CTS CORP
Form 10-Q
October 25, 2018
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
FORM 10-Q

(Mark One)
x QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For The Quarterly Period Ended September 30, 2018

OR

o 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: 1-4639

CTS CORPORATION
(Exact name of registrant as specified in its charter)

Indiana	35-0225010
(State or other jurisdiction of incorporation or organization)	(IRS Employer Identification Number)
4925 Indiana Avenue, Lisle, IL	60532
(Address of principal executive offices)	(Zip Code)

Registrant’s telephone number, including area code: 630-577-8800

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 x No ¨

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes x No ¨

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of “large accelerated filer”, “accelerated filer” and “smaller reporting company” in Rule 12b-2 of the Exchange Act.

Large accelerated filer x	Accelerated filer o	Non-accelerated filer o (Do not check if smaller reporting company)	Smaller reporting company o

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

Indicate the number of shares outstanding of each of the issuer’s classes of common stock, as of October 23, 2018: 33,087,043.

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PART I - FINANCIAL INFORMATION

Item 1. Financial Statements

CTS CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF EARNINGS - UNAUDITED

(In thousands of dollars, except per share amounts)

	Three Months Ended		Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Net sales	$118,859	$106,243	$350,410	$312,083
Cost of goods sold	76,777	68,705	228,082	204,527
Gross Margin	42,082	37,538	122,328	107,556
Selling, general and administrative expenses	18,450	15,915	55,441	46,970
Research and development expenses	6,517	6,380	19,500	18,432
Restructuring charges	997	1,435	3,364	2,942
Loss on sale of assets	—	697	2	698
Operating earnings	16,118	13,111	44,021	38,514
Other income (expense):				
Interest expense	(489)	(773)	(1,601)	(2,209)
Interest income	413	363	1,367	914
Other (expense) income, net	(1,687)	1,258	(2,557)	2,889
Total other (expense) income	(1,763)	848	(2,791)	1,594
Earnings before income taxes	14,355	13,959	41,230	40,108
Income tax expense	4,144	4,340	12,262	12,039
Net earnings	$10,211	$9,619	$28,968	$28,069
Earnings per share:				
Basic	$0.31	$0.29	$0.88	$0.85
Diluted	$0.30	$0.29	$0.86	$0.84
Basic weighted – average common shares outstanding:	33,087	32,935	33,038	32,876
Effect of dilutive securities	562	456	542	475
Diluted weighted – average common shares outstanding	33,649	33,391	33,580	33,351
Cash dividends declared per share	$0.04	$0.04	$0.12	$0.12

See notes to unaudited condensed consolidated financial statements.

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CTS CORPORATION AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME UNAUDITED
(In thousands of dollars)

	Three Months Ended		Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Net earnings	$10,211	$9,619	$28,968	$28,069
Other comprehensive income:				
Changes in fair market value of derivatives, net of tax	624	(45)	1,498	563
Changes in unrealized pension cost, net of tax	1,157	936	3,513	2,694
Cumulative translation adjustment, net of tax	1	164	(131)	452
Other comprehensive income	$1,782	$1,055	$4,880	$3,709
Comprehensive income	$11,993	$10,674	$33,848	$31,778

See notes to unaudited condensed consolidated financial statements.

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CTS CORPORATION AND SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS
(In thousands of dollars)

	(Unaudited) September 30, 2018	December 31, 2017
ASSETS		
Current Assets		
Cash and cash equivalents	$ 103,754	$ 113,572
Accounts receivable, net	79,030	70,584
Inventories, net	41,960	36,596
Other current assets	14,254	12,857
Total current assets	238,998	233,609
Property, plant and equipment, net	96,670	88,247
Other Assets		
Prepaid pension asset	61,382	57,050
Goodwill	71,057	71,057
Other intangible assets, net	61,869	66,943
Deferred income taxes	17,369	20,694
Other	2,247	2,096
Total other assets	213,924	217,840
Total Assets	$ 549,592	$ 539,696
LIABILITIES AND SHAREHOLDERS’ EQUITY		
Current Liabilities		
Accounts payable	52,177	49,201
Accrued payroll and benefits	13,183	11,867
Accrued liabilities	40,300	41,344
Total current liabilities	105,660	102,412
Long-term debt	50,000	76,300
Long-term pension obligations	6,918	7,201
Deferred income taxes	4,744	3,802
Other long-term obligations	6,065	6,176
Total Liabilities	173,387	195,891
Commitments and Contingencies (Note 10)		
Shareholders’ Equity		
Common stock	303,641	304,777
Additional contributed capital	44,740	41,084
Retained earnings	445,160	420,160
Accumulated other comprehensive loss	(74,080)	(78,960)
Total shareholders’ equity before treasury stock	719,461	687,061
Treasury stock	(343,256)	(343,256)
Total shareholders’ equity	376,205	343,805
Total Liabilities and Shareholders’ Equity	$ 549,592	$ 539,696

See notes to unaudited condensed consolidated financial statements.

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CTS CORPORATION AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS UNAUDITED
(In thousands of dollars)

	Nine Months Ended	
	September 30, 2018	September 30, 2017
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net earnings	$28,968	$28,069
Adjustments to reconcile net earnings to net cash provided by operating activities:		
Depreciation and amortization	16,349	15,061
Pension and other post-retirement plan expense (income)	318	(1,369)
Stock-based compensation	4,104	2,514
Deferred income taxes	2,794	6,777
Loss on sales of fixed assets	2	698
(Gain) loss on foreign currency hedges, net of cash	(56)	126
Changes in assets and liabilities:		
Accounts receivable	(9,228)	202
Inventories	(6,045)	(4,335)
Other assets	(417)	(1,890)
Accounts payable	4,761	3,234
Accrued payroll and benefits	1,224	(2,137)
Accrued expenses	1,674	(915)
Income taxes payable	(1,510)	226
Other liabilities	(145)	946
Pension and other post-retirement plans	(233)	(240)
Net cash provided by operating activities	42,560	46,967
CASH FLOWS FROM INVESTING ACTIVITIES:		
Capital expenditures	(20,800)	(11,987)
Proceeds from sale of assets	1	485
Payments for acquisitions, net of cash acquired	—	(19,121)
Net cash used in investing activities	(20,799)	(30,623)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Payments of long-term debt	(910,100)	(1,173,000)
Proceeds from borrowings of long-term debt	883,800	1,166,200
Payments of short-term notes payable	—	(1,150)
Dividends paid	(3,962)	(3,942)
Taxes paid on behalf of equity award participants	(1,433)	(1,571)
Net cash used in financing activities	(31,695)	(13,463)
Effect of exchange rate changes on cash and cash equivalents	116	(534)
Net (decrease) increase in cash and cash equivalents	(9,818)	2,347
Cash and cash equivalents at beginning of period	113,572	113,805
Cash and cash equivalents at end of period	$103,754	$116,152
Supplemental cash flow information:		
Cash paid for interest	$1,302	$1,606
Cash paid for income taxes, net	$8,517	$4,918

See notes to unaudited condensed consolidated financial statements.

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NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - UNAUDITED
(in thousands except for share and per share data)
September 30, 2018
NOTE 1—Basis of Presentation

The accompanying condensed consolidated financial statements have been prepared by CTS Corporation (“CTS” "we", "our", "us" or the "Company”), without audit, pursuant to the rules and regulations of the Securities and Exchange Commission. Certain information and footnote disclosures normally included in financial statements prepared in accordance with generally accepted accounting principles have been omitted pursuant to such rules and regulations. The unaudited condensed consolidated financial statements should be read in conjunction with the financial statements, notes thereto, and other information included in the Company’s Annual Report on Form 10 K for the year ended December 31, 2017.

The accompanying unaudited condensed consolidated financial statements reflect, in the opinion of management, all adjustments (consisting of normal recurring items) necessary for a fair statement, in all material respects, of the financial position and results of operations for the periods presented. The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reported period. Actual results could differ materially from those estimates. The results of operations for the interim periods are not necessarily indicative of the results for the entire year.

Changes in Accounting Principles

Beginning in January 2018, CTS adopted the provisions of Accounting Standards Update ("ASU") 2014-09, "Revenue from Contracts with Customers (Topic 606)" under the modified retrospective method, which requires a cumulative effect adjustment to the opening balance of retained earnings on the date of adoption. This approach was applied to contracts not completed as of December 31, 2017. At date of adoption, there was no significant change to our past revenue recognition practices and therefore no adjustment to the opening balance of retained earnings was required.

Beginning in April 2018, CTS elected to adopt the provisions of ASU No. 2017-12 "Derivatives and Hedging (Topic 815): Target Improvements to Accounting for Hedging Activities" under the modified retrospective method, which requires a cumulative effect adjustment to the opening balance of retained earnings. Prior to adoption, the company measured hedge effectiveness for all cash flow hedges quarterly and recognized any ineffectiveness in earnings in the current period. Upon adoption the company elected to review hedge effectiveness qualitatively as described further in Note 12 - Derivative Financial Instruments. At the date of adoption there was no significant hedge ineffectiveness recorded in earnings for hedged assets existing as of January 1, 2018, and therefore no adjustment to the opening balance of retained earnings was required.

Subsequent Events

We have evaluated subsequent events and transactions for potential recognition or disclosure in the financial statements through the date the consolidated financial statements are issued.

NOTE 2 – Revenue Recognition

The core principle of Topic 606 is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The guidance provides a five-step process to achieve that core principle:

- Identify the contract(s) with a customer
- Identify the performance obligations
- Determine the transaction price
- Allocate the transaction price
- Recognize revenue when the performance obligations are met

We recognize revenue when the performance obligations specified in our contracts have been satisfied, after considering the impact of variable consideration and other factors that may affect the transaction price. Our contracts normally contain a single performance obligation that is fulfilled on the date of delivery based on shipping terms stipulated in the contract. We usually expect payment within 30 to 90 days from the shipping date, depending on our terms with the customer. None of our contracts as of September 30, 2018, contained a significant financing component. Differences between the amount of revenue recognized and the amount

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invoiced, collected from, or paid to our customers are recognized as contract assets or liabilities. Contract assets will be reviewed for impairment when events or circumstances indicate that they may not be recoverable.

To the extent the transaction price includes variable consideration, we estimate the amount of variable consideration that should be included in the transaction price utilizing the most likely amount method based on an analysis of historical experience and current facts and circumstances, which requires significant judgment. Variable consideration is included in the transaction price if, in our judgment, it is probable that a significant future reversal of cumulative revenue under the contract will not occur.

Contract Assets and Liabilities

Contract assets and liabilities included in our Condensed Consolidated Balance Sheets are as follows:

	As of September 30, 2018	December 31, 2017
Contract Assets		
Prepaid rebates included in Other current assets	$64	$52
Prepaid rebates included in Other assets	468	465
Total Contract Assets	$532	$517
Contract Liabilities		
Customer discounts and price concessions included in Accrued liabilities	$(2,482)	$(1,133)
Customer rights of return included in Accrued liabilities	(328)	(462)
Total Contract Liabilities	$(2,810)	$(1,595)

During the three and nine months ended September 30, 2018, we recognized a decrease of revenues of $18 and an increase of $68, respectively, that were included in contract liabilities at the beginning of the period.

The increase in contract liabilities as of September 30, 2018 is primarily due to net increases in estimated future discounts and price concessions, offset by net settlements of products sold with rights of return.

Disaggregated Revenue

The following table presents revenues disaggregated by the major markets we serve:

	Three Months Ended		Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Aero & Defense	$5,692	$ 4,503	$16,819	$ 13,835
Industrial	22,675	18,742	65,804	55,068
Medical	10,259	10,502	29,293	24,790
Telecom & IT	5,049	3,925	15,099	14,705
Transportation	75,184	68,571	223,395	203,685
Total	$118,859	$ 106,243	$350,410	$ 312,083

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NOTE 3 – Accounts Receivable

The components of accounts receivable are as follows:

	As of September 30, 2018	December 31, 2017
Accounts receivable, gross	$79,423	$70,941
Less: Allowance for doubtful accounts	(393)	(357)
Accounts receivable, net	$79,030	$70,584

NOTE 4 – Inventories

Inventories consist of the following:

	As of September 30, 2018	December 31, 2017
Finished goods	$11,845	$9,203
Work-in-process	10,835	12,065
Raw materials	24,586	21,150
Less: Inventory reserves	(5,306)	(5,822)
Inventories, net	$41,960	$36,596

NOTE 5 – Property, Plant and Equipment

Property, plant and equipment is comprised of the following:

	As of September 30, 2018	December 31, 2017
Land	$1,136	$1,130
Buildings and improvements	68,883	64,201
Machinery and equipment	232,154	223,650
Less: Accumulated depreciation	(205,503)	(200,734)
Property, plant and equipment, net	$96,670	$88,247
Depreciation expense for the nine months ended September 30, 2018		$11,227
Depreciation expense for the nine months ended September 30, 2017		$10,201

NOTE 6 – Retirement Plans

Pension Plans

Net pension expense (income) for our domestic and foreign plans was as follows:

Three Months Ended		Nine Months Ended	
September 30,	September 30,	September 30,	September 30,

	2018	2017	2018	2017
Net pension expense (income)	$77	$ (492)	$234	$ (1,416)

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The components of net pension expense (income) for our domestic and foreign plans include the following:

	Domestic Pension Plans		Foreign Pension Plans	
	Three Months Ended		Three Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Service cost	$ —	$ —	$ 11	$ 12
Interest cost	1,781	2,068	10	8
Expected return on plan assets (1)	(3,225)	(4,060)	(6)	(5)
Amortization of loss	1,466	1,446	40	39
Expense (income), net	$ 22	$ (546)	$ 55	$ 54

(1) Expected return on plan assets is net of expected investment expenses and certain administrative expenses.

	Domestic Pension Plans		Foreign Pension Plans	
	Nine Months Ended		Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Service cost	$ —	$ —	$ 33	$ 36
Interest cost	5,343	6,204	32	25
Expected return on plan assets (1)	(9,675)	(12,181)	(19)	(15)
Amortization of loss	4,398	4,338	122	116
Other cost due to retirement	—	61	—	—
Expense (income), net	$ 66	$ (1,578)	$ 168	$ 162

(1) Expected return on plan assets is net of expected investment expenses and certain administrative expenses.

Other Post-retirement Benefit Plan

Net post-retirement expense for our other post-retirement plan includes the following components:

	Three Months Ended		Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Service cost	$—	$ —	$1	$ 1
Interest cost	39	41	117	121
Amortization of gain	(11)	(25)	(34)	(75)
Expense, net	$28	$ 16	$84	$ 47

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NOTE 7 – Other Intangible Assets

Intangible assets consist of the following components:

	As of September 30, 2018		
	Gross Carrying Amount	Accumulated Amortization	Net Amount
Customer lists/relationships	$64,323	$ (36,237)	$ 28,086
Patents	10,319	(10,319)	—
Technology and other intangibles	44,460	(12,877)	31,583
In process research and development	2,200	—	2,200
Other intangible assets, net	$121,302	$ (59,433)	$ 61,869
Amortization expense for the three months ended September 30, 2018		$ 1,698	
Amortization expense for the nine months ended September 30, 2018		$ 5,122	

	As of December 31, 2017		
	Gross Carrying Amount	Accumulated Amortization	Net Amount
Customer lists/relationships	$64,323	$ (33,685)	$ 30,638
Patents	10,319	(10,319)	—
Technology and other intangibles	44,460	(10,355)	34,105
In process research and development	2,200	—	2,200
Other intangible assets, net	$121,302	$ (54,359)	$ 66,943
Amortization expense for the three months ended September 30, 2017		$ 1,711	
Amortization expense for the nine months ended September 30, 2017		$ 4,860	

Remaining amortization expense for other intangible assets as of September 30, 2018 is as follows:

	Amortization expense
2018	$ 1,689
2019	6,754
2020	6,624
2021	6,467
2022	6,230
Thereafter	34,105
Total amortization expense	$ 61,869

NOTE 8 – Costs Associated with Exit and Restructuring Activities

Costs associated with exit and restructuring activities are recorded in the Condensed Consolidated Statement of Earnings as a separate component of Operating earnings.

Total restructuring charges, all related to the June 2016 Plan described below, were as follows:

Three Months Ended

	September 30, 2018	September 30, 2017
Restructuring charges	$ 997	$ 1,435

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	Nine Months Ended	
	September 30, 2018	September 30, 2017
Restructuring charges	$3,364	$ 2,942

In June 2016, we announced plans to restructure operations by phasing out production at our Elkhart facility by the end of 2018 and transitioning it into a research and development center supporting our global operations ("June 2016 Plan"). Additional organizational changes were also implemented in various other locations. During the third quarter of 2017, we revised the June 2016 Plan. The amendment added an additional $1,100 in planned costs related to the relocation of our corporate headquarters in Lisle, IL and our plant in Bolingbrook, IL, both of which will be consolidated into a single facility. The total cost of the plan is expected to be approximately $13,400. The total restructuring liability related to severance and other one-time benefit arrangements under the June 2016 Plan was $1,044 at September 30, 2018, and $1,460 at December 31, 2017. Additional costs related to production line movements, equipment charges, and other costs will be expensed as incurred.

The following table displays the planned restructuring charges associated with the June 2016 Plan as well as a summary of the actual costs incurred through September 30, 2018:

June 2016 Plan	Planned Costs	Actual costs incurred through September 30, 2018
Workforce reduction	$3,075	$ 3,114
Building and equipment relocation	9,025	6,538
Other charges	1,300	899
Total restructuring charges	$13,400	$ 10,551

In April 2014, we announced plans to restructure our operations and consolidate our Canadian operations into other existing facilities as part of our overall plan to simplify our business model and rationalize our global footprint (“April 2014 Plan”). These restructuring actions were completed in 2015. The remaining restructuring liability related to the April 2014 Plan was $440 at September 30, 2018, and $453 at December 31, 2017.

The following table displays the restructuring liability activity for all plans for the nine months ended September 30, 2018:

Restructuring liability at January 1, 2018	$1,913
Restructuring charges	3,364
Cost paid	(3,780)
Other activity (1)	(13)
Restructuring liability at September 30, 2018	$1,484

(1) Other activity includes the effects of currency translation and other charges that do not flow through restructuring expense.

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NOTE 9 – Accrued Liabilities

The components of accrued liabilities are as follows:

	As of September 30, 2018	December 31, 2017
Accrued product related costs	$6,280	$ 5,297
Accrued income taxes	3,937	5,475
Accrued property and other taxes	2,062	997
Accrued professional fees	3,441	2,228
Contract liabilities	2,810	1,595
Dividends payable	1,323	1,318
Remediation reserves	13,831	17,067
Other accrued liabilities	6,616	7,367
Total accrued liabilities	$40,300	$ 41,344

NOTE 10 – Contingencies

Certain processes in the manufacture of our current and past products create by-products classified as hazardous waste. We have been notified by the U.S. Environmental Protection Agency, state environmental agencies, and in some cases, groups of potentially responsible parties, that we may be potentially liable for environmental contamination at several sites currently and formerly owned or operated by us. Some sites, such as Asheville, North Carolina and Mountain View, California, are designated National Priorities List sites under the U.S. Environmental Protection Agency's Superfund program. We reserve for probable remediation activities and for claims and proceedings against us with respect to other environmental matters. We record reserves on an undiscounted basis. In the opinion of management, based upon presently available information relating to such matters, adequate provision for probable and estimable costs have been recorded. We do not have any known environmental obligations where a loss is probable or reasonably possible of occurring for which we do not have a reserve, nor do we have any amounts for which we have not reserved because the amount of the loss cannot be reasonably estimated. Due to the inherent nature of environmental obligations, we cannot provide assurance that our ultimate environmental liability will not materially exceed the amount of its current reserve. Our reserve and disclosures will be adjusted accordingly if additional information becomes available in the future.

A roll forward of remediation reserves included in accrued liabilities on the balance sheet is comprised of the following:

	As of September 30, 2018	December 31, 2017
Balance at beginning of period	$17,067	$ 18,176
Remediation expense	1,145	307
Net remediation payments	(4,381)	(1,416)
Balance at end of the period	$13,831	$ 17,067

Unrelated to the environmental claims described above, certain other claims are pending against us with respect to matters arising in the ordinary conduct of our business. Although the ultimate outcome of any potential litigation resulting from these claims cannot be predicted with certainty, and some may be disposed of unfavorably to us, we believe that adequate provision for anticipated costs have been established based upon all presently available information. Except as noted herein, we do not believe we have any pending loss contingencies that are probable or reasonably possible of having a material impact on our consolidated financial position, results of operations, or cash

flows.

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NOTE 11 - Debt

Long-term debt was comprised of the following:

	As of September 30, 2018	December 31, 2017
Total credit facility	$300,000	$300,000
Balance outstanding	$50,000	$76,300
Standby letters of credit	$1,940	$2,065
Amount available	$248,060	$221,635
Weighted-average interest rate	3.10 %	2.30 %
Commitment fee percentage per annum	0.20 %	0.25 %

On August 10, 2015, we entered into a five-year credit agreement ("Revolving Credit Facility") with a group of banks in order to support our financing needs. The Revolving Credit Facility originally provided for a credit line of $200,000. On May 23, 2016, we requested and received a $100,000 increase in the aggregate revolving credit commitments under the existing credit agreement, which increased the credit line from $200,000 to $300,000.

The Revolving Credit Facility includes a swing line sublimit of $15,000 and a letter of credit sublimit of $10,000. Borrowings under the Revolving Credit Facility bear interest, at our option, at the base rate plus the applicable margin for base rate loans or London Interbank Offered Rate ("LIBOR") plus the applicable margin for LIBOR loans. We also pay a quarterly commitment fee on the unused portion of the Revolving Credit Facility. The commitment fee ranges from 0.20% to 0.40% based on the our total leverage ratio.

The Revolving Credit Facility requires, among other things, that we comply with a maximum total leverage ratio and a minimum fixed charge coverage ratio. Failure to comply with these covenants could reduce the borrowing availability under the Revolving Credit Facility. We were in compliance with all debt covenants at September 30, 2018. The Revolving Credit Facility requires that we deliver quarterly financial statements, annual financial statements, auditor certifications, and compliance certificates within a specified number of days after the end of a quarter and year. Additionally, the Revolving Credit Facility contains restrictions limiting our ability to: dispose of assets; incur certain additional debt; repay other debt or amend subordinated debt instruments; create liens on assets; make investments, loans or advances; make acquisitions or engage in mergers or consolidations; engage in certain transactions with our subsidiaries and affiliates; and make stock repurchases and dividend payments. Interest rates on the Revolving Credit Facility fluctuate based upon the LIBOR and the Company's quarterly total leverage ratio.

We have debt issuance costs related to our long-term debt that are being amortized using the straight-line method over the life of the debt. These costs are included in interest expense in our Condensed Consolidated Statement of Earnings. Amortization expense was approximately $46 for both the three months ended September 30, 2018 and September 30, 2017, respectively, and approximately $139 for both the nine months ended September 30, 2018 and September 30, 2017, respectively.

Note 12 - Derivative Financial Instruments

Our earnings and cash flows are subject to fluctuations due to changes in foreign currency exchange rates and interest rates. We selectively use derivative financial instruments including foreign currency forward contracts and interest rate swaps to manage our exposure to these risks.

The use of derivative financial instruments exposes the Company to credit risk, which relates to the risk of nonperformance by a counterparty to the derivative contracts. We manage our credit risk by entering into derivative contracts with only highly rated financial institutions and by using netting agreements.

The effective portion of derivative gains and losses are recorded in accumulated other comprehensive (loss) income until the hedged transaction affects earnings upon settlement, at which time they are reclassified to cost of goods sold or net sales. If it is probable that an anticipated hedged transaction will not occur by the end of the originally specified time period, we reclassify the gains or losses related to that hedge from accumulated other comprehensive (loss) income to other income (expense).

On April 1, 2018, the company adopted the provisions of ASU 2017-12 "Derivatives and Hedging (Topic 815): Target Improvements to Accounting for Hedging Activities". As a result, hedge effectiveness was reviewed qualitatively by verifying that the critical terms of the hedging instrument and the forecasted transaction continue to match, and that there have been no adverse developments

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that have increased the risk that the counterparty will default. No recognition of ineffectiveness was recorded in our Condensed Consolidated Statement of Earnings for the nine months ended September 30, 2018.

Foreign Currency Hedges

In January of 2016, we began using forward contracts to mitigate currency risk related to a portion of our forecasted foreign currency revenues and costs. The currency forward contracts are designed as cash flow hedges and are recorded in the Condensed Consolidated Balance Sheets at fair value.
We continue to monitor the Company's overall currency exposure and may elect to add cash flow hedges in the future. At September 30, 2018, we had a net unrealized gain of $867 in accumulated other comprehensive (loss) income, of which $644 is expected to be reclassified to income within the next 12 months. At September 30, 2017 we had a net unrealized gain of $350 in accumulated other comprehensive (loss) income. The notional amount of foreign currency forward contracts outstanding was $19.2 million at September 30, 2018.

Interest Rate Swaps
We use interest rate swaps to convert the revolving credit facility's variable rate of interest into a fixed rate. In the second quarter of 2012, CTS entered into four separate interest rate swap agreements to fix interest rates on $50,000 of long-term debt for the periods January 2013 to January 2017. In the third quarter of 2012, we entered into four additional interest rate swap agreements to fix interest rates on $25,000 of long-term debt for the periods January 2013 to January 2017. In the third quarter of 2016, we entered into three additional interest rate swap agreements to fix interest rates on $50,000 of long-term debt for the periods August 2017 to August 2020. The difference to be paid or received under the terms of the swap agreements will be recognized as an adjustment to interest expense when settled. These swaps are treated as cash flow hedges and consequently, the changes in fair value were recorded in other comprehensive (loss) income. The estimated net amount of the existing gains that are reported in accumulated other comprehensive (loss) income that are expected to be reclassified into earnings within the next twelve months is approximately $616.

The location and fair values of derivative instruments designated as hedging instruments in the Condensed Consolidated Balance Sheets as of September 30, 2018, are shown in the following table:

	As of September 30, 2018	December 31, 2017
Interest rate swaps reported in Other current assets	$616	$ 278
Interest rate swaps reported in Other assets	$742	$ 693
Foreign currency hedges reported in Other current assets	$864	$ —
Foreign currency hedges reported in Accrued liabilities	$—	$ (742)

The Company has elected to net its foreign currency derivative assets and liabilities in the balance sheet in accordance with ASC 210-20 (Balance Sheet, Offsetting). On a gross basis, there were foreign currency derivative assets of $864 and foreign currency derivative liabilities of $0.

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The effect of derivative instruments on the Condensed Consolidated Statements of Earnings is as follows:

	Three Months Ended		Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Foreign Exchange Contracts:				
Gain (loss) recognized in Net sales	$152	$ (194)	$115	$ (253)
(Loss) gain recognized in Cost of goods sold	(52)	268	88	182
Gain (loss) recognized in Selling, general and administrative expense	3	21	(2)	31
Loss recognized in Other income	—	(2)	(1)	(11)
Interest Rate Swaps:				
Benefit recorded in Interest expense	$114	$ 12	$284	$ 12
Total gain (loss)	$217	$ 105	$484	$ (39)

NOTE 13 – Accumulated Other Comprehensive (Loss) Income

Shareholders' equity includes certain items classified as accumulated other comprehensive (loss) income ("AOCI") in the Condensed Consolidated Balance Sheets, including:

Unrealized gains (losses) on hedges relate to interest rate swaps to convert the revolving credit facility's variable rate of interest into a fixed rate and foreign currency forward contracts used to hedge our exposure to changes in exchange rates affecting certain revenues and costs denominated in foreign currencies. These hedges are designated as cash flow hedges, and we have deferred income statement recognition of gains and losses until the hedged transactions occur, at which time amounts are reclassified into earnings. Further information related to our derivative financial instruments is included in Note 12 - Derivative Financial Instruments and Note 16 – Fair Value Measurements.

Unrealized gains (losses) on pension obligations are deferred from income statement recognition until the gains or losses are realized. Amounts reclassified to income from AOCI are included in net periodic pension income / (expense). Further information related to our pension obligations is included in Note 6 – Retirement Plans.

Cumulative translation adjustments relate to our non-U.S. subsidiary companies that have designated a functional currency other than the U.S. dollar. We are required to translate the subsidiary functional currency financial statements to dollars using a combination of historical, period-end, and average foreign exchange rates. This combination of rates creates the foreign currency translation adjustment component of other comprehensive income.

Changes in exchange rates between the functional currency and the currency in which a transaction is denominated are foreign exchange transaction gains or losses. Transaction losses for the three and nine months ended September 30, 2018 were $1,740 and $2,658, respectively and transaction gains for the three and nine months ended September 30, 2017 were $960 and $2,517, respectively, which have been included in other income (expense) in the Condensed Consolidated Statement of Earnings.

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The components of accumulated other comprehensive (loss) income for the three months ended September 30, 2018, are as follows:

	As of June 30, 2018	Gain (Loss) Recognized in OCI	Gain (Loss) Reclassified from AOCI to Income	As of September 30, 2018
Changes in fair market value of hedges:				
Gross	$1,418	$ 1,023	$ (217)	$2,224
Income tax (expense) benefit	(360)	(231)	49	(542)
Net	1,058	792	(168)	1,682
Changes in unrealized pension cost:				
Gross	(127,055)	—	1,491	(125,564)
Income tax benefit (expense)	52,152	—	(334)	51,818
Net	(74,903)	—	1,157	(73,746)
Cumulative translation adjustment:				
Gross	(2,115)	1	—	(2,114)
Income tax benefit	98	—	—	98
Net	(2,017)	1	—	(2,016)
Total accumulated other comprehensive (loss) income	$(75,862)	$ 793	$ 989	$(74,080)

The components of accumulated other comprehensive (loss) income for the three months ended September 30, 2017, are as follows:

	As of June 30, 2017	Gain (Loss) Recognized in OCI	Gain (Loss) Reclassified from AOCI to Income	As of September 30, 2017
Changes in fair market value of hedges:				
Gross	$1,070	$ 37	$ (108)	$999
Income tax (expense) benefit	(388)	(14)	40	(362)
Net	682	23	(68)	637
Changes in unrealized pension cost:				
Gross	(148,856)	—	1,458	(147,398)
Income tax benefit (expense)	59,668	—	(522)	59,146
Net	(89,188)	—	936	(88,252)
Cumulative translation adjustment:				
Gross	(2,132)	161	—	(1,971)
Income tax benefit	98	3	—	101
Net	(2,034)	164	—	(1,870)
Total accumulated other comprehensive (loss) income	$(90,540)	$ 187	$ 868	$(89,485)

The components of accumulated other comprehensive (loss) income for the nine months ended September 30, 2018, are as follows:

	As of December 31, 2017	Gain (Loss) Recognized in OCI	Gain (Loss) Reclassified from AOCI to Income	As of September 30, 2018
Changes in fair market value of hedges:				
Gross	$ 289	$ 2,420	$ (485)	$ 2,224
Income tax (expense) benefit	(105)	(547)	110	(542)
Net	184	1,873	(375)	1,682
Changes in unrealized pension cost:				
Gross	(130,096)	—	4,532	(125,564)
Income tax benefit (expense)	52,837	—	(1,019)	51,818
Net	(77,259)	—	3,513	(73,746)
Cumulative translation adjustment:				
Gross	(1,985)	(129)	—	(2,114)
Income tax benefit (expense)	100	(2)	—	98
Net	(1,885)	(131)	—	(2,016)
Total accumulated other comprehensive (loss) income	$ (78,960)	$ 1,742	$ 3,138	$ (74,080)

The components of accumulated other comprehensive (loss) income for the nine months ended September 30, 2017, are as follows:

	As of December 31, 2016	Gain (Loss) Recognized in OCI	Gain (Loss) Reclassified from AOCI to Income	As of September 30, 2017
Changes in fair market value of hedges:				
Gross	$ 116	$ 856	$ 27	$ 999
Income tax expense	(42)	(311)	(9)	(362)
Net	74	545	18	637
Changes in unrealized pension cost:				
Gross	(151,618)	—	4,220	(147,398)
Income tax benefit (expense)	60,672	—	(1,526)	59,146
Net	(90,946)	—	2,694	(88,252)
Cumulative translation adjustment:				
Gross	(2,414)	443	—	(1,971)
Income tax benefit	92	9	—	101
Net	(2,322)	452	—	(1,870)
Total accumulated other comprehensive (loss) income	$ (93,194)	$ 997	$ 2,712	$ (89,485)

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NOTE 14 – Shareholders’ Equity

Share count and par value data related to shareholders’ equity are as follows:

	As of September 30, 2018	December 31, 2017
Preferred Stock		
Par value per share	No par value	No par value
Shares authorized	25,000,000	25,000,000
Shares outstanding	—	—
Common Stock		
Par value per share	No par value	No par value
Shares authorized	75,000,000	75,000,000
Shares issued	56,781,303	56,632,488
Shares outstanding	33,087,281	32,938,466
Treasury stock		
Shares held	23,694,022	23,694,022

No common stock repurchases were made during the nine months ended September 30, 2018. Through September 30, 2018, we had purchased an aggregate of $7,446 under a board-authorized share repurchase plan allowing for up to $25,000 in stock repurchases. Approximately $17,554 is available for future purchases.

A roll-forward of common shares outstanding is as follows:

	Nine Months Ended	
	September 30, 2018	September 30, 2017
Balance at the beginning of the year	32,938,466	32,762,494
Repurchases	—	—
Shares issued upon exercise of stock options	—	—
Restricted share issuances	148,815	174,556
Balance at the end of the period	33,087,281	32,937,050

Certain potentially dilutive restricted stock units are excluded from diluted earning per share because they are anti-dilutive. The number of awards that were anti-dilutive at September 30, 2018 and September 30, 2017 were 1,538 and 10,094, respectively.

NOTE 15 - Stock-Based Compensation

At September 30, 2018, we had five active stock-based compensation plans: the Nonemployee Directors’ Stock Retirement Plan (“Directors’ Plan”), the 2004 Omnibus Long-Term Incentive Plan (“2004 Plan”), the 2009 Omnibus Equity and Performance Incentive Plan (“2009 Plan”), the 2014 Performance & Incentive Plan (“2014 Plan”), and the 2018 Equity and Incentive Compensation Plan ("2018 Plan"). Future grants can only be made under the 2018 Plan.

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The following table summarizes the compensation expense included in selling, general and administrative expenses in the Condensed Consolidated Statements of Earnings related to stock-based compensation plans:

	Three Months Ended		Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Service-Based RSUs	$523	$ 415	$1,541	$ 1,430
Performance-Based RSUs	1,258	360	2,411	1,040
Cash-settled RSUs	137	52	152	44
Total	$1,918	$ 827	$4,104	$ 2,514
Income tax benefit	433	311	927	945
Net	$1,485	$ 516	$3,177	$ 1,569

The following table summarizes the unrecognized compensation expense related to non-vested RSUs by type and the weighted-average period in which the expense is to be recognized:

	Unrecognized Compensation Expense at September 30, 2018	Weighted-Average Period
Service-Based RSUs	$ 1,451	1.42
Performance-Based RSUs	3,217	1.68
Total	$ 4,668	1.60

We recognize expense on a straight-line basis over the requisite service period for each separately vesting portion of the award as if the award was, in substance, multiple awards.

The following table summarizes the status of these plans as of September 30, 2018:

	2018 Plan	2014 Plan	2009 Plan	2004 Plan	Directors' Plan
Awards originally available	2,500,000	1,500,000	3,400,000	6,500,000	N/A
Performance-based options outstanding	—	285,000	—	—	—
Maximum potential RSU and cash settled awards outstanding	—	732,642	92,600	35,952	5,522
Maximum potential awards outstanding	—	1,017,642	92,600	35,952	5,522
RSUs and cash settled awards vested and released	—	—	—	—	—
Awards available for grant	2,500,000	—	—	—	—

Stock Options

We have no stock options exercisable or outstanding as of September 30, 2018, other than the performance-based stock options described below.

Performance-Based Stock Options

During 2015 and 2016, the Compensation Committee of the Board of Directors of the Company (the "Committee") granted a total of 350,000 performance-based stock option awards ("Performance-Based Option Awards") for certain employees under the 2014 Plan, of which 285,000 remain outstanding after considering forfeitures. The Performance-Based Option Awards have an exercise price of $18.37, a term of five years, and generally will become exercisable (provided the optionee remains employed by the Company or an affiliate) upon our attainment of at least

$600,000 in revenues during any of our trailing four quarterly periods (as determined by the Committee) during the term. We have not recognized any expense on these Performance-Based Option Awards

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for the nine-month periods ended September 30, 2018 and 2017, since the revenue target was not deemed likely to be attained based on our current forecast.

Service-Based Restricted Stock Units

The following table summarizes the service-based RSU activity as of and for the nine months ended September 30, 2018:

	Units	Weighted Average Grant Date Fair Value
Outstanding at January 1, 2018	399,347	$ 14.60
Granted	74,222	26.31
Vested and released	(130,634)	14.24
Forfeited	(1,938)	20.86
Outstanding at September 30, 2018	340,997	$ 17.25
Releasable at September 30, 2018	194,674	$ 12.82

Performance and Market-Based Restricted Stock Units

The following table summarizes the performance and market-based RSU activity as of and for the nine months ended September 30, 2018:

	Units	Weighted Average Grant Date Fair Value
Outstanding at January 1, 2018	271,305	$ 18.77
Granted	72,043	28.75
Attained by performance	18,600	17.66
Released	(72,456)	18.66
Forfeited	(21,700)	17.66
Outstanding at September 30, 2018	267,792	$ 21.44
Releasable at September 30, 2018	—	$ —

The following table summarizes each grant of performance awards outstanding at September 30, 2018.

Description	Grant Date	Vesting Year	Vesting Dependency	Target Units Outstanding	Maximum Number of Units to be Granted
2016 - 2018 Performance RSUs	February 16, 2016	2018	35% RTSR, 35% sales growth, 30% operating cash flow	92,840	185,680
2017 - 2019 Performance RSUs	February 9, 2017	2019	35% RTSR, 35% sales growth, 30% operating cash flow	71,796	143,592
2017 - 2019 Performance RSUs	February 9, 2017	2018 - 2020	Operating Income	27,113	27,113

2018 - 2020 Performance RSUs	February 8, 2018	2020	35% RTSR, 35% sales growth, 30% operating cash flow	40,223	80,446
2018 - 2020 Performance RSUs	February 16, 2018	2020	35% RTSR, 35% sales growth, 30% operating cash flow	31,820	63,640
Single Crystal Performance RSUs	March 31, 2016	2018	Various	4,000	8,000

Cash-Settled Restricted Stock Units

Cash-Settled RSUs entitle the holder to receive the cash equivalent of one share of common stock for each unit when the unit vests. These RSUs are issued to key employees residing in foreign locations as direct compensation. Generally, these RSUs vest over a three-year period. Cash-Settled RSUs are classified as liabilities and are remeasured at each reporting date until settled. At September 30, 2018 and December 31, 2017 we had 17,248 and 14,082 cash-settled RSUs outstanding, respectively.

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At September 30, 2018 and December 31, 2017, liabilities of $321 and $241, respectively were included in Accrued liabilities on our Condensed Consolidated Balance Sheets.

NOTE 16 — Fair Value Measurements

We use interest rate swaps to convert our Revolving Credit Facility's variable rate of interest into a fixed rate and foreign currency forward contracts to hedge the effect of foreign currency changes on certain revenues and costs denominated in foreign currencies. These derivative financial instruments are measured at fair value on a recurring basis.

The table below summarizes our financial assets that were measured at fair value on a recurring basis at September 30, 2018:

	Asset Carrying Value at September 30, 2018	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Interest rate swaps	$ 1,358	$ —	$ 1,358	$ —
Foreign currency hedges	$ 864	$ —	$ 864	$ —

The table below summarizes the financial assets (liabilities) that were measured at fair value on a recurring basis as of December 31, 2017:

	Asset (Liability) Carrying Value at December 31, 2017	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Interest rate swaps	$ 971	$ —	$ 971	$ —
Foreign currency hedges	$ (742)	$ —	$ (742)	$ —

The fair value of our interest rate swaps and foreign currency hedges were measured using standard valuation models using market-based observable inputs over the contractual terms, including forward yield curves, among others. There is a readily determinable market for these derivative instruments, but that market is not active and therefore they are classified within Level 2 of the fair value hierarchy.

The table below provides a reconciliation of the recurring financial assets (liabilities) for our derivative instruments:

Total gains (losses) for the period:	Interest Rate Swaps	Foreign Currency Hedges
Balance at January 1, 2017	$ 753	$ (601)
Settled in cash	—	(132)
Included in earnings	—	38
Included in other comprehensive income	218	(47)
Balance at December 31, 2017	$ 971	$ (742)
Settled in cash	—	(143)

Included in earnings	(284)	200
Included in other comprehensive income	671	1,549
Balance at September 30, 2018	$ 1,358	$ 864

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Our long-term debt consists of the Revolving Credit Facility which is recorded at its carrying value. There is a readily determinable market for our long-term debt and it is classified within Level 2 of the fair value hierarchy as the market is not deemed to be active. The fair value of long-term debt approximates carrying value and was determined by valuing a similar hypothetical coupon bond and attributing that value to our long-term debt under the Revolving Credit Facility.

NOTE 17 — Income Taxes

The effective tax rates for the three and nine-month periods ended September 30, 2018 and 2017 were:

	Three Months Ended		Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Effective tax rate	28.9 %	31.1 %	29.7 %	30.0 %

Our effective income tax rate was 28.9% and 31.1% in the third quarters of 2018 and 2017, respectively. The decrease in the effective tax rate for the three months ended September 30, 2018, compared with the same period in 2017, was primarily attributed to a reduction in our statutory tax rate as a result of the 2017 Tax and Jobs Act (the "Tax Act"). The tax rate in the third quarter of 2018 was higher than the U.S. statutory federal tax rate primarily due to state taxes, foreign withholding taxes including the impact of the one-time cash distribution from Taiwan, higher non-deductible currency losses, and foreign earnings taxed at higher rates. The tax rate in the third quarter of 2017 was lower than the U.S. statutory federal tax rate primarily due to lower foreign tax rates applicable on foreign earnings.

Our effective income tax rate was 29.7% and 30.0% in the first nine months of 2018 and 2017, respectively. The decrease in the effective tax rate for the nine months ended September 30, 2018, compared with the same period in 2017, was primarily attributed to the previously mentioned statutory tax rate reduction resulting from the Tax Act. The tax rate in the first nine months of 2018 was higher than the U.S. statutory federal tax rate primarily due to state taxes, foreign withholding taxes including the impact of the one-time cash distribution from Taiwan, higher non-deductible currency losses, and foreign earnings taxed at higher rates. The tax rate in the first nine months of 2017 was lower than the U.S. statutory federal tax rate primarily due to tax benefits recorded upon vesting of restricted stock units, a release of valuation allowances recorded against realizable foreign NOLs, and favorable tax rates on foreign earnings, offset by the impact of state taxes, tax expense for withholding taxes on the anticipated distribution of earnings in China, and other various permanent items.

We recognized the income tax effects of the Tax Act in the audited consolidated financial statements included in our 2017 Annual Report on Form 10-K. Staff Accounting Bulletin No. 118 provides Securities and Exchange Commission staff guidance for the application of ASC Topic 740, Income Taxes, which allows for a measurement period of up to one year from the enactment date for companies to complete their accounting for the U.S. tax law changes. As such, our 2017 financial results reflected a provisional amount of $6,267 that was recorded as deferred tax expense related to the revaluation of deferred tax assets and liabilities, and a provisional amount of $11,734 that was recorded as current tax expense related to the transition tax on the mandatory deemed repatriation of foreign earnings. During the three and nine months ended September 30, 2018, we recognized measurement period adjustments that resulted in additional tax expense of $0 and $241, respectively. Any subsequent adjustments to our provisional estimated amounts will be recorded to tax expense in the quarter when the analysis is complete.

For the calendar year beginning in 2018, we are subject to several new provisions of the Tax Act including but not limited to the Global Intangible Low-Taxed Income (GILTI) tax. We have elected to account for any GILTI tax in the period in which it is incurred, and therefore have not provided any deferred tax impacts in our consolidated financial statements. For these computations, we have recorded an estimate in our annual effective tax rate. The company will continue to refine our estimates as additional guidance and information becomes available.

In general, outside of Canada and the U.K., it has been our historical practice to permanently reinvest the earnings of our non-U.S. subsidiaries into those operations. However, as a result of the Tax Act, we can repatriate our cumulative undistributed foreign earnings to the U.S. as needed with minimal U.S. income tax consequences other than the one-time deemed repatriation tax. We will continue to evaluate whether to repatriate all or a portion of the cumulative undistributed foreign earnings based on expansion needs and as circumstances change. We are still evaluating whether to change our indefinite reinvestment assertion in light of the Tax Act and consider that conclusion to be incomplete under guidance issued by SAB 118. If we subsequently change our assertion during the measurement period, we will account for the change in assertion as part of the Tax Act enactment.

Our continuing practice is to recognize interest and/or penalties related to income tax matters as income tax expense. For the three and nine months ended September 30, 2018, and 2017, we recorded interest and penalties of $0 and $181, and $14 and $533, respectively.

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NOTE 18 - Business Combinations

On May 15, 2017, we acquired 100% of the equity interest in Noliac A/S, a privately-held company, for $19.3 million in cash. Noliac A/S is a designer and manufacturer of tape cast and bulk piezoelectric material as well as transducers for use in the telecommunications, industrial, medical, and defense industries. This acquisition enabled us to increase our product base within our ceramics product lines as well as expand our presence in the European market.

The purchase price of $19,121, net of cash acquired of $199, has been allocated to the assets acquired and liabilities assumed on the acquisition date based on their fair values.

	Fair Values at May 15, 2017
Current assets	$2,836
Property, plant and equipment	580
Other assets	395
Goodwill	9,313
Intangible assets	9,142
Fair value of assets acquired	22,266
Less fair value of liabilities acquired	(3,145)
Net cash paid	$19,121

Goodwill recorded in connection with this acquisition represents the value we expect to be created by combining the operations of the acquired business with our existing operations, including the expansion into markets within our existing business, access to new customers, and potential cost savings and synergies. Goodwill related to this acquisition is expected to be deductible for tax purposes.

We incurred $291 in transaction related costs during the nine months ended September 30, 2017. These costs are included in selling, general and administrative costs in our Consolidated Statements of Earnings.

NOTE 19 — Recent Accounting Pronouncements

ASU 2018-14 "Compensation - Retirement Benefits - Defined Benefit Plans - General"

In August 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2018-14, "Compensation - Retirement Benefits - Defined Benefit Plans - General." This ASU modifies the disclosure requirements for defined benefit and other postretirement plans. This ASU eliminates certain disclosures associated with accumulated other comprehensive income, plan assets, related parties, and the effects of interest rate basis point changes on assumed health care costs; while other disclosures have been added to address significant gains and losses related to changes in benefit obligations. This ASU also clarifies disclosure requirements for projected benefit and accumulated benefit obligations. The amendments in this ASU are effective for fiscal years ending after December 15, 2020 and for interim periods therein with early adoption permitted. Adoption on a retrospective basis for all periods presented is required. This ASU will impact our financial statement disclosures but will not have an impact on our consolidated financial position, results of operations, or cash flows.

ASU 2018-13 "Fair Value Measurement (Topic 820): Disclosure Framework-Changes to the Disclosure Requirements for Fair Value Measurement"

In August 2018, the FASB issued ASU No. 2018-13 "Fair Value Measurement (Topic 820): Disclosure Framework-Changes to the Disclosure Requirements for Fair Value Measurement". This ASU modified the

disclosures related to recurring and nonrecurring fair value measurements. Disclosures related to the transfer of assets between Level 1 and Level 2 hierarchies have been eliminated and various additional disclosures related to Level 3 fair value measurements have been added, modified or removed. This ASU is effective for annual periods beginning after December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted upon issuance of the standard for disclosures modified or removed with a delay of adoption of the additional disclosures until their effective date. This ASU is not expected to have an impact on our financial statements.

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ASU 2018-02 "Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income"

In February 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2018-02 "Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income". This ASU allows for a reclassification from accumulated comprehensive income to retained earnings for the stranded tax effects resulting from the Tax Cuts and Jobs Act enacted in December 2017. This ASU is effective for annual periods beginning after December 15, 2018, and interim periods within those fiscal years. Early adoption is permitted in any interim period for which financial statements have not been issued. We are evaluating the impact this ASU may have on our financial statements.

ASU 2017-12 "Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities"

In August 2017, the FASB issued ASU No. 2017-12 "Derivatives and Hedging (Topic 815): Target Improvements to Accounting for Hedging Activities". This ASU is meant to better align an entity's risk management activities and financial reporting for hedging relationships through changes to both the designation and measurement guidance for qualifying hedging relationships and presentation of the effects of the hedging instrument and the hedged item in the financial statements. This ASU also allows an entity to assess hedge effectiveness on a qualitative basis subsequent to the initial quantitative assessment if the facts and circumstances related to the hedging relationship have not changed such that the entity can assert qualitatively that the hedging relationship was and continues to be highly effective. This ASU is effective for annual periods beginning after December 15, 2018, and interim periods within those fiscal years. Early adoption is permitted in any interim period after issuance. Any changes should be applied to all hedging relationships that exist at the date of adoption by applying a cumulative-effect adjustment related to eliminating the separate measurement of ineffectiveness to accumulated other comprehensive income with a corresponding adjustment to the opening balance of retained earnings as of the beginning of the fiscal year of adoption. Presentation and disclosure guidance is to be applied prospectively. We adopted the provisions of ASU 2017-12 as of April 1, 2018, see Note 1, Basis of Presentation.

ASU 2017-07 "Compensation - Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Post-retirement Benefit Cost"

In March 2017, the FASB issued ASU No. 2017-07 "Compensation - Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and net Periodic Post-retirement Benefit Cost". This ASU is meant to improve the presentation of net periodic pension and net periodic post-retirement benefits costs. Currently, pension and post-retirement benefit costs are comprised of several components reflecting the different aspects of an employer's financial arrangements and cost of providing benefits to employees. These components are aggregated for reporting, but prior guidance does not prescribe where the net cost should be presented in the income statement or capitalized in assets. This ASU requires disaggregation of the service cost component from other components of net benefit cost and provides explicit guidance on how to present the service cost and other components in the income statement, allowing only the service cost component of net benefit costs to be eligible for capitalization. These amendments should be applied retrospectively for the presentation of service cost and other components of net periodic pension and net post-retirement benefit cost in the income statement and prospectively for the capitalization of service cost and net periodic pension cost and periodic post-retirement benefit in assets. We adopted this ASU as of January 1, 2018. It did not have a material impact on our financial statements because the service cost component of our pension cost is immaterial to our financial results on a prospective basis.

ASU 2017-04 "Intangibles -Goodwill and Other (Topic 305): Simplifying the Test for Goodwill Impairment"

In January 2017, the FASB issued ASU No. 2017-04 "Intangibles - Goodwill and Other (Topic 305): Simplifying the Test for Goodwill Impairment". This ASU is meant to simplify the subsequent measurement of goodwill for impairment by eliminating the current Step 2 analysis in computing the implied fair value of goodwill. In addition, this ASU requires an entity to consider income tax effects on any tax deductible goodwill on the carrying amount of the reporting unit when measuring an impairment loss, if applicable. Under this ASU, impairment is determined by comparing the reporting unit's fair value to the carrying value. This amendment is effective for fiscal years beginning after December 15, 2019, with early adoption permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017. We do not expect this guidance to have an impact on our financial statements.

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ASU 2017-01 "Business Combinations (Topic 805): Clarifying the Definition of Business"
In January 2017, the FASB issued ASU No. 2017-01 "Business Combinations (Topic 805): Clarifying the Definition of Business". This ASU is meant to clarify the definition of a business to add guidance when determining when an acquisition or disposal should be accounted for as a sale of assets or business. This ASU provides a more robust framework to use in determining when a set of assets or activities should be classified as a business, providing more consistency in accounting for business or asset acquisitions. We adopted this ASU on January 1, 2018 and it will be applied to any business combinations subsequent to that date.
ASU 2016-16 "Income Taxes (Topic 740) Intra-Entity Transfers of Assets Other Than Inventory"
In October 2016, the FASB issued ASU No. 2016-16, "Intra-Entity Transfers of Assets Other Than Inventory". This ASU is meant to improve the accounting for the income tax effect of intra-entity transfers of assets other than inventory. Currently, U.S. GAAP prohibits the recognition of current and deferred income taxes for intra-entity asset transfers until the asset is sold to a third party. This ASU will now require companies to recognize the income tax effect of an intra-entity asset transfer (other than inventory) when the transaction occurs. This ASU is effective for public companies, for fiscal years beginning after December 15, 2019 and interim periods within those annual reporting periods. Early adoption is permitted and is to be applied on a modified retrospective basis through a cumulative-effect adjustment to retained earnings as of the beginning of the period of adoption. This guidance is not expected to have a material impact on our consolidated financial statements.
ASU 2016-15 "Statement of Cash Flows (Topic 230) Classification of Certain Cash Receipts and Cash Payments"
In August 2016, the FASB issued ASU No. 2016-15, "Classification of Certain Cash Receipts and Cash Payments". This ASU reduces the diversity in reporting of eight specific cash flow issues due to accounting guidance that is unclear or does not exist. The eight issues relate to certain debt activities, business combination activities, insurance settlements and other various activities. We adopted this ASU as of January 1, 2018 and it did not have an impact on our financial statements.
ASU 2016-02 "Leases (Topic 842)"
In February 2016, the FASB issued ASU 2016-02, "Leases (Topic 842)". This amendment created a new Topic under the accounting standards codification to account for the provisions of the ASU. This amendment is meant to provide transparency and to improve comparability between entities. The ASU requires companies to record an asset and liability on the balance sheet for leases that were formerly designated as operating leases as well as leases designated as financing leases. The provisions of the ASU predominately change the recognition of leases for lessees; the provisions do not substantially change the accounting for lessors. This ASU will supersede the provisions of Topic 840 Leases.
The liability recorded for a lease is meant to recognize the lease payments and the asset as a right to use the underlying asset for the lease, including optional periods if it is reasonably certain the option will be exercised. Recording of the liability should be based on the present value of the lease payments. If a lease term is less than twelve months, a company is allowed to elect not to record the asset and liability. Expense related to these leases are to be amortized on a straight-line basis over the expected term of the lease.
Additionally, the provisions of this ASU provide additional guidance on separating lease terms from maintenance and other type of provisions that provide a good or service, accounting for sale-leaseback provisions, and leveraged leases. Reporting in the cash flow statement remains virtually unchanged. Additional qualitative and quantitative disclosures are required.
In July 2018, the FASB issued ASU 2018-11 "Leases (Topic 842) Targeted Improvements. This amendment allows companies to elect to record a cumulative effect adjustment to beginning retained earnings on the date of adoption. We expect to elect the provisions of ASU 2018-11 as of the date of adoption on January 1, 2019.
The provisions of this ASU are effective for fiscal years beginning after December 15, 2018 and early adoption is permitted. We have begun the process of reviewing existing agreements and are evaluating the impact of this ASU on our financial statements. We expect certain operating leases to be recognized as assets and liabilities as a result of adopting the standard.

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Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A")
(in thousands, except percentages and per share amounts)

The following discussion should be read in conjunction with our unaudited Condensed Consolidated Financial Statements and notes included under Item 1, as well as our Consolidated Financial Statements and notes and related Management's Discussion and Analysis of Financial Condition and Results of Operations included in our Annual Report on Form 10-K for the year ended December 31, 2017.

Overview

CTS Corporation ("CTS", "we", "our" or "us") is a leading designer and manufacturer of products that Sense, Connect and Move. We manufacture sensors, actuators, and electronic components in North America, Europe, and Asia, and provide engineered products to customers in the aerospace/defense, industrial, medical, telecommunications/IT, and transportation markets.

Results of Operations: Third Quarter 2018 versus Third Quarter 2017

The following table highlights changes in significant components of the Unaudited Condensed Consolidated Statements of Earnings for the quarters ended September 30, 2018, and September 30, 2017:

	Three Months Ended			Percent of	Percent of
	September 30, 2018	September 30, 2017	Percent Change	Net Sales – 2018	Net Sales – 2017
Net sales	$118,859	$106,243	11.9	100.0	100.0
Cost of goods sold	76,777	68,705	11.8	64.6	64.7
Gross margin	42,082	37,538	12.1	35.4	35.3
Selling, general and administrative expenses	18,450	15,915	15.9	15.5	15.0
Research and development expenses	6,517	6,380	2.1	5.5	6.0
Restructuring charges	997	1,435	(30.5)	0.8	1.4
Loss on sale of assets	—	697	(100.0)	—	0.7
Total operating expenses	25,964	24,427	6.2	21.8	23.0
Operating earnings	16,118	13,111	22.9	13.6	12.3
Total other (expense) income	(1,763)	848	(307.9)	(1.5)	0.8
Earnings before income taxes	14,355	13,959	2.8	12.1	13.1
Income tax expense	4,144	4,340	(4.5)	3.5	4.1
Net earnings	$10,211	$9,619	6.2	8.6	9.0
Earnings per share:					
Diluted net earnings per share	$0.30	$0.29			

Sales were $118,859 in the third quarter of 2018, an increase of $12,616 or 11.9% from the third quarter of 2017. Sales to transportation markets increased $6,613 or 9.6%. Other sales increased $6,003 or 15.9%. Changes in foreign exchange rates decreased sales by $375 year-over-year due to the U.S. Dollar appreciating compared to the Chinese Renminbi and Euro and relating mostly to sales of products to the transportation end market.

Gross margin as a percent of sales was 35.4% in the third quarter of 2018 compared to 35.3% in the third quarter of 2017. The improvement from savings related to product line transfers was partially offset by tariff and material cost increases.

Selling, general and administrative ("SG&A") expenses were $18,450 or 15.5% of sales in the third quarter of 2018 versus $15,915 or 15.0% of sales in the third quarter of 2017. The 2018 SG&A costs include higher stock-based compensation and non-cash pension expense versus income in 2017.

Research and development expenses were $6,517 or 5.5% of sales in the third quarter of 2018 compared to $6,380 or 6.0% of sales in the comparable quarter of 2017. Research and development expenses are focused on expanded

applications of existing products and new product development as well as current product and process enhancements.

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Restructuring charges were $997 or 0.8% of sales in the third quarter of 2018. The charges were mainly for building and equipment relocation, severance, and travel costs related to the restructuring of certain operations as part of the 2016 Restructuring Plan. Restructuring charges were $1,435 or 1.4% of sales in the third quarter of 2017.
The loss on sale of assets in the third quarter of 2017 was driven by the sale of vacant land adjacent to our Hopkinton, Massachusetts facility in September 2017.
Operating earnings were $16,118 or 13.6% of sales in the third quarter of 2018 compared to operating earnings of $13,111 or 12.3% of sales in the comparable quarter of 2017.
Other income and expense items are summarized in the following table:

	Three Months Ended	
	September 30, 2018	September 30, 2017
Interest expense	$(489)	$ (773)
Interest income	413	363
Other (expense) income, net	(1,687)	1,258
Total other (expense) income	$(1,763)	$ 848

Interest expense decreased mainly as a result of the reduction in debt year-over-year. Interest income increased due to higher interest rates. Other expense in the third quarter of 2018 was principally driven by foreign currency translation losses, mainly due to the appreciation of the U.S. Dollar compared to the Chinese Renminbi during the quarter.

	Three Months Ended	
	September 30, 2018	September 30, 2017
Effective tax rate	28.9%	31.1 %

Our effective income tax rate was 28.9% and 31.1% in the third quarters of 2018 and 2017, respectively. The decrease in the effective tax rate for the three months ended September 30, 2018, compared with the same period in 2017, was primarily attributed to a reduction in our statutory tax rate as a result of the 2017 Tax and Jobs Act (the "Tax Act"), which was partially offset by tax expense related to the one-time cash distribution from Taiwan and higher non-deductible currency losses.

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Results of Operations: Nine Months Ended September 30, 2018 versus Nine Months Ended September 30, 2017

The following table highlights changes in significant components of the Unaudited Condensed Consolidated Statements of Earnings for the nine months ended September 30, 2018, and September 30, 2017:

	Nine Months Ended			Percent of	Percent of
	September 30, 2018	September 30, 2017	Percent Change	Net Sales – 2018	Net Sales – 2017
Net sales	$350,410	$312,083	12.3	100.0	100.0
Cost of goods sold	228,082	204,527	11.5	65.1	65.5
Gross margin	122,328	107,556	13.8	34.9	34.5
Selling, general and administrative expenses	55,441	46,970	18.0	15.7	15.1
Research and development expenses	19,500	18,432	5.8	5.6	5.9
Restructuring charges	3,364	2,942	14.3	1.0	0.9
Loss on sale of assets	2	698	(99.7)	—	0.2
Total operating expenses	78,307	69,042	13.4	22.3	22.1
Operating earnings	44,021	38,514	14.3	12.6	12.4
Total other (expense) income	(2,791)	1,594	(275.1)	(0.8)	0.5
Earnings before income taxes	41,230	40,108	2.8	11.8	12.9
Income tax expense	12,262	12,039	1.9	3.5	3.9
Net earnings	$28,968	$28,069	3.2	8.3	9.0
Earnings per share:					
Diluted net earnings per share	$0.86	$0.84			

Sales were $350,410 in the nine months ended September 30, 2018, an increase of $38,327 or 12.3% from the nine months ended September 30, 2017. Sales to transportation markets increased $19,710 or 9.7%. Other sales increased $18,617 or 17.2%. The Noliac acquisition, which was completed in May 2017, added $6,952 in sales in the nine months of 2018 and $4,097 in the first nine months of 2017. Changes in foreign exchange rates increased sales by $4,118 year-over-year due to the U.S. Dollar depreciating compared to the Euro and Chinese Renminbi and relating mostly to sales of transportation products.

Gross margin as a percent of sales was 34.9% in the nine months of 2018 compared to 34.5% in the first nine months of 2017. Major drivers for the improvement include savings related to product line transfers and favorable foreign exchange impact, partially offset by tariff and material cost increases. The first nine months of 2017 also included costs related to certain production rework issues resolved in the first quarter of 2017.

Selling, general and administrative expenses were $55,441 or 15.7% of sales in the nine months ended September 30, 2018 versus $46,970 or 15.1% of sales in the comparable year-to-date period in 2017. The 2018 SG&A costs include a $950 environmental charge, $1,069 for tax projects, amortization of intangibles and other operating costs associated with our Noliac acquisition, higher stock-based compensation, and non-cash pension expense versus income in 2017. The environmental charge relates to soil remediation at one of our older facilities in Asia.

Research and development expenses were $19,500 or 5.6% of sales in the nine months ended September 30, 2018 compared to $18,432 or 5.9% of sales in the comparable prior year period. Research and development expenses are focused on expanded applications of existing products and new product development as well as current product and process enhancements.

Restructuring charges were $3,364 or 1.0% of sales in the first nine months of 2018. The charges were mainly for building and equipment relocation, severance, and travel costs related to the restructuring of certain operations as part of the 2016 Restructuring Plan. Restructuring charges were $2,942 or 0.9% of sales in the first nine months of 2017.

The loss on sale of assets in 2017 was driven by the sale of vacant land adjacent to our Hopkinton, Massachusetts facility.

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Other income and expense items are summarized in the following table:

	Nine Months Ended	
	September 30, 2018	September 30, 2017
Interest expense	$(1,601)	$(2,209)
Interest income	1,367	914
Other (expense) income, net	(2,557)	2,889
Total other (expense) income	$(2,791)	$1,594

Interest expense decreased in the first nine months of 2018 versus the same period of 2017 mainly as a result of the reduction in debt year-over-year. Interest income increased due to higher interest rates. Other expense in the first nine months of 2018 was principally driven by foreign currency translation losses, mainly due to the appreciation of the U.S. Dollar compared to the Chinese Renminbi during the first nine months of the year.

	Nine Months Ended	
	September 30, 2018	September 30, 2017
Effective tax rate	29.7%	30.0%

Our effective income tax rate was 29.7% and 30.0% in the first nine months of 2018 and 2017, respectively. The decrease in the effective tax rate for the nine months ended September 30, 2018, compared with the same period in 2017, was primarily attributed to the previously mentioned statutory tax rate reduction resulting from the Tax Act, which was partially offset by tax expense related to the one-time cash distribution from Taiwan and higher non-deductible currency losses.

Liquidity and Capital Resources

Cash and cash equivalents were $103,754 at September 30, 2018, and $113,572 at December 31, 2017, of which $87,557 and $112,531, respectively, were held outside the United States. The decrease in cash and cash equivalents of $9,818 was primarily driven by capital expenditures of $20,800 and net long-term debt payments of $26,300, which were partially offset by cash generated from operating activities of $42,560. Total long-term debt was $50,000 as of September 30, 2018 and $76,300 as of December 31, 2017. Total debt as a percentage of total capitalization, defined as long-term debt as a percentage of total debt and shareholders' equity, was 11.7% at September 30, 2018, compared to 18.2% at December 31, 2017.

Working capital increased by $2,141 during the nine months ended September 30, 2018, primarily due to the increases in accounts receivable and inventory, which were partially offset by the decrease in cash and increase in accounts payable.

Cash Flows from Operating Activities

Net cash provided by operating activities was $42,560 during the first nine months of 2018. Components of net cash provided by operating activities included net earnings of $28,968, depreciation and amortization expense of $16,349, other net non-cash items of $7,162, and a net cash outflow from changes in assets and liabilities of $9,919.

Cash Flows from Investing Activities

Net cash used in investing activities for the first nine months of 2018 was $20,799, driven almost entirely by capital expenditures.

Cash Flows from Financing Activities

Net cash used in financing activities for the first nine months of 2018 was $31,695. These cash outflows were the result of net long-term debt payments of $26,300, dividend payments of $3,962, and taxes paid on behalf of equity award participants in the amount of $1,433.

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Capital Resources

Long term debt was comprised of the following:

	As of September 30, 2018	December 31, 2017
Total credit facility	$300,000	$300,000
Balance outstanding	$50,000	$76,300
Standby letters of credit	$1,940	$2,065
Amount available	$248,060	$221,635
Weighted-average interest rate	3.10 %	2.30 %
Commitment fee percentage per annum	0.20 %	0.25 %

On August 10, 2015, we entered into a five-year credit agreement (“Revolving Credit Facility”) with a group of banks in order to support our financing needs. The Revolving Credit Facility originally provided for a credit line of $200,000. On May 23, 2016, we requested and received a $100,000 increase in the aggregate revolving credit commitments under the existing credit agreement, which increased the credit line from $200,000 to $300,000.

The Revolving Credit Facility requires, among other things, that CTS comply with a maximum total leverage ratio and a minimum fixed charge coverage ratio. Failure to comply with these covenants could reduce the borrowing availability under the Revolving Credit Facility. We were in compliance with all debt covenants at September 30, 2018.

We use interest rate swaps to convert the Revolving Credit Facility’s variable rate of interest into a fixed rate. In the second quarter of 2012, we entered into four separate interest rate swap agreements to fix interest rates on $50,000 of long-term debt for the periods January 2013 to January 2017. In the third quarter of 2012, we entered into four additional interest rate swap agreements to fix interest rates on $25,000 of long-term debt for the periods January 2013 to January 2017. In the third quarter of 2016, we entered into three additional forward-starting interest rate swap agreements to fix interest rates on $50,000 of long-term debt for the periods August 2017 to August 2020. The difference to be paid or received under the terms of the swap agreements will be recognized as an adjustment to interest expense when settled.

In general, other than in Canada and the U.K., it has been our historical practice to permanently reinvest the earnings of our non-U.S. subsidiaries in those operations. However, as a result of the Tax Cuts and Jobs Act (the "Act"), we can repatriate our cumulative undistributed foreign earnings to the U.S. when needed with minimal U.S. income tax consequences other than the one-time deemed repatriation charge. We will continue to evaluate whether to repatriate all or a portion of the cumulative undistributed foreign earnings based on our business needs. We are still evaluating whether to change our indefinite reinvestment assertion in light of the Act and consider that conclusion to be incomplete under guidance issued by SAB 118. If we subsequently change our assertion during the measurement period, we will account for the change in assertion as a change in estimate related to the enactment of the Act.

We have historically funded our capital and operating needs primarily through cash flows from operating activities, supported by available credit under our Revolving Credit Facility. We believe that cash flows from operating activities and available borrowings under our Revolving Credit Facility will be adequate to fund our working capital needs, capital expenditures, and debt service requirements for at least the next twelve months. However, we may choose to pursue additional equity and debt financing to provide additional liquidity or to fund acquisitions.

Critical Accounting Policies and Estimates

Management prepared the consolidated financial statements of CTS under accounting principles generally accepted in the United States of America. These principles require the use of estimates, judgments, and assumptions. We believe that the estimates, judgments, and assumptions we used are reasonable, based upon the information available.

Our estimates and assumptions affect the reported amounts in our financial statements. The following accounting policies comprise those that we believe are the most critical in understanding and evaluating our reported financial results.

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Revenue Recognition

We recognize revenue upon the transfer of promised goods to our customers in an amount that reflects the consideration to which we expect to be entitled by applying the following five-step process specified in Accounting Standard Codification ("ASC") Topic 606:

- Identify the contract(s) with a customer
- Identify the performance obligations
- Determine the transaction price
- Allocate the transaction price
- Recognize revenue when the performance obligations are met

Our contracts normally contain a single performance obligation that is fulfilled on the date of delivery based on shipping terms stipulated in the contract. We recognize revenue when (or as) the performance obligation has been satisfied after considering the impact of variable consideration and other factors that may affect the transaction price. Differences between the amount of revenue recognized and the amount invoiced, collected from, or paid to our customers are recognized as contract assets or liabilities. Contract assets will be reviewed for impairment when events or circumstances indicate that they may not be recoverable.

Product Warranties

Provisions for estimated warranty expenses related to our automotive products are made at the time products are sold. These estimates are established using a quoted industry rate. We adjust our warranty reserve for any known or anticipated warranty claims as new information becomes available. We evaluate our warranty obligations at least quarterly and adjust our accruals if it is probable that future costs will be different than our current reserve.

Accounts Receivable

We have standardized credit granting and review policies and procedures for all customer accounts, including:

- Credit reviews of all new customer accounts,
- Ongoing credit evaluations of current customers,
- Credit limits and payment terms based on available credit information,
- Adjustments to credit limits based upon payment history and the customer's current credit worthiness,
- An active collection effort by regional credit functions, reporting directly to the corporate financial officers, and;
- Limited credit insurance on the majority of our international receivables.

We reserve for estimated credit losses based on historical experience and specific customer collection issues. Over the last three years, accounts receivable reserves have been approximately 0.2% to 0.7% of total accounts receivable. We believe our reserve level is appropriate considering the quality of the portfolio. While credit losses have historically been within expectations and the reserves established, we cannot guarantee that our credit loss experience will continue to be consistent with historical experience.

Inventories

We value our inventories at the lower of the actual cost to purchase or manufacture using the first-in, first-out ("FIFO") method, or net realizable value. We review inventory quantities on hand and record a provision for excess and obsolete inventory based on forecasts of product demand and production requirements.

Over the last three years, our reserves for excess and obsolete inventories have ranged from 11.2% to 20.1% of gross inventory. We believe our reserve level is appropriate considering the quantities and quality of the inventories.

Retirement Plans

Actuarial assumptions are used in determining pension income and expense and our pension benefit obligation. We utilize actuaries from consulting companies in each applicable country to develop our discount rates that match high-quality bonds currently available and expected to be available during the period to maturity of the pension benefit in order to provide the necessary future cash flows to pay the accumulated benefits when due. After considering the recommendations of our actuaries, we have assumed a discount rate, expected rate of return on plan assets and a rate of compensation increase in determining our annual pension income and expense and the projected benefit obligation. During the fourth quarter of each year, we review our actuarial assumptions in light of current

economic factors to determine if the assumptions need to be adjusted. Changes in the actuarial assumptions could have a material effect on our results of operations.

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Valuation of Goodwill

Goodwill of a reporting unit is tested for impairment annually, or more frequently, if an event occurs or circumstances change that would more-likely-than-not reduce the fair value of a reporting unit below its carrying amount. Examples of such events or circumstances include, but are not limited to, the following:

- Significant decline in market capitalization relative to net book value,
- Significant adverse change in legal factors or in the business climate,
- Adverse action or assessment by a regulator,
- Unanticipated competition,
- More-likely-than-not expectation that a reporting unit or a significant portion of a reporting unit will be sold or otherwise disposed of,
- Testing for recoverability of a significant asset group within a reporting unit, and
- Allocation of a portion of goodwill to a business to be disposed.

If we believe that one or more of the above indicators of impairment have occurred, we perform an impairment test. The test involves comparing the fair values of our reporting units with their carrying values. We recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value, but only to the extent of goodwill recognized.

We generally determine the fair value of our reporting units using two valuation methods: "Income Approach — Discounted Cash Flow Method" and "Market Approach — Guideline Public Company Method". The approach defined below is based upon our last impairment test conducted as of October 1, 2017.

Under the "Income Approach — Discounted Cash Flow Method", the key assumptions include sales, cost of sales, and operating expense projections through the year 2021. These assumptions were determined by management utilizing our internal operating plan and assuming growth rates for revenues, operating expenses, and gross margin assumptions. The fourth key assumption under this approach is the discount rate, which is determined by looking at current risk-free rates, current market interest rates and the evaluation of risk premium relevant to the business segment. If any of our assumptions were to change or were incorrect, our fair value calculation may change, which could result in impairment.

Under the "Market Approach — Guideline Public Company Method", we identified eight publicly traded companies which we believe have significant relevant similarities to CTS. For these eight companies, we calculated a range of EBITDA multiples derived from the ratio of enterprise value to EBITDA and compared these multiples to the corresponding multiples for each of our reporting units. Similar to the income approach discussed above, sales, cost of sales, operating expenses and growth rates were key assumptions utilized in developing projected EBITDA levels for each of our reporting units. The market prices of CTS and the other guideline company's shares are also key assumptions as they are used to calculate enterprise value. The Market approach is based upon historical and current economic conditions, which might not reflect the long-term prospects or opportunities for our reporting units being evaluated.

The results of these two methods are weighted based upon management's determination.

If the carrying amount of a reporting unit exceeds the reporting unit's fair value, we perform the second step of the goodwill impairment test to determine the amount of impairment loss, if any. This involves comparing the implied fair value of the affected reporting unit's goodwill with the carrying value of that goodwill.

There have not been any significant changes to our impairment testing methodology other than updates to the assumptions to reflect the current market environment. Based upon our latest assessment, we determined that our goodwill was not impaired as of October 1, 2017. We will monitor future results and will perform a test if indicators trigger an impairment review.

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Valuation of Other Intangible and Long-Lived Assets

We evaluate the impairment of identifiable intangibles and other long-lived assets whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors considered that may trigger an impairment review consist of, but are not limited to, the following:

- Significant decline in market capitalization relative to net book value,
- Significant underperformance relative to expected historical or projected future operating results,
- Significant changes in the manner of use of the acquired assets or the strategy for the overall business,
- Significant negative industry or economic trends.

If we believe that one or more indicators of impairment have occurred, we perform a recoverability test by comparing the carrying amount of an asset or asset group to the sum of the undiscounted cash flows expected to result from the use and the eventual disposition of the asset or asset group. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceeds the fair value. No indicators of impairment were identified as of September 30, 2018.

Income Taxes

Our income tax expense, deferred tax assets and liabilities, and liabilities for unrecognized tax benefits reflect management's best estimate of current and future taxes to be paid. We are subject to income taxes in the United States and numerous foreign jurisdictions. Significant judgments and estimates are required in the determination of the consolidated income tax expense.

Deferred income taxes arise from temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements, which will result in taxable or deductible amounts in the future. In evaluating our ability to recover our deferred tax assets in the jurisdiction from which they arise, we consider all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax-planning strategies, and results of recent operations. The assumptions about future taxable income require the use of significant judgment and are consistent with the plans and estimates we are using to manage the underlying businesses.

The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax laws and regulations in a multitude of jurisdictions across our global operations. ASC 740 states that a tax benefit from an uncertain tax position may be recognized when it is more-likely-than-not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, on the basis of its technical merits. We record unrecognized tax benefits as liabilities in accordance with ASC 740 and adjust these liabilities when our judgment changes as a result of the evaluation of new information not previously available. Because of the complexity of some of these uncertainties, the ultimate resolution may result in a payment that is materially different from our current estimate of the unrecognized tax liabilities. These differences will be reflected as increases or decreases to income tax expense in the period in which new information is available.

Our practice is to recognize interest and penalties related to income tax matters as part of income tax expense.

We earn a significant amount of our operating income outside of the U.S., which is generally deemed to be permanently reinvested in foreign jurisdictions except in Canada and the U.K. In 2015, as a result of changes in the business, the foreign earnings of these two subsidiaries were no longer permanently reinvested. Therefore, a provision for the expected taxes on repatriation of those earnings was recorded. However, as a result of the Tax Cuts and Jobs Act, we can repatriate our cumulative undistributed foreign earnings back to the U.S. when needed with minimal U.S. income tax consequences other than the one-time deemed repatriation charge. We will continue to evaluate whether to repatriate all or a portion of the cumulative undistributed foreign earnings based on expansion needs and as circumstances change. We are still evaluating whether to change our indefinite reinvestment assertion in light of the Act and consider that conclusion to be incomplete under guidance issued by SAB 118. If we subsequently change our assertion during the measurement period, we will account for the change in assertion as a change in estimate related to enactment of the Act.

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Significant Customers

Our net sales to customers representing at least 10% of total net sales were as follows:

	Three Months Ended		Nine Months Ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Cummins Inc.	16.0 %	14.6 %	14.7 %	13.6 %
Honda Motor Co.	10.8 %	11.7 %	10.4 %	10.8 %
Toyota Motor Corporation	9.9 %	9.9 %	10.6 %	10.2 %

Forward Looking Statements

This document contains statements that are, or may be deemed to be, forward looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These forward looking statements include, but are not limited to, any financial or other guidance, statements that reflect our current expectations concerning future results and events, and any other statements that are not based solely on historical fact. Forward looking statements are based on management’s expectations, certain assumptions and currently available information. Readers are cautioned not to place undue reliance on these forward looking statements, which speak only as of the date hereof and are based on various assumptions as to future events, the occurrence of which necessarily are subject to uncertainties. These forward looking statements are made subject to certain risks, uncertainties and other factors, which could cause our actual results, performance or achievements to differ materially from those presented in the forward looking statements. Examples of factors that may affect future operating results and financial condition include, but are not limited to: changes in the economy generally and in respect to the business in which CTS operates; unanticipated issues in integrating acquisitions; the results of actions to reposition our business; rapid technological change; general market conditions in the automotive, communications, and computer industries, as well as conditions in the industrial, defense and aerospace, and medical markets; reliance on key customers; unanticipated natural disasters or other events; the ability to protect our intellectual property; pricing pressures and demand for our products; unanticipated developments that could occur with respect to contingencies such as litigation and environmental matters as well as any product liability claims; and risks associated with our international operations, including trade and tariff barriers, exchange rates and political and geopolitical risks. Many of these and other risks and uncertainties are discussed in further detail in Item 1A. of CTS' Annual Report on Form 10 K for the fiscal year ended December 31, 2017. We undertake no obligation to publicly update our forward looking statements to reflect new information or events or circumstances that arise after the date hereof, including market or industry changes.

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Item 3. Quantitative and Qualitative Disclosures About Market Risk

There have been no material changes in our market risk since December 31, 2017.

Item 4. Controls and Procedures

Pursuant to Rule 13a-15(e) of the Securities and Exchange Act of 1934, management, under the direction of our Chief Executive Officer and Chief Financial Officer, evaluated our disclosure controls and procedures. Based on such evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of September 30, 2018.

Changes in Internal Control Over Financial Reporting

Beginning January 1, 2018, we adopted ASC 606 "Revenue from Contracts with Customers". It is expected to have an immaterial impact on our ongoing net income; however, we implemented changes to our processes related to revenue recognition and related internal controls. These changes included the development of new policies related to the five-step model, training, ongoing contract review requirements, and gathering of information to comply with disclosure requirements.

PART II - OTHER INFORMATION

Not applicable

Item 1. Legal Proceedings

From time to time we are involved in litigation with respect to matters arising from the ordinary conduct of our business, and currently certain claims are pending against us. In the opinion of management, based upon presently available information, either adequate provision for anticipated costs have been accrued or the ultimate anticipated costs will not materially affect our consolidated financial position, results of operations, or cash flows.

Item 1A. Risk Factors

There have been no significant changes to our risk factors since December 31, 2017.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

On April 27, 2015, we announced that our Board of Directors authorized an expansion to its repurchase program by authorizing the purchase of an additional $25 million dollars of its common stock in the open market. This authorization has no expiration. As shown in the following table, there were no stock repurchases during the quarter ended September 30, 2018.

	(a) Total Number of Shares Purchased	(b) Average Price Paid per Share	(c) Total Number of Shares Purchased as Part of Plans or Program	(d) Maximum Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs(2)
Balance at December 31, 2017				$ 17,554
January 1, 2018 - June 30, 2018	—	—	—	$ —
Total	—	—	—	$ 17,554

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Item 6. Exhibits

(10)(a)	CTS Corporation Director and Officer Indemnification Agreement (incorporated by reference to Exhibit 10.1 to the Form 8-K, filed with the SEC on February 18, 2015).
(10)(b)	CTS Corporation 2018 Equity and Incentive Compensation Plan (incorporated by reference to Exhibit 10.1 to the Form 8-K, filed with the SEC on May 22, 2018).
(31)(a)	Certification pursuant to Section 302 of the Sarbanes Oxley Act of 2002.
(31)(b)	Certification pursuant to Section 302 of the Sarbanes Oxley Act of 2002.
(32)(a)	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes Oxley Act of 2002.
(32)(b)	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes Oxley Act of 2002.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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.

CTS Corporation	CTS Corporation
/s/ William M. Cahill	/s/ Ashish Agrawal
William M. Cahill	Ashish Agrawal
Chief Accounting Officer	Vice President and Chief Financial Officer
(Principal Accounting Officer)	(Principal Financial Officer)
Dated: October 25, 2018	Dated: October 25, 2018