illinois and Bear, Delaware. We recognized no restructuring charges in the third quarter of 2019. We recognized $0.9 million of restructuring charges related to our facility consolidation in the first nine months of 2019.

We recognized $0.4 million of impairment charges primarily related to certain fixed assets in Belgium, for the three and nine months ended September 30, 2020. We recognized $0.6 million and $1.5 million in impairment charges on certain assets in connection with the Isola USA Corp. (Isola) asset acquisition for the three and nine months ended September 30, 2019, respectively.

We expect to incur between $2.5 million and $4.5 million of restructuring and impairment charges in the fourth quarter of 2020.

With respect to other operating (income) expense, net, we recognized income of $0.1 million from economic incentive grants related to the physical relocation of our global headquarters from Rogers, Connecticut to Chandler, Arizona, for the nine months ended September 30, 2020. In connection with the transitional leaseback of a portion of the facility and certain machinery and equipment acquired from Isola in August 2018, we recognized lease income of $0.1 million and $0.9 million for the three and nine months ended September 30, 2019, respectively, and related depreciation on leased assets of $0.2 million and $1.7 million, respectively, for the three and nine months ended September 30, 2019.

Equity Income in Unconsolidated Joint Ventures

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Equity income in unconsolidated joint ventures	**$ 937**	$ 1,498	**$ 3,177**	$ 4,077

As of September 30, 2020, we had two unconsolidated joint ventures, each 50% owned: Rogers INOAC Corporation (RIC) and Rogers INOAC Suzhou Corporation (RIS). Equity income in those unconsolidated joint ventures decreased 37.4% in the third quarter of 2020 from the third quarter of 2019, and decreased 22.1% in the first nine months of 2020 from the first nine months of 2019. On a quarter-to-date basis, the decrease was due to lower net sales due to the COVID-19 pandemic, as well as declines in operational performance for both RIS and RIC. On a year-to-date basis, the decrease was due to lower net sales due to the COVID-19 pandemic and declines in operational performance for both RIS and RIC.

Pension Settlement Charges and Other (Expense) Income, Net

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Pension settlement charges	**$ —**	$ —	**$ (55)**	$ —
Other income (expense), net	**$ 1,446**	$ (918)	**$ 1,294**	$ (915)

In the second quarter of 2020, we recorded an immaterial pre-tax settlement charge in connection with the remaining settlement efforts for the termination of the Rogers Corporation Defined Benefit Pension Plan (following its merger with the Hourly Employees Pension Plan of Arlon LLC, Microwave Material and Silicone Technologies Divisions, Bear, Delaware (collectively, the Merged Plan)). For additional information, refer to "Note 11 – Pension Benefits and Other Postretirement Benefits."

Other (expense) income, net increased to income of $1.4 million in the third quarter of 2020 from expense of $0.9 million in the third quarter of 2019. On a quarter-to-date basis, the increase was due to favorable impacts from our copper derivative contracts and foreign currency transactions, partially offset by unfavorable impacts from our foreign currency derivative contracts and by lower net periodic benefit credits associated with our defined benefit plans.

Other (expense) income, net increased to income of $1.3 million in the first nine months of 2020 from expense of $0.9 million in the first nine months of 2019. On a year-to-date basis, the increase was due to favorable impacts from our copper derivative contracts and foreign currency transactions, partially offset by unfavorable impacts from our foreign currency derivative contracts and by lower net periodic benefit credits associated with our defined benefit plans.

Interest Expense, Net

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Interest expense, net	**$ (3,553)**	$ (1,747)	**$ (6,539)**	$ (5,723)

Interest expense, net, increased by 103.4% in the third quarter of 2020 from the third quarter of 2019, and increased by 14.3% in the first nine months of 2020 from the first nine months of 2019. The increase, on both a quarter-to-date and year-to-date basis, was primarily due to the $2.4 million acceleration of interest expense as a result of the unwinding of the interest rate swap on September 30, 2020. The increase on both a quarter-to-date and year-to-date basis, was partially offset by lower interest expense on borrowings under our revolving credit facility, which was mainly attributable to a lower weighted-average interest rate year-over-year. We expect interest expense, net to decrease on a quarter-to-date basis in the fourth quarter of 2020 from the fourth quarter of 2019 due to an anticipated lower weighted-average interest rate on and an anticipated lower weighted-average outstanding balance for our borrowings under our revolving credit facility. We expect interest expense, net to increase on a year-to-date basis in the fourth quarter of 2020 from the fourth quarter of 2019 due to the $2.4 million acceleration of interest expense as a result of the unwinding of the interest rate swap, partially offset by an anticipated lower weighted-average interest rate on and an anticipated lower weighted-average outstanding balance for our borrowings under our revolving credit facility.

Income Taxes

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Income tax expense	**$ 618**	$ 5,331	**$ 10,453**	$ 17,258
Effective tax rate	**8.1 %**	18.6 %	**23.1 %**	18.5 %

Our effective income tax rate was 8.1% and 18.6% for the three months ended September 30, 2020 and 2019, respectively. The decrease from the third quarter of 2019 was primarily due to the beneficial impact of changes in valuation allowance related to R&D credits, partially offset by the increase in current quarter accruals of reserves for uncertain tax positions, higher tax impact on unremitted foreign earnings and profits, and changes in pretax mix across jurisdictions with disparate tax rates. Our effective income tax rate was 23.1% and 18.5% for the nine months ended September 30, 2020 and 2019, respectively. The increase from the first nine months of 2019 was primarily due to the increase in current quarter accruals of reserves for uncertain tax positions, the decrease in excess tax deductions on stock-based compensation and higher tax impact on unremitted foreign earnings and profits, partially offset by the beneficial impact of changes in valuation allowance related to R&D credits and pretax mix across jurisdictions with disparate tax rates.

Operating Segment Net Sales and Operating Income

Advanced Connectivity Solutions

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Net sales	**$ 63,714**	$ 78,983	**$ 199,207**	$ 251,982
Operating income	**$ 4,981**	$ 13,778	**$ 26,067**	$ 45,301

ACS net sales decreased by 19.3% in the third quarter of 2020 compared to the third quarter of 2019. The decrease in net sales over the third quarter of 2019 was primarily driven by significantly lower net sales in the 4G and 5G wireless infrastructure markets, as well as the automotive market, partially offset by higher net sales in the aerospace and defense market. Net sales were not materially impacted by changes in foreign currencies.

ACS net sales decreased by 20.9% in the first nine months of 2020 compared to the first nine months of 2019. The decrease in net sales over the first nine months of 2019 was primarily driven by significantly lower net sales in the 4G and 5G wireless infrastructure markets, as well as the automotive market, partially offset by higher net sales in the aerospace and defense market. Net sales were unfavorably impacted by $1.7 million, or 0.7%, due to the depreciation in value of the Chinese renminbi relative to the U.S. dollar.

The lower net sales in the 4G and 5G wireless infrastructure markets in our ACS operating segment reflected the waning of 4G infrastructure spending by telecommunications companies in anticipation of 5G, as well as the impacts of the trade restrictions on Huawei, increased competition and design changes by telecommunications equipment original equipment manufacturers (OEMs), which reduced our materials content in 5G base stations. The lower net sales in the automotive market was largely due to the impacts of COVID-19 pandemic.

In our ACS operating segment, we anticipate lower net sales in the 4G and 5G wireless infrastructure markets year-over-year in the fourth quarter of 2020, on both a quarter-to-date and year-to-date basis, while we anticipate higher net sales in the aerospace and defense market year-over-year on a quarter-to-date and year-to-date basis. On a sequential quarter basis, we anticipate lower net sales in the 4G and 5G wireless infrastructure and aerospace and defense markets, while we anticipate higher net sales in the automotive market. The effects of trade tensions, increased competition, lower 5G base station content and the ongoing decline in 4G deployments are creating a great deal of uncertainty around our outlook for wireless infrastructure. As a result, we believe the growth opportunity in wireless infrastructure is substantially reduced going forward. Our expectations of net sales in the aerospace and defense market are primarily due to the alignment of the advanced weaponry requirements with the technical capabilities of our products, partially offset by unfavorable impacts of defense program timing. Our expectations of net sales in the automotive market are primarily due to the anticipation of further recovery of the automotive sector from the impact of the COVID-19 pandemic in the second quarter of 2020.

Operating income decreased by 63.8% in the third quarter of 2020 from the third quarter of 2019. As a percentage of net sales, operating income in the third quarter of 2020 was 7.8%, an approximately 960 basis point decrease as compared to the 17.4% reported in the third quarter of 2019. The decrease in operating income was primarily due to lower volume and unfavorable absorption of fixed overhead costs, unfavorable product mix and an increase in inventory reserve provision, partially offset by lower freight, duties and tariffs costs, lower fixed overhead costs and yield improvements. Additionally, our ACS operating segment incurred $2.9 million of restructuring and impairment charges in the third quarter of 2020.

Operating income decreased by 42.5% in the first nine months of 2020 from the first nine months of 2019. As a percentage of net sales, operating income in the first nine months of 2020 was 13.1%, an approximately 490 basis point decrease as compared to the 18.0% reported in the first nine months of 2019. The decrease in operating income was primarily due to lower volume, unfavorable absorption of fixed overhead costs and unfavorable product mix, partially offset by lower freight, duties and tariffs costs, including the recognition of a $3.3 million expected recovery of previous duty taxes paid due to a change in Chinese tariff regulations, yield improvements and lower fixed overhead costs. Additionally, our ACS operating segment incurred $2.9 million of restructuring and impairment charges in the first nine months of 2020.

The incremental direct costs associated with the temporary additional benefits established under our dependent care, premium pay and sick pay programs in response to the COVID-19 pandemic, as well as the additional safety supplies, impacted ACS operating income by approximately $0.2 million and $1.7 million on a quarter-to-date basis and year-to-date basis, respectively.

Elastomeric Material Solutions

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Net sales	**$ 86,444**	$ 94,940	**$ 241,596**	$ 281,596
Operating income	**$ 7,372**	$ 17,995	**$ 21,884**	$ 46,752

EMS net sales decreased by 8.9% in the third quarter of 2020 compared to the third quarter of 2019. The decrease in net sales over the third quarter of 2019 was primarily driven by lower net sales in the general industrial, mass transit, automotive and consumer markets, partially offset by higher net sales in the portable electronics and EV/HEV markets. Net sales were not materially impacted by changes in foreign currencies.

EMS net sales decreased by 14.2% in the first nine months of 2020 compared to the first nine months of 2019. The decrease in net sales over the first nine months of 2019 was primarily driven by lower net sales in the general industrial, mass transit, consumer, portable electronics and automotive markets, partially offset by higher net sales in the EV/HEV market. Net sales were unfavorably impacted by $1.9 million, or 0.7%, due to the depreciation in value of the Chinese renminbi, Korean won and euro relative to the U.S. dollar.

In our EMS operating segment, we anticipate higher net sales in the EV/HEV and portable electronics markets year-over-year in the fourth quarter of 2020, on a quarter-to-date basis, and we anticipate higher net sales in the EV/HEV market, year-over-year, on a year-to-date basis, while we anticipate lower net sales in the general industrial market year-over-year, on both a quarter-to-date and year-to-date basis. On a sequential quarter basis, we anticipate lower net sales in the EV/HEV and portable electronics market in the fourth quarter of 2020. Our expectations of net sales in the EV/HEV market are primarily due to continued strong demand partially offset by unfavorable variations of ordering patterns. Our expectations of net sales in the portable electronics market are primarily due to an extension of the normal seasonality from the third quarter into the fourth quarter as a result of the COVID-19 pandemic. Our expectations of net sales in the general industrial market are primarily due to impact of the COVID-19 pandemic.

Operating income decreased by 59.0% in the third quarter of 2020 from the third quarter of 2019. As a percentage of net sales, third quarter of 2020 operating income was 8.5%, an approximately 1,050 basis point decrease as compared to the 19.0% reported in the third quarter of 2019. As a result of the acceleration of amortization expense related to the DSP customer relationships and trademarks and trade names definite-lived other intangible assets, we recognized an additional $11.7 million of amortization expense in the third quarter of 2020. The decrease in operating income was also due to lower volume and unfavorable absorption of fixed overhead costs. This was partially offset by favorable product mix, lower fixed overhead costs and yield improvements.

Operating income decreased by 53.2% in the first nine months of 2020 from the first nine months of 2019. As a percentage of net sales, operating income in the first nine months of 2020 was 9.1%, an approximately 750 basis point decrease as compared to the 16.6% reported in the first nine months of 2019. As a result of the acceleration of amortization expense related to the DSP customer relationships and trademarks and trade names definite-lived other intangible assets, we recognized an additional $15.6 million of amortization expense in the first nine months of 2020. The decrease in operating income was also due to lower volume, unfavorable absorption of fixed overhead costs and an increase in inventory reserve provision, partially offset by favorable product mix, lower fixed overhead costs and lower freight, duties and tariffs costs.

The incremental direct costs associated with the temporary additional benefits established under our dependent care, premium pay and sick pay programs in response to the COVID-19 pandemic, as well as the additional safety supplies, impacted EMS operating income by approximately $0.1 million and $1.6 million on a quarter-to-date basis and year-to-date basis, respectively.

The increase in amortization expense for the three and nine months ended September 30, 2020 was due to the acceleration of amortization expense related to our DSP customer relationships and trademarks and trade names definite-lived other intangible assets, which were both accelerated to be fully amortized by December 31, 2020 due to an adjustment to their remaining useful lives. We recognized an additional $11.7 million of amortization expense in the third quarter of 2020 and $15.6 million in the first nine months of 2020, and will recognize an additional $11.7 million of amortization expense in the fourth quarter of 2020. The increases in amortization expense in 2020 are offset by decreases in forecasted amortization expense in future years. For additional information, refer to “Note 6 – Goodwill and Other Intangible Assets” to the condensed consolidated financial statements in Part I, Item 1 of this Form 10-Q.

Power Electronics Solutions

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Net sales	**$ 47,927**	$ 43,131	**$ 139,868**	$ 154,607
Operating loss	**$ (4,691)**	$ (3,358)	**$ (3,929)**	$ (976)

PES net sales increased by 11.1% in the third quarter of 2020 from the third quarter of 2019. The increase in net sales over the third quarter of 2019 was primarily driven by higher net sales in the EV/HEV and renewable energy markets, partially offset by lower net sales in the mass transit and variable frequency drives markets. Net sales were favorably impacted by foreign currency fluctuations of $0.9 million, or 2.0%, due to the depreciation in value of the euro relative to the U.S. dollar.

PES net sales decreased by 9.5% in the first nine months of 2020 from the first nine months of 2019. The decrease in net sales over the first nine months of 2019 was primarily driven by lower net sales in the mass transit, variable frequency drives and vehicle electrification markets, partially offset by higher net sales in the EV/HEV and renewable energy markets. Net sales were unfavorably impacted by foreign currency fluctuations of $1.2 million, or 0.8%, due to the depreciation in value of the euro and Chinese renminbi relative to the U.S. dollar.

The lower net sales in variable frequency drives market in our PES operating segment was due to a slowdown in industrial automation demand through the first nine months of 2020 combined with customer inventory rebalancing, which began in mid-2019, and continued through most of the first half of 2020. The lower year-to-date net sales in vehicle electrification market in our PES operating segment was due to the COVID-19 impacts on the automotive sector in the first half of 2020, partially offset by the initial recovery in the third quarter of 2020.

In our PES operating segment, we anticipate higher net sales in the EV/HEV market year-over-year in the fourth quarter of 2020, on both a quarter-to-date and year-to-date basis, while we anticipate lower net sales in the variable frequency drives market year-over-year, on both a quarter-to-date and year-to-date basis. On a sequential quarter basis, we anticipate higher net sales in the EV/HEV market in the fourth quarter of 2020, while we anticipate lower net sales in the variable frequency drives market. Our expectations of net sales in the EV/HEV market in the fourth quarter of 2020 are primarily due to the anticipation of further recovery of the automotive sector from the impact of the COVID-19 pandemic in the second quarter of 2020. Our expectations of the net sales in the variable frequency drives market are primarily due to the anticipated continued effects of the COVID-19 pandemic.

Operating loss increased by 39.7% in the third quarter of 2020 from the third quarter of 2019. As a percentage of net sales, the third quarter of 2020 operating loss was 9.8% as compared to the 7.8% for operating loss reported in the third quarter of 2019. The increase in operating loss was primarily due to $6.3 million of restructuring and impairment charges incurred in the third quarter of 2020, in addition to unfavorable product mix, partially offset by higher volume, lower fixed overhead costs, favorable productivity performance, yield improvements and favorable absorption of fixed overhead costs.

Operating loss increased by 302.6% in the first nine months of 2020 from the first nine months of 2019. As a percentage of net sales, the first nine months of 2020 operating loss was 2.8% as compared to the 0.6% for operating loss reported in the first nine months of 2019. The increase in operating loss was primarily due to $6.3 million of restructuring and impairment charges incurred in the first nine months of 2020, in addition to lower volume, unfavorable product mix and unfavorable absorption of fixed overhead costs, partially offset by favorable productivity performance, yield improvements, lower fixed overhead costs and lower freight costs.

The incremental transaction costs associated with the temporary additional benefits established under our dependent care, premium pay and sick pay programs in response to the COVID-19 pandemic, as well as the additional safety supplies, did not materially impact PES operating loss on a quarter-to-date basis and impacted PES operating loss by approximately $0.8 million on a year-to-date basis.

Other

	Three Months Ended		Nine Months Ended	
(Dollars in thousands)	**September 30, 2020**	September 30, 2019	**September 30, 2020**	September 30, 2019
Net sales	**$ 3,859**	$ 4,788	**$ 11,240**	$ 16,307
Operating income	**$ 1,132**	$ 1,470	**$ 3,339**	$ 4,821

Net sales in this segment decreased by 19.4% in the third quarter of 2020 from the third quarter of 2019. The decrease in net sales over the third quarter of 2019 was primarily driven by lower demand in the automotive market partially resulting from the COVID-19 pandemic. Net sales were not materially impacted by changes in foreign currencies.

Net sales in this segment decreased by 31.1% in the first nine months of 2020 from the first nine months of 2019. The decrease in net sales over the first nine months of 2019 was primarily driven by a non-recurring last time buy in the Durel business in the first quarter of 2019, as well as lower demand in the automotive market partially resulting from the COVID-19 pandemic. Net sales were unfavorably impacted by foreign currency fluctuations of $0.1 million, or 0.7%, due to the depreciation in value of the Chinese renminbi relative to the U.S. dollar.

Operating income decreased 23.0% in the third quarter of 2020 compared to the third quarter of 2019. The decrease in operating income was primarily driven by lower volume and unfavorable absorption of fixed overhead costs, partially offset by lower fixed overhead costs. As a percentage of net sales, third quarter of 2020 operating income was 29.3%, a 140 basis point decrease as compared to the 30.7% reported in the third quarter of 2019.

Operating income decreased 30.7% in the first nine months of 2020 compared to the first nine months of 2019. The decrease in operating income was primarily driven by lower volume and unfavorable absorption of fixed overhead costs, partially offset by lower fixed overhead costs. As a percentage of net sales, the first nine months of 2020 operating income was 29.7%, a 10 basis point increase as compared to the 29.6% reported in the first nine months of 2019.

Liquidity, Capital Resources and Financial Position

We believe that our existing sources of liquidity and cash flows that we expect to generate from our operations, together with our available credit facilities, will be sufficient to fund our operations, currently planned capital expenditures, research and development efforts and our debt service commitments, for at least the next 12 months. We regularly review and evaluate the adequacy of our cash flows, borrowing facilities and banking relationships in an effort to ensure that we have the appropriate access to cash to fund both our near-term operating needs and our long-term strategic initiatives.

The following table illustrates the location of our cash and cash equivalents by our three major geographic areas:

(Dollars in thousands)	**September 30, 2020**	December 31, 2019
United States	**$ 43,143**	$ 39,354
Europe	**46,560**	31,166
Asia	**96,420**	96,329
Total cash and cash equivalents	**$ 186,123**	$ 166,849

Approximately $143.0 million of our cash and cash equivalents were held by non-U.S. subsidiaries as of September 30, 2020. We did not make any changes in the nine months ended September 30, 2020 to our position on the permanent reinvestment of our earnings from foreign operations. With the exception of certain of our Chinese subsidiaries, where a substantial portion of our Asia cash and cash equivalents are held, we continue to assert that historical foreign earnings are indefinitely reinvested.

(Dollars in thousands)		**September 30, 2020**		December 31, 2019
Key Financial Position Accounts:				
Cash and cash equivalents	**$**	**186,123**	$	166,849
Accounts receivable, net	**$**	**138,611**	$	122,285
Inventories	**$**	**109,733**	$	132,859
Borrowings under revolving credit facility	**$**	**60,000**	$	123,000

Changes in key financial position accounts and other significant changes in our statements of financial position from December 31, 2019 to September 30, 2020 were as follows:

- Accounts receivable, net increased 13.4% to $138.6 million as of September 30, 2020, from $122.3 million as of December 31, 2019. The increase from year-end was primarily due to higher net sales at the end of the third quarter of 2020 compared to at the end of 2019, as well as an increase to our days sales outstanding and an increase in our income taxes receivable.
- Inventories decreased 17.4% to $109.7 million as of September 30, 2020, from $132.9 million as of December 31, 2019, primarily driven by a decline in inventory levels to align with our lower net sales volumes, as well as an increase in inventory reserve provision within the EMS operating segment and a reduction of capitalized variances associated with the timing of volumes produced versus sold relative to the end of 2019.
- Borrowings under revolving credit facility decreased 51.2% to $60.0 million as of September 30, 2020, from $123.0 million as of December 31, 2019. This was as a result of $213.0 million of discretionary principal payments on our revolving credit facility during the second and third quarters of 2020, partially offset by $150.0 million in borrowings under our revolving credit facility during the first quarter of 2020 as a precautionary measure in order to increase our cash position and preserve financial flexibility given current uncertainty in the global markets resulting from the COVID-19 pandemic. For additional information regarding this facility and the Third Amended Credit Agreement and the Fourth Amended Credit Agreement, refer to “Note 9 – Debt” to the condensed consolidated financial statements in Part I, Item 1 of this Form 10-Q.

		Nine Months Ended		
(Dollars in thousands)		**September 30, 2020**		September 30, 2019
Key Cash Flow Measures:				
Net cash provided by operating activities	**$**	**113,673**	$	115,672
Net cash used in investing activities	**$**	**(28,944)**	$	(36,193)
Net cash provided by (used in) financing activities	**$**	**(67,033)**	$	(104,010)

As of September 30, 2020, cash and cash equivalents were $186.1 million as compared to $166.8 million as of December 31, 2019, an increase of $19.3 million, or 11.6%. This increase was primarily due to the $150.0 million in borrowings under our revolving credit facility during the first quarter of 2020, supplemented by cash flows generated by operations. This increase was partially offset by $213.0 million of discretionary principal payments on our revolving credit facility during the second and third quarters of 2020, $28.9 million in capital expenditures and $5.1 million in tax payments related to net share settlement of equity awards.

Restrictions on Payment of Dividends

The Third Amended Credit Agreement generally permits us to pay cash dividends to our shareholders, provided that (i) no default or event of default has occurred and is continuing or would result from the dividend payment and (ii) our leverage ratio does not exceed 2.75 to 1.00. If our leverage ratio exceeds 2.75 to 1.00, we may nonetheless make up to $20.0 million in restricted payments, including cash dividends, during the fiscal year, provided that no default or event of default has occurred and is continuing or would result from the payments. Our leverage ratio did not exceed 2.75 to 1.00 as of September 30, 2020.

The Fourth Amended Credit Agreement generally permits us to pay cash dividends to our shareholders, provided that (i) no default or event of default has occurred and is continuing or would result from the dividend payment and (ii) our total net leverage ratio does not exceed 2.75 to 1.00. If our total net leverage ratio exceeds 2.75 to 1.00, we may nonetheless make up to $20.0 million in restricted payments, including cash dividends, during each fiscal year, provided that no default or event of default has occurred and is continuing or would result from the payments. Our total net leverage ratio did not exceed 2.75 to 1.00 as of October 16, 2020.

Contingencies

During the third quarter of 2020, we did not become aware of any material developments related to environmental matters disclosed in our Annual Report, our asbestos litigation or other material contingencies previously disclosed or incur any material costs or capital expenditures related to such matters. Refer to "Note 12 – Commitments and Contingencies" to the condensed consolidated financial statements in Part I, Item 1 of this Form 10-Q for further discussion of these contingencies.

Off-Balance Sheet Arrangements

As of September 30, 2020, we did not have any off-balance sheet arrangements that have or are, in the opinion of management, reasonably likely to have a current or future material effect on our results of operations or financial position.

Critical Accounting Policies

There were no material changes in our critical accounting policies during the third quarter of 2020.

Recent Accounting Pronouncements

Refer to "Note 16 – Recent Accounting Standards" to the condensed consolidated financial statements in Part I, Item 1 of this Form 10-Q for discussion of recent accounting pronouncements including expected dates of adoption.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

There have been no material changes in our exposure to market risk during the third quarter of 2020. For discussion of our exposure to market risk, refer to "Item 7A. *Quantitative and Qualitative Disclosures About Market Risk*" contained in our Annual Report.

Item 4. Controls and Procedures

EVALUATION OF DISCLOSURE CONTROLS AND PROCEDURES

The Company, with the participation of our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the design and operation of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d- 15(e) under the Securities Exchange Act of 1934, as amended (the Exchange Act), as of September 30, 2020. The Company's disclosure controls and procedures are designed (i) to ensure that information required to be disclosed by it in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and (ii) to ensure that information required to be disclosed in the reports the Company files or submits under the Exchange Act is accumulated and communicated to its management, including its Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure. Based on their evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that the Company's disclosure controls and procedures were effective as of September 30, 2020.

CHANGES IN INTERNAL CONTROL OVER FINANCIAL REPORTING

There were no changes in the Company's internal control over financial reporting during its most recently completed fiscal quarter that have materially affected or are reasonably likely to materially affect the Company's internal control over financial reporting, as defined in Rule 13a-15(f) and 15d-15(f) under the Exchange Act.

Part II - Other Information

Item 1. Legal Proceedings

Refer to the discussion of certain environmental, asbestos and other litigation matters in "Note 12 – Commitments and Contingencies" to the condensed consolidated financial statements in Part I, Item 1 of this Form 10-Q.

Item 1A. Risk Factors

The COVID-19 pandemic and global responsive measures have impacted our business and results of operations and could materially adversely affect our business, results of operations and financial position in future periods.

The COVID-19 pandemic has now spread globally and resulted in governmental authorities implementing numerous responsive measures, such as travel bans and other restrictions, including quarantines, shelter-in-place and stay-home orders, transportation disruptions, closures and shutdowns. We maintain significant manufacturing and administrative operations in the U.S., China, Belgium, Germany, South Korea and Hungary, and each of these countries has been significantly affected by the outbreak and taken measures to try to contain it. We have also modified our business practices in an effort to ensure business continuity while promoting continued employee health and well-being. Collectively, these measures have impacted and are likely to continue to impact our workforce and operations. In addition, the outbreak and associated responsive measures have resulted in significant disruption of the global economy, leading to steep declines and increased volatility in the financial markets, and it is possible that a potentially severe global recession will follow.

There is considerable uncertainty regarding the effect of COVID-19 as well as current and future responsive measures on our business, including on our workforce and operations. We may experience sustained demand reductions for our products in certain end markets, be unable to satisfy customer demand and face increased operating costs, asset impairments and cash flow reductions, all of which could have a material adverse effect on our business, results of operations and financial position.

Item 6. Exhibits

List of Exhibits:

3.1	Restated Articles of Organization of Rogers Corporation, as amended, incorporated by reference to Exhibit 3a to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2006.
3.2	Amended and Restated Bylaws of Rogers Corporation, effective February 11, 2016, incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed on February 26, 2016.
10.1	Fourth Amended and Restated Credit Agreement dated as of October 16, 2020, incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on October 16, 2020.
31.1	Certification of President and Chief Executive Officer (Principal Executive Officer) pursuant to Rule 13a-14(a) of 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 Senior Vice President, Chief Financial Officer and Treasurer (Principal Financial Officer) pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, filed herewith.
32	Certification of President and Chief Executive Officer (Principal Executive Officer) and Senior Vice President, Chief Financial Officer and Treasurer (Principal Financial Officer) pursuant to Rule 13a-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, furnished herewith.
99.1	Rogers Corporation Employee Stock Purchase Plan, as amended and restated on October 7, 2020 (formerly known as the Rogers Corporation Global Stock Ownership Plan for Employees).
101	The following materials from Rogers Corporation's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2020 formatted in iXBRL (Inline Extensible Business Reporting Language): (i) Condensed Consolidated Statements of Operations for the three and nine months ended September 30, 2020 and September 30, 2019, (ii) Condensed Consolidated Statements of Comprehensive Income (Loss) for the three and nine months ended September 30, 2020 and September 30, 2019, (iii) Condensed Consolidated Statements of Financial Position as of September 30, 2020 and December 31, 2019, (iv) Condensed Consolidated Statements of Cash Flows for the nine months ended September 30, 2020 and September 30, 2019, (v) Condensed Consolidated Statements of Shareholders' Equity for the three and nine months ended September 30, 2020 and September 30, 2019, (vi) Notes to Condensed Consolidated Financial Statements and (vii) Cover Page.
104	The cover page from Rogers Corporation's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2020, formatted in iXBRL and contained in Exhibit 101.

Signatures

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

ROGERS CORPORATION
(Registrant)

/s/ Michael M. Ludwig

Michael M. Ludwig

Senior Vice President, Chief Financial Officer and Treasurer
Principal Financial Officer

Dated: October 30, 2020