UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

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

For the quarterly period ended June 30, 2021
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, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer", "accelerated filer", "smaller reporting company", and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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

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

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

The number of shares outstanding of the registrant's capital stock as of July 26, 2021 was 18,729,142.

ROGERS CORPORATION
FORM 10-Q

June 30, 2021

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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		Six Months Ended	
	June 30, 2021	June 30, 2020	**June 30, 2021**	June 30, 2020
Net sales	**$ 234,906**	$ 191,157	**$ 464,171**	$ 389,967
Cost of sales	**145,073**	121,188	**284,839**	254,368
Gross margin	**89,833**	69,969	**179,332**	135,599
Selling, general and administrative expenses	**44,959**	41,694	**87,372**	82,024
Research and development expenses	**7,492**	7,295	**14,664**	15,100
Restructuring and impairment charges	**747**	—	**2,253**	—
Other operating (income) expense, net	**890**	(112)	**2,105**	(92)
Operating income	**35,745**	21,092	**72,938**	38,567
Equity income in unconsolidated joint ventures	**1,930**	1,022	**4,111**	2,240
Pension settlement charges	**—**	(55)	**—**	(55)
Other income (expense), net	**1,239**	634	**4,207**	(152)
Interest expense, net	**(404)**	(1,779)	**(1,011)**	(2,986)
Income before income tax expense	**38,510**	20,914	**80,245**	37,614
Income tax expense	**9,855**	6,394	**20,372**	9,835
Net income	**$ 28,655**	$ 14,520	**$ 59,873**	$ 27,779
Basic earnings per share	**$ 1.53**	$ 0.78	**$ 3.20**	$ 1.49
Diluted earnings per share	**$ 1.52**	$ 0.78	**$ 3.18**	$ 1.49
Shares used in computing:				
Basic earnings per share	**18,729**	18,676	**18,721**	18,673
Diluted earnings per share	**18,846**	18,681	**18,810**	18,686

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

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

	Three Months Ended		Six Months Ended	
	June 30, 2021	June 30, 2020	**June 30, 2021**	June 30, 2020
Net income	**$ 28,655**	$ 14,520	**$ 59,873**	$ 27,779
Foreign currency translation adjustment	**2,758**	5,629	**(10,501)**	(1,265)
Pension and other postretirement benefits:				
Pension settlement benefits, net of tax (Note 4)	**—**	(48)	**—**	(48)
Actuarial net gain incurred, net of tax (Note 4)	**—**	626	**—**	626
Amortization of loss, net of tax (Note 4)	**58**	67	**121**	133
Derivative instrument designated as cash flow hedge:				
Change in unrealized gain (loss) before reclassifications, net of tax (Note 4)	**—**	383	**—**	(866)
Unrealized gain reclassified into earnings, net of tax (Note 4)	**—**	(267)	**—**	(334)
Other comprehensive income (loss)	**2,816**	6,390	**(10,380)**	(1,754)
Comprehensive income	**$ 31,471**	$ 20,910	**$ 49,493**	$ 26,025

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)

	June 30, 2021	December 31, 2020
Assets		
Current assets		
Cash and cash equivalents	**$ 203,945**	$ 191,785
Accounts receivable, less allowance for credit losses of $1,319 and $1,682	**157,471**	134,421
Contract assets	**30,285**	26,575
Inventories	**110,761**	102,360
Prepaid income taxes	**2,904**	2,960
Asbestos-related insurance receivables, current portion	**2,986**	2,986
Other current assets	**16,773**	13,088
Total current assets	**525,125**	474,175
Property, plant and equipment, net of accumulated depreciation of $363,927 and $365,844	**282,543**	272,378
Investments in unconsolidated joint ventures	**16,904**	15,248
Deferred income taxes	**25,986**	28,667
Goodwill	**267,192**	270,172
Other intangible assets, net of amortization	**111,404**	118,026
Pension assets	**5,694**	5,278
Asbestos-related insurance receivables, non-current portion	**63,807**	63,807
Other long-term assets	**14,821**	16,254
Total assets	**$ 1,313,476**	$ 1,264,005
Liabilities and Shareholders' Equity		
Current liabilities		
Accounts payable	**$ 53,471**	$ 35,987
Accrued employee benefits and compensation	**43,915**	41,708
Accrued income taxes payable	**5,177**	8,558
Asbestos-related liabilities, current portion	**3,615**	3,615
Other accrued liabilities	**20,844**	21,641
Total current liabilities	**127,022**	111,509
Borrowings under revolving credit facility	—	25,000
Pension and other postretirement benefits liabilities	**1,658**	1,612
Asbestos-related liabilities, non-current portion	**69,469**	69,620
Non-current income tax	**16,930**	16,346
Deferred income taxes	**9,537**	8,375
Other long-term liabilities	**12,198**	10,788
Commitments and contingencies (Note 10 and Note 12)		
Shareholders' equity		
Capital stock - $1 par value; 50,000 authorized shares; 18,722 and 18,677 shares issued and outstanding	**18,722**	18,677
Additional paid-in capital	**154,330**	147,961
Retained earnings	**933,565**	873,692
Accumulated other comprehensive loss	**(29,955)**	(19,575)
Total shareholders' equity	**1,076,662**	1,020,755
Total liabilities and shareholders' equity	**$ 1,313,476**	$ 1,264,005

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)

	Six Months Ended	
	June 30, 2021	June 30, 2020
Operating Activities:		
Net income	**$ 59,873**	$ 27,779
Adjustments to reconcile net income to cash provided by operating activities:		
Depreciation and amortization	**20,997**	25,858
Equity compensation expense	**8,394**	7,022
Deferred income taxes	**3,881**	(8,976)
Equity in undistributed income of unconsolidated joint ventures	**(4,111)**	(2,240)
Dividends received from unconsolidated joint ventures	**1,754**	1,785
Pension settlement benefits	**—**	(63)
Pension and other postretirement benefits	**(190)**	(100)
(Gain) loss on sale or disposal of property, plant and equipment	**(682)**	53
UTIS fire fixed asset and inventory write-offs	**1,211**	—
Provision (benefit) for credit losses	**(342)**	54
Changes in assets and liabilities:		
Accounts receivable	**(24,609)**	(6,623)
Proceeds from insurance/government subsidies related to operations	**148**	—
Contract assets	**(3,710)**	3,174
Inventories	**(10,527)**	7,910
Pension and postretirement benefit contributions	**(151)**	(244)
Other current assets	**(3,767)**	414
Accounts payable and other accrued expenses	**14,547**	(6,129)
Other, net	**3,490**	5,285
Net cash provided by operating activities	**66,206**	54,959
Investing Activities:		
Capital expenditures	**(21,415)**	(18,150)
Proceeds from the sale of property, plant and equipment, net	**714**	—
Net cash used in investing activities	**(20,701)**	(18,150)
Financing Activities:		
Proceeds from borrowings under revolving credit facility	**—**	150,000
Repayment of debt principal and finance lease obligations	**(29,652)**	(50,193)
Payments of taxes related to net share settlement of equity awards	**(2,684)**	(5,029)
Proceeds from issuance of shares to employee stock purchase plan	**704**	664
Net cash (used in) provided by financing activities	**(31,632)**	95,442
Effect of exchange rate fluctuations on cash	**(1,713)**	(358)
Net increase in cash and cash equivalents	**12,160**	131,893
Cash and cash equivalents at beginning of period	**191,785**	166,849
Cash and cash equivalents at end of period	**$ 203,945**	$ 298,742
Supplemental Disclosures:		
Accrued capital additions	**$ 7,403**	$ 4,144
Cash paid during the year for:		
Interest, net of amounts capitalized	**$ 964**	$ 3,311
Income taxes	**$ 18,036**	$ 15,644

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		Six Months Ended	
	June 30, 2021	June 30, 2020	**June 30, 2021**	June 30, 2020
Capital Stock				
Balance, beginning of period	**$ 18,712**	$ 18,662	**$ 18,677**	$ 18,577
Shares issued for vested restricted stock units, net of shares withheld for taxes	**—**	6	**28**	85
Shares issued for employee stock purchase plan	**—**	—	**7**	6
Shares issued to directors	**10**	—	**10**	—
Balance, end of period	**18,722**	18,668	**18,722**	18,668
Additional Paid-In Capital				
Balance, beginning of period	**150,004**	137,235	**147,961**	138,526
Shares issued for vested restricted stock units, net of shares withheld for taxes	**(52)**	(38)	**(2,712)**	(5,114)
Shares issued for employee stock purchase plan	**—**	—	**697**	658
Shares issued to directors	**(10)**	—	**(10)**	—
Equity compensation expense	**4,388**	3,895	**8,394**	7,022
Balance, end of period	**154,330**	141,092	**154,330**	141,092
Retained Earnings				
Balance, beginning of period	**904,910**	836,961	**873,692**	823,702
Net income	**28,655**	14,520	**59,873**	27,779
Balance, end of period	**933,565**	851,481	**933,565**	851,481
Accumulated Other Comprehensive Loss				
Balance, beginning of period	**(32,771)**	(55,049)	**(19,575)**	(46,905)
Other comprehensive income (loss)	**2,816**	6,390	**(10,380)**	(1,754)
Balance, end of period	**(29,955)**	(48,659)	**(29,955)**	(48,659)
Total Shareholders' Equity	**$ 1,076,662**	$ 962,582	**$ 1,076,662**	$ 962,582

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, 2020. Refer to the discussion below for our restructuring activities significant accounting policy.

Through the fourth quarter of 2020, we operated three strategic operating segments: Advanced Connectivity Solutions (ACS), Elastomeric Material Solutions (EMS) and Power Electronics Solutions (PES), with the remaining operations, which represented our non-core businesses, being reported in a fourth operating segment, the Other operating segment. In the first quarter of 2021, we completed the realignment of our strategic business segments to reflect the combination of our ACS and PES businesses resulting in a new strategic business segment, Advanced Electronics Solutions (AES). The combination of these two complementary businesses with capabilities in both high power and high frequency applications is expected to enhance our overall value proposition to customers in multiple high-growth markets. As a result of our organizational and reporting structure changes, we re-evaluated the chief operating decision maker's review and assessment of the Company's operating performance for purposes of performance monitoring and resource allocation. We determined, based on the financial data utilized by the chief operating decision maker to assess segment performance and allocate resources among the Company's strategic business segments, that we now have three operating segments under this new organizational and reporting structure: AES, EMS and Other. Reported results for the AES operating segment prior to 2021 represent the aggregation of the results for our former ACS and PES operating segments.

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 June 30, 2021			
(Dollars in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total**
Pension surplus investment[(1)]	**$ 5,334**	**$ 2,391**	**$ —**	**$ 7,725**

	Available-for-Sale Investment at Fair Value as of December 31, 2020			
(Dollars in thousands)	Level 1	Level 2	Level 3	Total
Pension surplus investment[(1)]	$ 6,706	$ 2,400	$ —	$ 9,106

(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 June 30, 2021, the fair value of these investments approximated its carrying value.

From time to time we enter into various instruments that require fair value measurement, including foreign currency contracts and copper derivative contracts. 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 June 30, 2021			
(Dollars in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total[(1)]**
Foreign currency contracts	**$ —**	**$ (72)**	**$ —**	**$ (72)**
Copper derivative contracts	**$ —**	**$ 4,840**	**$ —**	**$ 4,840**

	Derivative Instruments at Fair Value as of December 31, 2020			
(Dollars in thousands)	Level 1	Level 2	Level 3	Total[(1)]
Foreign currency contracts	$ —	$ (130)	$ —	$ (130)
Copper derivative contracts	$ —	$ 4,785	$ —	$ 4,785

[(1)] All balances were recorded in the "Other current assets" or "Other accrued liabilities" line items in the condensed consolidated statements of financial position.

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 and commodity pricing risk (primarily related to copper). 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.

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.

Foreign Currency

During the three months ended June 30, 2021, 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 income (expense), net" in our condensed consolidated statements of operations in the period in which the adjustment occurred.

As of June 30, 2021, the notional values of the remaining foreign currency forward contracts were as follows:

Notional Values of Foreign Currency Derivatives		
USD/CNH	$	19,919,008
KRW/USD	₩	10,170,000,000
EUR/USD	€	10,049,732

Commodity

As of June 30, 2021, we had 10 outstanding contracts to hedge exposure related to the purchase of copper in our AES operating segment. 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 income (expense), net" in our condensed consolidated statements of operations in the period in which the adjustment occurred.

As of June 30, 2021, the volume of our copper contracts outstanding was as follows:

Volume of Copper Derivatives	
July 2021 - September 2021	222 metric tons per month
October 2021 - December 2021	222 metric tons per month
January 2022 - March 2022	213 metric tons per month
April 2022 - June 2022	168 metric tons per month

Effects on Financial Statements

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

		Three Months Ended		**Six Months Ended**	
(Dollars in thousands)	**Financial Statement Line Item**	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Foreign Currency Contracts					
Contracts not designated as hedging instruments	Other income (expense), net	**$ (400)**	$ (27)	**$ (1,222)**	$ (555)
Copper Derivative Contracts					
Contracts not designated as hedging instruments	Other income (expense), net	**$ 1,313**	$ 964	**$ 3,860**	$ (171)
Interest Rate Swap					
Contract designated as hedging instrument	Other comprehensive income (loss)	**$ —**	$ 173	**$ —**	$ (1,517)

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, 2020	**$ (10,571)**	**$ (9,004)**	**$ —**	**$ (19,575)**
Other comprehensive income (loss) before reclassifications	**(10,501)**	**—**	**—**	**(10,501)**
Amounts reclassified from accumulated other comprehensive loss	**—**	**121**	**—**	**121**
Net current-period other comprehensive income (loss)	**(10,501)**	**121**	**—**	**(10,380)**
Balance as of June 30, 2021	**$ (21,072)**	**$ (8,883)**	**$ —**	**$ (29,955)**
Balance as of December 31, 2019	$ (35,478)	$ (10,455)	$ (972)	$ (46,905)
Other comprehensive income (loss) before reclassifications	(1,265)	626	(866)	(1,505)
Amounts reclassified from accumulated other comprehensive loss	—	85	(334)	(249)
Net current-period other comprehensive income (loss)	(1,265)	711	(1,200)	(1,754)
Balance as of June 30, 2020	$ (36,743)	$ (9,744)	$ (2,172)	$ (48,659)

[1] Net of taxes of $1,923 and $1,951 as of June 30, 2021 and December 31, 2020, respectively. Net of taxes of $2,172 and $2,368 as of June 30, 2020 and December 31, 2019, respectively.

[2] Net of taxes of $0 as of both June 30, 2021 and December 31, 2020. Net of taxes of $598 and $282 as of June 30, 2020 and December 31, 2019, respectively.

Note 5 – Inventories

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

(Dollars in thousands)	**June 30, 2021**	December 31, 2020
Raw materials	**$ 53,904**	$ 44,976
Work-in-process	**27,950**	25,291
Finished goods	**28,907**	32,093
Total inventories	**$ 110,761**	$ 102,360

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 Electronics Solutions	Elastomeric Material Solutions	Other	Total
December 31, 2020	$ 124,927	$ 143,021	$ 2,224	$ 270,172
Foreign currency translation adjustment	(2,400)	(580)	—	$ (2,980)
June 30, 2021	**$ 122,527**	**$ 142,441**	**$ 2,224**	**$ 267,192**

Other Intangible Assets

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

(Dollars in thousands)	**June 30, 2021** Gross Carrying Amount	**June 30, 2021** Accumulated Amortization	**June 30, 2021** Net Carrying Amount	December 31, 2020 Gross Carrying Amount	December 31, 2020 Accumulated Amortization	December 31, 2020 Net Carrying Amount
Customer relationships	**$ 150,219**	**$ 74,661**	**$ 75,558**	$ 150,863	$ 72,014	$ 78,849
Technology	**80,478**	**53,235**	**27,243**	83,469	53,540	29,929
Trademarks and trade names	**12,013**	**8,509**	**3,504**	12,039	8,149	3,890
Covenants not to compete	**1,340**	**928**	**412**	1,340	827	513
Total definite-lived other intangible assets	**244,050**	**137,333**	**106,717**	247,711	134,530	113,181
Indefinite-lived other intangible asset	**4,687**	**—**	**4,687**	4,845	—	4,845
Total other intangible assets	**$ 248,737**	**$ 137,333**	**$ 111,404**	$ 252,556	$ 134,530	$ 118,026

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

Amortization expense was $3.1 million and $7.6 million for the three months ended June 30, 2021 and 2020, respectively, and $6.3 million and $11.2 million for the six months ended June 30, 2021 and 2020, respectively. The estimated future amortization expense is $6.2 million for the remainder of 2021 and $11.9 million, $11.3 million, $10.0 million and $8.5 million for 2022, 2023, 2024 and 2025, respectively.

The weighted average amortization period as of June 30, 2021, by definite-lived other intangible asset class, was as follows:

Definite-Lived Other Intangible Asset Class	**Weighted Average Remaining Amortization Period**
Customer relationships	7.5 years
Technology	3.8 years
Trademarks and trade names	4.9 years
Covenants not to compete	1.0 years
Total definite-lived other intangible assets	**6.4 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**		**Six Months Ended**	
	June 30, 2021	June 30, 2020	**June 30, 2021**	June 30, 2020
Numerator:				
Net income	**$ 28,655**	$ 14,520	**$ 59,873**	$ 27,779
Denominator:				
Weighted-average shares outstanding - basic	**18,729**	18,676	**18,721**	18,673
Effect of dilutive shares	**117**	5	**89**	13
Weighted-average shares outstanding - diluted	**18,846**	18,681	**18,810**	18,686
Basic earnings per share	**$ 1.53**	$ 0.78	**$ 3.20**	$ 1.49
Diluted earnings per share	**$ 1.52**	$ 0.78	**$ 3.18**	$ 1.49

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 June 30, 2021 and 2020, 1,769 shares and 55,961 shares were excluded, respectively.

Note 8 – Capital Stock and Equity Compensation

Equity Compensation

Performance-Based Restricted Stock Units

As of June 30, 2021, we had performance-based restricted stock units from 2021, 2020 and 2019 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, except as noted below in *Chief Executive Officer's 2021 Equity Award Grants*. 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 2021 and 2020:

	February 10, 2021	February 12, 2020
Expected volatility	**51.0%**	41.0%
Expected term (in years)	**2.9**	2.9
Risk-free interest rate	**0.18%**	1.41%

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 six months ended June 30, 2021 is presented below:

	Performance-Based Restricted Stock Units
Awards outstanding as of December 31, 2020	111,059
Awards granted	39,955
Stock issued	—
Awards cancelled	(34,020)
Awards outstanding as of June 30, 2021	**116,994**

We recognized \$1.1 million and \$1.3 million of compensation expense for performance-based restricted stock units for the three months ended June 30, 2021 and 2020, respectively. We recognized \$3.2 million and \$2.7 million of compensation expense for performance-based restricted stock units for the six months ended June 30, 2021 and 2020, respectively.

Time-Based Restricted Stock Units

As of June 30, 2021, we had time-based restricted stock unit awards from 2021, 2020, 2019 and 2018 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, except as noted below in *Chief Executive Officer's 2021 Equity Award Grants*. 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 six months ended June 30, 2021 is presented below:

	Time-Based Restricted Stock Units
Awards outstanding as of December 31, 2020	102,142
Awards granted	46,998
Stock issued	(44,037)
Awards cancelled	(5,450)
Awards outstanding as of June 30, 2021	**99,653**

We recognized $1.9 million and $1.5 million of compensation expense for time-based restricted stock units for the three months ended June 30, 2021 and 2020, respectively. We recognized $3.7 million and $3.1 million of compensation expense for performance-based restricted stock units for the six months ended June 30, 2021 and 2020, respectively.

Chief Executive Officer's 2021 Equity Award Grants

The terms of the performance-based and time-based restricted stock unit awards granted to our Chief Executive Officer (CEO), Bruce Hoechner, in February 2021 were modified from the standard language provisions from prior year awards to allow for accelerated vesting of the full awards provided certain criteria are met. Accounting Standards Codification (ASC) Topic 718: *Compensation—Stock Compensation* requires companies that allow for accelerated vesting of employees' unvested equity upon retirement to recognize the expense from the date of grant to the date the employee becomes eligible to retire – regardless of whether or not the employee actually retires when he or she is eligible to retire. As a result, the $4.0 million of expense related to the awards granted on February 10, 2021 to our CEO, which provide for immediate vesting upon retirement, will be expensed from the date of the grant, February 10, 2021, through his retirement eligibility date, November 9, 2021.

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 six months ended June 30, 2021 is presented below:

	Deferred Stock Units
Awards outstanding as of December 31, 2020	12,450
Awards granted	6,450
Stock issued	(9,400)
Awards outstanding as of June 30, 2021	**9,500**

We recognized $1.2 million of compensation expense related to deferred stock units for the three and six months ended June 30, 2021, and $1.0 million of compensation expense for the three and six months ended June 30, 2020.

Note 9 – Debt

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 Federal Reserve Bank of New York 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. Based on our leverage ratio on June 30, 2021, the spread was 162.5 basis points.

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.

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 the 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 June 30, 2021.

We did not borrow anything under the Fourth Amended Credit Agreement for the three and six months ended June 30, 2021. During the three months ended March 31, 2020, we borrowed $150.0 million under the Third Amended Credit Agreement (prior to its restatement) 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 did not borrow anything further for the three months ended June 30, 2020. We are not required to make any quarterly principal payments under the Fourth Amended Credit Agreement. However, we made $4.0 million and $25.0 million of discretionary principal payments on our revolving credit facility for the three and six months ended June 30, 2021, respectively, and we made $50.0 million of discretionary principal payments for both of the three and six month periods ended June 30, 2020.

We had no outstanding borrowings under our revolving credit facility as of June 30, 2021, and $25.0 million as of December 31, 2020. We had $2.0 million and $2.3 million of outstanding line of credit issuance costs as of June 30, 2021 and December 31, 2020, respectively, which will be amortized over the life of the Fourth Amended Credit Agreement.

Note 10 - Leases

We had a finance lease obligation related to our manufacturing facility in Eschenbach, Germany. Under the terms of the lease agreement, we had an option to purchase the property upon the expiration of the lease on June 30, 2021 at a price which was the greater of (i) the then-current market value or (ii) the residual book value of the land including the buildings and installations thereon. We exercised this purchase option with a net cash payment of $5.0 million on June 30, 2021, extinguishing the remaining finance lease obligation and finance lease right-of-use asset related to this facility. Our finance lease obligation related to this facility was $4.2 million just prior to the exercise of the purchase option and $4.5 million as of December 31, 2020. The finance lease right-of-use asset balance for this facility was $6.1 million just prior to the exercise of the purchase option and $6.5 million as of December 31, 2020, respectively. Accumulated amortization related to this finance lease right-of-use asset was $4.5 million just prior to the exercise of the purchase option and as of June 30, 2021. The aggregate of all other finance lease obligations, finance lease right-of-use assets and related accumulated amortization, were immaterial as of June 30, 2021 and December 31, 2020.

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 six-month periods ended June 30, 2021 and 2020. 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 six-month periods ended June 30, 2021 and 2020. Payments made on the principal portion of our finance lease obligations were immaterial for each of the three- and six-month periods ended June 30, 2021 and 2020, excluding the $5.0 million net cash payment to exercise the Eschenbach, Germany manufacturing facility purchase option.

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		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Operating leases expense	**$ 779**	$ 694	**$ 1,460**	$ 1,422
Short-term leases expense	**$ 56**	$ 107	**$ 130**	$ 230
Payments on operating lease obligations	**$ 665**	$ 722	**$ 1,335**	$ 1,468

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**	**June 30, 2021**	December 31, 2020
Finance lease right-of-use assets	Property, plant and equipment, net	**$ 418**	$ 7,017
Operating lease right-of-use assets	Other long-term assets	**$ 4,565**	$ 4,216
Finance lease obligations, current portion	Other accrued liabilities	**$ 219**	$ 4,755
Finance lease obligations, non-current portion	Other long-term liabilities	**$ 161**	$ 322
Total finance lease obligations		**$ 380**	$ 5,077
Operating lease obligations, current portion	Other accrued liabilities	**$ 2,164**	$ 2,275
Operating lease obligations, non-current portion	Other long-term liabilities	**$ 2,431**	$ 2,219
Total operating lease obligations		**$ 4,595**	$ 4,494

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 June 30, 2021:

	Finance			Operating		
(Dollars in thousands)	**Leases Signed**	**Less: Leases Not Yet Commenced**	**Leases in Effect**	**Leases Signed**	**Less: Leases Not Yet Commenced**	**Leases in Effect**
2021	15	—	15	1,232	(10)	1,222
2022	412	(218)	194	2,057	(33)	2,024
2023	478	(291)	187	1,238	(33)	1,205
2024	291	(291)	—	323	(24)	299
2025	291	(291)	—	43	(5)	38
Thereafter	362	(362)	—	7	(4)	3
Total lease payments	1,849	(1,453)	396	4,900	(109)	4,791
Less: Interest	(75)	59	(16)	(199)	3	(196)
Present Value of Net Future Minimum Lease Payments	1,774	(1,394)	380	4,701	(106)	4,595

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	2.3 years	2.4 years
Weighted Average Discount Rate	3.70%	3.58%

Note 11 – Pension Benefits and Other Postretirement Benefits

Pension and Other Postretirement Benefit Plans

As of June 30, 2021, we had one qualified noncontributory defined benefit pension plan, the Rogers Corporation Employees' Pension Plan (the Union Plan), which was frozen and ceased accruing benefits in 2013.

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 Termination Surplus Funds

On October 17, 2019, our Chief Executive Officer approved 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)). We provided participants of the Merged Plan an option to elect either a lump sum distribution or an annuity. A group annuity contract was purchased with an insurance company for all participants who did not elect a lump sum distribution. The insurance company became responsible for administering and paying pension benefit payments effective January 1, 2020.

Upon completion of the pension termination and settlement processes for the Merged Plan, we had a $9.7 million remaining pension surplus investment balance. In July 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 (RESIP), a 401(k) plan for domestic employees. The investment balance not transferred to the trust suspense account will be used to pay any final plan expenses, after which the remainder of these funds will be moved to the RESIP trust suspense account. The funds in the RESIP trust suspense account have been, and will continue to be, used to fund certain employer contributions. As of June 30, 2021, the combined remaining pension surplus investment balance was approximately $7.7 million.

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 June 30,		**Six Months Ended June 30,**		**Three Months Ended June 30,**		**Six Months Ended June 30,**	
(Dollars in thousands)	**2021**	2020	**2021**	2020	**2021**	2020	**2021**	2020
Service cost	**$ —**	$ —	**$ —**	$ —	**$ 15**	$ 17	**$ 30**	$ 34
Interest cost	**184**	231	**368**	462	**6**	10	**12**	20
Expected return of plan assets	**(390)**	(393)	**(780)**	(786)	**—**	—	**—**	—
Amortization of prior service credit	**—**	—	**—**	—	**(24)**	(28)	**(48)**	(56)
Amortization of net loss	**98**	114	**196**	228	**—**	—	**—**	—
Settlement benefit	**—**	(63)	**—**	(63)	**—**	—	**—**	—
Net periodic benefit (credit) cost	**$ (108)**	$ (111)	**$ (216)**	$ (159)	**$ (3)**	$ (1)	**$ (6)**	$ (2)

Employer Contributions

There were no required or voluntary contributions made to the Union Plan or the Merged Plan for each of the three and six-month periods ended June 30, 2021 and 2020. Additionally, we are not required to make additional contributions to the Union Plan for the remainder of 2021.

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 six-month periods ended June 30, 2021 and 2020, 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 $1.8 million of aggregate remediation costs through June 30, 2021, and the accrual for future remediation efforts is $0.9 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 six months ended June 30, 2021:

	Asbestos Claims
Claims outstanding as of January 1, 2021	561
New claims filed	64
Pending claims concluded[1]	(77)
Claims outstanding as of June 30, 2021	**548**

[1] For the six months ended June 30, 2021, 71 claims were dismissed and 6 claims were settled. Settlements totaled approximately $0.5 million for the six months ended June 30, 2021.

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 six-month periods ended June 30, 2021 and 2020, 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)	**June 30, 2021**	December 31, 2020
Asbestos-related liabilities	**$ 73,084**	$ 73,235
Asbestos-related insurance receivables	**$ 66,793**	$ 66,793

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 25.6% and 30.6% for the three months ended June 30, 2021 and 2020, respectively. The decrease from the second quarter of 2020 was primarily due to the decrease in the current quarter accruals for reserves of unrecognized tax benefits and the pretax mix across jurisdictions with disparate tax rates, partially offset by the second quarter of 2020 beneficial impact of changes in valuation allowance related to research and development (R&D) credits. Our effective income tax rate was 25.4% and 26.1% for the six months ended June 30, 2021 and 2020, respectively. The decrease from the first half of 2020 was primarily due to the decrease in the current quarter accruals of reserves of unrecognized tax benefits and the pretax mix across jurisdictions with disparate tax rates, partially offset by the first half of 2020 beneficial impact of changes in valuation allowance related to R&D credits.

The total amount of unrecognized tax benefits as of June 30, 2021 was $15.5 million, of which $14.9 million would affect our effective tax rate if recognized. Additionally, the balance of unrecognized tax benefits as of June 30, 2021 also included $0.6 million of tax benefits that, if recognized, would result in adjustments to other tax accounts, primarily deferred taxes.

We recognize interest and penalties related to unrecognized tax benefits through income tax expense. As of June 30, 2021, we had $1.5 million accrued for the payment of interest.

We are subject to taxation in the U.S. and various state and foreign jurisdictions. Our tax years from 2016 through 2020 are subject to examination by the tax authorities. With few exceptions, we are no longer subject to U.S. federal, state, local and foreign examinations by tax authorities for the years before 2016.

Note 14 – Operating Segment Information

Our reporting structure is comprised of the following strategic operating segments: AES and EMS. The remaining operations, which represent our non-core businesses, are reported in the Other operating segment.

Our AES operating segment designs, develops, manufactures and sells circuit materials, ceramic substrate materials, busbars and cooling solutions for applications in electric and hybrid electric vehicles (EV/HEV), wireless infrastructure (i.e., power amplifiers, antennas and small cells), automotive (i.e., advanced driver assistance systems (ADAS), telematics and thermal solutions), aerospace and defense (i.e., antenna systems, communication systems and phased array radar systems), mass transit, clean energy (i.e., variable frequency drives, renewable energy), connected devices (i.e., mobile internet devices and thermal solutions) and wired infrastructure (i.e., 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, 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 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 Electronics Solutions	Elastomeric Material Solutions	Other	Total
Three Months Ended June 30, 2021				
Net sales - recognized over time	**$ 57,248**	**$ 3,758**	**$ 4,761**	**$ 65,767**
Net sales - recognized at a point in time	**83,178**	**85,573**	**388**	**169,139**
Total net sales	**$ 140,426**	**$ 89,331**	**$ 5,149**	**$ 234,906**
Operating income	**$ 18,288**	**$ 15,637**	**$ 1,820**	**$ 35,745**
Three Months Ended June 30, 2020				
Net sales - recognized over time	$ 45,060	$ 2,667	$ 3,077	$ 50,804
Net sales - recognized at a point in time	71,100	68,959	294	140,353
Total net sales	$ 116,160	$ 71,626	$ 3,371	$ 191,157
Operating income	$ 17,070	$ 2,995	$ 1,027	$ 21,092
Six Months Ended June 30, 2021				
Net sales - recognized over time	**$ 112,062**	**$ 6,445**	**$ 9,973**	**$ 128,480**
Net sales - recognized at a point in time	**160,256**	**174,735**	**700**	**335,691**
Total net sales	**$ 272,318**	**$ 181,180**	**$ 10,673**	**$ 464,171**
Operating income	**$ 33,137**	**$ 35,714**	**$ 4,087**	**$ 72,938**
Six Months Ended June 30, 2020				
Net sales - recognized over time	$ 91,461	$ 5,494	$ 6,727	$ 103,682
Net sales - recognized at a point in time	135,973	149,658	654	286,285
Total net sales	$ 227,434	$ 155,152	$ 7,381	$ 389,967
Operating income	$ 21,848	$ 14,512	$ 2,207	$ 38,567

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

(Dollars in thousands)	Net Sales[1]			
Region/Country	**Advanced Electronics Solutions**	**Elastomeric Material Solutions**	**Other**	**Total**
Three Months Ended June 30, 2021				
United States	**$ 21,824**	**$ 40,666**	**$ 1,353**	**$ 63,843**
Other Americas	**790**	**2,815**	**171**	**3,776**
Total Americas	**22,614**	**43,481**	**1,524**	**67,619**
China	**49,841**	**27,427**	**1,026**	**78,294**
Other APAC	**25,432**	**5,410**	**648**	**31,490**
Total APAC	**75,273**	**32,837**	**1,674**	**109,784**
Germany	**21,651**	**5,889**	**217**	**27,757**
Other EMEA	**20,888**	**7,124**	**1,734**	**29,746**
Total EMEA	**42,539**	**13,013**	**1,951**	**57,503**
Total net sales	**$ 140,426**	**$ 89,331**	**$ 5,149**	**$ 234,906**
Three Months Ended June 30, 2020				
United States	$ 22,885	$ 30,073	$ 707	$ 53,665
Other Americas	758	1,668	48	2,474
Total Americas	23,643	31,741	755	56,139
China	44,700	20,159	1,024	65,883
Other APAC	13,439	9,835	453	23,727
Total APAC	58,139	29,994	1,477	89,610
Germany	18,407	4,799	44	23,250
Other EMEA	15,971	5,092	1,095	22,158
Total EMEA	34,378	9,891	1,139	45,408
Total net sales	$ 116,160	$ 71,626	$ 3,371	$ 191,157

[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 Electronics Solutions**	**Elastomeric Material Solutions**	**Other**	**Total**
Six Months Ended June 30, 2021				
United States	**$ 45,621**	**$ 78,398**	**$ 2,025**	**$ 126,044**
Other Americas	**1,384**	**5,309**	**387**	**7,080**
Total Americas	**47,005**	**83,707**	**2,412**	**133,124**
China	**108,264**	**55,258**	**2,419**	**165,941**
Other APAC	**48,804**	**14,698**	**1,368**	**64,870**
Total APAC	**157,068**	**69,956**	**3,787**	**230,811**
Germany	**26,814**	**16,165**	**351**	**43,330**
Other EMEA	**41,431**	**11,352**	**4,123**	**56,906**
Total EMEA	**68,245**	**27,517**	**4,474**	**100,236**
Total net sales	**$ 272,318**	**$ 181,180**	**$ 10,673**	**$ 464,171**
Six Months Ended June 30, 2020				
United States	$ 45,510	$ 68,640	$ 1,686	$ 115,836
Other Americas	1,811	4,117	359	6,287
Total Americas	47,321	72,757	2,045	122,123
China	77,633	38,534	1,249	117,416
Other APAC	33,118	22,788	1,001	56,907
Total APAC	110,751	61,322	2,250	174,323
Germany	35,136	8,433	193	43,762
Other EMEA	34,226	12,640	2,893	49,759
Total EMEA	69,362	21,073	3,086	93,521
Total net sales	$ 227,434	$ 155,152	$ 7,381	$ 389,967

(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)	**June 30, 2021**	December 31, 2020
Advanced Electronics Solutions	**$ 25,947**	$ 24,199
Elastomeric Material Solutions	**1,828**	887
Other	**2,510**	1,489
Total contract assets	**$ 30,285**	$ 26,575

We did not have any contract liabilities as of June 30, 2021 or December 31, 2020. No impairment losses were recognized for the three or six-month periods ended June 30, 2021 and 2020, 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, which contains restructuring charges and related expenses, as well as impairment charges, were as follows:

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Restructuring charges				
Manufacturing footprint optimization	**747**	—	**2,253**	—
Total restructuring charges	**747**	—	**2,253**	—
Total restructuring and impairment charges	**$ 747**	$ —	**$ 2,253**	$ —

Our AES operating segment incurred $0.7 million and $2.3 million of restructuring and impairment charges for the three and six months ended June 30, 2021, respectively, and our EMS operating segment incurred an immaterial amount of restructuring and impairment charges for the three and six months ended June 30, 2021.

Restructuring Charges & Related Expenses - Manufacturing Footprint Optimization

During the third quarter of 2020, we commenced manufacturing footprint optimization plans involving certain Europe and Asia manufacturing locations, primarily impacting our AES operating segment, in order to achieve greater cost competitiveness as well as align capacity with end market demand. The majority of the restructuring activities have been completed as of the end of the first half of 2021. We incurred restructuring charges and related expenses of $0.7 million and $2.3 million for the three and six months ended June 30, 2021, respectively, of which $0.4 million of contra-expense and $0.1 million of expense is related to severance and related benefits for the three and six months ended June 30, 2021, respectively. Severance and related benefits activity related to the manufacturing footprint optimization plan is presented in the table below for the six months ended June 30, 2021:

(Dollars in thousands)	**Manufacturing Footprint Optimization Restructuring Severance**
Balance as of December 31, 2020	$ 11,003
Provisions	113
Payments	(6,902)
Foreign currency translation adjustment	(312)
Balance as of June 30, 2021	**$ 3,902**

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		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
UTIS fire				
Fixed assets write-offs	**—**	—	**891**	—
Inventory charges	**40**	—	**320**	—
Professional services	**1,072**	—	**1,594**	—
Lease obligations	**54**	—	**540**	—
Compensation & benefits	**600**	—	**844**	—
Other	**76**	—	**76**	—
Insurance recoveries	**(359)**	—	**(1,478)**	—
Total UTIS fire	**1,483**	—	**2,787**	—
(Gain) loss on sale or disposal of property, plant and equipment	**(593)**	33	**(682)**	53
Economic incentive grants	**—**	(145)	**—**	(145)
Total other operating (income) expense, net	**$ 890**	$ (112)	**$ 2,105**	$ (92)

In early February 2021, there was a fire at our UTIS manufacturing facility in Ansan, South Korea, which manufactures eSorba® polyurethane foams used in portable electronics and display applications. The site was safely evacuated and there were no reported injuries; however, there was extensive damage to the manufacturing site and some damage to nearby property. The cause of the fire is still under investigation. Operations at this facility will be disrupted into at least the first quarter of 2022. We are currently evaluating alternative facility options.

We recognized fixed asset write-offs and inventory charges of $0.9 million and $0.3 million, respectively, related to property destroyed in the fire for the six months ended June 30, 2021. Additionally, we recognized a $0.5 million contingent liability pertaining to our obligations for the fire damage to the building in connection with the underlying lease agreement. We have incurred $1.1 million and $1.6 million of fees for various professional services for the three and six months ended June 30, 2021, respectively, in connection with the assessment of the fire and the efforts to rebuild and resume operations. Further, we incurred $0.6 million and $0.8 million of compensation and benefits for UTIS manufacturing employees, subsequent to the fire, for the three and six months ended June 30, 2021, respectively. In connection with the UTIS fire, we have recognized anticipated insurance recoveries of $0.4 million and $1.5 million related to our ongoing insurance claim for property damage and compensation and benefits of hourly employees, less the applicable $0.3 million deductible, for the three and six months ended June 30, 2021, respectively.

Based on the facts and circumstances known to us as of our filing, while we are aware of other potential liabilities, we are unable presently to estimate the probability or amount of any further contingent liabilities associated with damages to nearby property or other potential costs due to the fire at our UTIS manufacturing facility. As such, no further reserves have been established at this time. We will continue to re-assess as additional information becomes available.

Interest Expense, Net

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

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Interest on revolving credit facility	**$ 5**	$ 1,388	**$ 106**	$ 2,467
Interest rate swap settlements	**—**	336	**—**	422
Line of credit fees	**291**	152	**564**	318
Debt issuance amortization costs	**179**	138	**358**	276
Interest on finance leases	**47**	32	**259**	65
Interest income	**(150)**	(269)	**(345)**	(589)
Other	**32**	2	**69**	27
Total interest expense, net	**$ 404**	$ 1,779	**$ 1,011**	$ 2,986

Note 16 – Recent Accounting Standards

Recently Adopted Standards Reflected in Our 2021 Financial Statements

In August 2020, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2020-06, *Debt-Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging-Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*. Under ASU 2020-06, the embedded conversion features are no longer separated from the host contract for convertible instruments with conversion features that are not required to be accounted for as derivatives under Topic 815, or that do not result in substantial premiums accounted for as paid-in capital. Consequently, a convertible debt instrument will be accounted for as a single liability measured at its amortized cost, as long as no other features require bifurcation and recognition as derivatives. The new guidance also requires the if-converted method be applied for all convertible instruments. ASU 2020-06 is effective for fiscal years beginning after December 15, 2021, with early adoption permitted. Adoption of the standard requires using either the modified retrospective or the retrospective approach. We adopted this standard in January 2021, and it did not have a material effect on our condensed consolidated financial statements.

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*. Under ASU 2019-12, the new guidance removes certain exceptions to the general principles in Topic 740. The new guidance also clarifies and amends existing guidance to improve consistent application. ASU 2019-12 is effective for our annual reporting periods beginning after December 15, 2020. The transition method (retrospective, modified retrospective, or prospective approach) related to this standard depends on the applicable guidance, and all amendments for which there is no transition guidance specified, are to be applied on a prospective basis. We adopted this standard in January 2021, and it did not have a material effect 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 and distribute vaccines, 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 and willingness 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, 2020 (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 two strategic operating segments: Advanced Electronics Solutions (AES) and Elastomeric Material Solutions (EMS). 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, portable electronics and telecommunications industries, we sell into a variety of other markets including general industrial, aerospace and defense, mass transit, clean energy and connected devices.

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 maintain 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—while at the same time taking actions to preserve business continuity. Our non-manufacturing employees transitioned seamlessly to remote working arrangements and are effectively collaborating both internally and with our customers. In some cases, based on local conditions, non-manufacturing employees have returned to their worksites. 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 six months ended June 30, 2021 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 second quarter of 2021 as compared to the second quarter of 2020, our net sales increased 22.9% to $234.9 million, our gross margin increased approximately 160 basis points to 38.2% from 36.6%, and operating income increased approximately 420 basis points to 15.2% from 11.0%. In the first half of 2021 as compared to the first half of 2020, our net sales increased approximately 19.0% to $464.2 million, our gross margin increased approximately 380 basis points to 38.6% from 34.8%, and operating income increased approximately 580 basis points to 15.7% from 9.9%.
- We made $25.0 million of discretionary principal payments on our revolving credit facility during the first half of 2021.
- We recognized $0.7 million of restructuring charges in the second quarter of 2021 and $2.3 million of restructuring charges in the first half of 2021, related to the manufacturing footprint optimization plans involving certain Europe and Asia manufacturing locations, primarily impacting our AES operating segment.

- In early February 2021, there was a fire at our UTIS manufacturing facility in Ansan, South Korea. This facility manufactures eSorba® polyurethane foams used in portable electronics and display applications. Operations at this facility will be disrupted into at least the first quarter of 2022. We are currently evaluating alternative facility options. We recognized net expense of $1.5 million in the second quarter of 2021 and $2.8 million in the first half of 2021, related to the financial impacts from the fire, which consisted of write-offs of fixed assets and inventory destroyed and/or damaged in the fire, professional services, costs incurred due to obligations under our manufacturing facility lease agreement, compensation and benefits for certain of our UTIS employees, partially offset by the recognition of certain anticipated insurance recoveries.
- We incurred incremental transaction costs of $0.5 million and $3.3 million in the second quarter of 2021 and the second quarter of 2020, respectively, and incurred incremental transaction costs of $1.1 million and $4.0 million in the first half of 2021 and the first half of 2020, respectively, due to the COVID-19 pandemic.

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		Six Months Ended	
	June 30, 2021	June 30, 2020	**June 30, 2021**	June 30, 2020
Net sales	**100.0 %**	100.0 %	**100.0 %**	100.0 %
Gross margin	**38.2 %**	36.6 %	**38.6 %**	34.8 %
Selling, general and administrative expenses	**19.1 %**	21.8 %	**18.7 %**	21.0 %
Research and development expenses	**3.2 %**	3.8 %	**3.2 %**	3.9 %
Restructuring and impairment charges	**0.3 %**	— %	**0.5 %**	— %
Other operating (income) expense, net	**0.4 %**	— %	**0.5 %**	— %
Operating income	**15.2 %**	11.0 %	**15.7 %**	9.9 %
Equity income in unconsolidated joint ventures	**0.9 %**	0.5 %	**0.9 %**	0.5 %
Other income (expense), net	**0.5 %**	0.3 %	**0.9 %**	— %
Interest expense, net	**(0.2)%**	(0.9)%	**(0.2)%**	(0.8)%
Income before income tax expense	**16.4 %**	10.9 %	**17.3 %**	9.6 %
Income tax expense	**4.2 %**	3.3 %	**4.4 %**	2.5 %
Net income	**12.2 %**	7.6 %	**12.9 %**	7.1 %

Net Sales and Gross Margin

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Net sales	**$ 234,906**	$ 191,157	**$ 464,171**	$ 389,967
Gross margin	**$ 89,833**	$ 69,969	**$ 179,332**	$ 135,599
Percentage of net sales	**38.2 %**	36.6 %	**38.6 %**	34.8 %

Net sales increased by 22.9% in the second quarter of 2021 compared to the second quarter of 2020. Our AES and EMS operating segments had net sales increases of 20.9% and 24.7%, respectively. The increase in net sales was primarily due to higher net sales in the ADAS, EV/HEV, aerospace and defense and clean energy markets in our AES operating segment and higher net sales in the EV/HEV, general industrial, consumer and automotive markets in our EMS operating segment. The increase was partially offset by lower net sales in the wireless infrastructure market in our AES operating segment and lower net sales in the mass transit market in our EMS operating segment. Net sales were favorably impacted by foreign currency impacts of $8.1 million, or 4.3%, due to the appreciation in value of the euro and Chinese renminbi relative to the U.S. dollar.

Net sales increased by 19.0% in the first half of 2021 compared to the first half of 2020. Our AES and EMS operating segments had net sales increases of 19.7% and 16.8%, respectively. The increase in net sales was primarily due to higher net sales in the ADAS, EV/HEV, aerospace and defense and clean energy markets in our AES operating segment and higher net sales in the EV/HEV, general industrial, consumer and automotive markets in our EMS operating segment. The increase was partially offset by lower net sales in the wireless infrastructure market in our AES operating segment and lower net sales in the mass transit market in our EMS operating segment. Net sales were favorably impacted by foreign currency impacts of $16.3 million, or 4.2%, due to the appreciation in value of the euro and Chinese renminbi relative to the U.S. dollar.

Gross margin as a percentage of net sales increased approximately 160 basis points to 38.2% in the second quarter of 2021 compared to 36.6% in the second quarter of 2020. Gross margin in the second quarter of 2021 was favorably impacted by higher volume and favorable absorption of fixed overhead costs in our AES and EMS operating segments, favorable product mix in our EMS operating segment, favorable productivity improvements in our AES operating segment, as well as a lower inventory reserves provision in our EMS operating segment. This was partially offset by higher commodity and raw material costs as well as higher freight, duties and tariffs expenses in our AES and EMS operating segments, unfavorable product mix in our AES operating segments and unfavorable productivity performance due to raw material shortages in our EMS operating segment. The higher freight, duties and tariffs expenses were primarily due to the recognition in the second quarter of 2020 of $3.3 million of Chinese duty tax recoveries.

Gross margin as a percentage of net sales increased approximately 380 basis points to 38.6% in the first half of 2021 compared to 34.8% in the first half of 2020. Gross margin in the first half of 2021 was favorably impacted by higher volume and favorable absorption of fixed overhead costs in our AES and EMS operating segments, favorable product mix in our EMS operating segment, favorable productivity improvements in our AES operating segment and a lower inventory reserves provision in our EMS operating segment. This was partially offset by higher commodity and raw material costs as well as higher freight, duties and tariffs expenses in our AES and EMS operating segments, unfavorable product mix in our AES operating segment and unfavorable productivity performance due to raw material shortages in our EMS operating segment. The higher freight, duties and tariffs expenses were primarily due to the recognition in the second quarter of 2020 of $3.3 million of Chinese duty tax recoveries.

Our UTIS net sales were only slightly impacted by the fire at our UTIS manufacturing facility in Ansan, South Korea as a result of selling our undamaged finished goods inventory during the remainder of the first quarter of 2021. In the second quarter of 2021, we experienced a greater impact to our net sales due to the continued disruption to our UTIS operations. In the third quarter of 2021, we expect a similar impact to our net sales as the second quarter of 2021.

In the first quarter of 2021, our net sales were largely unaffected by global supply chain disruptions, but we began seeing some greater impacts as we exited the quarter. In the second quarter of 2021, the impact of supply constraints and raw material cost increases, primarily due to the weather interruptions along the U.S. Gulf Coast as well as commodity price increases, somewhat tempered our net sales growth and gross margin results. In the third quarter of 2021, we expect these issues to continue, but to a lesser extent.

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 $0.4 million and $3.0 million in the second quarter of 2021 and the second quarter of 2020, respectively, and $1.1 million and $3.6 million in the first half of 2021 and the first half of 2020, respectively.

Selling, General and Administrative Expenses

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Selling, general and administrative expenses	**$ 44,959**	$ 41,694	**$ 87,372**	$ 82,024
Percentage of net sales	**19.1 %**	21.8 %	**18.7 %**	21.0 %

Selling, general and administrative (SG&A) expenses increased 7.8% in the second quarter of 2021 from the second quarter of 2020, primarily due to a $5.2 million increase in total compensation and benefits, a $0.9 million increase in software expenses, a $0.5 million increase in recruiting/relocation/training expenses, a $0.3 million increase in travel and entertainment expenses and a $0.1 million increase in depreciation. This was partially offset by a $4.5 million decrease in other intangible assets amortization and a $0.1 million decrease in environmental charges.

SG&A expenses increased 6.5% in the first half of 2021 from the first half of 2020, primarily due to an $7.7 million increase in total compensation and benefits, a $1.7 million increase in software expenses and a $0.6 million increase in recruiting/relocation/training expenses. This was partially offset by a $5.0 million decrease in other intangible assets amortization and a $0.9 million decrease in travel and entertainment expenses.

The decrease in amortization expense for the three and six months ended June 30, 2021 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 amortization expense for our DSP definite-lived other intangible assets of $0.1 million and $4.4 million in the second quarter of 2021 and the second quarter of 2020, respectively, and $0.1 million and $4.8 million in the first half of 2021 and the first half of 2020, respectively.

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

Research and Development Expenses

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Research and development expenses	**$ 7,492**	$ 7,295	**$ 14,664**	$ 15,100
Percentage of net sales	**3.2 %**	3.8 %	**3.2 %**	3.9 %

R&D expenses increased 2.7% in the second quarter of 2021 from the second quarter of 2020 due to increases in depreciation and laboratory expenses, partially offset by decreases in professional services and total compensation benefits.

R&D expenses decreased 2.9% in the first half of 2021 from the first half of 2020 due to decreases in professional services, total compensation benefits and travel and entertainment expenses, partially offset by increases in depreciation and laboratory expenses. The year-to-date decrease in travel and entertainment expenses was primarily driven by the impacts of COVID-19.

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

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Restructuring and impairment charges	**$ 747**	$ —	**$ 2,253**	$ —
Other operating (income) expense, net	**$ 890**	$ (112)	**$ 2,105**	$ (92)

We incurred restructuring charges and related expenses associated with our manufacturing footprint optimization plans involving certain Europe and Asia manufacturing locations. We recognized $0.7 million and $2.3 million of restructuring charges and related expenses pertaining to these restructuring projects in the second quarter of 2021 and the first half of 2021, respectively. For additional information, refer to “Note 15 – Supplemental Financial Information” to the condensed consolidated financial statements in Part I, Item 1 of this Form 10-Q.

With respect to other operating (income) expense, net, we recognized expense of $0.9 million and $2.1 million in the second quarter of 2021 and the first half of 2021, respectively, primarily related to the financial impacts from the fire at our UTIS manufacturing facility in Ansan, South Korea in the first quarter of 2021. This impact consisted of write-offs of fixed assets and inventory destroyed and/or damaged in the fire, professional services, costs incurred due to obligations under our manufacturing facility lease agreement, compensation and benefits for certain of our UTIS employees, partially offset by the recognition of certain anticipated insurance recoveries. There may be other potential costs that cannot be reasonably foreseen or estimated at this time and we continue to evaluate information as it becomes available. For additional information, refer to “Note 15 – Supplemental Financial Information” to the condensed consolidated financial statements in Part I, Item 1 of this Form 10-Q.

Equity Income in Unconsolidated Joint Ventures

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Equity income in unconsolidated joint ventures	**$ 1,930**	$ 1,022	**$ 4,111**	$ 2,240

As of June 30, 2021, 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 increased 88.8% in the second quarter of 2021 from the second quarter of 2020, and increased 83.5% in the first half of 2021 from the first half of 2020. On a quarter-to-date basis and a year-to-date basis, the increase was due to higher net sales, driven by strong sales in the portable electronics and general industrial markets, and improved operational performance for both RIS and RIC, primarily due to higher utilization of production capacity.

Other Income (Expense), Net

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Other income (expense), net	**$ 1,239**	$ 634	**$ 4,207**	$ (152)

Other income (expense), net increased to income of $1.2 million in the second quarter of 2021 from income of $0.6 million in the second quarter of 2020. 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.

Other income (expense), net increased to income of $4.2 million in the first half of 2021 from expense of $0.2 million in the first half of 2020. 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.

Interest Expense, Net

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Interest expense, net	**$ (404)**	$ (1,779)	**$ (1,011)**	$ (2,986)

Interest expense, net, decreased by 77.3% in the second quarter of 2021 from the second quarter of 2020, and decreased by 66.1% in the first half of 2021 from the first half of 2020. The decrease on quarter-to-date and year-to-date bases was primarily due to a lower weighted-average outstanding balance for our borrowings under our revolving credit facility. We expect interest expense, net to decrease on quarter-to-date and year-to-date bases in the third quarter of 2021 from the third quarter of 2020 primarily due to a lower weighted-average outstanding balance for our borrowings under our revolving credit facility.

Income Taxes

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Income tax expense	**$ 9,855**	$ 6,394	**$ 20,372**	$ 9,835
Effective tax rate	**25.6 %**	30.6 %	**25.4 %**	26.1 %

Our effective income tax rate was 25.6% and 30.6% for the three months ended June 30, 2021 and 2020, respectively. The decrease from the second quarter of 2020 was primarily due to the decrease in the current quarter accruals for reserves of unrecognized tax benefits and the pretax mix across jurisdictions with disparate tax rates, partially offset by the second quarter of 2020 beneficial impact of changes in valuation allowance related to R&D credits. Our effective income tax rate was 25.4% and 26.1% for the six months ended June 30, 2021 and 2020, respectively. The decrease from the first half of 2020 was primarily due to the decrease in the current quarter accruals of reserves of unrecognized tax benefits and the pretax mix across jurisdictions with disparate tax rates, partially offset by the first half of 2020 beneficial impact of changes in valuation allowance related to R&D credits.

Operating Segment Net Sales and Operating Income

Advanced Electronics Solutions

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Net sales	**$ 140,426**	$ 116,160	**$ 272,318**	$ 227,434
Operating income	**$ 18,288**	$ 17,070	**$ 33,137**	$ 21,848

AES net sales increased by 20.9% in the second quarter of 2021 compared to the second quarter of 2020. The increase in net sales over the second quarter of 2020 was primarily driven by higher net sales in the ADAS, EV/HEV, aerospace and defense and clean energy markets, partially offset by lower net sales in the wireless infrastructure market. Net sales were favorably impacted by foreign currency fluctuations of $5.4 million, or 4.7%, due to the appreciation in value of the euro and Chinese renminbi relative to the U.S. dollar.

AES net sales increased by 19.7% in the first half of 2021 compared to the first half of 2020. The increase in net sales over the first half of 2020 was primarily driven by higher net sales in the ADAS, EV/HEV, aerospace and defense and clean energy markets, partially offset by lower net sales in the wireless infrastructure market. Net sales were favorably impacted by foreign currency fluctuations of $10.7 million, or 4.7%, due to the appreciation in value of the euro and Chinese renminbi relative to the U.S. dollar.

Operating income increased by 7.1% in the second quarter of 2021 from the second quarter of 2020. The increase in operating income was primarily due to higher volume, favorable absorption of fixed overhead costs and favorable productivity improvements. This was partially offset by higher commodity costs, unfavorable product mix and higher freight, duties and tariffs expenses. The higher freight, duties and tariffs expenses were primarily due to the recognition in the second quarter of 2020 of $3.3 million of Chinese duty tax recoveries. As a percentage of net sales, operating income in the second quarter of 2021 was 13.0%, an approximately 170 basis point decrease as compared to the 14.7% reported in the second quarter of 2020.

Operating income increased by 51.7% in the first half of 2021 from the first half of 2020. The increase in operating income was primarily due to higher volume, favorable absorption of fixed overhead costs and favorable productivity improvements. This was partially offset by higher commodity costs, unfavorable product mix and higher freight, duties and tariffs expenses. The higher freight, duties and tariffs expenses were primarily due to the recognition in the second quarter of 2020 of $3.3 million of Chinese duty tax recoveries. As a percentage of net sales, operating income in the first half of 2021 was 12.2%, an approximately 260 basis point increase as compared to the 9.6% reported in the first half of 2020.

Additionally, we incurred restructuring charges and related expenses associated with our manufacturing footprint optimization plans involving certain Europe and Asia manufacturing locations. We recognized $0.7 million and $2.3 million of restructuring charges and related expenses pertaining to these restructuring projects in the second quarter of 2021 and the first half of 2021, respectively. For additional information, refer to "Note 15 – Supplemental Financial Information" to the condensed consolidated financial statements in Part I, Item 1 of this Form 10-Q.

In the first quarter of 2021, our net sales were largely unaffected by global supply chain disruptions, but we began seeing some greater impacts as we exited the quarter. In the second quarter of 2021, the impact of higher commodity costs tempered our gross margin results. In the third quarter of 2021, we expect these issues to persist, but to a lesser extent due to commercial actions we have begun to take to address these higher costs.

Our AES operating segment 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 operating income by $0.3 million and $1.9 million in the second quarter of 2021 and the second quarter of 2020, respectively, and $0.7 million and $2.3 million in the first half of 2021 and the first half of 2020, respectively.

Elastomeric Material Solutions

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Net sales	**$ 89,331**	$ 71,626	**$ 181,180**	$ 155,152
Operating income	**$ 15,637**	$ 2,995	**$ 35,714**	$ 14,512

EMS net sales increased by 24.7% in the second quarter of 2021 compared to the second quarter of 2020. The increase in net sales over the second quarter of 2020 was primarily driven by higher net sales in the EV/HEV, general industrial, consumer and automotive markets, partially offset by lower net sales in the mass transit market. Net sales were favorably impacted by foreign currency fluctuations of $2.5 million, or 3.5%, due to the appreciation in value of the Chinese renminbi and euro relative to the U.S. dollar.

EMS net sales increased by 16.8% in the first half of 2021 compared to the first half of 2020. The increase in net sales over the first half of 2020 was primarily driven by higher net sales in the EV/HEV, general industrial, consumer and automotive markets, partially offset by lower net sales in the mass transit market. Net sales were favorably impacted by foreign currency fluctuations of $5.2 million, or 3.4%, due to the appreciation in value of the Chinese renminbi and euro relative to the U.S. dollar.

Operating income increased by 422.1% in the second quarter of 2021 from the second quarter of 2020. 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 in 2020, we recognized lower amortization expense in the second quarter of 2021 compared to the second quarter of 2020. The increase in operating income was also due to higher volume, favorable product mix, a lower inventory reserves provision and favorable absorption of fixed overhead costs. This was partially offset by higher freight, duties and tariffs expenses, higher raw material costs and unfavorable productivity performance due to raw material shortages. As a percentage of net sales, operating income in the second quarter of 2021 was 17.5%, an approximately 1,330 basis point increase as compared to the 4.2% reported in the second quarter of 2020.

Operating income increased by 146.1% in the first half of 2021 from the first half of 2020. 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 in 2020, we recognized lower amortization expense in the first half of 2021 compared to the first half of 2020. The increase in operating income was also due to higher volume, favorable product mix, a lower inventory reserves provision and favorable absorption of fixed overhead costs. This was partially offset by higher freight, duties and tariffs expenses, higher raw material costs and unfavorable productivity performance due to raw material shortages. As a percentage of net sales, operating income in the first half of 2021 was 19.7%, an approximately 1,030 basis point increase as compared to the 9.4% reported in the second quarter of 2020.

The decrease in amortization expense for the three and six months ended June 30, 2021 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 amortization expense for our DSP definite-lived other intangible assets of $0.1 million and $4.4 million in the second quarter of 2021 and the second quarter of 2020, respectively, and $0.1 million and $4.8 million in the first half of 2021 and the first half of 2020, respectively.

Additionally, we recognized expense of $1.5 million and $2.8 million primarily related to the financial impacts from the fire at our UTIS manufacturing facility in Ansan, South Korea in 2021 for the second quarter of 2021 and the first half of 2021, respectively. This impact consisted of write-offs of fixed assets and inventory destroyed and/or damaged in the fire, professional services, costs incurred due to obligations under our manufacturing facility lease agreement, compensation and benefits for certain of our UTIS employees, partially offset by the recognition of certain anticipated insurance recoveries. There may be other potential costs that cannot be reasonably foreseen or estimated at this time and we continue to evaluate information as it becomes available. For additional information, refer to “Note 15 – Supplemental Financial Information” to the condensed consolidated financial statements in Part I, Item 1 of this Form 10-Q.

Our UTIS net sales were only slightly impacted by the fire at our UTIS manufacturing facility in Ansan, South Korea as a result of selling our undamaged finished goods inventory during the remainder of the first quarter of 2021. In the second quarter of 2021, we experienced a greater impact to our net sales due to the continued disruption to our UTIS operations. In the third quarter of 2021, we expect a similar impact to our net sales as the second quarter of 2021.

In the first quarter of 2021, our net sales were largely unaffected by global supply chain disruptions, but we began seeing some greater impacts as we exited the quarter. In the second quarter of 2021, the impact of supply constraints and raw material cost increases, primarily due to the weather interruptions along the U.S. Gulf Coast, somewhat tempered our net sales growth and gross margin results. In the third quarter of 2021, we expect these issues to persist, but to a lesser extent as the supply chain constraints begin to subside, in addition to commercial actions we have begun to take to address the higher raw material costs.

Our EMS operating segment 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 operating income by $0.2 million and $1.3 million in the second quarter of 2021 and the second quarter of 2020, respectively, and $0.4 million and $1.5 million in the first half of 2021 and the first half of 2020, respectively.

Other

	Three Months Ended		Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020	**June 30, 2021**	June 30, 2020
Net sales	**$ 5,149**	$ 3,371	**$ 10,673**	$ 7,381
Operating income	**$ 1,820**	$ 1,027	**$ 4,087**	$ 2,207

Net sales in this segment increased by 52.7% in the second quarter of 2021 from the second quarter of 2020. The increase in net sales over the second quarter of 2020 was primarily driven by higher demand in the automotive market. Net sales were favorably impacted by foreign currency fluctuations of $0.2 million, or 6.0%, due to the appreciation in value of the Chinese renminbi relative to the U.S. dollar.

Net sales in this segment increased by 44.6% in the first half of 2021 from the first half of 2020. The increase in net sales over the first half of 2020 was primarily driven by higher demand in the automotive market. Net sales were favorably impacted by foreign currency fluctuations of $0.4 million, or 5.1%, due to the appreciation in value of the Chinese renminbi relative to the U.S. dollar.

Operating income increased 77.2% in the second quarter of 2021 compared to the second quarter of 2020. The increase in operating income was primarily driven by higher volume and favorable absorption of fixed overhead costs, partially offset by unfavorable product mix and higher freight expenses.

Operating income increased 85.2% in the first half of 2021 compared to the first half of 2020. The increase in operating income was primarily driven by higher volume and favorable absorption of fixed overhead costs, partially offset by unfavorable product mix and higher freight expenses.

As a percentage of net sales, operating income in the second quarter of 2021 was 35.3%, a 480 basis point increase as compared to the 30.5% reported in the second quarter of 2020. As a percentage of net sales, operating income in the first half of 2021 was 38.3%, a 840 basis point increase as compared to the 29.9% reported in the first half of 2020.

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)	**June 30, 2021**	December 31, 2020
United States	**$ 39,390**	$ 21,657
Europe	**44,446**	55,449
Asia	**120,109**	114,679
Total cash and cash equivalents	**$ 203,945**	$ 191,785

Approximately $164.6 million of our cash and cash equivalents were held by non-U.S. subsidiaries as of June 30, 2021. We did not make any changes in the six months ended June 30, 2021 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)	**June 30, 2021**	December 31, 2020
Key Financial Position Accounts:		
Cash and cash equivalents	**$ 203,945**	$ 191,785
Accounts receivable, net	**$ 157,471**	$ 134,421
Inventories	**$ 110,761**	$ 102,360
Borrowings under revolving credit facility	**$ —**	$ 25,000

Changes in key financial position accounts and other significant changes in our statements of financial position from December 31, 2020 to June 30, 2021 were as follows:

- Accounts receivable, net increased 17.1% to $157.5 million as of June 30, 2021 from $134.4 million as of December 31, 2020. The increase from year-end was primarily due to higher net sales at the end of the second quarter of 2021 compared to at the end of 2020.
- Inventories increased 8.2% to $110.8 million as of June 30, 2021, from $102.4 million as of December 31, 2020, primarily driven by raw material cost increases as well as the ramp up of raw material purchases and production efforts to meet anticipated demand.
- Borrowings under revolving credit facility were nil as of June 30, 2021 compared to $25.0 million as of December 31, 2020. This was as a result of $25.0 million of discretionary principal payments on our revolving credit facility during the first half of 2021. For additional information regarding this facility 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.

	Six Months Ended	
(Dollars in thousands)	**June 30, 2021**	June 30, 2020
Key Cash Flow Measures:		
Net cash provided by operating activities	**$ 66,206**	$ 54,959
Net cash used in investing activities	**$ (20,701)**	$ (18,150)
Net cash (used in) provided by financing activities	**$ (31,632)**	$ 95,442

As of June 30, 2021, cash and cash equivalents were $203.9 million as compared to $191.8 million as of December 31, 2020, an increase of $12.2 million, or 6.3%. This increase was primarily due to cash flows generated by operations, partially offset by $25.0 million of discretionary principal payments on our revolving credit facility during the first half of 2021, $21.4 million in capital expenditures and $2.7 million in tax payments related to net share settlement of equity awards.

In 2021, we continue to expect capital spending to be in the range of approximately $70.0 million to $80.0 million, which we plan to fund with cash from operations. This range includes the capital expenditures necessary to restore the UTIS operations, a significant portion of which we expect to be reimbursed by insurance proceeds.

Restrictions on Payment of Dividends

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 June 30, 2021.

Contingencies

During the second quarter of 2021, 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 June 30, 2021, 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 second quarter of 2021.

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 second quarter of 2021. 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 June 30, 2021. 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 June 30, 2021.

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 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.
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.
101	The following materials from Rogers Corporation's Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2021 formatted in iXBRL (Inline Extensible Business Reporting Language): (i) Condensed Consolidated Statements of Operations for the three and six months ended June 30, 2021 and June 30, 2020, (ii) Condensed Consolidated Statements of Comprehensive Income (Loss) for the three and six months ended June 30, 2021 and June 30, 2020, (iii) Condensed Consolidated Statements of Financial Position as of June 30, 2021 and December 31, 2020, (iv) Condensed Consolidated Statements of Cash Flows for the six months ended June 30, 2021 and June 30, 2020, (v) Condensed Consolidated Statements of Shareholders' Equity for the three and six months ended June 30, 2021 and June 30, 2020, (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 June 30, 2021, 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/ Ramakumar Mayampurath

Ramakumar Mayampurath

Senior Vice President, Chief Financial Officer and Treasurer

Principal Financial Officer

Dated: July 29, 2021