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

FORM 10-K

(Mark One)

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

For The Fiscal Year Ended December 31, 2020

OR

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

For the transition period from to

Commission File Number: 1-4639

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

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Trading Symbol(s)	Name of Each Exchange on Which Registered
Common stock, without par value	CTS	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. ☐ Yes ☒ No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Exchange Act. ☐ Yes ☒ No

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). ☒ Yes ☐ No

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

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

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

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

The aggregate market value of the voting and non-voting stock held by non-affiliates of CTS Corporation, based upon the closing sales price of CTS common stock on June 30, 2020, was approximately $637,000,000. There were 32,348,383 shares of common stock, without par value, outstanding on February 19, 2021.

DOCUMENTS INCORPORATED BY REFERENCE

(1) Portions of the Proxy Statement to be filed for the annual meeting of shareholders to be held on or about May 13, 2021 are incorporated by reference in Part III.

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Safe Harbor

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 transportation, telecommunications, and information technology industries, as well as conditions in the industrial, aerospace and defense, and medical markets; reliance on key customers; unanticipated public health crises, natural disasters or other events; environmental compliance and remediation expenses; the ability to protect our intellectual property; pricing pressures and demand for our products; 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 this Annual Report on Form 10-K. 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.

PART I

Item 1. Business

CTS Corporation ("CTS", "we", "our", "us" or the "Company") is a global manufacturer of sensors, connectivity components, and actuators. CTS was established in 1896 as a provider of high-quality telephone products and was incorporated as an Indiana corporation in February 1929. Our principal executive offices are located in Lisle, Illinois.

We design, manufacture, and sell a broad line of sensors, connectivity components, and actuators primarily to original equipment manufacturers ("OEMs") and tier one suppliers for the aerospace and defense, industrial, information technology, medical, telecommunications, and transportation markets. Our vision is to be a leading provider of sensing and motion devices as well as connectivity components, enabling an intelligent and seamless world. These devices are categorized by their ability to Sense, Connect or Move. Sense products provide vital inputs to electronic systems. Connect products allow systems to function in synchronization with other systems. Move products ensure required movements are effectively and accurately executed. We are committed to achieving our vision by continuing to invest in the development of products, technologies, and talent within these categories.

We operate manufacturing facilities in North America, Asia, and Europe. Sales and marketing are accomplished through our sales engineers, independent manufacturers' representatives, and distributors.

See the Consolidated Financial Statements and Notes included in Part II, Item 8 of this Annual Report on Form 10-K for financial information regarding the Company.

PRODUCTS BY MAJOR MARKETS

Our products perform specific electronic functions for a given product family and are intended for use in customer assemblies. Our major products consist principally of sensors and actuators used in passenger or commercial vehicles, connectivity components used in telecommunications infrastructure, information technology and other high-speed applications, switches, temperature sensors, and potentiometers supplied to multiple markets, and fabricated piezoelectric materials and substrates used primarily in medical, industrial, aerospace and defense, and information technology markets.

The following table identifies major products by industry. Products are sold to several industry OEMs, tier one suppliers, and distributors.

Product Description	Transportation	Industrial	Medical	Aerospace and Defense	Telecom and IT
SENSE	●	●	●	●	
(Controls, Pedals, Piezo Sensing Products, Sensors, Switches, Transducers)					
CONNECT		●	●	●	●
(EMI/RFI Filters, Capacitors, Frequency Control, Resistors, RF filters)					
MOVE	●	●			●
(Piezo Microactuators, Rotary Actuators)					

The following table provides a breakdown of net sales by industry as a percent of consolidated net sales:

	2020	2019	2018
Industry			
Transportation	57%	64%	64%
Industrial	22%	17%	18%
Medical	9%	9%	9%
Aerospace and Defense	9%	7%	5%
Telecommunications and IT	3%	3%	4%
% of consolidated net sales	100%	100%	100%

MARKETING AND DISTRIBUTION

Sales and marketing to customers is accomplished through our sales engineers, independent manufacturers' representatives, and distributors. We maintain sales offices in China, Czech Republic, Denmark, Germany, Japan, Singapore, Taiwan, and the United States. Approximately 88% of 2020 net sales were attributable to our sales engineers.

Our sales engineers generally service our largest customers with application-specific products. The sales engineers work closely with major customers in designing and developing products to meet specific customer requirements.

We utilize the services of independent manufacturers' representatives for customers not serviced directly by our sales engineers. Independent manufacturers' representatives receive commissions from us. During 2020, approximately 6% of net sales were attributable to independent manufacturers' representatives. We also use independent distributors. Independent distributors purchase products from us for resale to customers. In 2020, independent distributors accounted for approximately 6% of net sales.

RAW MATERIALS

We utilize a wide variety of raw materials and purchased parts in our manufacturing processes. The following are the most significant raw materials and purchased components:

Conductive inks and contactors, passive connectivity components, integrated circuits and semiconductors, certain rare earth elements ("REEs"), ceramic powders, plastic components, molding compounds, printed circuit boards and assemblies, quartz blanks and crystals, wire harness assemblies, copper, brass, silver, gold, platinum, lead, aluminum, and steel-based raw materials and components.

These raw materials and parts are purchased from a number of suppliers, and we generally do not believe we are dependent upon one or a limited number of suppliers. Although we purchase all of our semiconductors, REEs, conductive inks, and silver pastes from a limited number of suppliers, alternative sources are generally available.

Lead times between the placement of orders for certain raw materials and purchased parts and actual delivery to us may vary. Occasionally, we may need to order raw materials in greater quantities and at higher prices to compensate for the variability of lead times for delivery. The price and availability of raw materials and manufactured components is subject to change due to, among other things, new laws and regulations, global economic and political events including strikes, and public health and safety concerns.

The continued uncertainties due to the COVID-19 pandemic may adversely affect our ability to source materials.

PATENTS, TRADEMARKS, AND LICENSES

We maintain a program of obtaining and protecting U.S. and non-U.S. patents relating to products that we have designed and manufactured, as well as processes and equipment used in our manufacturing technology. We were issued 7 new U.S. patents and 12 non-U.S. patents in 2020 and currently hold 134 U.S. patents and 129 non-U.S. patents. We have 10 registered U.S. trademarks, 24 registered foreign trademarks and 4 international trademark registrations. We have licensed the right to use several of our patents. In 2020, license and royalty income was less than 1% of net sales.

MAJOR CUSTOMERS

Sales to our 15 largest customers as a percentage of total net sales were as follows:

	Years Ended December 31,		
	2020	**2019**	**2018**
Total of 15 largest customers / net sales	59.4%	61.9%	63.7%

Our net sales to significant customers as a percentage of total net sales were as follows:

	Years Ended December 31,		
	2020	**2019**	**2018**
Toyota Motor Corporation	13.4%	11.6%	10.5%
Cummins Inc.	13.1%	16.1%	15.2%
Honda Motor Co.	8.0%	9.6%	10.5%

We sell parts to these three transportation customers for certain vehicle platforms under purchase agreements that have program lifetime volume estimates and are subject to purchase orders issued from time to time.

No other customer accounted for 10% or more of total net sales during these periods. We continue to focus on broadening our customer base to diversify our end market exposure.

Changes in the level of our customers' orders have, in the past, had a significant impact on our operating results. If a major customer reduces the amount of business it transacts with us, or substantially changes the terms of that business, there could be an adverse impact on our operating results.

ORDER BACKLOG

Order backlog is comprised of firm open purchase orders we have received from our customers and generally represents 1 to 2 months of sales for certain products. Our business is a mix of purchase order-based business, shorter-term contracts, and multi-year awards, such as with customers who serve the automotive end market. As such, order backlog does not provide a meaningful indication of future sales.

COMPETITION

We compete with domestic and foreign manufacturers principally based on product features, technology, price, quality, reliability, delivery, and service. Most of our product lines encounter significant global competition. The number of competitors varies from product line to product line. No one competitor competes with us in every product line, but some competitors are larger and more diversified than we are.

Some customers have reduced or plan to reduce their number of suppliers, while increasing their volume of purchases. Customers demand lower cost and higher quality, reliability, and delivery standards from us as well as from our competitors. These trends create opportunities for us, but also increase the risk of loss of business to competitors. We are subject to competitive risks that are typical in our end markets, including technical obsolescence.

We believe we compete most successfully in custom engineered products manufactured to meet specific applications of major OEMs.

NON-U.S. REVENUES AND OPERATIONS

Our net sales to customers originating from our non-U.S. operations as a percentage of total net sales were as follows:

	Years Ended December 31,		
	2020	**2019**	**2018**
Net sales from non-U.S. operations	43%	40%	33%

We believe the business risks to our non-U.S. operations, though substantial, are normal risks for global businesses. These risks include currency controls and changes in currency exchange rates, longer collection cycles, political and transportation risks, economic downturns and inflation, government regulations, and expropriation. Our non-U.S. manufacturing facilities are located in China, Czech Republic, Denmark, Mexico, Philippines, and Taiwan. Additional information regarding the Company’s sales by geographic area and long-lived tangible assets in different geographic areas is included in Note 20 - Geographic Data.

HUMAN CAPITAL RESOURCES

We employed 3,786 people at December 31, 2020, with 87% of these employees located outside the U.S. We employed 3,570 people at December 31, 2019 with 84% of these employees located outside the U.S.

We are committed to building a diverse, inclusive and engaged workforce. Our management teams and all of our employees are expected to exhibit the principles of fairness, honesty and integrity in the actions we undertake. Our employees must adhere to a code of conduct that sets standards for appropriate behavior and includes required annual training on preventing, identifying, reporting and stopping any type of unlawful discrimination or unethical actions.

We have a global talent review and succession planning process designed to align our talent plans with the current and future strategies of the business. This includes the identification of key positions, assessment of internal talent and potential successors and plans for talent acquisition and development.

We strive to align compensation with the external market and maintain equity within the organization. In addition, we offer a broad range of company-paid benefits, which we believe are competitive in our industry.

The safety of our employees is a priority and vital to our success. Our employees are regularly trained on safety-related topics and we monitor and measure our effectiveness at all of our locations.

During fiscal 2020, in response to the COVID-19 pandemic, we took action to protect our employees' safety and health, including equipping employees with personal protective equipment, establishing minimum staffing and social distancing policies, sanitizing workspaces more frequently, adopting alternate work schedules including encouraging remote work arrangements, and instituting other measures aimed at minimizing the transmission of COVID-19 while sustaining production and related services. In addition, we modified the way we conduct many aspects of our business to reduce the number of in-person interactions. For example, we significantly expanded the use of virtual interactions in many aspects of our business, including customer facing activities.

EXECUTIVE OFFICERS OF THE COMPANY

Executive Officers. The following serve as executive officers of CTS as of December 31, 2020. The executive officers are expected to serve until the next annual shareholders meeting, scheduled to be held on or about May 13, 2021, at which time the election of officers will be considered again by the Board of Directors.

Name	Age	Positions and Offices
Kieran O'Sullivan	58	President, Chief Executive Officer and Chairman of the Board
Ashish Agrawal	50	Vice President and Chief Financial Officer

Kieran O'Sullivan - 58 - President, Chief Executive Officer and Chairman of the Board. Mr. O'Sullivan joined CTS on January 7, 2013. Before joining CTS, Mr. O'Sullivan served as Executive Vice President of Continental AG's Global Infotainment and Connectivity Business and led the NAFTA Interior Division, having joined Continental AG, a global automotive supplier, in 2006. Mr. O'Sullivan is a member of the board of directors, the audit committee, and risk committee and the corporate governance and nominating committee of LCI Industries, a supplier of engineered components for manufacturers of recreational vehicles, manufactured homes, marine applications, and for the related aftermarkets.

Ashish Agrawal - 50 - Vice President and Chief Financial Officer. On November 11, 2013, Mr. Agrawal was elected Vice President and Chief Financial Officer for CTS. Mr. Agrawal joined CTS in June 2011 as Vice President, Treasury and Corporate Development, and was elected as Treasurer on September 1, 2011. Before joining CTS, Mr. Agrawal was with Dometic Group AB, a manufacturer of refrigerators, awnings and air conditioners, as Senior Vice President and Chief Financial Officer, Americas, since 2007. Prior to that, Mr. Agrawal was with General Electric Co. in various positions since December 1994.

Information with respect to Directors and Corporate Governance may be found in our definitive proxy statement to be delivered to shareholders in connection with our 2021 Annual Meeting of Shareholders. Such information is incorporated herein by reference.

ADDITIONAL INFORMATION

We are incorporated in the State of Indiana. Our principal corporate office is located at 4925 Indiana Avenue Lisle, IL 60532.

Our internet address is www.ctscorp.com. We make available free of charge through our website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) of the Securities Exchange Act of 1934 as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission ("SEC"). Other than the documents that we file with the SEC that are incorporated by reference herein, the information contained on or accessible through our website is not part of this or any other report we file or furnish to the SEC.

Investors and others should note that we announce material financial information to our investors using the Investors section of our website (*ctscorp.com/investors*), SEC filings, press releases, public conference calls and webcasts. We use these channels as well as social media and blogs to communicate with our investors and the public about our company, our services and other issues. It is possible that the information we post on social media and blogs could be deemed to be material information.

Item 1A. Risk Factors

The following are certain risk factors that could affect our business, financial condition and operating results. These risk factors should be considered in connection with evaluating forward-looking statements contained in this Annual Report on Form 10-K or in any other reports filed or furnished by us, because these factors could cause our actual results and financial condition to differ materially from those projected in any such forward-looking statements. Before you invest in us, you should know that making such an investment involves risks, including the risks described below. The risks that are highlighted below are not the only ones that we face. If any of the following risks occur, our business, financial condition and operating results could be negatively affected.

Risks Related to Our Business and Industry

Because we currently derive a substantial portion of our revenues from a small number of customers, any decrease in orders from these customers could have an adverse effect on our business, financial condition and operating results.

We depend on a small number of customers for a substantial portion of our business, and changes in the level of our customers' orders have, in the past, had a significant impact on our results of operations. If a major customer significantly delays, reduces, or cancels the level of business it does with us, there could be an adverse effect on our business, financial condition and operating results. Significant pricing and margin pressures exerted by a major customer could also materially adversely affect our operating results. In addition, we generate significant accounts receivable from sales to our major customers. If one or more of our major customers were to become insolvent or otherwise unable to pay or were to delay payment for our products, our business, financial condition and operating results could be materially adversely affected.

Our customers may cancel their orders, change production quantities or locations or delay production.

We generally receive volume estimates, but not firm volume commitments from our customers, and may experience reduced or extended lead times in customer orders. Customers may cancel orders, change production quantities and delay production for a number of reasons. Uncertain economic and geopolitical conditions may result in some of our customers delaying the delivery of some of the products we manufacture for them and placing purchase orders for lower volumes of products than previously anticipated. Cancellations, reductions or delays by a significant customer or by a number of customers may harm our results of operations by reducing the volumes of products we manufacture and sell, as well as by causing a delay in the recovery of our expenditures for inventory in preparation for customer orders, or by reducing our asset utilization, resulting in lower profitability.

In addition, customers may request that manufacturing of their products be transitioned from one of our facilities to another to achieve cost reductions and other objectives. Such transfers may result in inefficiencies and costs due to resulting excess capacity and overhead at one facility and capacity constraints and the inability to fulfill all orders at another. In addition, we make key decisions based on our estimates of customer requirements, including determining the levels of orders that we will seek and accept, production schedules, component procurement commitments, personnel needs and other resource requirements. Changes in demand for our customers’ products may reduce our ability to estimate future customer requirements accurately. This may make it difficult to schedule production and maximize utilization of our manufacturing capacity. Anticipated orders may not materialize and delivery schedules may be deferred as a result of changes in demand for our products or our customers' products. We often increase staffing and capacity, and incur other expenses to meet the anticipated demand of our customers, which causes reductions in our gross margins if customer orders are delayed or canceled. On occasion, customers may require rapid increases in production, which may stress our resources and reduce margins. We may not have sufficient capacity at any given time to meet our customers' demands. In addition, because many of our costs and operating expenses are relatively fixed over the short-term, a reduction in customer demand could harm our gross margin and operating income until such time as adjustments can be made to activity and operating levels or to structural costs.

We sell products to customers in cyclical industries that are subject to significant downturns that could materially adversely affect our business, financial condition and operating results.

We sell products to customers in cyclical industries that have experienced economic and industry downturns. The markets for our products have softened in the past and may again soften in the future. We may face reduced end-customer demand, underutilization of our manufacturing capacity, changes in our revenue mix and other factors that could adversely affect our results.

We are susceptible to trends and factors affecting industries that we serve.

Factors negatively affecting the industries we serve and the demand for their products could negatively affect our business, financial condition and operating results. Any adverse occurrence, including among others, industry slowdown, recession, public health crisis, political instability, costly or constraining regulations, increased tariffs, reduced government budgets and spending, armed hostilities, terrorism, excessive inflation, prolonged disruptions in one or more of our customers' production schedules or labor disturbances, that results in a decline in the volume of sales in these industries, or in an overall downturn in the business and operations of our customers in these industries, could materially adversely affect our business, financial condition and operating results. These industries may be unionized and some of our customers have experienced labor disruptions in the past. Furthermore, these industries can be highly cyclical in nature and sensitive to changes in general economic conditions, consumer preferences and interest rates. The failure of manufacturers that we serve may result in the failure to receive payment in full for products sold in the past and an abrupt cancellation in demand for certain products. Weakness in demand, the insolvency of manufacturers that we serve or their suppliers, and constriction of credit markets may negatively and materially affect our facility utilization, cost structure, financial condition, and operating results.

Our operating results may vary significantly from period to period.

We experience fluctuations in our operating results. Some of the principal factors that contribute to these fluctuations are: changes in demand for our products; our effectiveness in managing manufacturing processes, costs and timing of our component purchases so that components are available when needed for production, while mitigating the risks of purchasing inventory in excess of immediate production needs; the degree to which we are able to utilize our available manufacturing capacity; changes in the cost and availability of components, which often occur in the electronics manufacturing industry and which affect our margins and our ability to meet delivery schedules; general economic and served industry conditions; and local conditions and events that may affect our production volumes, such as labor conditions or political instability.

We may experience shortages and increased costs of raw material and required electronic components.

Unanticipated raw material or electronic component shortages may prevent us from making scheduled shipments to customers. Our inability to make scheduled shipments could cause us to experience a shortfall in revenue, increase our costs and adversely affect our relationship with affected customers and our reputation as a reliable supplier. We may be required to pay higher prices for raw materials or electronic components in short supply and order these raw materials or electronic components in greater quantities to compensate for variable delivery times. We may also be required to pay higher prices for raw materials or electronic components due to inflationary trends regardless of supply. We are also dependent on our suppliers' ability to supply and deliver raw materials on a timely basis at negotiated prices. Any delay or inability to deliver raw materials by our suppliers may require that we attempt to mitigate such failure or fail to make deliveries to our customers on a timely basis. As a result, raw material or electronic component shortages, price increases, or failure to perform by our suppliers could adversely affect our operating results for a particular period due to the resulting revenue shortfall and/or increased costs.

We may pursue acquisition opportunities that complement or expand our business as well as divestitures that could impact our business operations. We may not be able to complete these transactions, and these transactions, if executed, may pose risks that could materially adversely affect our business, financial condition and operating results.

On an ongoing basis we explore opportunities to buy other businesses or technologies that could complement, enhance or expand our current business or product lines or that might otherwise offer us growth opportunities. We may have difficulty finding suitable opportunities or, if we do identify these opportunities, we may not be able to complete the transactions for any number of reasons including a failure to secure financing. In addition, we may not be able to successfully or profitably integrate, operate, maintain and manage our newly acquired operations or employees. Any transactions that we are able to identify and complete may involve a number of risks, including: the diversion of management's attention from our existing business to integrate the operations and personnel of the acquired or combined business; possible adverse effects on our operating results during the integration process; difficulties managing and integrating operations in geographically dispersed locations; increases in our expenses and working capital requirements, which could reduce our return on invested capital; exposure to unanticipated liabilities of acquired companies; and our possible inability to achieve the intended objectives of the transaction. Even if we are initially successful in integrating a new operation, we may not be able to maintain uniform standards, controls, procedures and policies, and this may lead to operational inefficiencies. In addition, future acquisitions may result in dilutive issuances of equity securities or the incurrence of additional debt.

These and other factors could harm our ability to achieve anticipated levels of profitability from acquired operations or realize other anticipated benefits of an acquisition and could adversely affect our business and operating results.

We have in the past, and may in the future, consider divesting certain business operations. Divestitures may involve a number of risks, including the diversion of management's attention, significant costs and expenses, the loss of customer relationships and cash flow, and the disruption of operations in the affected business. Failure to timely complete or consummate a divestiture may negatively affect valuation of the affected business or result in restructuring charges.

We may restructure our operations or fail to execute capital projects as planned, which may materially adversely affect our business, financial condition and operating results.

We have announced and initiated restructuring plans or capital projects at various times in the recent past designed to revise and consolidate certain aspects of our operations for the purpose of improving our cost structure and operational efficiency. We may incur restructuring and impairment charges in the future if circumstances warrant. Additionally, if we are unsuccessful in implementing restructuring plans or in executing capital projects, we may experience disruptions in our operations and higher ongoing costs, which may materially adversely affect our business, financial condition and operating results.

We may be unable to compete effectively against competitors.

The industries in which we operate are highly competitive and characterized by price erosion and rapid technological change. We compete against many domestic and foreign companies, some of which have substantially greater manufacturing, financial, research and development, and marketing resources than we do. If any customer becomes dissatisfied with our prices, quality, or timeliness of delivery, among other things, it could award business to our competitors. Moreover, some of our customers could choose to manufacture and develop particular products themselves rather than purchase them from us. Increased competition could result in price reductions, reduced profit margins and loss of market share, each of which could materially adversely affect our business, financial condition and operating results. These developments also may materially adversely affect our ability to compete successfully going forward. We cannot assure you that our products will continue to compete successfully with our competitors' products.

We may be unable to keep pace with rapid technological changes that could make some of our products or processes obsolete before we realize a return on our investment.

The technologies relating to some of our products have undergone and are continuing to undergo changes. End markets for our products are characterized by technological change, frequent new product introductions and enhancements, changes in customer requirements, and emerging industry standards. The introduction of products embodying new technologies and the emergence of new industry standards could render our existing products obsolete and unmarketable before we can recover any or all of our research, development and commercialization expenses, or our capital investments. Furthermore, the life cycles of our products and the products we manufacture for others vary, may change, and are difficult to estimate.

We may experience difficulties that could delay or prevent the successful development, introduction and marketing of new products or product enhancements and our new products or product enhancements may not adequately meet the requirements of the marketplace or achieve market acceptance. If we are unable, for technological or other reasons, to develop and market new products or product enhancements in a timely and cost-effective manner, our business, financial condition and operating results could be materially adversely affected.

Products we manufacture may contain design or manufacturing defects that could result in reduced demand for our products or services and liability claims against us.

Despite our quality control and quality assurance efforts, defects may occur in the products we manufacture due to design or manufacturing errors, supplier quality issues, or component failure. Product defects could result in delayed shipments and reduced demand for our products. We may be subject to increased costs due to warranty claims on defective products. Product defects could result in product liability claims against us where defects cause, or are alleged to cause, property damage, bodily injury or death. As we grow our business in the transportation and medical device markets, the risk of exposure to product liability litigation increases. We may be required to participate in a recall involving products which are, or are alleged to be, defective. We carry insurance for certain legal matters involving product liability; however, costs related to product defects and the costs of such claims, including costs of defense and settlement, may exceed our available coverage. Accordingly, our results of operations, cash flow and financial position could be adversely affected.

We are subject to government regulations, including environmental, health, and safety laws and regulations, that expose us to potential financial liability.

Our operations are regulated by a number of federal, state, local and foreign government regulations, including those pertaining to environmental, health, and safety ("EHS") that govern, among other things, air and water emissions, worker protection, and the handling, storage and disposal of hazardous materials. Compliance with EHS laws and regulations is a major consideration for us because we use hazardous materials in our manufacturing processes. If we violate EHS laws and regulations, we could be liable for substantial fines, penalties, and costs of mandated remedial actions. Our environmental permits could also be revoked or modified, which could require us to cease or limit production at one or more of our facilities, thereby materially adversely affecting our business, financial condition and operating results. EHS laws and regulations have generally become more stringent over time and could continue to do so, imposing greater compliance costs and increasing risks and penalties associated with any violation, which also could materially affect our business, financial condition and operating results.

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 are potentially liable for environmental contamination at several sites currently and formerly owned or operated by us, including sites designated as National Priorities List sites under the U.S. Environmental Protection Agency's Superfund program. Superfund liability is joint and several and we may be held responsible for more than our share of contamination at a site. Although we estimate our potential environmental liability and reserve for such matters, we cannot assure you that our reserves will be sufficient to cover the actual costs that we incur as a result of these matters.

Future events, such as the notification of potential liability at new sites, the discovery of additional contamination or changes to an approved remedy at existing sites, changes to existing EHS laws and regulations or their interpretation, and more rigorous regulatory action by government authorities, may require additional expenditures by us, which could have a negative impact on our operations.

In addition, we could be affected by future laws or regulations imposed in response to climate change concerns. Such laws or regulations could have a material adverse effect on our business, financial condition, and results of operations. Climate change initiatives may result in significant operational changes and expenditures, reduce demand for our products and adversely affect our business. We recognize that climate change is a global environmental concern. Continuing political and social attention to the issue of climate change has resulted in both existing and pending international agreements and national, regional or local legislation and regulatory measures to limit greenhouse gas emissions. These agreements and measures may require equipment modifications, operational changes, taxes, or purchase of emission credits to reduce emission of greenhouse gases from our operations, which may result in substantial capital expenditures and compliance, operating, maintenance and remediation costs. Regulatory initiatives to reduce greenhouse gas usage may also adversely impact some of the industries we serve and our supply chain, adversely impacting our sales and the value of our business.

Regulations related to conflict minerals could adversely impact our business.

The Dodd-Frank Wall Street Reform and Consumer Protection Act contains provisions to improve transparency and accountability concerning the supply of certain minerals, known as conflict minerals, originating from the Democratic Republic of Congo ("DRC") and adjoining countries. As a result, the SEC adopted annual disclosure and reporting requirements for those companies who may use conflict minerals mined from the DRC and adjoining countries in their products. There have been and will continue to be costs associated with complying with these disclosure requirements, including diligence costs to determine the sources of minerals used in our products and other potential changes to products, processes or sources of supply to the extent necessary as a consequence of such verification activities. These rules could adversely affect the sourcing, supply and pricing of materials used in our products. As there may be only a limited number of suppliers offering conflict-free minerals, we cannot be sure that we will be able to obtain necessary conflict-free minerals from such suppliers in sufficient quantities or at competitive prices. Also, we may face reputational challenges if we determine that certain of our products contain conflict minerals or if we are unable to sufficiently verify the origins for all minerals used in our products through the procedures we may implement.

Negative or unexpected tax consequences could adversely affect our results of operations.

We operate globally and changes in tax laws could adversely affect our results. The international tax environment continues to change as a result of both coordinated actions by governments and unilateral measures enacted by individual countries, such as the comprehensive tax reform enacted in the U.S. in 2017, which could significantly impact our effective tax rate, tax liabilities, and ability to utilize deferred tax assets.

Adverse changes in the underlying profitability and financial outlook of our operations in several jurisdictions could lead to changes in our valuation allowances against deferred tax assets and other tax accruals that could materially and adversely affect our results of operations. In addition, acquisitions or divestitures may cause our effective tax rate to change.

We base our tax positions upon the anticipated nature and conduct of our business and upon our understanding of the tax laws of the various countries in which we have assets or conduct activities. However, our tax positions are subject to review and possible challenge by taxing authorities and to possible changes in law, which may have a retroactive effect.

Risks Related to Indebtedness and Financing

Our indebtedness may adversely affect our financial health.

Our indebtedness could, among other things: increase our vulnerability to general economic and industry conditions, including recessions; require us to use cash flow from operations to service our indebtedness, thereby reducing our ability to fund working capital, capital expenditures, research and development efforts and other expenses; limit our flexibility in planning for, or reacting to, changes in our business and the industries in which we operate; place us at a competitive disadvantage compared to competitors that have less indebtedness; or limit our ability to borrow additional funds that may be needed to operate and expand our business. Moreover, an increase in interest rates could increase our interest expense.

Our credit facility contains provisions that could materially restrict our business.

Our 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; repurchase stock; or make dividend payments above a certain amount.

The restrictions contained in our credit facility could limit our ability to plan for or react to changes in market conditions or meet capital needs or could otherwise restrict our activities or business plans. These restrictions could adversely affect our ability to finance our operations, make strategic acquisitions, fund investments or other capital needs or engage in other business activities that could be in our interest.

Further, our ability to comply with our loan covenants may be affected by events beyond our control that could result in an event of default under our credit facility, or documents governing any other existing or future indebtedness. A default, if not cured or waived, may permit acceleration of our indebtedness. In addition, our lenders could terminate their commitments to make further extensions of credit under our credit facility. If our indebtedness is accelerated, we cannot be certain that we will have sufficient funds to pay the accelerated indebtedness or that we will have the ability to refinance accelerated indebtedness on terms favorable to us, or at all.

Losses in the financial markets could negatively impact pension asset returns and cash flow due to possible required contributions in the future.

We make a number of assumptions relating to our pension plans in order to measure the financial position of the plans and the net periodic benefit cost. The most significant assumptions relate to the discount rate and the expected long-term return on plan assets. If these assumptions prove to be significantly different from actual rates, then we may need to record additional expense relating to the pension plans, which could require cash contributions to fund future pension obligation payments and could have a material adverse effect on our financial condition and results of operations.

Risks Related to COVID-19 Pandemic and Other External Factors

Public health issues such as the COVID-19 pandemic have adversely affected, and could in the future, adversely affect our business or financial results.

The United States and other countries have experienced, and may experience in the future, outbreaks of contagious diseases that affect public health. In connection with the outbreak of the global COVID-19 pandemic in 2020, the United States declared a national emergency in March 2020 and the World Health Organization, and the U.S. Centers for Disease Control and Prevention have recommended containment and mitigation measures. Numerous states and municipalities have also declared public health emergencies. Along with these declarations, extraordinary and wide-ranging actions have been taken by international, federal, state, and local public health and governmental authorities to mitigate the impact of COVID-19, including quarantines, stay-at-home orders and business closure mandates requiring that individuals substantially restrict daily activities and that businesses substantially modify, curtail or cease normal operations. Many of these measures are currently in place in many jurisdictions where we operate, and additional measures may be imposed by governmental authorities in the future. There is significant uncertainty regarding the extent to which and how long COVID-19 and related government directives, actions and economic relief efforts will disrupt the global economy and level of employment, capital markets, consumer confidence, and demand for our products. The extent to which COVID-19 impacts our operational and financial performance will depend on future developments, including the duration and spread of COVID-19, the acceptance and effectiveness of vaccines, and the impact of COVID-19 and related containment and mitigation measures on our customers, trade partners and employees, all of which are highly uncertain, unpredictable and outside our control. If COVID-19 continues to have a significant negative impact on economic conditions over a prolonged period of time, the pandemic could have a material adverse effect on our financial condition and results of operations.

Natural disasters may adversely impact our capability to supply product to our customers.

Natural disasters, such as storms, flooding and associated power outages, occurring at any of our locations or supplier locations may lead to disruption of our manufacturing operations and supply chain, adversely impacting our capability to supply product to our customers. In the event of a natural disaster, it may not be possible for us to find an alternate manufacturing location for certain product lines, further impacting our capability to recover from such a disruption.

General Risk Factors

We face risks relating to our international operations.

Because we have significant international operations, our operating results and financial condition could be materially adversely affected by economic, political, health, regulatory and other factors existing in foreign countries in which we operate. Our international operations are subject to inherent risks, which may materially adversely affect us, including: political and economic instability in countries in which our products are manufactured; expropriation or the imposition of government controls; changes in government regulations; export license requirements; trade restrictions; earnings repatriation and expatriation restrictions; exposure to different legal standards, including related to intellectual property; health conditions and standards; currency controls; fluctuations in exchange rates; increases in the duties and taxes we pay; inflation or deflation; greater difficulty in collecting accounts receivable and longer payment cycles; changes in labor conditions and difficulties in staffing and managing our international operations; limitations on insurance coverage against geopolitical risks, natural disasters, and business operations; and communication among and management of international operations. In addition, these same factors may also place us at a competitive disadvantage compared to some of our foreign competitors.

We may face risks associated with violations of the Foreign Corrupt Practices Act ("FCPA") and similar anti-bribery laws. The FCPA and similar anti-bribery laws in other jurisdictions generally prohibit companies and their intermediaries from making improper payments to government officials for the purpose of obtaining or retaining business. Our Code of Ethics mandates compliance with these anti-bribery laws. We operate in many parts of the world where strict compliance with anti-bribery laws may conflict with local customs and practices. We cannot assure you that our internal controls and procedures always will protect us from the detrimental actions by our employees or agents. If we are found to be liable for FCPA violations (either due to our own acts or inadvertence or due to the acts or inadvertence of others), we could suffer from criminal or civil penalties or other sanctions, which could have a material adverse effect on our business.

Public health or safety concerns and governmental restrictions, including measures implemented in response to the global COVID-19 pandemic, that impact the availability of raw materials, labor, or the movement of goods in some of the countries in which we operate could have a material adverse effect on our business, financial condition and operating results.

We are exposed to fluctuations in foreign currency exchange rates that may adversely affect our business, financial condition and operating results.

We transact business in various foreign countries. We present our consolidated financial statements in U.S. dollars, but a portion of our revenues and expenditures are transacted in other currencies. As a result, we are exposed to fluctuations in foreign currencies. Additionally, we have currency exposure arising from funds held in local currencies in foreign countries. Volatility in the exchange rates between the foreign currencies and the U.S. dollar could harm our business, financial condition and operating results. Furthermore, to the extent we sell our products in foreign markets, currency fluctuations may result in our products becoming too expensive for foreign customers.

If we are unable to protect our intellectual property or we infringe, or are alleged to infringe, on others' intellectual property rights, our business, financial condition and operating results could be materially adversely affected.

The success of our business depends, in part, upon our ability to protect trade secrets, trademarks, copyrights and patents, obtain or license patents and operate without infringing on the intellectual property rights of others. We rely on a combination of trade secrets, copyrights, patents, nondisclosure agreements and technical measures to protect our proprietary rights in our products and technology. The steps we have taken to prevent misappropriation of our technology may be inadequate. In addition, the laws of some foreign countries in which we operate do not protect our proprietary rights to the same extent as do the laws of the United States. Although we continue to evaluate and implement protective measures, there can be no assurance that these efforts will be successful. Our inability to protect our intellectual property rights could diminish or eliminate the competitive advantages that we derive from our technology, cause us to lose sales or otherwise harm our business.

We believe that patents will continue to play an important role in our business. However, there can be no assurance that we will be successful in securing patents for claims in any pending patent application or that any issued patent will provide us with any competitive advantage. We also cannot provide assurance that the patents will not be challenged by third parties or that the patents of others will not materially adversely affect our ability to do business.

We may become involved in litigation in the future to protect our intellectual property or because others may allege that we infringed on their intellectual property. These claims and any resulting lawsuit could subject us to liability for damages and invalidate our intellectual property rights. If an infringement claim is successfully asserted by a holder of intellectual property rights, we may be required to cease marketing or selling certain products, pay penalties and spend significant time and money to develop a non-infringing product or process or to obtain licenses for the technology, process or information from the holder. We may not be successful in the development of a non-infringing alternative, or licenses may not be available on commercially acceptable terms, if at all, in which case we may lose sales and profits. In addition, any litigation could be lengthy and costly and could materially adversely affect us even if we are successful in the litigation.

Loss of our key management and other personnel, or an inability to attract key management and other personnel, could materially affect our business.

We depend on our senior executive officers and other key personnel to run our business. We do not have long-term employment contracts with our key personnel. The loss of any of these officers or other key personnel could adversely affect our operations. Competition for qualified employees among companies that rely heavily on engineering and technology is at times intense, and the loss of qualified employees or an inability to attract, retain and motivate additional highly skilled employees required for the operation and expansion of our business could hinder our ability to conduct research and development activities and deliver marketable products successfully.

Ineffective internal control over our financial reporting may harm our business.

We are subject to the ongoing internal control provisions of Section 404 of the Sarbanes-Oxley Act of 2002 ("Sarbanes-Oxley"). Our controls necessary for continued compliance with Sarbanes-Oxley may not operate effectively or at all times and may result in a material weakness. The identification of material weaknesses in internal control over financial reporting could indicate a lack of proper controls to generate accurate financial statements. Further, the effectiveness of our internal controls may be impacted if we are unable to retain sufficient skilled finance and accounting personnel, especially in light of the increased demand for such personnel among publicly traded companies.

We could face risks to our systems, networks and production including increased IT security threats and more sophisticated and targeted computer crime.

Increased global information technology security threats and more sophisticated and targeted computer crime pose a risk to the security of our systems and networks and the confidentiality, availability and integrity of our data and communications. While we attempt to mitigate these risks by employing a number of measures - including employee training, comprehensive monitoring of our networks and systems, and maintenance of backup and protective systems - our systems, networks and products remain potentially vulnerable to advanced persistent threats. Depending on their nature and scope, such threats could potentially lead to the compromising of confidential information and communications, improper use of our systems and networks, manipulation and destruction of data, defective products, production downtimes and operational disruptions, which in turn could adversely affect our reputation, competitiveness and results of operations. Additionally, any updates to or implementation of systems, including the selection and implementation of an ERP system, may cause delays or disruptions in our processes or production which could adversely affect our results. The regulatory environment surrounding information security and privacy is increasingly demanding, with frequent imposition of new and changing requirements. For example, the European Union's General Data Protection Regulation ("GDPR"), which became effective in May 2018, and other similar U.S. federal and state and foreign laws and regulations in this area, impose significant new requirements and additional obligations for companies on how they collect, process and transfer personal data by enhancing consumer privacy rights and imposing significant fines for non-compliance. The potential for fines and other related costs in the event of a breach of or non-compliance with the GDPR or other existing or proposed information security or privacy laws and requirements may have an adverse effect on our financial results.

Item 1B. Unresolved Staff Comments

Not applicable.

Item 2. Properties

As of December 31, 2020, we had manufacturing facilities, administrative, research and development and sales offices in the following locations:

Manufacturing Facilities	Square Footage	Owned/Leased
Albuquerque, New Mexico	114,525	Leased
Boise, Idaho	15,000	Leased
Calamba, Philippines	14,800	Leased
Fairfield, New Jersey	9,100	Leased
Haryana, India	19,400	Leased
Hopkinton, Massachusetts	32,000	Owned
Juarez, Mexico	114,600	Leased
Kaohsiung, Taiwan	75,900	Owned (1)
Kvistgaard, Denmark	30,680	Leased
Lisle, Illinois	31,000	Leased
Matamoros, Mexico	51,000	Owned
Tecate, Mexico	25,000	Leased
Tecate, Mexico	12,000	Owned
Nogales, Mexico	64,000	Leased
Nupaky, Czech Republic	55,919	Leased
Ostrava, Czech Republic	67,600	Leased
Tianjin, China	225,000	Owned (2)
Zhongshan, China	112,600	Leased
Total manufacturing	1,070,124	

(1) Ground lease through 2026; restrictions on use and transfer apply.
(2) Land Use Rights Agreement through 2050 includes transfer, lease and mortgage rights.

Non-Manufacturing Facilities	Square Footage	Owned/Leased	Description
Brownsville, Texas	N/A	Owned	Land
Brownsville, Texas	10,000	Leased	Warehouse
El Paso, Texas	22,400	Leased	Office and warehouse
Matamoros, Mexico	23,000	Leased	Warehouse and administrative offices
Tecate, Mexico	9,500	Owned	Warehouse
Elkhart, Indiana	319,000	Owned	Idle facility
Elkhart, Indiana	93,000	Owned	Administrative offices and research
Farmington Hills, Michigan	1,800	Leased	Sales office
Lisle, Illinois	74,925	Leased	Administrative offices and research
Nagoya, Japan	800	Leased	Sales office
Singapore	5,600	Leased	Sales office
Yokohama, Japan	1,400	Leased	Sales office
Total non-manufacturing	561,425		

We regularly assess our facilities for manufacturing capacity, available labor, and proximity to our markets and major customers. Management believes our manufacturing facilities are suitable and adequate and have sufficient capacity to meet our current needs. The extent of utilization varies from plant to plant and with economic conditions. We also review the operating costs of our facilities and may from time-to-time relocate a portion of our manufacturing activities in order to reduce operating costs and improve asset utilization and cash flow.

Item 3. 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, we believe we have established adequate accruals pursuant to U.S. generally accepted accounting principles for our expected future liability with respect to pending lawsuits, claims and proceedings, where the nature and extent of any such liability can be reasonably estimated based on presently available information. However, we cannot provide assurance that the final resolution of any existing or future lawsuits, claims or proceedings will not have a material adverse effect on our business, results of operations, financial condition, or cash flows.

See Note 11 "Contingencies" in the Notes to the Consolidated Financial Statements in this Annual Report on Form 10-K.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Shareholder Matters and Issuer Purchases of Equity Securities

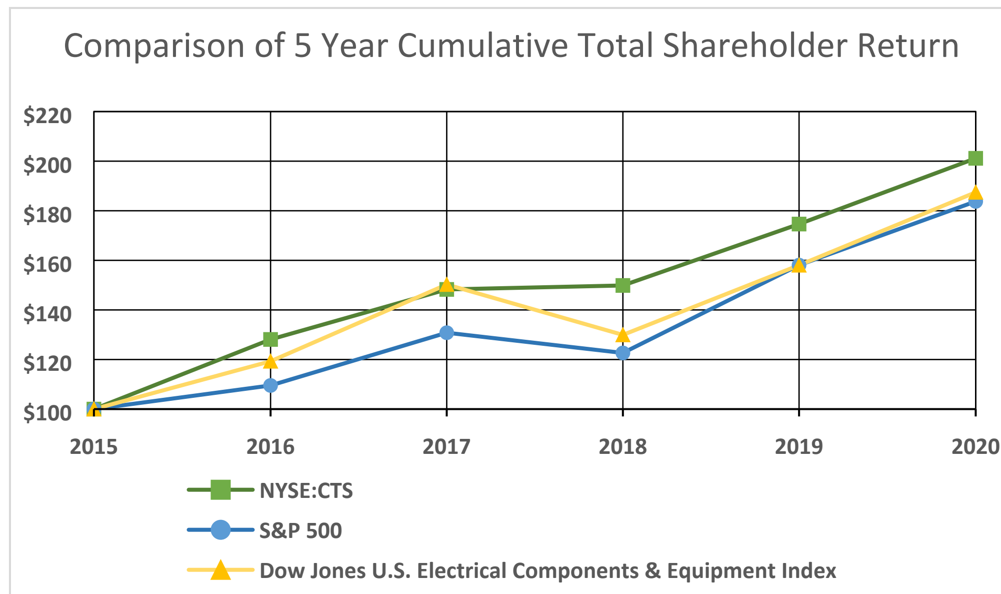
Our common stock is listed on the New York Stock Exchange under the symbol "CTS." On February 19, 2021, there were approximately 894 shareholders of record.

There were no repurchases of the Company's equity securities during the three months ended December 31, 2020. As of December 31, 2020, approximately $5.7 million remained available under the repurchase program.

In February 2019, our Board of Directors authorized a new stock repurchase program with a maximum dollar limit of $25,000 in stock repurchases, which replaced the previous authorized plan that was approved by our Board of Directors in April 2015. The authorization has no expiration date. During the year ended December 31, 2020 we purchased 342,731 shares for approximately $8,080.

Shareholder Performance Graph

The following graph shows a five-year comparison of the cumulative total shareholder return on CTS common stock with the cumulative total returns of a general market index and a peer group index (S&P 500 and Dow Jones Electrical Components & Equipment Industry Group). The graph tracks the performance of a $100 investment in the Company's common stock and in each of the indexes (with the reinvestment of all dividends) on December 31, 2015.



Item 6. Selected Financial Data

Five-Year Summary

(Amounts in thousands, except percentages and per share amounts)

	2020	% of Sales	2019	% of Sales	2018	% of Sales	2017	% of Sales	2016	% of Sales
Summary of Operations										
Net sales	$ 424,066	100.0	$ 468,999	100.0	$ 470,483	100.0	$ 422,993	100.0	$ 396,679	100.0
Cost of goods sold	285,003	67.2	311,424	66.4	305,510	64.9	282,562	66.8	256,251	64.6
Gross margin	139,063	32.8	157,575	33.6	164,973	35.1	140,431	33.2	140,428	35.4
Selling, general and administrative expenses	67,787	16.0	70,408	15.0	73,569	15.6	71,943	17.0	61,624	15.5
Research and development expenses	24,317	5.7	25,967	5.5	25,304	5.4	25,146	5.9	24,040	6.1
Restructuring charges	1,830	0.4	7,448	1.6	5,062	1.1	4,139	1.0	3,048	0.8
(Gain) loss on sale of assets	—	—	(63)	—	—	—	708	0.2	(11,450)	(2.9)
Operating earnings	45,129	10.6	53,815	11.5	61,038	13.0	38,495	9.1	63,166	15.9
Total other (expense), net	350	0.1	(3,549)	(0.8)	(2,935)	(0.6)	1,758	0.4	(5,921)	(1.5)
Earnings before taxes	45,479	10.7	50,266	10.7	58,103	12.4	40,253	9.5	57,245	14.4
Income tax expense	10,793	2.5	14,120	3.0	11,571	2.5	25,805	6.1	22,865	5.8
Net earnings	$ 34,686	8.2	$ 36,146	7.7	$ 46,532	9.9	$ 14,448	3.4	$ 34,380	8.7
Retained earnings - beginning of year	509,766		478,847		420,160		410,979		381,840	
Dividends declared	(5,171)		(5,227)		(5,278)		(5,267)		(5,241)	
Implementation of new accounting standard	—		—		17,433		—		—	
Retained earnings - end of year	$ 539,281		$ 509,766		$ 478,847		$ 420,160		$ 410,979	
Net earnings per share:										
Basic	$ 1.07		$ 1.11		$ 1.41		$ 0.44		$ 1.05	
Diluted	$ 1.06		$ 1.09		$ 1.39		$ 0.43		$ 1.03	
Average basic shares outstanding (000s)	32,317		32,700		33,024		32,892		32,728	
Average diluted shares outstanding (000s)	32,584		33,105		33,569		33,420		33,251	
Cash dividends per share (annualized)	$ 0.16		$ 0.16		$ 0.16		$ 0.16		$ 0.16	
Capital expenditures	$ 14,858		$ 21,733		$ 28,488		$ 18,094		$ 20,500	
Depreciation and amortization	$ 26,670		$ 24,619		$ 22,514		$ 20,674		$ 18,992	
Financial Position at Year End										
Current assets	$ 233,231		$ 237,478		$ 239,359		$ 233,609		$ 215,707	
Current liabilities	104,932		96,948		103,993		102,412		98,129	
Current ratio	2.2 to 1		2.4 to 1		2.3 to 1		2.3 to 1		2.2 to 1	
Working capital	128,299		140,530		135,366		131,197		117,587	
Inventories	45,870		42,237		43,486		36,596		28,652	
Net property, plant and equipment	97,437		105,038		99,401		88,247		82,111	
Total assets	626,049		643,354		548,341		539,696		517,697	
Long-term debt	54,600		99,700		50,000		76,300		89,100	
Long-term obligations, including long-term debt	97,435		141,187		66,419		93,479		101,686	
Shareholders' equity	423,682		405,219		377,929		343,805		317,882	
Common shares outstanding (000s)	32,277		32,472		32,751		32,938		32,762	
Equity (book value) per share	$ 13.13		$ 12.48		$ 11.54		$ 10.44		$ 9.70	
Stock price range	18.24-34.82		25.10-33.95		24.07-39.20		19.30-28.35		12.87-24.80	

Certain acquisitions, divestitures, closures of operations or product lines, and certain accounting reclassifications affect the comparability of information contained in the "Five-Year Summary.”

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

This section of this Form 10-K generally discusses 2020 and 2019 items and year-to-year comparisons between 2020 and 2019. Discussions of 2018 items and year-to-year comparisons between 2019 and 2018 that are not included in this Form 10-K can be found in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7 of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2019.

Overview

CTS Corporation ("CTS", "we", "our" or "us") is a leading designer and manufacturer of products that Sense, Connect and Move. Our vision is to be a leading provider of sensing and motion devices as well as connectivity components, enabling an intelligent and seamless world. These devices are categorized by their ability to Sense, Connect or Move. Sense products provide vital inputs to electronic systems. Connect products allow systems to function in synchronization with other systems. Move products ensure required movements are effectively and accurately executed. We are committed to achieving our vision by continuing to invest in the development of products and technologies, and talent within these categories.

We manufacture sensors, actuators, and connectivity components in North America, Europe, and Asia. CTS provides engineered products to OEMs and tier one suppliers in the aerospace and defense, industrial, information technology, medical, telecommunications, and transportation markets.

There is an increasing proliferation of sensing and motion applications within various markets we serve. In addition, the increasing connectivity of various devices to the internet results in greater demand for communication bandwidth and data storage, increasing the need for our connectivity products. Our success is dependent on the ability to execute our strategy to support these trends. We are subject to challenges including periodic market softness, competition from other suppliers, changes in technology, and the ability to add new customers, launch new products or penetrate new markets.

Impact of COVID-19

The COVID-19 pandemic has resulted in a significant disruption to the global economy that has and is likely to have continued adverse impact on our business. We have experienced reductions in customer demand in several of our end markets. We expect that social distancing measures, higher employee absenteeism, and reductions in production due to mandated labor capacity restrictions at some of our plants in Asia, Europe, and North America, as well as the reduced operational capacity of our customers and suppliers, could continue to impact our business into 2021. As a result of these economic headwinds, we implemented cost savings measures throughout 2020, some of which were temporary in nature. We continue to evaluate market conditions and the impact on our operations to determine the extent and duration of any future cost measures. The pandemic could lead to additional extended disruptions of economic activity and the impact on our consolidated results of operations, financial position and cash flows could be material. We remain cautious about the financial impact into 2021.

Results of Operations: Year Ended December 31, 2020 versus Year Ended December 31, 2019

(Amounts in thousands, except percentages and per share amounts):

The following table highlights changes in significant components of the Consolidated Statements of Earnings for the years ended December 31, 2020, and December 31, 2019:

	Years Ended December 31,		Percent Change	Percent of Net Sales	
	2020	2019		2020	2019
Net sales	$ 424,066	$ 468,999	(9.6)	100.0	100.0
Cost of goods sold	285,003	311,424	(8.5)	67.2	66.4
Gross margin	139,063	157,575	(11.7)	32.8	33.6
Selling, general and administrative expenses	67,787	70,408	(3.7)	16.0	15.0
Research and development expenses	24,317	25,967	(6.4)	5.7	5.5
Restructuring charges	1,830	7,448	(75.4)	0.4	1.6
Gain on sale of assets	—	(63)	—	—	—
Total operating expenses	93,934	103,760	(9.5)	22.2	22.1
Operating earnings	45,129	53,815	(16.1)	10.6	11.5
Total other income (expense), net	350	(3,549)	(109.9)	0.1	(0.8)
Earnings before taxes	45,479	50,266	(9.5)	10.7	10.7
Income tax expense	10,793	14,120	(23.6)	2.5	3.0
Net earnings	$ 34,686	$ 36,146	(4.0)	8.2	7.7
Diluted earnings per share:					
Diluted net earnings per share	$ 1.06	$ 1.09			

Net sales were $424,066 for the year ended December 31, 2020, a decrease of $44,933, or 9.6% from 2019. Net sales for 2020 were adversely impacted by lower volumes as a result of the COVID-19 pandemic and government activities to control its spread. Specifically, mandated or selective plant closures due to the pandemic and related government activities drove weak demand in some end markets. In addition, the activities had a significant impact on our supply chain. We remain cautious about possible future disruptions on our supply chain, operations, and future demand.

Net sales to transportation markets decreased $57,559 or 19.3%. Net sales to other markets increased $12,626 or 7.4%. The QTI acquisition, which was completed in July 2019, added sales of $24,508 in 2020 compared to $9,252 in 2019. Changes in foreign exchange rates increased net sales by $1,706 year-over-year primarily due to the U.S. Dollar depreciating compared to the Chinese Renminbi and Euro.

Gross margin as a percent of sales was 32.8% in 2020 versus 33.6% in 2019. The decrease in gross margin was driven primarily by lower sales volumes, which was partially offset by various cost reduction measures.

Selling, general and administrative ("SG&A") expenses were $67,787, or 16.0% of sales for the year ended December 31, 2020, versus $70,408 or 15.0% of sales in the comparable period of 2019. The 2020 SG&A costs include savings from cost reduction measures we implemented during the year, partially offset by a full year of amortization of intangibles and other operating costs associated with the QTI acquisition.

Research and development expenses were $24,317 or 5.7% of sales in 2020 compared to $25,967 or 5.5% of sales in 2019.

Restructuring charges were $1,830 for year ended December 31, 2020 and were primarily as a result of certain initiatives initiated in the third quarter of 2020. The restructuring actions are focused on optimizing our manufacturing footprint and improving operational efficiency by better utilizing our systems capabilities. Restructuring charges were $7,448 in 2019.

Operating earnings were $45,129, or 10.6% of sales in 2020, compared to $53,815, or 11.5% of sales in 2019 as a result of the items discussed above.

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

	Years Ended December 31,	
	2020	2019
Interest expense	$ (3,272)	$ (2,648)
Interest income	1,047	1,737
Other income (expense)	2,575	(2,638)
Total other income (expense), net	$ 350	$ (3,549)

Interest expense increased mainly due to a higher average debt balance during 2020 related to the QTI acquisition and additional borrowings at the end of the first quarter to ensure adequate liquidity for the next several quarters in light of COVID-19 concerns. Interest income declined as a result of lower interest rates on foreign cash balances. The Other income, net for the twelve months ended December 31, 2020 was principally driven by foreign currency translation gains, mainly due to the depreciation of the U.S. Dollar compared to the Chinese Renminbi and Euro, which were partially offset by pension expense.

	Years Ended December 31,	
	2020	**2019**
Effective tax rate	23.7%	28.1%

The effective income tax rate in 2020 was 23.7% compared to 28.1% in the prior year. This decrease is primarily attributed to the change in the mix of earnings by jurisdiction, decreases in uncertain tax position and offset by the company's decision to no longer reinvest the earnings of its Taiwan subsidiary. The tax rate in 2020 was higher than the U.S. statutory federal tax rate primarily due to foreign earnings that are taxed at higher rates and unfavorable impacts to reserves. The tax rate in 2019 was higher than the U.S. statutory federal tax rate primarily due to foreign earnings that are taxed at higher rates, the impact of taxes on unremitted earnings and unfavorable increases to reserves.

Net earnings were $34,686 or $1.06 per diluted share for the year ended December 31, 2020 compared to earnings of $36,146 or $1.09 per diluted share in the comparable period of 2019.

Liquidity and Capital Resources

Cash and cash equivalents were $91,773 at December 31, 2020, and $100,241 at December 31, 2019, of which $90,051 and $98,309 respectively, were held outside the United States. The decrease in cash and cash equivalents of $8,468 was primarily driven by net payments of long-term debt of $45,100, capital expenditures of $14,858, payments for the SSI acquisition of $8,309, treasury stock purchases of $8,080, and dividends paid of $5,179, which were partially offset by cash generated from operating activities of $76,783. Total debt as of December 31, 2020, and December 31, 2019, was $54,600 and $99,700, respectively. Total debt as a percentage of total capitalization, defined as long-term debt as a percentage of total debt and shareholders' equity, was 11.4% at December 31, 2020, compared to 19.7% at December 31, 2019.

Working capital decreased by $12,231 from December 31, 2019, to December 31, 2020, driven mainly by the decrease in cash and cash equivalents related to the items noted above.

Cash Flows from Operating Activities

Net cash provided by operating activities was $76,783 during the year ended December 31, 2020. Components of net cash provided by operating activities included net earnings of $34,686, depreciation and amortization expense of $26,670, stock-based compensation of $3,417, other net non-cash items totaling $930, and a net cash inflow from changes in assets and liabilities of $10,064.

Cash Flows from Investing Activities

Net cash used in investing activities for the year ended December 31, 2020 was $23,167, driven by capital expenditures of $14,858 and the payment for the Sensor Scientific, Inc. ("SSI") acquisition of $8,309. See Note 3 "Business Acquisitions" in the Notes to the Consolidated Financial Statements in this Annual Report on Form 10-K.

Cash Flows from Financing Activities

Net cash used in financing activities for the year ended December 31, 2020, was $61,333. The net cash outflow was the result of net payments of long-term debt of $45,100, treasury stock purchases of $8,080, dividend payments of $5,179, taxes paid on behalf of equity award participants of $1,917, and a contingent consideration payment of $1,057.

Capital Resources

Long-term debt was comprised of the following:

	As of December 31,	
	2020	2019
Total credit facility	$ 300,000	$ 300,000
Balance Outstanding	$ 54,600	$ 99,700
Standby letters of credit	$ 1,740	$ 1,800
Amount available, subject to covenant restrictions	$ 243,660	$ 198,500
Weighted-average interest rate	1.92%	3.25%
Commitment fee percentage per annum	0.23%	0.23%

On February 12, 2019, we entered into an amended and restated five-year Credit Agreement with a group of banks (the "Credit Agreement") to extend the term of the facility. The Credit Agreement provides for a revolving credit facility of $300,000, which may be increased by $150,000 at the request of the Company, subject to the administrative agent's approval. This new unsecured credit facility replaces the prior $300,000 unsecured credit facility, which would have expired August 10, 2020. Borrowings of $50,000 under the prior credit agreement were refinanced into the Credit Agreement. The prior agreement was terminated as of February 12, 2019.

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 the base rate defined in the Credit Agreement. We also pay a quarterly commitment fee on the unused portion of the Revolving Credit Facility. The commitment fee ranges from 0.20% to 0.30% based on our total leverage ratio.

We have entered into interest rate swap agreements to fix interest rates on $50,000 of long-term debt through February 2024. The difference to be paid or received under the terms of the swap agreements is recognized as an adjustment to interest expense when settled.

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 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.

Revenue Recognition

Product revenue is recognized when the transfer of promised goods to a customer occurs in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods. We follow the five step model to determine when this transfer has occurred: 1) identify the contract(s) with the customer; 2) identify the performance obligations in the contract; 3) determine the transaction price; 4) allocate the transaction price to the performance obligations in the contract; 5) recognize revenue when (or as) the entity satisfies a performance obligation.

Product Warranties

Provisions for estimated warranty expenses primarily related to our automotive products are made at the time products are sold. These estimates are established either using a quoted industry rate or based on customer specific circumstances. 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. Over the last three years, product warranty reserves have ranged from 0.5% to 2.4% of total sales. We believe our reserve level is appropriate considering all facts and circumstances surrounding any outstanding quality claims and our historical experience selling our products to our customers.

Accounts Receivable

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

- Credit reviews of all new significant 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 creditworthiness,
- 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, specific customer collection issues, current conditions and reasonable and supportable forecasts that affect the collectability of the remaining cash flows over the contractual terms of our receivables and other financial assets. Over the last three years, accounts receivable reserves have ranged from 0.1% to 1.1% 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 of the reserves established, we cannot guarantee that our credit loss experience will continue to be consistent with historical experience or our current forecasts.

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 10.2% to 13.9% 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 defined benefit obligations. We utilize actuaries from consulting companies in each applicable country to develop our discount rates, matching 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.

In February 2020, the CTS Board of Directors authorized management to explore termination of our U.S. Pension Plan (“Plan”) at management's discretion, subject to certain conditions. On June 1, 2020, we amended the Plan whereby we set an effective termination date of July 31, 2020. In February 2021, we received the determination letter from the Internal Revenue Service that allows us to proceed with the termination process. The completion of the Plan termination process, including offering lump sum settlements and the final purchases of annuities, is expected to occur in 2021. Since the amount of the settlement depends on a number of factors determined as of the liquidation date, including lump sum payout estimates, the annuity pricing interest rate environment and asset experience, we are currently unable to determine the ultimate cost of the settlement. However, we expect non-cash settlement charges of approximately $10,000 to $20,000 to be recognized in the second or third quarter of 2021 with the remaining amount of the gross accumulated other comprehensive loss balance to be recognized by the end of 2021. We do not expect any cash contributions from the Company to the Plan as a result of this termination because plan assets significantly exceed estimated liabilities.

Impairment 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 regulatory factors or in the business climate,
- 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. We have the option to perform a qualitative assessment (commonly referred to as "step zero" test) to determine whether further quantitative analysis for impairment of goodwill and indefinite-lived intangible assets is necessary. The qualitative assessment includes a review of macroeconomic conditions, industry and market considerations, internal cost factors, and our own overall financial and share price performance, among other factors. If, after assessing the totality of events or circumstances we determine that it is not more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, we do not need to perform a quantitative analysis.

If a quantitative assessment is required, we estimate the fair value of each reporting unit using a combination of discounted cash flow analysis and market-based valuation methodologies. Determining fair value using a quantitative approach requires significant judgment, including judgments about projected revenues, cash flows over a multi-year period, discount rates and estimated valuation multiples. The discount rate applied to our forecasts of future cash flows is based on our estimated weighted average cost of capital. In assessing the reasonableness of our determined fair values, we evaluate our results against our market capitalization. Changes in these estimates and assumptions could materially affect the determination of fair value and impact the goodwill impairment assessment.

We typically perform a quantitative assessment at least every three years, or as conditions require. Our previous quantitative test was in 2017, therefore, we performed the current year assessment using a quantitative approach. Based upon our latest assessment, we determined that our goodwill was not impaired as of October 1, 2020. We will monitor future results and will perform a test if indicators trigger an impairment review.

Impairment 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. We recorded a charge of $1,016 during the first quarter due to the impairment of a specific asset group. In addition, we recorded a charge of $2,200 during the third quarter of 2020 due to the impairment of a specific asset group as a result of the restructuring actions being taken. No other indicators of impairment were identified during the year ended December 31, 2020.

Environmental and Legal Contingencies

U.S. GAAP requires a liability to be recorded for contingencies when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated. Significant judgment is required to determine the existence and amounts of our environmental, legal and other contingent liabilities. We regularly consult with attorneys and consultants to determine the relevant facts and circumstances before we record a liability. Changes in laws, regulatory orders, cost estimates, participation of other parties, timing of payments, input of attorneys and consultants, or other circumstances may have a material impact on the recorded liability.

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 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 our 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. Accounting Standards Codification (ASC) No. 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 resolution 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 benefit 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.

Following the enactment of the 2017 Tax Cut and Jobs Act and the associated one-time transition tax, in general, repatriation of foreign earnings to the U.S. can be completed with no incremental U.S. Tax. However, there are limited other taxes that continue to apply such as foreign withholding and certain state taxes. The company records a deferred liability for the estimated foreign earnings and state tax cost associated with the undistributed foreign earnings that are not permanently reinvested.

Contractual Obligations

Our contractual obligations as of December 31, 2020, were:

	Payments due by period				
	Total	**2021**	**2022-2023**	**2024-2025**	**2026-beyond**
Long-term debt, including interest	$ 59,265	$ 1,502	$ 2,948	$ 54,815	$ —
Operating lease payments	34,891	4,854	8,949	7,682	13,406
Retirement obligations	6,713	816	1,514	1,390	2,993
Total	$ 100,869	$ 7,172	$ 13,411	$ 63,887	$ 16,399

We have no off-balance sheet arrangements that have a material current effect or are reasonably likely to have a material future effect on our financial condition or changes in our financial condition.

Management believes that existing capital resources and funds generated from operations are sufficient to finance anticipated capital requirements.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

(in thousands)

Our cash flows and earnings are subject to fluctuations resulting from changes in foreign currency exchange rates and interest rates. We manage our exposure to these market risks through internally established policies and procedures and, when deemed appropriate, through the use of derivative financial instruments. Our policies do not allow speculation in derivative instruments for profit or execution of derivative instrument contracts for which there are no underlying exposures. We do not use financial instruments for trading purposes, and we are not a party to any leveraged derivatives. We monitor our underlying market risk exposures on an ongoing basis and believe that we can modify or adapt our hedging strategies as needed.

Interest Rate Risk

We are exposed to risk of changes in interest rates on our revolving credit facility. There was $54,600 and $99,700 outstanding under our revolving credit facility at December 31, 2020, and 2019, respectively. As of December 31, 2020, we had interest rate swaps that fix interest costs on $50,000 of our long-term debt through February 2024.

Foreign Currency Risk

We are exposed to foreign currency exchange rate risks. Our significant foreign subsidiaries are located in China, Czech Republic, Mexico, and Taiwan. As of December 31, 2020, we had foreign currency forward contracts outstanding with a notional value of $14,958 to hedge our exposure against the Mexican Peso.

Commodity Price Risk

Many of our products require the use of raw materials that are produced in only a limited number of regions around the world or are available from only a limited number of suppliers. Our results of operations may be materially and adversely affected if we have difficulty obtaining these raw materials, the quality of available raw materials deteriorates, or there are significant price increases for

these raw materials. For periods in which the prices of these raw materials are rising, we may be unable to pass on the increased cost to our customers, which would result in decreased margins for the products in which they are used. For periods in which the prices are declining, we may be required to write down our inventory carrying cost of these raw materials, since we record our inventory at the lower of cost or net realizable value.

Public Health Risk

The COVID-19 outbreak is adversely affecting our business. We and some of our suppliers and customers have facilities that were required to remain closed for a period of time, and when permitted to reopen, employees have been limited in their ability to return to work due to governmental restrictions. The consequences of the outbreak, and the actions taken to limit its spread, have adversely affected our sales and results of operations in 2020 and could impact our results in 2021, and possibly longer if coronavirus consequences continue.

Item 8. Financial Statements and Supplementary Data

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Shareholders
CTS Corporation

Opinion on the financial statements

We have audited the accompanying consolidated balance sheets of CTS Corporation (an Indiana corporation) and subsidiaries (the "Company") as of December 31, 2020 and 2019, the related consolidated statements of earnings, comprehensive earnings, changes in shareholders' equity, and cash flows for each of the three years in the period ended December 31, 2020, and the related notes and financial statement schedules included under Item 15(a) (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"), and our report dated February 25, 2021 expressed an unqualified opinion.

Basis for opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical audit matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements; and (2) involved our especially challenging, subjective, or complex judgments. The communication of a critical audit matter does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Goodwill impairment assessment

The Company's consolidated goodwill balance was $109.5 million as of December 31, 2020. As described in Note 1 and Note 8 to the consolidated financial statements, the Company evaluates goodwill for impairment at the reporting unit level annually and performed a quantitative impairment assessment as of October 1, 2020 for each of its three reporting units. The quantitative impairment assessment involves the comparison of the fair value of a reporting unit to its carrying amount. The Company determines the fair value of each reporting unit using a combination of discounted cash flow analysis and market-based valuation methodologies, which requires significant management judgment. We have identified the quantitative goodwill impairment assessment as a critical audit matter.

The principal consideration for our determination that the quantitative impairment assessment is a critical matter was the significant auditor judgment required to evaluate the reporting units' forecasted revenues, forecasted cash flows over a multi-year period, discount rates, and estimated valuation multiples.

Our audit procedures related to the critical audit matter included the following, among others:

- Tested the design and operating effectiveness of the key controls over the Company's goodwill impairment assessment, including controls over the development of the significant assumptions such as the forecasted revenues and cash flows, discount rates, and estimated valuation multiples;
- Evaluated the forecasted revenues and cash flows for each reporting unit by comparing the forecasted growth assumptions to both current and historical results, as well as forecasted industry trends;
- Assessed the Company's discount rates for each reporting unit by comparing them against discount rates independently developed using publicly available market data for comparable peers; and
- Assessed the estimated valuation multiples for each reporting unit by evaluating the reasonableness of the selected comparable publicly traded companies and the resulting market multiples calculations.

Specialists were involved in evaluating the valuation methodology and significant assumptions such as discount rates and estimated valuation multiples.

/s/ GRANT THORNTON LLP

We have served as the Company's auditor since 2005.

Chicago, Illinois
February 25, 2021

CTS CORPORATION AND SUBSIDIARIES
Consolidated Statements of Earnings
(in thousands, except per share amounts)

	Years Ended December 31,		
	2020	2019	2018
Net sales	$ 424,066	$ 468,999	$ 470,483
Cost of goods sold	285,003	311,424	305,510
Gross margin	139,063	157,575	164,973
Selling, general and administrative expenses	67,787	70,408	73,569
Research and development expenses	24,317	25,967	25,304
Restructuring charges	1,830	7,448	5,062
Gain on sale of assets	—	(63)	—
Operating earnings	45,129	53,815	61,038
Other (expense) income:			
Interest expense	(3,272)	(2,648)	(2,085)
Interest income	1,047	1,737	1,826
Other income (expense)	2,575	(2,638)	(2,676)
Total other income (expense), net	350	(3,549)	(2,935)
Earnings before taxes	45,479	50,266	58,103
Income tax expense	10,793	14,120	11,571
Net earnings	$ 34,686	$ 36,146	$ 46,532
Net earnings per share:			
Basic	1.07	1.11	1.41
Diluted	1.06	1.09	1.39
Basic weighted-average common shares outstanding	32,317	32,700	33,024
Effect of dilutive securities	267	405	545
Diluted weighted-average common shares outstanding	32,584	33,105	33,569
Cash dividends declared per share	$ 0.16	$ 0.16	$ 0.16

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

CTS CORPORATION AND SUBSIDIARIES
Consolidated Statements of Comprehensive Earnings
(in thousands)

	Years Ended December 31,		
	2020	**2019**	**2018**
Net earnings	$ 34,686	$ 36,146	$ 46,532
Other comprehensive (loss) earnings:			
Changes in fair market value of derivatives, net of tax	(1,307)	(509)	795
Changes in unrealized pension cost, net of tax	(2,965)	6,439	(1,830)
Cumulative translation adjustment, net of tax	77	83	(311)
Other comprehensive (loss) earnings	$ (4,195)	$ 6,013	$ (1,346)
Comprehensive earnings	$ 30,491	$ 42,159	$ 45,186

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

CTS CORPORATION AND SUBSIDIARIES
Consolidated Balance Sheets
(in thousands)

	December 31,	
	2020	2019
ASSETS		
Current Assets		
Cash and cash equivalents	$ 91,773	$ 100,241
Accounts receivable, net	80,981	78,008
Inventories, net	45,870	42,237
Other current assets	14,607	16,992
Total current assets	233,231	237,478
Property, plant and equipment, net	97,437	105,038
Operating lease assets, net	23,281	24,644
Other assets		
Prepaid pension asset	56,642	62,082
Goodwill	109,497	106,056
Other intangible assets, net	79,121	85,215
Deferred income taxes	24,250	19,795
Other assets	2,590	3,046
Total other assets	272,100	276,194
Total Assets	$ 626,049	$ 643,354
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities		
Accounts payable	$ 50,489	$ 48,219
Operating lease obligations	3,294	2,787
Accrued payroll and benefits	12,978	9,564
Accrued expenses and other liabilities	38,171	36,378
Total current liabilities	104,932	96,948
Long-term debt	54,600	99,700
Long-term operating lease obligations	23,163	24,926
Long-term pension obligations	7,466	6,632
Deferred income taxes	7,010	5,637
Other long-term obligations	5,196	4,292
Total Liabilities	202,367	238,135
Commitments and Contingencies (Note 11)		
Shareholders' Equity		
Common stock	311,190	307,932
Additional contributed capital	41,654	43,689
Retained earnings	539,281	509,766
Accumulated other comprehensive loss	(95,921)	(91,726)
Total shareholders' equity before treasury stock	796,204	769,661
Treasury stock	(372,522)	(364,442)
Total shareholders' equity	423,682	405,219
Total Liabilities and Shareholders' Equity	$ 626,049	$ 643,354

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

CTS CORPORATION AND SUBSIDIARIES
Consolidated Statements of Cash Flows
(in thousands)

	Years Ended December 31,		
	2020	2019	2018
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net earnings	$ 34,686	$ 36,146	$ 46,532
Adjustments to reconcile net earnings to net cash provided by operating activities:			
Depreciation and amortization	26,670	24,619	22,514
Pensions and other post-retirement plan expense	2,698	1,009	422
Stock-based compensation	3,417	5,015	5,256
Asset impairment charges	1,016	—	—
Restructuring non-cash charges	300	1,704	—
Deferred income taxes	(2,048)	2,413	(1,008)
Gain on sales of fixed assets	—	(63)	—
(Gain) loss on foreign current hedges, net of tax	(20)	97	(82)
Changes in assets and liabilities, net of acquisitions:			
Accounts receivable	(343)	3,784	(9,877)
Inventories	(578)	4,371	(7,521)
Operating lease assets	1,363	(2,578)	—
Other assets	3,701	(2,605)	(2,675)
Accounts payable	3,860	(4,658)	5,113
Accrued payroll and benefits	2,518	(5,940)	2,349
Income taxes payable	(927)	941	1,564
Operating lease liabilities	(1,257)	2,921	—
Accrued expenses and other liabilities	1,983	(2,484)	(4,053)
Pension and other post-retirement plans	(256)	(287)	(382)
Net cash provided by operating activities	76,783	64,405	58,152
CASH FLOWS FROM INVESTING ACTIVITIES:			
Capital expenditures	(14,858)	(21,733)	(28,488)
Proceeds from sale of assets	—	137	3
Payments for acquisitions, net of cash acquired	(8,309)	(73,906)	—
Net cash used in investing activities	(23,167)	(95,502)	(28,485)
CASH FLOWS FROM FINANCING ACTVITIES:			
Payments of long-term debt	(3,792,550)	(1,885,800)	(1,060,100)
Proceeds from borrowings of long-term debt	3,747,450	1,935,500	1,033,800
Purchase of treasury stock	(8,080)	(11,746)	(9,440)
Dividends paid	(5,179)	(5,238)	(5,285)
Taxes paid on behalf of equity award participants	(1,917)	(2,657)	(1,468)
Contingent consideration payment	(1,057)	—	—
Net cash (used in) provided by financing activities	(61,333)	30,059	(42,493)
Effect of exchange rate on cash and cash equivalents	(751)	346	187
Net decrease in cash and cash equivalents	(8,468)	(692)	(12,639)
Cash and cash equivalents at beginning of year	100,241	100,933	113,572
Cash and cash equivalents at end of year	$ 91,773	$ 100,241	$ 100,933
Supplemental cash flow information:			
Cash paid for interest	$ 2,597	$ 1,961	$ 1,582
Cash paid for income taxes, net	$ 11,967	$ 11,113	$ 9,916
Non-cash financing and investing activities:			
Capital expenditures incurred not paid	$ 729	$ 4,077	$ 4,312

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

CTS CORPORATION AND SUBSIDIARIES
Consolidated Statements of Shareholders' Equity
(in thousands)

	Common Stock	Additional Contributed Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Treasury Stock	Total
Balances at January 1, 2018	$ 304,777	$ 41,084	$ 420,160	$ (78,960)	$(343,256)	$ 343,805
Net earnings	—	—	46,532	—	—	46,532
Changes in fair market value of derivatives, net of tax	—	—	—	795	—	795
Changes in unrealized pension cost, net of tax	—	—	—	(1,830)	—	(1,830)
Cumulative translation adjustment, net of tax	—	—	—	(311)	—	(311)
Cash dividends of $0.16 per share	—	—	(5,278)	—	—	(5,278)
Acquired 342,100 shares of treasury stock	—	—	—	—	(9,440)	(9,440)
Issued shares on vesting of restricted stock units	1,920	(3,389)	—	—	—	(1,469)
Implementation of ASU No. 2018-02	—	—	17,433	(17,433)	—	—
Stock compensation	—	5,125	—	—	—	5,125
Balances at December 31, 2018	$ 306,697	$ 42,820	$ 478,847	$ (97,739)	$(352,696)	$ 377,929
Net earnings	—	—	36,146	—	—	36,146
Changes in fair market value of derivatives, net of tax	—	—	—	(509)	—	(509)
Changes in unrealized pension cost, net of tax	—	—	—	6,439	—	6,439
Cumulative translation adjustment, net of tax	—	—	—	83	—	83
Cash dividends of $0.16 per share	—	—	(5,227)	—	—	(5,227)
Acquired 420,770 shares of treasury stock	—	—	—	—	(11,746)	(11,746)
Issued shares on vesting of restricted stock units	1,235	(3,891)	—	—	—	(2,656)
Stock compensation	—	4,760	—	—	—	4,760
Balances at December 31, 2019	$ 307,932	$ 43,689	$ 509,766	$ (91,726)	$(364,442)	$ 405,219
Net earnings	—	—	34,686	—	—	34,686
Changes in fair market value of derivatives, net of tax	—	—	—	(1,307)	—	(1,307)
Changes in unrealized pension cost, net of tax	—	—	—	(2,965)	—	(2,965)
Cumulative translation adjustment, net of tax	—	—	—	77	—	77
Cash dividends of $0.16 per share	—	—	(5,171)	—	—	(5,171)
Acquired 342,731 shares for treasury stock	—	—	—	—	(8,080)	(8,080)
Issued shares on vesting of restricted stock units	3,258	(5,175)	—	—	—	(1,917)
Stock compensation	—	3,140	—	—	—	3,140
Balances at December 31, 2020	$ 311,190	$ 41,654	$ 539,281	$ (95,921)	$(372,522)	$ 423,682

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

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(in thousands, except for share and per share data)

NOTE 1 — Summary of Significant Accounting Policies

Description of Business: CTS Corporation ("CTS", "we", "our", "us" or the "Company") is a global manufacturer of sensors, connectivity components, and actuators operating as a single reportable business segment. We operate manufacturing facilities located throughout North America, Asia and Europe and service major markets globally.

Principles of Consolidation: The consolidated financial statements include the accounts of CTS and its wholly owned subsidiaries. All significant intercompany accounts and transactions have been eliminated.

Use of Estimates: The preparation of financial statements in conformity with the accounting principles generally accepted in the United States of America ("U.S. GAAP") 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 reporting period. Actual results could differ materially from those estimates.

Cash and Cash Equivalents: All highly liquid investments with maturities of three months or less at the date of purchase are considered to be cash equivalents.

Accounts Receivable and Allowance for Credit Losses: Accounts receivable consists primarily of amounts due from normal business activities. We maintain an allowance for credit losses for estimated uncollectible accounts receivable. Our reserves for estimated credit losses are based upon historical experience, specific customer collection issues, current conditions and reasonable and supportable forecasts that affect the collectability of the remaining cashflows over the contractual terms of our receivables and other financial assets. Accounts are written off against the allowance account when they are determined to no longer be collectible.

Concentration of Credit Risk: Financial instruments that potentially subject us to concentrations of credit risk consist of cash and cash equivalents and trade receivables. Our cash and cash equivalents, at times, may exceed federally insured limits. Cash and cash equivalents are deposited primarily in banking institutions with global operations. We have not experienced any losses in such accounts. We believe we are not exposed to any significant credit risk related to cash and cash equivalents.

Trade receivables subject us to the potential for credit risk with major customers. We sell our products to customers principally in the aerospace and defense, industrial, information technology, medical, telecommunications, and transportation markets, primarily in North America, Europe, and Asia. We perform ongoing credit evaluations of our customers to minimize credit risk. We do not require collateral. The allowance for credit losses is based on management's estimates of the collectability of its accounts receivable after analyzing historical credit losses, customer concentrations, customer creditworthiness, current economic trends, specific customer collection issues, and reasonable and supportable forecasts that affect the collectability of the remaining cashflows over the contractual terms of our receivables. Uncollectible trade receivables are charged against the allowance for credit losses when all reasonable efforts to collect the amounts due have been exhausted.

Our net sales to significant customers as a percentage of total net sales were as follows:

	Years Ended December 31,		
	2020	2019	2018
Toyota Motor Corporation	13.4%	11.6%	10.5%
Cummins Inc.	13.1%	16.1%	15.2%
Honda Motor Co.	8.0%	9.6%	10.5%

We sell parts to these three transportation customers for certain vehicle platforms under purchase agreements that have no volume commitments and are subject to purchase orders issued on a periodic basis.

No other customer accounted for 10% or more of total net sales during these periods.

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

Retirement Plans: We have various defined benefit and defined contribution retirement plans. Our policy is to annually fund the defined benefit pension plans at or above the minimum required by law. We: 1) recognize the funded status of a benefit plan (measured as the difference between plan assets at fair value and the projected benefit obligation) in our Consolidated Balance Sheets; 2) recognize the gains or losses and prior service costs or credits that arise during the period but are not recognized as components of

net periodic benefit/cost as a component of other comprehensive earnings; and 3) measure defined benefit plan assets and obligations as of the date of our fiscal year-end.

During 2020, the Company commenced the termination process on our primary U.S. Pension Plan (“U.S. Plan”) and expects to offer employees a lump sum settlement and then complete the transfer of any remaining U.S. Plan assets to a third-party administrator, which the Company expects to complete by the end of 2021. See Note 7, "Retirement Plans" for further information.

Property, Plant and Equipment: Property, plant and equipment is stated at cost, less accumulated depreciation. Depreciation is computed primarily over the estimated useful lives of the various classes of assets using the straight-line method. Useful lives for buildings and improvements range from 10 to 45 years, machinery and equipment from 3 to 15 years, and software from 2 to 15 years. Depreciation on leasehold improvements is computed over the lesser of the lease term or estimated useful lives of the assets. Amounts expended for maintenance and repairs are charged to expense as incurred. Major overhauls that extend the useful lives of existing assets are capitalized. Upon disposition, any related gains or losses are included in operating earnings.

Income Taxes: We account for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements. Under this method, we determine deferred tax assets and liabilities on the basis of the differences between the financial statement and tax bases of assets and liabilities by using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date.

We recognize deferred tax assets to the extent that we believe that these assets are more-likely-than-not to be realized. In making such a determination, we consider all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations. If we determine that we would be able to realize our deferred tax assets in the future in excess of their net recorded amount, we would make an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

We record uncertain tax positions in accordance with Accounting Standards Codification ("ASC") Topic 740 on the basis of a two-step process in which (1) we determine whether it is more-likely-than-not that the tax positions will be sustained on the basis of the technical merits of the position and (2) for those tax positions that meet the more-likely-than-not recognition threshold, we recognize the largest amount of tax benefit that is more than 50 percent likely to be realized upon ultimate settlement with the related tax authority.

We recognize interest and penalties related to unrecognized tax benefits on the income tax expense line in the accompanying Consolidated Statements of Earnings. Accrued interest and penalties are included in the related tax liability line in the Consolidated Balance Sheets.

See Note 19, "Income Taxes" for further information.

Goodwill and Indefinite-lived Intangible Assets: Goodwill represents the excess of the purchase price over the fair values of the net assets acquired in a business combination. In accordance with ASC 350, *Intangibles—Goodwill and Other*, goodwill is not amortized, but instead is tested for impairment annually or more frequently if circumstances indicate a possible impairment may exist. Absent any interim indicators of impairment, the Company tests for goodwill impairment as of the first day of its fourth fiscal quarter of each year.

We have the option to perform a qualitative assessment (commonly referred to as "step zero" test) to determine whether further quantitative analysis for impairment of goodwill and indefinite-lived intangible assets is necessary. The qualitative assessment includes a review of macroeconomic conditions, industry and market considerations, internal cost factors, and our own overall financial and share price performance, among other factors. If, after assessing the totality of events or circumstances, we determine that it is not more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, we do not need to perform a quantitative analysis.

We typically perform a quantitative assessment at least every three years, or as conditions require. Our previous quantitative test was in 2017, therefore, we performed the current year assessment using a quantitative approach. Based upon our latest assessment, we determined that our goodwill was not impaired as of October 1, 2020.

In addition to goodwill, we also have acquired in-process research and development ("IPR&D") intangible assets that are treated as indefinite-lived intangible assets and therefore not subject to amortization until the completion or abandonment of the associated research and development efforts. If these efforts are abandoned in the future, the carrying value of the IPR&D asset will be expensed. If the research and development efforts are successfully completed, the IPR&D will be reclassified as a finite-lived asset and amortized over its useful life. In the third quarter of 2020, due to the restructuring actions further outlined in Note 9, we identified a triggering event associated with a specific asset group including IPR&D due to executed restructuring actions. This resulted in the

recognition of $2,200 of impairment charges, and a revaluation of associated contingent liabilities totaling $1,900. The net impact of $300 was recorded as restructuring charges in the Consolidated Statements of Earnings.

Other Intangible Assets and Long-lived Assets: We account for long-lived assets (excluding indefinite-lived intangible assets) in accordance with the provisions of ASC 360, *Property, Plant, and Equipment*. This statement requires that long-lived assets, which includes fixed assets and finite-lived intangible assets, be reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. If an impairment test is warranted, recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to the sum of the undiscounted cash flows expected to result from the use and the eventual disposition of the asset. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount in which the carrying amount of the assets exceeds the fair value of the assets. Assets to be disposed of are reported at the lower of the carrying amount or fair value less costs to sell. We recorded a charge of $1,016 during the first quarter due to the impairment of a specific asset group that was recorded in selling, general and administrative expenses in the Consolidated Statements of Earnings.

Intangible assets (excluding indefinite-lived intangible assets) consist primarily of technology, customer lists and relationships, patents, and trade names. These assets are recorded at cost and usually amortized on a straight-line basis over their estimated lives. We assess useful lives based on the period over which the asset is expected to contribute to cash flows.

Revenue Recognition: Product revenue is recognized upon the transfer of promised goods to a customer in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods. We follow the five step model to determine when this transfer has occurred: 1) identify the contract(s) with the customer; 2) identify the performance obligations in the contract; 3) determine the transaction price; 4) allocate the transaction price to the performance obligations in the contract; 5) recognize revenue when (or as) the entity satisfies a performance obligation.

Research and Development: Research and development ("R&D") costs include expenditures for search and investigation aimed at discovery of new knowledge to be used to develop new products or processes or to significantly enhance existing products or production processes. R&D costs also include the implementation of new knowledge through design, testing of product alternatives, or construction of prototypes. We expense all R&D costs as incurred, net of customer reimbursements for sales of prototypes and non-recurring engineering charges.

We create prototypes and tools related to R&D projects. A prototype is defined as a constructed product not intended for production resulting in a commercial sale. We also incur engineering costs related to R&D activities. Such costs are incurred to support such activities to improve the reliability, performance and cost-effectiveness of our existing products and to design and develop innovative products that meet customer requirements for new applications. Furthermore, we may engage in activities that develop tooling machinery and equipment for our customers.

We occasionally enter into agreements with our customers whereby we receive a contractual guarantee based on achieving milestones to be reimbursed the costs we incur in the product development process or to construct molds, dies, and other tools that are used to make many of the products we sell. The costs we incur are included in other current assets on the Consolidated Balance Sheets until reimbursement is received from the customer. Reimbursements received from customers are netted against such costs and included in our Consolidated Statements of Earnings if the amount received is in excess of the costs that we incur. The following is a summary of amounts to be received from customers as of December 31, 2020, and 2019:

	As of December 31,	
	2020	2019
Cost of molds, dies and other tools included in other current assets	$ 4,895	$ 7,690

Financial Instruments: We use forward contracts to mitigate currency risk related to forecasted foreign currency revenue and costs. These forward contracts are designed as cash flow hedges. At least quarterly, we assess the effectiveness of these hedging relationships based on the total change in their fair value using regression analysis. In addition, we use interest rate swaps to convert a portion of our revolving credit facility's variable rate of interest into a fixed rate. As a result of the use of these derivative instruments, the Company is exposed to the risk that counterparties to derivative contracts will fail to meet their contractual obligations. To mitigate the counterparty credit risk, the Company has a policy of only entering into contracts with carefully selected major financial institutions based upon their credit ratings and other factors and by using netting agreements. Our established policies and procedures for mitigating credit risk on principal transactions include reviewing and establishing limits for credit exposure and continually assessing the creditworthiness of counterparties.

We estimate the fair value of our financial instruments as follows:

Instrument	Method for determining fair value
Cash, cash equivalents, accounts receivable and accounts payable	Cost, approximates fair value due to the short-term nature of these instruments.
Revolving credit facility	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 credit facility.
Interest rate swaps and forward contracts	The fair value of our interest rate swaps and forward contracts are measured using a market approach which uses current industry information.

Debt Issuance Costs: 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.

Stock-Based Compensation: We recognize expense related to the fair value of stock-based compensation awards, consisting of restricted stock units ("RSUs"), cash-settled restricted stock units, performance share units ("PSU's"), and stock options, in the Consolidated Statements of Earnings.

We estimate the fair value of stock option awards on the date of grant using the Black-Scholes option pricing model. A number of assumptions are used by the Black-Scholes option pricing model to compute the grant date fair value of an award, including expected price volatility, option term, risk-free interest rate, and dividend yield. These assumptions are established at each grant date based upon current information at that time. Expected volatilities are based on historical volatilities of CTS' common stock. The expected option term is derived from historical data of exercise behavior. Actual option terms can differ from the expected option terms as a result of different groups of employees exhibiting different exercise behavior. The dividend yield is based on historical dividend payments. The risk-free rate for periods within the contractual life of the option is based on the U.S. Treasury yield curve at the time of grant. The fair value of awards that are ultimately expected to vest is recognized as expense over the requisite service periods of the awards in the Consolidated Statements of Earnings.

The grant date fair values of our service-based and performance-based RSUs are the closing price of our common stock on the date of grant. The grant date fair value of our market-based RSUs is determined by using a simulation, or Monte Carlo, approach. Under this approach, stock returns from a comparative group of companies are simulated over the performance period, considering both stock price volatility and the correlation of returns. The simulated results are then used to estimate the future payout based on the performance and payout relationship established by the conditions of the award. The future payout is discounted to the measurement date using the risk-free interest rate.

Both our stock option and RSU awards primarily have a graded vesting schedule. 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. Compensation expense for PSUs is measured by determining the fair value of the award using the closing share price on the grant date and is recognized ratably from the grant date to the vesting date for the number of awards expected to vest. The amount of compensation expense recognized for PSUs is dependent upon a quarterly assessment of the likelihood of achieving the performance conditions and is subject to adjustment based on management's assessment of the Company's performance relative to the target number of shares performance criteria. Forfeitures are recorded as they occur.

See Note 17, "Stock-Based Compensation" for further information.

Earnings Per Share: Basic earnings per share excludes any dilution and is computed by dividing net earnings available to common shareholders by the weighted-average number of common shares outstanding for the period.

Diluted earnings per share is calculated by dividing net earnings by the weighted average shares outstanding assuming dilution. Dilutive common shares outstanding is computed using the Treasury Stock Method and reflects the additional shares that would be outstanding if dilutive stock options were exercised and restricted stock units were settled for common shares during the period. In addition, dilutive shares include any shares issuable related to performance share units for which the performance conditions would have been met as of the end of the period and therefore would be considered contingently issuable. If the common stock equivalents have an anti-dilutive effect, they are excluded from the computation of diluted earnings per share.

Our antidilutive securities consist of the following:

	Years Ended December 31,		
(units)	2020	2019	2018
Antidilutive securities	26,140	22,040	18,138

Foreign Currencies: The financial statements of our non-U.S. subsidiaries, except the United Kingdom ("U.K.") subsidiary, are remeasured into U.S. dollars using the U.S. dollar as the functional currency with all remeasurement adjustments included in the determination of net earnings.

Foreign currency gains (losses) recorded in the Consolidated Statement of Earnings includes the following:

	Years Ended December 31,		
	2020	2019	2018
Foreign currency gains (losses)	$ 5,316	$ (1,797)	$ (2,619)

The assets and liabilities of our U.K. subsidiary are translated into U.S. dollars at the current exchange rate at period end, with the resulting translation adjustments made directly to the "accumulated other comprehensive loss" component of shareholders' equity. Our Consolidated Statement of Earnings accounts are translated at the average rates during the period.

Shipping and Handling: All fees billed to the customer for shipping and handling are classified as a component of net sales. All costs associated with shipping and handling are classified as a component of cost of goods sold or operating expenses, depending on the nature of the underlying purchase.

Sales Taxes: When applicable, we classify sales taxes on a net basis in our consolidated financial statements.

Reclassifications: Certain reclassifications have been made to prior year amounts to conform to the current year presentation. The reclassifications had no impact on previously reported net earnings.

Recently Issued Accounting Pronouncements

Accounting Pronouncements Recently Adopted

ASU No. 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. We have applied the requirements of this ASU to the financial statements.

ASU No. 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. We adopted this ASU on January 1, 2020 and it did not have a material impact on our financial statements.

ASU No. 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. We adopted this ASU on January 1, 2020 and it did not have a material impact on our financial statements.

ASU 2016-13 "*Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*"

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, which amends the current accounting guidance and requires the measurement of all expected losses based on historical experience, current conditions and reasonable and supportable forecasts. For trade receivables, loans, and other financial

instruments, we will be required to use a forward-looking expected loss model rather than the incurred loss model for recognizing credit losses which reflects losses that are probable. The standard will become effective for interim and annual periods beginning after December 15, 2019, with early adoption permitted. Application of the amendments is through a cumulative-effect adjustment to retained earnings as of the effective date. We adopted this ASU on January 1, 2020 and it did not have a material impact on our financial statements.

Recently Issued Accounting Pronouncements

ASU No. 2020-04 *"Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting"*

In March 2020, the FASB issued ASU 2020-04, "*Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting*", which provides temporary optional guidance for a limited period of time to ease the potential burden in accounting for (or recognizing the effects of) reference rate reform on financial reporting as it relates to our LIBOR indexed instruments. ASU 2020-04 provides optional expedients and exceptions for applying U.S. GAAP to contracts, hedging relationships, and other transactions affected by reference rate reform if certain criteria are met. ASU 2020-04 is effective for all entities as of March 12, 2020 through December 31, 2022, and an entity may elect to apply ASU 2020-04 for contract modifications by Topic or Industry Subtopic as of any date from the beginning of an interim period that includes or is subsequent to March 12, 2020, or prospectively from a date within an interim period that includes or is subsequent to March 12, 2020, up to the date that the financial statements are available to be issued. We are currently evaluating the impact of the transition from LIBOR to alternative reference interest rate in our financial instruments. Our LIBOR based credit facility includes a provision for the determination of a successor LIBOR rate, and we are still evaluating the impact to potential future hedging activities.

ASU No. 2019-12 *"Simplifying the Accounting for Income Taxes"*

In December 2019, the FASB issued ASU 2019-12, *Simplifying the Accounting for Income Taxes*, as part of its Simplification Initiative to reduce the cost and complexity in accounting for income taxes. ASU 2019-12 removes certain exceptions related to the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period, and the recognition of deferred tax liabilities for outside basis differences. ASU 2019-12 also amends other aspects of the guidance to help simplify and promote consistent application of GAAP. The guidance is effective for interim and annual periods beginning after December 15, 2020, with early adoption permitted. We do not expect the adoption of this ASU to have a material impact on our financial statements or results.

NOTE 2 – Revenue Recognition

The core principle of ASC 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 December 31, 2020 contained a significant financing component. 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.

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 may require 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.

Disaggregated Revenue

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

	Twelve Months Ended December 31,	
	2020	2019
Transportation	$ 241,445	$ 299,005
Industrial	92,784	78,369
Medical	39,070	41,901
Aerospace & Defense	39,327	32,569
Telecom & IT	11,440	17,155
Total	$ 424,066	$ 468,999

NOTE 3 - Business Acquisitions

Sensor Scientific, Inc.

On December 30, 2020, we acquired 100% of the outstanding shares of Sensor Scientific, Inc. (SSI). SSI is a manufacturer of high-quality thermistors and temperature sensor assemblies serving original equipment manufacturers (OEMs) for applications that require precision and reliability in the medical, industrial and defense markets. SSI has complementary capabilities with our existing temperature sensing platform and expands our presence in the medical end market. It also provides high quality ceramic processing capabilities and valuable customer partnerships that expands our temperature sensing product portfolio and builds on our strategy to focus on innovative products that sense, connect and move.

The purchase price, which includes assumed changes in working capital, of $10,309 has been allocated to the fair values of assets and liabilities acquired as of December 30, 2020. The allocation of purchase price is preliminary pending the completion of the valuation of intangible assets and finalization of management's estimates. The final purchase price allocation may result in a materially different allocation than that recorded as of December 31, 2020.

The following table summarizes the consideration paid and the fair values of the assets acquired, and the liabilities assumed at the date of acquisition:

	Consideration Paid
Cash paid, net of cash acquired of $470	$ 8,309
Contingent consideration	2,000
Purchase price	$ 10,309

	Fair Values at December 30, 2020
Current assets	$ 2,618
Property, plant and equipment	129
Other assets	12
Goodwill	3,441
Intangible assets	5,161
Fair value of assets acquired	11,361
Less fair value of liabilities acquired	(1,052)
Purchase price	$ 10,309

Goodwill represents value the Company expects to be created by combining the operations of the acquired business with the Company's operations, including the expansion of customer relationships within our existing business, access to new customers, and potential cost savings and synergies. Goodwill related to the acquisition is expected to be deductible for tax purposes.

All contingent consideration is payable in cash and is based on success factors related to the integration process as well as upon the achievement of a revenue performance target through the year ending December 31, 2022. The Company recorded $2,000 as the acquisition date fair value of the contingent consideration based on an estimate of the probability of achieving the performance targets. This represents the maximum amount of contingent consideration payable. This amount is also reflected as an addition to purchase price and will be evaluated quarterly. The fair value of the contingent consideration requires significant judgment. The Company's fair value estimates used in the contingent consideration valuation are considered Level 3 fair value measurements. The fair value

estimates were based on assumptions management believes to be reasonable, but that are inherently uncertain, including estimates of future revenues and timing of events and activities that are expected to take place.

Intangible assets acquired have been assigned a provisional value of $5,161 and an estimated weighted average amortization period of 10 years. They are included as customer lists/relationships in our Consolidated Balance Sheets. Due to the timing of the acquisition, the identification and valuation of all intangible assets remains incomplete; however, management used historical experience and projections to estimate the potential value at December 31, 2020. The amount and assumptions included above remain an estimate that will be adjusted once purchase accounting is complete.

No revenues or earnings from SSI are included in our Consolidated Statements of Earnings.

Quality Thermistor, Inc.

On July 31, 2019, we acquired 100% of the outstanding shares of Quality Thermistor, Inc. (QTI) for $75 million plus a contingent earn out of up to $5 million based on sales performance objectives. The purchase price includes adjustments for debt assumed and changes in working capital. QTI, doing business as QTI Sensing Solutions, is a leading designer and manufacturer of high-quality temperature sensors serving original equipment manufacturers with mission-critical applications in the industrial, aerospace, defense and medical markets. This acquisition provides us with a new core temperature sensing technology that expands our sensing product portfolio, while increasing our presence in the industrial and medical markets.

The final purchase price of $73,906 has been allocated to the fair values of assets and liabilities acquired as of July 31, 2019.

The following table summarizes the consideration paid and the fair values of the assets acquired, and the liabilities assumed at the date of acquisition:

		Consideration Paid
Cash paid, net of cash acquired of $567	$	72,850
Contingent consideration		1,056
Purchase price	$	73,906

		Fair Values at July 31, 2019
Current assets	$	6,221
Property, plant and equipment		2,567
Other assets		29
Goodwill		34,999
Intangible assets		32,800
Fair value of assets acquired		76,616
Less fair value of liabilities acquired		(2,710)
Purchase price	$	73,906

Goodwill represents value the Company expects to be created by combining the operations of the acquired business with the Company's operations, including the expansion of customer relationships within our existing business, access to new customers, and potential cost savings and synergies. Goodwill related to the acquisition is expected to be deductible for tax purposes.

The contingent earn-out was payable in cash upon the achievement of a revenue performance target for the year ending December 31, 2019. The Company recorded contingent consideration for the earn out of $1,056 as of December 31, 2019 based on the achievement performance target for the full year 2019 results and the balance was paid out in Q1 2020. This amount was reflected as an addition to purchase price and was settled in Q1 2021.

The following table summarizes the carrying amounts and weighted average lives of the acquired intangible assets:

	Carrying Value	Weighted Average Amortization Period
Customer lists/relationships	$ 31,000	15.0
Trademarks, tradenames, and other intangibles	1,800	5.0
Total	$ 32,800	

Results of operations for QTI are included in our consolidated financial statements beginning on July 31, 2019. The amount of net sales and net loss from QTI since the acquisition date that have been included in the Consolidated Statements of Earnings are as follows:

	For the period July 31, 2019 through December 31, 2019
Net sales	$ 9,252
Net loss	$ (465)

NOTE 4 — Accounts Receivable, net

The components of accounts receivable, net are as follows:

	As of December 31,	
	2020	2019
Accounts receivable, gross	$ 81,745	$ 78,269
Less: Allowance for credit losses	(764)	(261)
Accounts receivable, net	$ 80,981	$ 78,008

NOTE 5 — Inventories, net

Inventories, net consist of the following:

	As of December 31,	
	2020	2019
Finished goods	$ 10,647	$ 9,447
Work-in-process	16,927	14,954
Raw materials	24,893	23,363
Less: Inventory reserves	(6,597)	(5,527)
Inventories, net	$ 45,870	$ 42,237

NOTE 6 — Property, Plant and Equipment, net

Property, plant and equipment, net is comprised of the following:

	As of December 31,	
	2020	2019
Land and land improvements	$ 1,095	$ 1,095
Buildings and improvements	69,360	68,350
Machinery and equipment	233,743	224,312
Less: Accumulated depreciation	(206,761)	(188,719)
Property, plant and equipment, net	$ 97,437	$ 105,038

Depreciation expense recorded in the Consolidated Statements of Earnings includes the following:

	For the Years Ended		
	2020	2019	2018
Depreciation expense	$ 17,615	$ 16,849	$ 15,697

NOTE 7 — Retirement Plans

We have a number of noncontributory defined benefit pension plans ("pension plans") covering approximately 2% of our active employees. Pension plans covering salaried employees provide pension benefits that are based on the employees´ years of service and compensation prior to retirement. Pension plans covering hourly employees generally provide benefits of stated amounts for each year of service. All benefits for the U.S. based pension plan were frozen in 2017 and 2013 for union and non-union employees, respectively.

We also provide post-retirement life insurance benefits for certain retired employees. Domestic employees who were hired prior to 1982 and certain former union employees are eligible for life insurance benefits upon retirement. We fund life insurance benefits through term life insurance policies and intend to continue funding all of the premiums on a pay-as-you-go basis.

We recognize the funded status of a benefit plan in our consolidated balance sheets. The funded status is measured as the difference between plan assets at fair value and the projected benefit obligation. We also recognize, as a component of other comprehensive earnings, net of tax, the gains or losses and prior service costs or credits that arise during the period but are not recognized as components of net periodic benefit/cost.

The measurement dates for the pension plans for our U.S. and non-U.S. locations were December 31, 2020, and 2019.

In February 2020, the CTS Board of Directors authorized management to explore termination of the U.S. Pension Plan (“Plan”) at management's discretion, subject to certain conditions. On June 1, 2020, we amended the Plan whereby we set an effective termination date of July 31, 2020. In February 2021, we received the determination letter from the Internal Revenue Service that allows us to proceed with the termination process. The completion of the Plan termination process, including offering lump sum settlements and the final purchases of annuities, is expected to occur in 2021. We do not expect any cash contributions from the Company to the Plan as a result of this termination because plan assets significantly exceed estimated liabilities.

In connection with the decision to terminate the Plan, we remeasured the projected benefit obligation in the fourth quarter of 2020 based on the expected Plan termination costs. Upon settlement of the pension liability, we will reclassify the related pension losses, currently recorded to accumulated other comprehensive loss, to the consolidated statements of earnings. As of December 31, 2020, we had gross unrecognized losses related to the Plan of $125,005 in accumulated other comprehensive loss that are expected to be recognized in the income statement in 2021. Since the amount of the settlement depends on a number of factors determined as of the liquidation date, including lump sum payout estimates, the annuity pricing interest rate environment and asset experience, we are currently unable to determine the ultimate cost of the settlement. However, we estimate that non-cash settlement charges of approximately $10,000 to $20,000 to be recognized in the second or third quarter of 2021 with the remaining amount of the gross accumulated other comprehensive loss balance to be recognized by the end of 2021.

The following table provides a reconciliation of benefit obligation, plan assets, and the funded status of the pension plans for U.S. and non-U.S. locations at the measurement dates. In connection with the Plan termination process, we remeasured the projected benefit obligation based on the expected Plan termination costs including estimates for the anticipated amount of lump sum payments as well as estimates for insurance company pricing on the portion of the obligation not distributed through lump sum payments. These changes as well as a reduction in the discount rate used to determine the benefit obligation were the primary drivers in the increase to the obligation.

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	U.S. Pension Plans		Non-U.S. Pension Plans	
	2020	2019	2020	2019
Accumulated benefit obligation	$ 230,205	$ 220,339	$ 1,983	$ 1,854
Change in projected benefit obligation:				
Projected benefit obligation at January 1	$ 220,339	$ 205,319	$ 2,633	$ 2,756
Service cost	—	—	31	37
Interest cost	5,773	7,724	28	31
Benefits paid	(14,590)	(14,834)	(285)	(408)
Actuarial loss	18,683	22,130	95	153
Foreign exchange impact	—	—	184	64
Projected benefit obligation at December 31	$ 230,205	$ 220,339	$ 2,686	$ 2,633
Change in plan assets:				
Assets at fair value at January 1	$ 281,276	$ 258,327	$ 1,419	$ 1,425
Actual return on assets	18,886	37,680	95	73
Company contributions	103	103	268	295
Benefits paid	(14,590)	(14,834)	(285)	(408)
Foreign exchange impact	—	—	98	34
Assets at fair value at December 31	$ 285,675	$ 281,276	$ 1,595	$ 1,419
Funded status (plan assets less projected benefit obligations)	$ 55,470	$ 60,937	$ (1,091)	$ (1,214)

The measurement dates for the post-retirement life insurance plan were December 31, 2020, and 2019. The following table provides a reconciliation of benefit obligation, plan assets, and the funded status of the post-retirement life insurance plan at those measurement dates.

	Post-Retirement Life Insurance Plan	
	2020	2019
Accumulated benefit obligation	$ 5,376	$ 4,766
Change in projected benefit obligation:		
Projected benefit obligation at January 1	$ 4,766	$ 4,595
Service cost	1	1
Interest cost	122	170
Benefits paid	(154)	(145)
Actuarial loss	641	145
Projected benefit obligation at December 31	$ 5,376	$ 4,766
Change in plan assets:		
Assets at fair value at January 1	$ —	$ —
Actual return on assets	—	—
Company contributions	154	145
Benefits paid	(154)	(145)
Other	—	—
Assets at fair value at December 31	$ —	$ —
Funded status (plan assets less projected benefit obligations)	$ (5,376)	$ (4,766)

The components of the prepaid (accrued) cost of the domestic and foreign pension plans are classified in the following lines in the Consolidated Balance Sheets at December 31:

	U.S. Pension Plans		Non-U.S. Pension Plans	
	2020	2019	2020	2019
Prepaid pension asset	$ 56,642	$ 62,082	$ —	$ —
Accrued expenses and other liabilities	(100)	(100)	—	—
Long-term pension obligations	(1,072)	(1,045)	(1,091)	(1,214)
Net prepaid (accrued) cost	$ 55,470	$ 60,937	$ (1,091)	$ (1,214)

The components of the accrued cost of the post-retirement life insurance plan are classified in the following lines in the Consolidated Balance Sheets at December 31:

	Post-Retirement Life Insurance Plan	
	2020	2019
Accrued expenses and other liabilities	$ (451)	$ (393)
Long-term pension obligations	(4,924)	(4,373)
Total accrued cost	$ (5,375)	$ (4,766)

We have also recorded the following amounts to accumulated other comprehensive loss for the U.S. and non-U.S. pension plans, net of tax:

	U.S. Pension Plans	Non-U.S. Pension Plans
	Unrecognized Loss	Unrecognized Loss
Balance at January 1, 2019	$ 95,494	$ 1,916
Amortization of retirement benefits, net of tax	(4,060)	(138)
Net actuarial (loss) gain	(2,604)	78
Foreign exchange impact	—	44
Balance at January 1, 2020	$ 88,830	$ 1,900
Amortization of retirement benefits, net of tax	(4,995)	(146)
Net actuarial gain (loss)	7,402	14
Foreign exchange impact	—	133
Balance at December 31, 2020	$ 91,237	$ 1,901

We have recorded the following amounts to accumulated other comprehensive loss for the post-retirement life insurance plan, net of tax:

	Unrecognized Gain
Balance at January 1, 2019	$ (849)
Amortization of retirement benefits, net of tax	129
Net actuarial gain	112
Balance at January 1, 2020	$ (608)
Amortization of retirement benefits, net of tax	64
Net actuarial gain	493
Balance at December 31, 2020	$ (51)

The accumulated actuarial gains and losses included in other comprehensive earnings are amortized in the following manner:

The component of unamortized net gains or losses related to our qualified pension plans is amortized based on the expected future life expectancy of the plan participants (estimated to be approximately 16 years at December 31, 2020), because substantially all of the participants in those plans are inactive. The component of unamortized net gains or losses related to our post-retirement life insurance plan is amortized based on the estimated remaining future service period of the plan participants (estimated to be approximately 3 years at December 31, 2020). The Company uses a market-related approach to value plan assets, reflecting changes in the fair value of plan assets over a five-year period. The variance resulting from the difference between the expected and actual return on plan assets is included in the amortization calculation upon reflection in the market-related value of plan assets.

In 2021, we expect to recognize approximately $125,214 of pre-tax losses included in accumulated other comprehensive loss related to our pension plans and post-retirement life insurance plan. This includes approximately $125,005 in pre-tax non-cash settlement charges expected from the U.S. Plan termination. The pre-tax non-cash settlement charge is an estimate and could be in the range of $110,000 and $135,000 based on changes in market conditions.

The projected benefit obligation, accumulated benefit obligation and fair value of plan assets for those Pension Plans with accumulated benefit obligation in excess of fair value of plan assets is shown below:

	As of December 31,	
	2020	2019
Projected benefit obligation	$ 3,859	$ 3,778
Accumulated benefit obligation	$ 3,155	$ 2,999
Fair value of plan assets	$ 1,595	$ 1,419

Net pension expense (income) includes the following components:

	Years Ended December 31, U.S. Pension Plans			Years Ended December 31, Non-U.S. Pension Plans		
	2020	2019	2018	2020	2019	2018
Service cost	$ —	$ —	$ —	$ 31	$ 37	$ 43
Interest cost	5,773	7,724	7,123	28	31	42
Expected return on plan assets[1]	(9,817)	(12,187)	(12,898)	(16)	(17)	(25)
Amortization of unrecognized loss	6,488	5,246	5,863	174	170	162
Net expense	$ 2,444	$ 783	$ 88	$ 217	$ 221	$ 222
Weighted-average actuarial assumptions[2]						
Benefit obligation assumptions:						
Discount rate	2.26%	3.15%	4.30%	0.63%	1.00%	1.13%
Rate of compensation increase	N/A	N/A	N/A	3.00%	3.00%	3.00%
Pension income/expense assumptions:						
Discount rate	3.15%	4.30%	3.63%	0.63%	1.13%	1.38%
Expected return on plan assets[1]	3.76%	4.61%	4.72%	0.63%	1.13%	1.38%
Rate of compensation increase	N/A	N/A	N/A	3.00%	3.00%	2.00%

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

(2) *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. 2020 assumptions reflect termination basis accounting.*

Net post-retirement expense includes the following components:

	Post-Retirement Life Insurance Plan Years Ended December 31,		
	2020	2019	2018
Service cost	$ 1	$ 1	$ 2
Interest cost	122	170	156
Amortization of unrecognized gain	(84)	(166)	(46)
Net expense	$ 39	$ 5	$ 112
Weighted-average actuarial assumptions[1]			
Benefit obligation assumptions:			
Discount rate	2.27%	3.09%	4.26%
Rate of compensation increase	N/A	N/A	N/A
Pension income/post-retirement expense assumptions:			
Discount rate	3.09%	4.26%	3.59%
Rate of compensation increase	N/A	N/A	N/A

(1) *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.*

Our pension plan asset allocation at December 31, 2020, and 2019, and target allocation for 2021 by asset category are as follows:

	Target Allocations	Percentage of Plan Assets at December 31,	
Asset Category	2021	2020	2019
Equity securities	0%	13%	13%
Fixed income/Debt securities	100%	83%	83%
Other	0%	4%	4%
Total	100%	100%	100%

Historically, we employed a liability-driven investment strategy whereby a mix of equity and fixed-income investments are used to pursue a de-risking strategy which over time seeks to reduce interest rate mismatch risk and other risks while achieving a return that matches or exceeds the growth in projected pension plan liabilities. Risk tolerance is established through careful consideration of plan liabilities and funded status. The investment portfolio primarily contained a diversified mix of equity and fixed-income investments. Other assets such as private equity are used modestly to enhance long-term returns while improving portfolio diversification. Investment risk is measured and monitored on an ongoing basis through quarterly investment portfolio reviews, annual liability measurements, and asset/liability studies at regular intervals.

As part of the planned termination of the U.S. pension plan, a new investment allocation strategy was put in place to protect the funded status of the U.S. plan assets subsequent to Board approval of U.S. pension plan termination. The target allocation for U.S. plan assets for 2021 is 100% fixed income investments including cash and cash equivalents.

The following table summarizes the fair values of our pension plan assets:

	As of December 31,	
	2020	**2019**
Equity securities - U.S. holdings(1)	$ 7	$ 24,586
Bond funds - government(4) (7)	53,239	33,991
Bond funds - other(5) (7)	173,853	207,901
Real estate(6) (7)	—	2,979
Cash and cash equivalents(2)	53,379	5,700
Partnerships(3)	6,792	7,539
Total fair value of plan assets	$ 287,270	$ 282,696

The fair values at December 31, 2020, are classified within the following categories in the fair value hierarchy:

	Quoted Prices in Active Markets (Level 1)	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**	**Not Leveled**	**Total**
Equity securities - U.S. holdings(1)	$ 7	$ —	$ —	$ —	$ 7
Bond funds - government(4) (7)	—	—	—	53,239	53,239
Bond funds - other(5) (7)	—	—	—	173,853	173,853
Cash and cash equivalents(2)	53,379	—	—	—	53,379
Partnerships(3)	—	—	6,792	—	6,792
Total	$ 53,386	$ —	$ 6,792	$ 227,092	$ 287,270

The fair values at December 31, 2019, are classified within the following categories in the fair value hierarchy:

	Quoted Prices in Active Markets (Level 1)	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**	**Not Leveled**	**Total**
Equity securities - U.S. holdings(1)	$ 24,586	$ —	$ —	$ —	$ 24,586
Bond funds - government(4) (7)	—	—	—	33,991	33,991
Bond funds - other(5) (7)	—	—	—	207,901	207,901
Real estate(6) (7)	—	—	—	2,979	2,979
Cash and cash equivalents(2)	5,700	—	—	—	5,700
Partnerships(3)	—	—	7,539	—	7,539
Total	$ 30,286	$ —	$ 7,539	$ 244,871	$ 282,696

(1) Comprised of common stocks of companies in various industries. The Pension Plan fund manager may shift investments from value to growth strategies or vice-versa, from small cap to large cap stocks or vice-versa, in order to meet the Pension Plan's investment objectives, which are to provide for a reasonable amount of long-term growth of capital without undue exposure to volatility, and protect the assets from erosion of purchasing power.

(2) Comprised of investment grade short-term investment and money-market funds.

(3) Comprised of partnerships that invest in various U.S. and international industries.

(4) Comprised of long-term government bonds with a minimum maturity of 10 years and zero-coupon Treasury securities ("Treasury Strips") with maturities greater than 20 years.

(5) *Comprised predominately of investment grade U.S. corporate bonds with maturities greater than 10 years and U.S. high-yield corporate bonds; emerging market debt (local currency sovereign bonds, U.S. dollar-denominated sovereign bonds and U.S. dollar-denominated corporate bonds); and U.S. bank loans.*

(6) *Comprised of investments in securities of U.S. and non-U.S. real estate investment trusts (REITs), real estate operating companies and other companies that are principally engaged in the real estate industry and of investments in global private direct commercial real estate. Investments can be redeemed immediately following the valuation date with a notice of at least fifteen business days before valuation.*

(7) *Comprised of investments that are measured at fair value using the NAV per share practical expedient. In accordance with the provisions of ASC 820-10, these investments have not been classified in the fair value hierarchy. The fair value amount not leveled is presented to allow reconciliation of the fair value hierarchy to total fund pension plan assets.*

The pension plan assets recorded at fair value are measured and classified in a hierarchy for disclosure purposes consisting of three levels based on the observability of inputs available in the marketplace used to measure fair value as discussed below:

- *Level 1:* Fair value measurements that are based on quoted prices (unadjusted) in active markets that the pension plan trustees have the ability to access for identical assets or liabilities. Market price data generally is obtained from exchange or dealer markets.
- *Level 2:* Fair value measurements based on inputs other than quoted prices included in Level 1 that are observable for the asset, either directly or indirectly. Level 2 inputs include quoted prices for similar assets in active or inactive markets, and inputs other than quoted prices that are observable for the asset, such as interest rates and yield curves that are observable at commonly quoted intervals.
- *Level 3:* Fair value measurements based on valuation techniques that use significant inputs that are unobservable.

The table below reconciles the Level 3 partnership assets within the fair value hierarchy:

		Amount
Fair value of Level 3 partnership assets at January 1, 2019	$	9,172
Capital contributions		120
Realized and unrealized gain		(139)
Capital distributions		(1,614)
Fair value of Level 3 partnership assets at December 31, 2019	$	7,539
Capital contributions		44
Realized and unrealized gain		(269)
Capital distributions		(522)
Fair value of Level 3 partnership assets at December 31, 2020	$	6,792

The partnership fund manager uses a market approach in estimating the fair value of the plan's Level 3 asset. The market approach estimates fair value by first determining the entity's earnings before interest, taxes, depreciation, and amortization and then multiplying that value by an estimated multiple. When establishing an appropriate multiple, the fund manager considers recent comparable private company transactions and multiples paid. The entity's net debt is then subtracted from the calculated amount to arrive at an estimated fair value for the entity.

We expect to make $551 of contributions to the U.S. plans and $253 of contributions to the non-U.S. plans during 2021.

Expected benefit payments under the defined benefit pension plans and the postretirement benefit plan, excluding the impact of the Plan termination process, for the next five years subsequent to 2020 and in the aggregate for the following five years are as follows:

		U.S. Pension Plans		Non-U.S. Pension Plans		Post-Retirement Life Insurance Plan
2021	$	15,514	$	54	$	451
2022		15,397		86		426
2023		15,215		71		402
2024		14,979		87		380
2025		14,703		98		360
2026-2029		68,579		734		1,545
Total	$	144,387	$	1,130	$	3,564

Defined Contribution Plans

We sponsor a 401(k) plan that covers substantially all of our U.S. employees as well as offer similar defined contribution plans at certain foreign locations. Contributions and costs are generally determined as a percentage of the covered employee's annual salary. We ceased matching employee contributions in Q2 2020 in light of COVID-19 concerns, and we have reimplemented the match in February 2021.

Expenses related to defined contribution plans include the following:

	Years Ended December 31,		
	2020	2019	2018
401(k) and other defined contribution plan expense	$ 1,636	$ 3,125	$ 3,256

NOTE 8 — Goodwill and Other Intangible Assets

Other Intangible Assets

The following is a summary of the Company's other intangible assets as of December 31:

	As of December 31, 2020			
	Gross Carrying Amount	Accumulated Amortization	Net Amount	Weighted Average Remaining Amortization Period (in years)
Other intangible assets:				
Customer lists / relationships	$ 97,355	$ (44,002)	$ 53,353	9.8
Technology and other intangibles	47,301	(21,533)	25,768	7.8
In process research and development	2,200	(2,200)	—	—
Other intangible assets, net	$ 146,856	$ (67,735)	$ 79,121	9.2
Amortization expense for the year ended December 31, 2020		$ 9,055		

In the third quarter of 2020, due to the restructuring actions further outlined in Note 9, we performed an interim impairment assessment. This resulted in the recognition of $2,200 of impairment charges related to in process research and development, and a revaluation of associated contingent liabilities totaling $1,900. The net impact of $300 was recorded as restructuring expense in the Consolidated Statements of Earnings.

	As of December 31, 2019		
	Gross Carrying Amount	Accumulated Amortization	Net Amount
Other intangible assets:			
Customer lists / relationships	$ 92,194	$ (38,682)	$ 53,512
Technology and other intangibles	47,925	(18,422)	29,503
In process research and development	2,200	—	2,200
Other intangible assets, net	$ 142,319	$ (57,104)	$ 85,215
Amortization expense for the year ended December 31, 2019		$ 7,770	
Amortization expense for the year ended December 31, 2018		$ 6,817	

The estimated amortization expense for the next five years and thereafter is as follows:

	Amortization expense
2021	$ 9,409
2022	9,173
2023	7,167
2024	7,005
2025	6,783
Thereafter	39,584
Total future amortization expense	$ 79,121

Goodwill

Changes in the net carrying value amount of goodwill were as follows:

	Total
Goodwill as of December 31, 2018	$ 71,057
Increase from acquisition	34,999
Goodwill as of December 31, 2019	$ 106,056
Increase from acquisition	3,441
Goodwill as of December 31, 2020	$ 109,497

See Note 3 for further information on the increase due to acquisition.

We performed our impairment test as of October 1, 2020, our measurement date, and concluded there was no impairment in any of our reporting units. The fair value estimates used in the goodwill impairment analysis required significant judgment. The Company's fair value estimates for the purposes of determining the goodwill impairment charge are considered Level 3 fair value measurements. The fair value estimates were based on assumptions management believes to be reasonable, but that are inherently uncertain, including estimates of future revenues and operating margins and assumptions about the overall economic climate and the competitive environment for the business.

NOTE 9 — Costs Associated with Exit and Restructuring Activities

Restructuring charges are reported as a separate line within operating earnings in the Consolidated Statements of Earnings. Total restructuring charges were:

	Years Ended December 31,		
	2020	2019	2018
Restructuring charges	$ 1,830	$ 7,448	$ 5,062

September 2020 Plan

In September 2020, we initiated a restructuring plan focused on optimizing our manufacturing footprint and improving operational efficiency by better utilizing our systems capabilities. This plan includes transitioning certain administrative functions to a shared service center, realignment of manufacturing locations, and certain other efficiency improvement actions ("September 2020 Plan"). The restructuring cost of the plan is estimated to be in the range of $4,600 and $6,000, including workforce reduction charges, building and equipment relocation charges, other contract and asset related costs. In addition to these charges, we expect an additional $4,000 to $5,100 of other costs to be incurred related to the initiatives that would not qualify as restructuring charges. These costs would include certain employee overlap and training costs as well as additional capital expenditures. Restructuring charges under this plan were $1,422 during the year ended December 31, 2020, consisting of $812 of workforce reduction costs, $300 of asset impairment charges (see Note 8) and $310 of other contract termination and facility closure costs. The total restructuring liability related to the September 2020 Plan was $512 at December 31, 2020.

June 2016 Plan

In June 2016, we announced plans to restructure operations by phasing out production at our Elkhart, IN facility 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. In 2017, we revised this plan to include 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 have now been consolidated into a single facility. Restructuring charges under this plan, which is substantially complete, were $(32), $4,284, and $4,559 during the

years ended December 31, 2020, 2019, and 2018, respectively. The total restructuring liability related to the June 2016 Plan was $3 and $233 at December 31, 2020 and 2019, respectively. Any additional costs related to product line movements, equipment charges, and other costs will be expensed as incurred.

The following table displays the restructuring charges associated with the June 2016 Plan as well as a summary of the actual costs incurred through December 31, 2020:

June 2016 Plan	Planned Costs	Actual costs incurred through December 31, 2020
Workforce reduction	$ 3,075	$ 3,312
Building and equipment relocation	9,025	10,530
Asset impairment charge	—	1,168
Other charges[(1)]	1,300	988
Restructuring charges	$ 13,400	$ 15,998

(1) Other charges include the effects of currency translation, travel, legal and other charges.

April 2014 Plan

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 substantially completed during 2015. Restructuring charges under this plan were $0, $(248), and $503 during the years ended December 31, 2020, 2019, and 2018, respectively. The total restructuring liability related to the April 2014 Plan was $839 and $703 at December 31, 2020 and 2019, respectively. The remaining liability is expected to be settled in the first half of 2021.

Other Restructuring Activities

From time to time we incur other restructuring activities that are not part of a formal plan. During the years ended December 31, 2020 and 2019, we incurred restructuring charges of $442 and $3,412, respectively, for exit and disposal activities at three sites and workforce reduction costs across the company. The remaining restructuring liability associated with these actions was $9 and $1,057 at December 31, 2020 and December 31, 2019, respectively.

The following table displays the restructuring liability activity for all plans the year ended December 31, 2020:

Restructuring liability at January 1, 2020	$ 1,993
Restructuring charges	1,830
Cost paid	(1,823)
Other activities[(1)]	(637)
Restructuring liability at December 31, 2020	$ 1,363

(1) Other charges include the effects of currency translation, non-cash asset write-downs, travel, legal and other charges.

The total liability of $1,363 is included in Accrued expenses and other liabilities at December 31, 2020.

NOTE 10 — Accrued Expenses and Other Liabilities

The components of accrued expenses and other liabilities are as follows:

	As of December 31,	
	2020	2019
Accrued product-related costs	$ 4,470	$ 2,950
Accrued income taxes	7,320	7,903
Accrued property and other taxes	2,478	1,574
Accrued professional fees	1,663	1,599
Accrued customer-related liabilities	3,815	4,391
Dividends payable	1,291	1,299
Remediation reserves	10,642	11,444
Derivative liabilities	671	—
Other accrued liabilities	5,821	5,218
Total accrued expenses and other liabilities	$ 38,171	$ 36,378

NOTE 11 — 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. Two of those sites, Asheville, North Carolina and Mountain View, California, are designated National Priorities List sites under the U.S. Environmental Protection Agency's Superfund program. We accrue a liability for probable remediation activities, claims and proceedings against us with respect to environmental matters if the amount can be reasonably estimated, and provide disclosures including the nature of a loss whenever it is probable or reasonably possible that a potentially material loss may have occurred but cannot be estimated. We record contingent loss accruals on an undiscounted basis.

A roll-forward of remediation reserves included in accrued expenses and other liabilities in the Consolidated Balance Sheets is comprised of the following:

	Years Ended December 31,		
	2020	2019	2018
Balance at beginning of period	$ 11,444	$ 11,274	$ 17,067
Remediation expense	2,769	2,602	1,182
Remediation payments	(3,639)	(2,455)	(6,967)
Other activity (1)	68	23	(8)
Balance at end of the period	$ 10,642	$ 11,444	$ 11,274

(1) Other activity includes currency translation adjustments not recorded through remediation expense

Unrelated to the environmental claims described above, certain other legal claims are pending against us with respect to matters arising out of the ordinary conduct of our business.

We provide product warranties when we sell our products and accrue for estimated liabilities at the time of sale. Warranty estimates are forecasts based on the best available information and historical claims experience. We accrue for specific warranty claims if we believe that the facts of a specific claim make it probable that a liability in excess of our historical experience has been incurred, and provide disclosures for specific claims whenever it is reasonably possible that a material loss may be incurred which cannot be estimated.

We cannot provide assurance that the ultimate disposition of environmental, legal, and product warranty claims will not materially exceed the amount of our accrued losses and adversely impact our consolidated financial position, results of operations, or cash flows. Our accrued liabilities and disclosures will be adjusted accordingly if additional information becomes available in the future.

NOTE 12 — Leases

We lease certain land, buildings and equipment under non-cancellable operating leases used in our operations. Operating lease assets represent our right to use an underlying asset for the lease term. Operating lease liabilities represent the present value of lease payments over the lease term, discounted using an estimate of our secured incremental borrowing rate because none of our leases contain a rate implicit in the lease arrangement.

The operating lease assets and liabilities are adjusted to include the impact of any lease incentives and non-lease components. We have elected not to separate lease and non-lease components, which include taxes and common area maintenance in some of our leases. Variable lease payments that depend on an index or a rate are included in lease payments using the prevailing index or rate in effect at lease commencement.

Options to extend or terminate a lease are included in the lease term when it is reasonably likely that we will exercise that option. We occasionally enter into short term operating leases with an initial term of twelve months or less. These leases are not recorded in the Consolidated Balance Sheets.

We determine if an arrangement is a lease or contains a lease at its inception, which normally does not require significant estimates or judgments. Our lease agreements do not contain any material residual value guarantees or material restrictive covenants and we currently have no material sublease agreements.

In accordance with FASB Staff Q&A - Topic 842 and Topic 840: Accounting for Lease Concessions Related to the Effects of the COVID-19 Pandemic ("FASB Staff Q&A") issued in April 2020, we have elected to account for any lease concessions resulting directly from COVID-19 as if the enforceable rights and obligations for the concessions existed in the respective contracts at lease inception and as such we will not account for any concession as a lease modification. Guidance from the FASB Staff Q&A provided methods to account for rent deferrals which include the option to treat the lease as if no changes to the lease contract were made or to treat deferred payments as variable lease payments. The FASB Staff Q&A allows entities to select the most practical approach and does not require the same approach be applied consistently to all leases. As a result, we have accounted for lease deferrals as if no changes to the lease contract were made and will continue to recognize lease expense, on a straight-line basis, during the deferral periods. During the twelve months ended December 31, 2020, these rent concessions related to COVID-19 were not material.

Components of lease expense for the twelve months ended December 31, 2020 and December 31, 2019 were as follows:

	Years Ended December 31,	
	2020	**2019**
Operating lease cost	$ 4,763	$ 4,342
Short-term lease cost	1,015	1,013
Total lease cost	$ 5,778	$ 5,355

Rent expense prior to adoption of ASC 842 was $5,726 for the year ended December 31, 2018.

Supplemental cash flow information related to leases was as follows:

	Years Ended December 31,	
	2020	**2019**
Cash paid for amounts included in the measurement of lease obligations	$ 4,654	$ 3,957
Leased assets obtained in exchange for new operating lease obligations	$ 1,678	$ 5,000

Supplemental balance sheet information related to leases was as follows:

	As of December 31	
Balance Sheet Classification:	**2020**	**2019**
Operating lease obligations	$ 3,294	$ 2,787
Long-term operating lease obligations	23,163	24,926
Total lease liabilities	$ 26,457	$ 27,713
Weighted-average remaining lease terms (years)	7.88	9.04
Weighted-average discount rate	6.40%	6.54%

Remaining maturity of our existing lease liabilities as of December 31, 2020 is as follows:

		Operating Leases[1]
2021	$	4,854
2022		4,691
2023		4,258
2024		4,119
2025		3,563
Thereafter		13,406
Total	$	34,891
Less: interest		(8,434)
Present value of lease payments	$	26,457

(1) Operating lease payments include $3,822 of payments related to options to extend lease terms that are reasonably expected to be exercised.

NOTE 13 — Debt

Long-term debt was comprised of the following:

	As of December 31			
		2020		2019
Total credit facility	$	300,000	$	300,000
Balance outstanding	$	54,600	$	99,700
Standby letters of credit	$	1,740	$	1,800
Amount available, subject to covenant restrictions	$	243,660	$	198,500
Weighted-average interest rate		1.92%		3.25%
Commitment fee percentage per annum		0.23%		0.23%

On February 12, 2019, we entered into an amended and restated five-year Credit Agreement with a group of banks (the "Credit Agreement") to extend the term of the facility. The Credit Agreement provides for a revolving credit facility of $300,000, which may be increased by $150,000 at the request of the Company, subject to the administrative agent's approval. This new unsecured credit facility replaces the prior $300,000 unsecured credit facility, which would have expired August 10, 2020. Borrowings of $50,000 under the prior credit agreement were refinanced into the Credit Agreement. The prior agreement was terminated as of February 12, 2019.

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 the base rate defined in the Credit Agreement. We also pay a quarterly commitment fee on the unused portion of the Revolving Credit Facility. The commitment fee ranges from 0.20% to 0.30% based on 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 December 31, 2020. 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. Amortization expense was approximately $168 for the twelve months ended December 31, 2020, $163 in 2019 and $185 in 2018. These costs are included in interest expense in our Consolidated Statements of Earnings.

We use interest rate swaps to convert the revolving credit facility's variable rate of interest into a fixed rate on a portion of the debt as described more fully in Note 14 "Derivative Financial Instruments." These swaps are treated as cash flow hedges and consequently, the changes in fair value were recorded in other comprehensive earnings.

NOTE 14 — 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).

We assess hedge effectiveness 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 that have increased the risk that the counterparty will default. No recognition of ineffectiveness was recorded in our Consolidated Statement of Earnings for the twelve months ended December 31, 2020.

Foreign Currency Hedges

We use 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 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 December 31, 2020, we had a net unrealized gain of $910 in accumulated other comprehensive (loss) income, of which $820 is expected to be reclassified to earnings within the next 12 months. The notional amount of foreign currency forward contracts outstanding was $14,958 at December 31, 2020.

Interest Rate Swaps

We use interest rate swaps to convert a portion of our revolving credit facility's outstanding balance from a variable rate of interest to a fixed rate. As of December 31, 2020, we have agreements to fix interest rates on $50,000 of long-term debt through February 2024. 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 are recorded in other comprehensive (loss) income. The estimated net amount of the existing losses that are reported in accumulated other comprehensive (loss) income that are expected to be reclassified into earnings within the next twelve months is approximately $517.

The location and fair values of derivative instruments designated as hedging instruments in the Consolidated Balance Sheets as of December 31, 2020, are shown in the following table:

	As of December 31,	
	2020	**2019**
Interest rate swaps reported in Other current assets	$ —	$ 82
Interest rate swaps reported in Accrued liabilities	$ (671)	$ —
Interest rate swaps reported in Other long-term obligations	$ (1,546)	$ (78)
Foreign currency hedges reported in Other current assets	$ 1,125	$ 580

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 $1,176 and foreign currency derivative liabilities of $51 at December 31, 2020.

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

	Years Ended December 31,		
	2020	2019	2018
Foreign Exchange Contracts:			
Amounts reclassified from AOCI to earnings:			
Net sales	$ (128)	$ —	$ 383
Cost of goods sold	(754)	860	(6)
Selling, general and administrative expense	(5)	92	107
Total amounts reclassified from AOCI to earnings	(887)	952	484
Gain recognized in other expense for hedge ineffectiveness	3	—	—
Total derivative (loss) gain on foreign exchange contracts recognized in earnings	$ (884)	$ 952	$ 484
Interest Rate Swaps:			
(Expense) benefit recorded in interest expense	$ (432)	$ 491	$ 421
Total (losses) gains on derivatives	$ (1,316)	$ 1,443	$ 905

NOTE 15 — Accumulated Other Comprehensive (Loss) Income

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

- **Unrealized gains (losses) on hedges** relate to interest rate swaps to convert a portion of our revolving credit facility's outstanding balance from a 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 14 - Derivative Financial Instruments and Note 18 – 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 earnings from AOCI are included in net periodic pension income (expense). Further information related to our pension obligations is included in Note 7 – Retirement Plans.
- **Cumulative translation adjustment** relates 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.

The components of accumulated other comprehensive (loss) income for the twelve months ended December 31, 2020 are as follows:

	As of December 31, 2019	Loss Recognized in OCI	Loss (gain) reclassified from AOCI to earnings	As of December 31, 2020
Changes in fair market value of derivatives:				
Gross	$ 659	$ (3,015)	$ 1,318	$ (1,038)
Income tax (expense) benefit	(150)	684	(294)	240
Net	509	(2,331)	1,024	(798)
Changes in unrealized pension cost:				
Gross	(124,140)	—	(3,864)	(128,004)
Income tax benefit	34,018	—	899	34,917
Net	(90,122)	—	(2,965)	(93,087)
Cumulative translation adjustment:				
Gross	(2,211)	175	—	(2,036)
Income tax benefit (expense)	98	(98)	—	—
Net	(2,113)	77	—	(2,036)
Total accumulated other comprehensive loss	$ (91,726)	$ (2,254)	$ (1,941)	$ (95,921)

The components of accumulated other comprehensive (loss) income for the twelve months ended December 31, 2019 are as follows:

	As of December 31, 2018	Gain (Loss) Recognized in OCI	(Gain) Loss reclassified from AOCI to earnings	As of December 31, 2019
Changes in fair market value of derivatives:				
Gross	$ 1,316	$ 786	$ (1,443)	$ 659
Income tax (expense) benefit	(298)	(178)	326	(150)
Net	1,018	608	(1,117)	509
Changes in unrealized pension cost:				
Gross	(132,454)	—	8,314	(124,140)
Income tax benefit (expense)	35,893	—	(1,875)	34,018
Net	(96,561)	—	6,439	(90,122)
Cumulative translation adjustment:				
Gross	(2,291)	80	—	(2,211)
Income tax benefit	95	3	—	98
Net	(2,196)	83	—	(2,113)
Total accumulated other comprehensive (loss) income	$ (97,739)	$ 691	$ 5,322	$ (91,726)

NOTE 16 — Shareholders' Equity

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

	As of December 31,	
	2020	2019
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	57,076,410	56,929,298
Shares outstanding	32,276,787	32,472,406
Treasury stock		
Shares held	24,799,623	24,456,892

On February 7, 2019, the Board of Directors authorized a stock repurchase program with a maximum dollar limit of $25,000 in stock repurchases, which replaced the previous authorized plan that was approved by our Board of Directors in April 2015. During the year ended December 31, 2020 we purchased 342,731 shares for approximately $8,080. During the year ended December 31, 2019 we purchased 420,770 shares for $11,746, of which $566 was repurchased under the previous plan and $11,180 was repurchased under the most recent board-authorized share repurchased program. Approximately $5,740 was available for future purchases.

A roll forward of common shares outstanding is as follows:

	As of December 31,	
	2020	2019
Balance at beginning of the year	32,472,406	32,750,727
Repurchases	(342,731)	(420,770)
Restricted stock unit issuances	147,112	142,449
Balance at end of period	32,276,787	32,472,406

NOTE 17 — Stock-Based Compensation

At December 31, 2020, we had five stock-based compensation plans: the Non-Employee 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.

These plans allow for grants of stock options, stock appreciation rights, restricted stock, restricted stock units ("RSUs"), performance shares, performance units, and other stock awards subject to the terms of the specific plans under which the awards are granted.

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

	Years Ended December 31,		
	2020	2019	2018
Service-Based RSUs	$ 2,601	$ 2,207	$ 2,036
Performance-Based RSUs	539	2,553	3,089
Cash-settled awards	277	255	131
Total	$ 3,417	$ 5,015	$ 5,256
Income tax benefit	786	1,133	1,188
Net	$ 2,631	$ 3,882	$ 4,068

The fair value of all equity awards that vested during the periods ended December 31, 2020, 2019, and 2018 were $5,680, $6,589, and $5,805, respectively. We recorded a tax deduction related to equity awards that vested during the year ended December 31, 2020, in the amount of $1,285.

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 December 31, 2020	Weighted-average period
Service-Based RSUs	$ 2,039	1.27 years
Performance-Based RSUs	1,893	1.76 years
Total	$ 3,932	1.50 years

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 December 31, 2020:

	2018 Plan	2014 Plan	2009 Plan	2004 Plan	Directors' Plan
Awards originally available to be granted	2,500,000	1,500,000	3,400,000	6,500,000	N/A
Performance stock options outstanding	—	—	—	—	—
Maximum potential RSU and cash settled awards outstanding	503,481	178,900	92,600	35,952	5,522
Maximum potential awards outstanding	503,481	178,900	92,600	35,952	5,522
RSUs and cash settled awards vested and released	45,539	—	—	—	—
Awards available to be granted	1,950,980	—	—	—	—

Service-Based Restricted Stock Units

Service-based RSUs entitle the holder to receive one share of common stock for each unit when the unit vests. RSUs are issued to officers, key employees, and non-employee directors as compensation. Generally, the RSUs vest over a three-year period. RSUs granted to non-employee directors vest one year after being granted. Upon vesting, the non-employee directors elect to either receive the stock associated with the RSU immediately or defer receipt of the stock to a future date. The fair value of the RSUs is equivalent to the trading value of our common stock on the grant date.

A summary of RSU activity for the year ended December 31, 2020 is presented below:

	Units	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
Outstanding at January 1, 2020	364,396	$ 19.87		
Granted	120,546	27.94		
Released	(100,830)	22.90		
Forfeited	(16,684)	28.75		
Outstanding at December 31, 2020	367,428	$ 21.28	19.69	$ 12,614
Releasable at December 31, 2020	203,574	$ 15.77	30.66	$ 6,989

	Years Ended December 31,		
	2020	2019	2018
Weighted-average grant date fair value	$ 27.94	$ 28.61	$ 26.95
Intrinsic value of RSUs released	$ 2,503	$ 2,155	$ 4,015

A summary of non-vested RSU activity for the year ended December 31, 2020 is presented below:

	RSUs	Weighted Average Grant Date Fair Value
Nonvested at January 1, 2020	136,922	$ 27.66
Granted	120,546	27.94
Vested	(76,930)	26.86
Forfeited	(16,684)	28.75
Nonvested at December 31, 2020	163,854	$ 28.13

Performance-Based Restricted Stock Units

We grant performance-based restricted stock unit awards ("PSUs") to certain executives and key employees. Units are usually awarded in the range from zero percent to 200% of a targeted number of shares. The award rate for the 2018-2020, 2019-2021, and 2020-2022 PSUs is dependent upon our achievement of sales growth targets, cash flow targets, and relative total shareholder return ("RTSR") using a matrix based on the percentile ranking of our stock price performance compared to a peer group over a three-year period. Other PSUs are granted from time to time based on other performance criteria. The initial fair value of the PSUs is equivalent to the trading value of our common stock on the grant date. The fair value is subsequently adjusted quarterly based on management's assessment of the Company's performance relative to the target number of shares performance criteria.

A summary of PSU activity for the year ended December 31, 2020 is presented below:

	Units	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
Outstanding at January 1, 2020	217,229	$ 27.73		
Granted	126,521	28.37		
Added by performance factor	38,820	23.84		
Released	(111,838)	23.74		
Forfeited	(45,173)	28.69		
Outstanding at December 31, 2020	225,559	$ 29.07	1.90	$ 7,743
Releasable at December 31, 2020	—	$ —		$ —

The following table summarizes each grant of performance awards outstanding at December 31, 2020:

Description	Grant Date	Vesting Year	Vesting Dependency	Target Units Outstanding	Maximum Number of Units to be Granted
2018 - 2020 Performance RSUs	February 8, 2018	2020	35% RTSR, 35% sales growth, 30% operating cash flow	22,082	44,164
2018 - 2020 Performance RSUs	February 16, 2018	2020	35% RTSR, 35% sales growth, 30% operating cash flow	31,820	63,640
2019-2021 Performance RSUs	February 7, 2019	2021	35% RTSR, 35% sales growth, 30% operating cash flow	50,456	100,912
2019 Supplemental Performance RSUs	February 7, 2019	2021	Succession Planning Targets	6,945	13,890
2020 - 2020 QTI Performance RSUs	September 24, 2019	2022	50% EBITDA growth, 50% Sales growth	1,750	3,500
2020 - 2022 Performance RSUs	February 6, 2020	2022	25% RTSR, 40% sales growth, 35% operating cash flow	63,006	126,012
Focus 2025 Performance RSUs	April 23, 2020	2024	Cumulative revenues of $750 million over a trailing four-quarter period	49,500	49,500
Total				225,559	401,618

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 December 31, 2020, and 2019, we had 30,009 and 17,271 cash-settled RSUs outstanding, respectively. At December 31, 2020, and 2019, liabilities of $396 and $353, respectively were included in Accrued expenses and other liabilities on our Consolidated Balance Sheets.

NOTE 18 — Fair Value Measurements

We use interest rates swaps to convert a portion of our Revolving Credit Facility's outstanding balance from a variable rate of interest to 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 the financial liabilities and assets that were measured at fair value on a recurring basis as of December 31, 2020 and the loss recorded during the year ended December 31, 2020:

	(Liability) Asset Carrying Value at December 31, 2020	Quoted Prices in Active Markets for Identical (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Loss for Year Ended December 31, 2020
Interest rate swap	$ (2,217)	$ —	$ (2,217)	$ —	$ 432
Foreign currency hedges	$ 1,125	$ —	$ 1,125	$ —	$ 887

The table below summarizes the financial assets that were measured at fair value on a recurring basis as of December 31, 2019 and the gain recorded during the year ended December 31, 2019:

	Asset Carrying Value at December 31, 2019	Quoted Prices in Active Markets for Identical (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	(Gain) for Year Ended December 31, 2019
Interest rate swap	$ 4	$ —	$ 4	$ —	$ (491)
Foreign currency hedges	$ 580	$ —	$ 580	$ —	$ (952)

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 the market is not active and therefore they are classified within level 2 of the fair value hierarchy.

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 19 — Income Taxes

Earnings before income taxes consist of the following:

	Years Ended December 31,		
	2020	2019	2018
U.S.	$ (7,101)	$ 15,103	$ 30,815
Non-U.S.	52,580	35,163	27,288
Total	$ 45,479	$ 50,266	$ 58,103

Significant components of income tax provision/(benefit) are as follows:

	Years Ended December 31,		
	2020	2019	2018
Current:			
U.S.	$ 211	$ (391)	$ (397)
Non-U.S.	11,275	10,666	12,538
Total Current	11,486	10,275	12,141
Deferred:			
U.S.	(2,815)	558	(330)
Non-U.S.	2,122	3,287	(240)
Total Deferred	(693)	3,845	(570)
Total provision for income taxes	$ 10,793	$ 14,120	$ 11,571

Significant components of our deferred tax assets and liabilities are as follows:

	As of December 31,	
	2020	2019
Post-retirement benefits	$ 1,259	$ 1,100
Inventory reserves	477	708
Loss carry-forwards	5,128	4,724
Credit carry-forwards	17,401	15,964
Accrued expenses	5,693	4,932
Research expenditures	18,893	17,953
Operating lease liabilities	6,012	6,211
Stock compensation	1,969	2,232
Foreign exchange loss	2,166	1,986
Other	872	230
Gross deferred tax assets	59,870	56,040
Depreciation and amortization	13,004	12,453
Pensions	12,557	13,552
Operating lease assets	5,703	5,963
Subsidiaries' unremitted earnings	3,046	1,903
Gross deferred tax liabilities	34,310	33,871
Net deferred tax assets	25,560	22,169
Deferred tax asset valuation allowance	(8,320)	(8,011)
Total net deferred tax assets	$ 17,240	$ 14,158

The long-term deferred tax assets and long-term deferred tax liabilities are as follows below:

	As of December 31,	
	2020	2019
Non-current deferred tax assets	$ 24,250	$ 19,795
Non-current deferred tax liabilities	$ (7,010)	$ (5,637)
Total net deferred tax assets	$ 17,240	$ 14,158

At each reporting date, we weigh all available positive and negative evidence to assess whether it is more-likely-than-not that the Company's deferred tax assets, including deferred tax assets associated with accumulated loss carryforwards and tax credits in the various jurisdictions in which it operates, will be realized. As of December 31, 2020, and 2019, we recorded deferred tax assets related to certain U.S. state and non-U.S. income tax loss carryforwards of $5,128 and $4,724, respectively, and U.S. and non-U.S. tax credits of $17,401 and $15,964, respectively. The deferred tax assets expire in various years primarily between 2021 and 2040.

Generally, we assess if it is more-likely-than-not that our net deferred tax assets will be realized during the available carry-forward periods. As a result, we have determined that valuation allowances of $8,320 and $8,011 should be provided for certain deferred tax assets at December 31, 2020, and 2019, respectively. As of December 31, 2020, the valuation allowances relate to certain U.S. state and non-U.S. loss carry-forwards and certain U.S. state tax credits that management does not anticipate will be utilized.

A valuation allowance of $180 was recorded in 2020 against the U.S. federal foreign tax credit carryforwards of $7,467, which expire in varying amounts between 2028 and 2029. No valuation allowance was recorded in 2020 against the U.S. federal research and development tax credits of $7,502, which expire in varying amounts between 2021 and 2040. We assessed the anticipated realization of those tax credits utilizing future taxable income projections. Based on those projections, management believes it is more-likely-than-not that we will realize the benefits of these credit carryforwards.

The following table reconciles taxes at the U.S. federal statutory rate to the effective income tax rate:

	Years Ended December 31,		
	2020	2019	2018
Taxes at the U.S. statutory rate	21.0%	21.0%	21.0%
State income taxes, net of federal income tax benefit	(0.1)%	0.4%	1.2%
Non-U.S. earnings taxed at rates different than the U.S. statutory rate	(0.9)%	1.3%	0.8%
Foreign source earnings, net of associated foreign tax credits	(0.7)%	0.3%	4.1%
Benefit of tax credits	(0.7)%	(1.5)%	(0.9)%
Non-deductible expenses	(0.5)%	4.1%	1.3%
Stock compensation - excess tax benefits	(0.1)%	(1.1)%	(0.9)%
Adjustment to valuation allowances	1.6%	(0.4)%	(0.6)%
Other changes in tax laws and rates	—	0.1%	(6.1)%
Change in unrecognized tax benefits	(0.7)%	3.3%	(1.7)%
Impacts of unremitted foreign earnings	5.2%	1.3%	1.1%
Impacts related to the 2017 Tax Cuts and Jobs Act	—	—%	(0.6)%
Other	(0.4)%	(0.7)%	1.2%
Effective income tax rate	23.7%	28.1%	19.9%

On December 22, 2017, Staff Accounting Bulletin No. 118 ("SAB 118") was issued to address the application of U.S. GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Act. The remeasurement period for SAB 118 ended on December 22, 2018, and upon completion of our analysis we determined the final impact of the Tax Act resulted in an additional tax benefit of $348 during the fourth quarter of 2018.

Following the enactment of the 2017 Tax Cut and Jobs Act and the associated one-time transition tax, in general, repatriation of foreign earnings to the U.S. can be completed with no incremental U.S. Tax. However, there are limited other taxes that continue to apply such as foreign withholding and certain state taxes. The company records a deferred tax liability for the estimated foreign earnings and state tax cost associated with the undistributed foreign earnings that are not permanently reinvested. In 2020 the Company made the decision to no longer permanently reinvest the earnings of its Taiwan subsidiary. As a result, a provision for the expected taxes on repatriation of those earnings has been recorded.

The Tax Act also includes provisions for Global Intangible Low-Taxed Income (“GILTI”) wherein taxes on foreign income are imposed in excess of a deemed return on tangible assets of foreign corporations. We elected to recognize the tax on GILTI as an expense in the period the tax is incurred.

We recognize the financial statement benefit of a tax position when it is more-likely-than-not, based on its technical merits, that the position will be sustained upon examination. A tax position that meets the more-likely-than-not threshold is then measured to determine the amount of benefit to be recognized in the financial statements. As of December 31, 2020, we have approximately $3,128 of unrecognized tax benefits, which if recognized, would impact the effective tax rate. We anticipate uncertain tax positions of approximately $900 to be settled in the next 12 months.

A reconciliation of the beginning and ending unrecognized tax benefits is provided below:

	As of December 31,	
	2020	2019
Balance at January 1	$ 5,016	$ 3,649
Increase related to current year tax positions	880	2,834
Decrease related to prior year tax positions	(1,156)	(10)
Decrease related to lapse in statute of limitation	—	(1,457)
Decrease related to settlements with taxing authorities	(1,612)	—
Balance at December 31	$ 3,128	$ 5,016

Our continuing practice is to recognize interest and/or penalties related to unrecognized tax benefits as income tax expense. As of December 31, 2020, and 2019, $301 and $707, respectively, of interest and penalties were accrued.

We are subject to taxation in the U.S., various states, and in non-U.S. jurisdictions. Our U.S. income tax returns are primarily subject to examination from 2017 through 2019; however, U.S. tax authorities also have the ability to review prior tax years to the extent loss carryforwards and tax credit carryforwards are utilized. The open years for the non-U.S. tax returns range from 2008 through 2019 based on local statutes.

NOTE 20 — Geographic Data

Financial information relating to our operations by geographic area were as follows:

Net Sales	Years Ended December 31, 2020	2019	2018
United States	$ 241,823	$ 279,904	$ 313,489
China	88,129	87,342	79,380
Singapore	31,985	32,957	6,724
Czech Republic	27,143	33,214	36,528
Taiwan	21,849	19,810	20,802
Other non-U.S.	13,137	15,772	13,560
Consolidated net sales	$ 424,066	$ 468,999	$ 470,483

Sales are attributed to countries based upon the origin of the sale.

Long-Lived Tangible Assets	Years Ended December 31, 2020	2019
United States	$ 39,368	$ 41,993
China	30,240	32,751
Mexico	12,441	14,149
Czech Republic	9,856	10,946
Taiwan	5,071	4,593
Other non-U.S	461	606
Consolidated long-lived assets	$ 97,437	$ 105,038

NOTE 21 — Quarterly Financial Data

Quarterly Results of Operations
(Unaudited)

	First	Second	Third	Fourth
2020				
Net sales	$ 103,075	$ 84,197	$ 113,777	$ 123,018
Gross margin	$ 32,899	$ 26,567	$ 36,906	$ 42,691
Operating earnings	$ 8,492	$ 6,242	$ 13,259	$ 17,137
Net earnings	$ 3,808	$ 4,857	$ 11,073	$ 14,947
Basic earnings per share	$ 0.12	$ 0.15	$ 0.34	$ 0.46
Diluted earnings per share	$ 0.12	$ 0.15	$ 0.34	$ 0.46
2019				
Net sales	$ 117,625	$ 120,684	$ 115,651	$ 115,040
Gross margin	$ 40,615	$ 41,204	$ 37,057	$ 38,700
Operating earnings	$ 14,218	$ 17,083	$ 10,124	$ 12,391
Net earnings	$ 11,419	$ 11,943	$ 2,722	$ 10,062
Basic earnings per share	$ 0.35	$ 0.36	$ 0.08	$ 0.31
Diluted earnings per share	$ 0.34	$ 0.36	$ 0.08	$ 0.31

CTS CORPORATION

SCHEDULE II — VALUATION AND QUALIFYING ACCOUNTS

(in thousands)	Balance at Beginning of Period	Charged to Expense	Charged to Other Accounts	(Write-offs) / Recoveries	Balance at End of Period
Year ended December 31, 2020 Allowance for credit losses	$ 261	$ 513	$ 152	$ (162)	$ 764
Year ended December 31, 2019 Allowance for credit losses	$ 384	$ 141	$ (9)	$ (255)	$ 261
Year ended December 31, 2018 Allowance for credit losses	$ 357	$ 56	$ (8)	$ (21)	$ 384

Item 9. **Changes in and Disagreements with Accountants on Accounting and Financial Disclosure**

Not applicable.

Item 9A. **Controls and Procedures**

(a) Evaluation of Disclosure and Controls

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended) as of the end of the period covered by this Annual Report on Form 10-K. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures as of the end of the period covered by this Annual Report on Form 10-K were effective in providing reasonable assurance that information required to be disclosed by us in reports that we file or submit under the Securities Exchange Act of 1934, as amended, is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosures.

Our management, including our Chief Executive Officer and Chief Financial Officer, does not expect that our disclosure controls and procedures or our internal controls will prevent all error and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within CTS Corporation have been detected.

(b) Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) of the Securities Exchange Act of 1934 as amended (the Exchange Act)). Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2020. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in *Internal Control—Integrated Framework* (2013 framework). Based on our assessment under the framework in Internal Control—Integrated Framework (2013 framework), our management concluded that our internal control over financial reporting was effective as of December 31, 2020. The effectiveness of our internal control over financial reporting as of December 31, 2020 has been audited by Grant Thornton LLP, an independent registered public accounting firm, as stated in their report that is included herein.

(c) Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting for the quarter ended December 31, 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Shareholders
CTS Corporation

Opinion on internal control over financial reporting

We have audited the internal control over financial reporting of CTS Corporation (an Indiana corporation) and subsidiaries (the "Company") as of December 31, 2020, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on criteria established in the 2013 *Internal Control—Integrated* Framework issued by COSO.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated financial statements of the Company as of and for the year ended December 31, 2020, and our report dated February 25, 2021 expressed an unqualified opinion on those financial statements.

Basis for opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Annual Report on Internal Control Over Financial Reporting ("Management's Report"). Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and limitations of internal control over financial reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that: (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ GRANT THORNTON LLP
Chicago, Illinois
February 25, 2021

Item 9B. Other Information

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Please see Part I, Item 1 of this Annual Report on Form 10-K for information about our executive officers, which is incorporated by reference herein. Information with respect to Directors and Corporate Governance may be found in our definitive proxy statement to be delivered to shareholders in connection with our 2021 Annual Meeting of Shareholders. Such information is incorporated herein by reference.

Item 11. Executive Compensation

Information with respect to this item may be found in our definitive proxy statement to be delivered to shareholders in connection with our 2021 Annual Meeting of Shareholders. Such information is incorporated herein by reference.

EQUITY COMPENSATION PLAN INFORMATION

The following table provides information about shares of CTS common stock that could be issued under all of our equity compensation plans as of December 31, 2020:

Plan Category	(a) Number of Securities to be Issued Upon Exercise of Outstanding Options, RSUs, Warrants and Rights [2]	(b) Weighted-Average Grant Date Fair Value of Outstanding Options, RSUs, Warrants and Rights	(c) Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column(a))
Equity compensation plans approved by security holders	806,336	$ 24.24	1,950,980
Equity compensation plans not approved by security holders[1]	5,522	—	—
Total	811,858		1,950,980

(1) *In 1990, we adopted the Stock Retirement Plan for Non-Employee Directors. Prior to December 1, 2004, we annually credited an account for each non-employee director with 800 CTS common stock units. We also annually credited each deferred stock account with an additional number of CTS common stock units representing the amount of dividends which would have been paid on an equivalent number of shares of CTS common stock for each quarter during the preceding calendar year. As of December 1, 2004, this plan was amended to preclude crediting any additional CTS common stock units under the plan. Upon retirement, a participating non-employee director is entitled to receive one share of CTS common stock for each CTS common stock unit in his deferred stock account. On December 31, 2020, the deferred stock accounts contained a total of 5,522 CTS common stock units.*

(2) *Based on achievement of the maximum targets for performance-based equity grants.*

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Shareholder Matters

Information with respect to this item may be found in our definitive proxy statement to be delivered to shareholders in connection with our 2021 Annual Meeting of Shareholders. Such information is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Information with respect to this item may be found in our definitive proxy statement to be delivered to shareholders in connection with our 2021 Annual Meeting of Shareholders. Such information is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

Information with respect to this item may be found in our definitive proxy statement to be delivered to shareholders in connection with our 2021 Annual Meeting of Shareholders. Such information is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statements Schedules

(a) (1) Financial Statements

The following Consolidated Financial Statements of CTS Corporation and Subsidiaries are included herein:

Report of Independent Registered Public Accounting Firm

Consolidated Statements of Earnings: Years ended December 31, 2020, December 31, 2019, and December 31, 2018

Consolidated Statements of Comprehensive Earnings: Years ended December 31, 2020, December 31, 2019, and December 31, 2018

Consolidated Balance Sheets: December 31, 2020, and December 31, 2019

Consolidated Statements of Cash Flows: Years ended December 31, 2020, December 31, 2019, and December 31, 2018

Consolidated Statements of Shareholders' Equity: Years Ended December 31, 2020, December 31, 2019, and December 31, 2018

Notes to Consolidated Financial Statements

(a) (2) Financial Statement Schedule:

Schedule II: Valuation and Qualifying Accounts and Reserves

Other schedules have been omitted because they are not applicable, or the required information is shown in the Consolidated Financial Statements or Notes thereto.

(a) (3) Exhibits

All references to documents filed pursuant to the Securities Exchange Act of 1934, including Forms 10-K, 10-Q and 8-K, were filed by CTS, File No. 1-4639.

(3)(i) Amended and Restated Articles of Incorporation (incorporated by reference to Exhibit 5 to the Current Report on Form 8-K, filed with the SEC on September 1, 1998).

(3)(ii) Amended Bylaws (incorporated herein by reference to Exhibit 3 to the Form 8-K, filed with the SEC on April 30, 2019).

(3)(iii) Amended and Restated Articles of Incorporation (incorporated by reference to Exhibit A to the 2020 Proxy Statement, filed with the SEC on April 2, 2020).

(10)(a) CTS Corporation Stock Retirement Plan for Non-Employee Directors, effective April 30, 1990, as amended (incorporated by reference to Exhibit (10)(a) to the Quarterly Report on Form 10-Q for the quarter ended March 30, 2003, filed with the SEC on April 23, 2003).*

(10)(b) Amendment to the CTS Corporation Stock Retirement Plan for Non-Employee Directors, dated as of December 1, 2004 (incorporated by reference to Exhibit (10)(j) to the Annual Report on Form 10-K for the year ended December 31, 2004, filed with the SEC on March 4, 2005).

(10)(c) Prototype Individual Excess Benefit Retirement Plan (incorporated by reference to Exhibit 10(d) to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2007, filed with the SEC on October 24, 2007).*

(10)(d) CTS Corporation Executive Severance Policy, effective as of September 10, 2009 (incorporated by reference to Exhibit 10 to the Quarterly Report on Form 10-Q for the quarter ended September 27, 2009, filed with the SEC on October 28, 2009).*

(10)(e) Prototype Change in Control Agreement (incorporated by reference to Exhibit 10(x) to the Annual Report on Form 10-K for the year ended December 31, 2011, filed with the SEC on February 24, 2012).*

(10)(f) First Amendment to the CTS Corporation Executive Severance Policy (incorporated by reference to Exhibit 10(b) to the Quarterly Report on Form 10-Q for the quarter ended March 31, 2013, filed with the SEC on April 25, 2013).*

(10)(g) CTS Corporation 2014 Performance and Incentive Compensation Plan (incorporated by reference to Exhibit 10.1 to the Form 8-K, filed with the SEC on May 22, 2014).*

(10)(h) Credit Agreement Between CTS Corporation and CTS International B.V. and BMO Harris Bank N.A. dated February 12, 2019 (incorporated by reference to Exhibit 10.1 to the Form 8-K filed with the SEC on February 15, 2019).

(10)(i) CTS Corporation Pension Plan Exhibit (Amended and Restated Effective As of July 1, 2015) (incorporated by reference to Exhibit 10(s) to the Form 10-K filed with the SEC on February 23, 2018).

(10)(j) Amendment to the CTS Corporation Pension Plan (Amended and Restated Effective as of July 1, 2015) as of October 6, 2016, (incorporated by reference to Exhibit 10(t) to the Form 10-K filed with the SEC on February 23, 2018).

(10)(k) Amendment to the CTS Corporation Pension Plan (Amended and Restated Effective as of July 1, 2015) as of June 26, 2017, (incorporated by reference to Exhibit 10(u) to the Form 10-K filed with the SEC on February 23, 2018).

(10)(l) Amendment to the CTS Corporation Pension Plan (Amended and Restated Effective as of July 1, 2015) as of September 22, 2017, (incorporated by reference to Exhibit 10(v) to the Form 10-K filed with the SEC on February 23, 2018).

(10)(m) Amendment to the CTS Corporation Pension Plan (Amended and Restated Effective as of July 1, 2015) as of June 28, 2018, (incorporated by reference to Exhibit 10.1 to Form 10-Q filed with the SEC on July 31, 2020).

(10)(n) Amendment to the CTS Corporation Pension Plan (Amended and Restated Effective as of July 1, 2015) as of June 1, 2020, (incorporated by reference to Exhibit 10.1 to Form 10-Q filed with the SEC on July 31, 2020).

(10)(o) 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)(p) 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).

(21) Subsidiaries.

(23) Consent of Grant Thornton LLP.

(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 The following financial statements from the Company's Annual Report on Form 10-K for the year ended December 31, 2020, formatted in Inline XBRL: (i) Consolidated Statements of Earnings, (ii) Consolidated Statements of Comprehensive Earnings, (iii) Consolidated Balance Sheets, (iv) Consolidated Statements of Cash Flows, (v) Consolidated Statements of Stockholders' Equity and (vi) Notes to Consolidated Financial Statements, tagged as blocks of text and including detailed tags.

104 The cover page from the Company's Annual Report on Form 10-K for the year ended December 31, 2020, formatted in Inline XBRL

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* *Management contract or compensatory plan or arrangement.*

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
Date: February 25, 2021	By: /s/ *Ashish Agrawal* Ashish Agrawal Vice President and Chief Financial Officer (Principal Financial Officer & Principal Accounting Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Date: February 25, 2021	By: /s/ *Kieran O'Sullivan* Kieran O'Sullivan Chairman, President, and Chief Executive Officer (Principal Executive Officer)
Date: February 25, 2021	By: /s/ *Robert A. Profusek* Robert A. Profusek Lead Director
Date: February 25, 2021	By: /s/ *Patricia K. Collawn* Patricia K. Collawn Director
Date: February 25, 2021	By: /s/ *Gordon Hunter* Gordon Hunter Director
Date: February 25, 2021	By: /s/ *William S. Johnson* William S. Johnson Director
Date: February 25, 2021	By: /s/ *Alfonso G. Zulueta* Alfonso G. Zulueta Director
Date: February 25, 2021	By: /s/ *Ye Jane Li* Ye Jane Li Director
Date: February 25, 2021	By: /s/ *Donna M. Costello* Donna M. Costello Director

Exhibit (21)

CTS CORPORATION AND SUBSIDIARIES

As of December 31, 2020
CTS Corporation (Registrant), an Indiana corporation

Subsidiary:	**Jurisdiction**
CTS Corporation	Delaware
CTS Automotive Holdings, L.L.C.	Delaware
CTS Advanced Materials, L.L.C.	Delaware
CTS Electronic Components, Inc.	Delaware
LTB Investment Corporation	Delaware
Filter Sensing Technologies, Inc.	Delaware
Tusonix, LLC.	Arizona
CTS Electronic Components (California), Inc.	California
CTS Printex, Inc.	California
CTS Automotive, L.L.C.	Illinois
CTS Automotive Holdings 2, L.L.C.	Illinois
CTS SRL-CV Holdings 1, L.L.C.	Illinois
CTS Valpey Corporation	Maryland
Dynamics Corporation of America	New York
CTS Czech Republic S.R.O.	Czech Republic
CTS Europe GmbH	Germany
CTS Electronic Hong Kong Limited	Hong Kong Special Administrative Region of the People's Republic of China
CTS India Private Limited	India
CTS Japan, Inc.	Japan
CTS Electro de Mexico S. DE R.L. DE C.V.	Mexico
CTS International B.V.	The Netherlands
CTS Overseas Holdings B.V.	The Netherlands
CTS (Tianjin) Electronics Co., Ltd.	People's Republic of China
CTS (Zhongshan) Technology Co. Ltd.	People's Republic of China
CTS of Canada Co.	Province of Nova Scotia (Canada)
CTS of Canada Holding Co.	Province of Nova Scotia (Canada)
CTS of Canada GP, Ltd.	Province of Ontario (Canada)
CTS of Canada L.P.	Province of Ontario (Canada)
CTS Components Taiwan, Ltd.	Republic of China
CTS Electro de Matamoros, S.A. de C.V.	Mexico
Technologia Mexicana, S de R.L. de C.V.	Mexico
CTS of Panama, S de R.L.	Republic of Panama
CTS Singapore Pte. Ltd.	Republic of Singapore
CTS Corporation U.K. Limited	Scotland
CTS Corporation Denmark A/S	Denmark
CTS Ceramics Czech Republic S.R.O.	Czech Republic
MAQ Holdings PTE. Ltd.	Republic of Singapore
Quality Thermistor, Inc.	Idaho
Tecate Assembly Services, Inc.	Idaho
Tecate Investments, LLC	Delaware
Tecate Holdings, LLC	Delaware
Componentes de Calidad, S.A. de C.V.	Mexico
Sensor Scientific, Inc	New Jersey
Sensor Scientific Phils., Inc	Republic of Philippines
CTS NA Services, S. de R.L. de C.V.	Mexico

Exhibit (23)

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our reports dated February 25, 2021, with respect to the consolidated financial statements and internal control over financial reporting included in the Annual Report of CTS Corporation and subsidiaries on Form 10-K for the year ended December 31, 2020. We consent to the incorporation by reference of said reports in the Registration Statements of CTS Corporation on Forms S-8 (File No. 333-226371, File No. 333-198235, File No. 333-159542, File No. 333-116287, File No. 333-106614, and File No. 333-62202).

/s/ GRANT THORNTON LLP
Chicago, Illinois
February 25, 2021

EXHIBIT (31)(a)

CERTIFICATION

I, Kieran O’Sullivan, certify that:

1. I have reviewed this quarterly report on Form 10-K of CTS Corporation:

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared; and

   (b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statement for external purposes in accordance with generally accepted accounting principles; and

   (c) evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusion about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and

5. The registrant’s other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of registrant’s board of directors (or persons performing the equivalent function):

   (a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and

   (b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

Date: February 25, 2021

/s/ Kieran O’Sullivan

Kieran O’Sullivan
Chairman, President and Chief Executive Officer

EXHIBIT (31)(b)

CERTIFICATION

I, Ashish Agrawal, certify that:

1. I have reviewed this quarterly report on Form 10-K of CTS Corporation:
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    (a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared; and

    (b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statement for external purposes in accordance with generally accepted accounting principles; and

    (c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusion about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    (d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent function):

    (a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    (b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 25, 2021

/s/Ashish Agrawal

Ashish Agrawal
Vice President and Chief Financial Officer

EXHIBIT (32)(a)

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report of CTS Corporation (the Company) on Form 10-K for the quarter ended December 31, 2020, as filed with the Securities and Exchange Commission on the date hereof (the Report), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. ss. 1350, as adopted pursuant to ss. 906 of the Sarbanes-Oxley Act of 2002, that:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 25, 2021

/s/ Kieran O'Sullivan

Kieran O'Sullivan
Chairman, President and Chief Executive Officer

A signed original of this written statement required by Section 906 has been provided to CTS Corporation and will be retained by CTS Corporation and furnished to the Securities and Exchange Commission or its staff upon request.

EXHIBIT (32)(b)

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report of CTS Corporation (the Company) on Form 10-K for the quarter ended December 31, 2020, as filed with the Securities and Exchange Commission on the date hereof (the Report), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. ss. 1350, as adopted pursuant to ss. 906 of the Sarbanes-Oxley Act of 2002, that:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 25, 2021

/s/Ashish Agrawal

Ashish Agrawal
Vice President and Chief Financial Officer

A signed original of this written statement required by Section 906 has been provided to CTS Corporation and will be retained by CTS Corporation and furnished to the Securities and Exchange Commission or its staff upon request.