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

FORM 10-K

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

For the fiscal year ended December 31, 2022

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: 001-13337

STONERIDGE INC

(Exact name of registrant as specified in its charter)

Ohio	**34-1598949**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*
39675 MacKenzie Drive, Suite 400, Novi, Michigan	**48377**
(Address of principal executive offices)	*(Zip Code)*

(248) 489-9300

Registrant's telephone number, including area code

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Shares, without par value	**SRI**	**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 Section 15(d) of the 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 definition of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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

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

Indicate by check mark whether the registrant 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. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

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

As of June 30, 2022, the aggregate market value of the registrant's Common Shares held by non-affiliates of the registrant was approximately $447.6 million. The closing price of the Common Shares on June 30, 2021 as reported on the New York Stock Exchange was $17.15 per share. As of June 30, 2022, the number of Common Shares outstanding was 27,317,604.

The number of Common Shares outstanding as of February 24, 2023 was 27,348,198.

DOCUMENTS INCORPORATED BY REFERENCE

Definitive Proxy Statement for the Annual Meeting of Shareholders to be held on May 16, 2023, into Part III, Items 10, 11, 12, 13 and 14.

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Forward-Looking Statements

Portions of this report on Form 10-K contain “forward-looking statements” under the Private Securities Litigation Reform Act of 1995. These statements appear in a number of places in this report and may include statements regarding the intent, belief or current expectations of the Company, with respect to, among other things, our (i) future product and facility expansion, (ii) acquisition strategy, (iii) investments and new product development, (iv) growth opportunities related to awarded business and (v) operational expectations. Forward-looking statements may be identified by the words “will,” “may,” “should,” “designed to,” “believes,” “plans,” “projects,” “intends,” “expects,” “estimates,” “anticipates,” “continue,” and similar words and expressions. The forward-looking statements are subject to risks and uncertainties that could cause actual events or results to differ materially from those expressed in or implied by the statements. Important factors that could cause actual results to differ materially from those in the forward-looking statements include, among other factors:

- the ability of our suppliers to supply us with parts and components at competitive prices on a timely basis, including the impact of potential tariffs and trade considerations on their operations and output;
- fluctuations in the cost and availability of key materials (including semiconductors, printed circuit boards, resin, aluminum, steel and copper) and components and our ability to offset cost increases through negotiated price increases with our customers or other cost reduction actions, as necessary;
- global economic trends, competition and geopolitical risks, including impacts from the ongoing conflict between Russia and Ukraine and the related sanctions and other measures, or an escalation of sanctions, tariffs or other trade tensions between the U.S. and China or other countries;
- our ability to achieve cost reductions that offset or exceed customer-mandated selling price reductions;
- the impact of COVID-19, or other future pandemics, on the global economy, and on our customers, suppliers, employees, business and cash flows;
- the reduced purchases, loss or bankruptcy of a major customer or supplier;
- the costs and timing of business realignment, facility closures or similar actions;
- a significant change in automotive, commercial, off-highway or agricultural vehicle production;
- competitive market conditions and resulting effects on sales and pricing;
- foreign currency fluctuations and our ability to mange those impacts;
- customer acceptance of new products;
- our ability to successfully launch/produce products for awarded business;
- adverse changes in laws, government regulations or market conditions, including tariffs, affecting our products or our customers’ products;
- our ability to protect our intellectual property and successfully defend against assertions made against us;
- liabilities arising from warranty claims, product recall or field actions, product liability and legal proceedings to which we are or may become a party, or the impact of product recall or field actions on our customers;
- labor disruptions at our facilities or at any of our significant customers or suppliers;
- business disruptions due to natural disasters or other disasters outside of our control;
- the amount of our indebtedness and the restrictive covenants contained in the agreements governing our indebtedness, including our revolving Credit Facility;
- capital availability or costs, including changes in interest rates or market perceptions;
- the failure to achieve the successful integration of any acquired company or business;
- risks related to a failure of our information technology systems and networks, and risks associated with current and emerging technology threats and damage from computer viruses, unauthorized access, cyber-attack and other similar disruptions; and
- the items described in Part I, Item IA (“Risk Factors”).

The forward-looking statements contained herein represent our estimates only as of the date of this filing and should not be relied upon as representing our estimates as of any subsequent date. While we may elect to update these forward-looking statements at some point in the future, we specifically disclaim any obligation to do so, whether to reflect actual results, changes in assumptions, changes in other factors affecting such forward-looking statements or otherwise.

PART I

Item 1. Business.

Overview

Founded in 1965, Stoneridge, Inc. (the "Company") is a global designer and manufacturer of highly engineered electrical and electronic systems, components and modules for the automotive, commercial, off-highway and agricultural vehicle markets. Our products and systems are critical elements in the management of systems to improve overall vehicle performance, convenience and monitoring in areas such as safety and security, intelligence, efficiency and emissions. Our worldwide footprint is primarily comprised of 21 locations in 11 countries and enables us to supply global automotive, commercial, off-highway, agricultural and other vehicle markets.

Our custom-engineered products and systems are used to activate equipment and accessories, monitor and display vehicle performance and control, distribute electrical power and signals and provide vehicle safety, security and convenience. Our product offerings consist of actuators, sensors, switches and connectors, driver information systems, vision and safety systems, connectivity and compliance products, electronic control units, vehicle tracking devices and monitoring services, vehicle security alarms and convenience accessories, in-vehicle audio and infotainment devices and telematics solutions. We supply the majority of our products, predominantly on a sole-source basis, to many of the world's leading automotive and commercial vehicle original equipment manufacturers ("OEMs") and select non-vehicle OEMs, as well as certain automotive and commercial vehicle Tier 1 suppliers. Our customers are increasingly utilizing electronic technology to comply with more stringent regulations (particularly emissions and safety) and to meet end-user demand for improved vehicle performance and greater convenience. As a result of this trend, per-vehicle electronic content has been increasing. Our technology and our partnership-oriented approach to product design and development enables us to develop next-generation products and systems aligned with these trends.

Beginning with the divestiture of our wiring business in 2014, we accelerated a shift in our product portfolio towards smart products, or those products that contain embedded electronics or logic. While the wiring business was our largest single business, based on revenues and employees, and the business that the Company was founded on, its products were largely commodities that did not provide a technology platform to drive our expected future growth. In addition to the divestiture of the wiring business, we deployed capital in 2017 to make strategic investments including the acquisition of Orlaco, our partner on the development of MirrorEye, our camera-based vision system, and the acquisition of 100 percent of our Stoneridge Brazil business. In 2019, the Company's Control Devices segment sold its non-core switches and connectors business (the "Non-core Products") and in 2020 announced the strategic exit of our PM sensor business to further align with our strategic plan. These activities have acted as a catalyst for the advancement of our smart product portfolio, increasing our smart content from just over 50% of our sales in 2014 to almost 78% of our sales in 2022. Our product portfolio shift focuses on the megatrends driving the transportation industry.

In January 2019, the Company committed to a restructuring plan that resulted in the closure of the Canton, Massachusetts facility ("Canton Facility") as of March 31, 2020 and the consolidation of manufacturing operations at that site into other Company locations ("Canton Restructuring"). During the third quarter of 2020, we leased the Canton facility to a third party. On June 17, 2021, we sold the Canton facility. See Note 7 and Note 2 to the consolidated financial statements for additional details regarding the third-party lease and sale, respectively, of the Canton Facility. See Note 12 to the consolidated financial statements for additional details regarding the Canton Restructuring.

On May 19, 2020, the Company committed to the strategic exit of its Control Devices particulate matter ("PM") sensor product line ("PM Sensor Exit"). The decision to exit the PM sensor product line was made after the consideration of the decline in the market outlook for diesel passenger vehicles, the current and expected profitability of the product line and the Company's strategic focus on aligning resources with the greatest opportunities. See Note 12 to the consolidated financial statements for additional details regarding the PM Sensor Exit.

On March 8, 2021, the Company entered into an Asset Purchase Agreement and sold the PM sensor product line and assets. The PM sensor product line and assets were located in Lexington, Ohio and Tallinn, Estonia. See Note 2 to the consolidated financial statements for additional details regarding the sale of the PM sensor business.

On November 2, 2021, the Company entered into a Share Purchase Agreement (the "SPA") with Minda Corporation Limited ("Minda"), as the buyer, and Minda Stoneridge Instruments Ltd. ("MSIL"). On December 30, 2021, pursuant to the SPA, the Company closed the sale of MSIL to Minda. See Note 2 to the consolidated financial statements for additional details regarding the sale of MSIL.

We have positioned each of our segments for continued long-term success. Our Control Devices segment is increasingly well positioned with a focus on continued development and commercialization of actuation and electrified powertrain applications that will drive future growth for the segment. Our Electronics segment is expected to drive strong revenue growth through previously awarded new program launches including launches for our MirrorEye® camera-based vision system in the OEM market, our digital driver information systems and our connectivity products globally. Our Stoneridge

Brazil segment continues to integrate into our global Electronics strategy as we leverage our global engineering footprint and prepare for continued expansion of our local OEM presence. Overall, we will continue to focus our resources on the areas of largest opportunity for the Company to drive long-term value creation for our shareholders.

Segments and Products

We conduct our business in three reportable business segments, which are the same as our operating segments: Control Devices, Electronics and Stoneridge Brazil.

Control Devices. Our Control Devices segment designs and manufactures products that monitor, measure or activate specific functions within a vehicle. This segment includes product lines such as actuators, sensors, switches and connectors. Actuator products enable OEMs to deploy power functions in a vehicle and can be designed to integrate switching and control functions including our park lock, front-axle disconnect and shift by wire products. Sensor products are employed in major vehicle systems such as the emissions, safety, powertrain, braking, climate control, steering and suspension systems and are now being applied to electric vehicle thermal management systems. Switches and connectors transmit signals that activate specific functions. Our switch and connector technology is principally used in two capacities, user-activated and hidden. User-activated switches are used by a vehicle's operator or passengers to manually activate in-vehicle accessories. Hidden switches are not typically visible to vehicle operators or passengers and are engaged to activate or deactivate selected functions as part of normal vehicle operations. We sell these products principally to the automotive market. To a lesser extent, we also sell these products to the commercial vehicle and agricultural markets.

Electronics. Our Electronics segment designs and manufactures driver information systems, vision and safety systems, connectivity and compliance products and electronic control units. Driver information systems and connectivity and compliance products collect, store and display vehicle information such as speed, pressure, maintenance data, trip information, operator performance, temperature, distance traveled, and driver messages related to vehicle performance. Vision and safety products provide enhanced vehicle visibility and safety to drivers. Electronic control units regulate, coordinate, monitor and direct the operation of the electrical system within a vehicle. These products are sold principally to the commercial vehicle market through both the OEM and aftermarket channels. In addition, vision and safety systems are sold to the off-highway and commercial vehicle markets.

Stoneridge Brazil. Our Stoneridge Brazil ("SRB") segment primarily serves the South American market and specializes in the design, manufacture and sale of vehicle tracking devices and monitoring services, vehicle security alarms and convenience accessories, in-vehicle audio and infotainment devices, driver information systems and telematics solutions primarily for the automotive market. This segment includes product lines such as vehicle monitoring and tracking devices, security alarms, convenience applications such as parking sensors and rearview cameras, audio and infotainment systems and telematics products used for fleet management. These products improve the performance, safety and convenience features of our customers' vehicles. Stoneridge Brazil sells its products through the aftermarket distribution channel, to factory authorized dealer installers, also referred to as original equipment services, direct to OEMs and through mass merchandisers. In addition, monitoring services and tracking devices are sold directly to corporate and individual customers.

Our products and systems are sold to numerous OEM and Tier 1 customers, as well as aftermarket distributors and mass merchandisers, for use on many different vehicle platforms. We supply multiple parts to many of our principal OEM and Tier 1 customers under requirements contracts for a particular vehicle model. These contracts range in duration from one year to the production life of the model, which commonly extends for three to seven years.

The following table sets forth for the periods indicated, the percentage of net sales derived from our principal end markets:

Principal End Markets	2022	2021	2020
Commercial vehicle	**48 %**	39 %	36 %
Automotive	**34 %**	41 %	45 %
Off-highway and other	**12 %**	12 %	12 %
Aftermarket distributors, mass merchandisers and monitoring services	**6 %**	8 %	7 %

For further information related to our reportable segments and financial information about geographic areas, see Note 13 to the consolidated financial statements.

Production Materials

The principal production materials used in the Company's manufacturing process are molded plastic components and resins, copper, steel, precious metals and certain electrical components such as printed circuit boards, semiconductors, microprocessors, memory devices, resistors, capacitors, fuses, relays, monitors and cameras. We purchase production materials pursuant to both annual contract and spot purchasing methods. Such materials are available from multiple sources, but we generally establish collaborative relationships with a qualified supplier for each of our key production materials in order to lower costs and enhance service and quality. As global demand for our production materials increases, we may have difficulties obtaining adequate production materials from our suppliers to satisfy our customers. Refer to the

Risk Factors for risks related to the current supply chain disruption related to semiconductors and other production materials. Any extended period for which we cannot obtain adequate production material or which we experience an increase in the price of production material would materially affect our results of operations and financial condition.

Patents, Trademarks and Intellectual Property

We maintain and have pending various U.S. and foreign patents, trademarks, and other rights to intellectual property relating to the reportable segments of our business, which we believe are appropriate to protect the Company's interests in existing products, new inventions, manufacturing processes and product developments. We do not believe any single patent is material to our overall business success, nor would the expiration or invalidity of any patent have a material adverse effect on our business or ability to compete.

Industry Cyclicality and Seasonality

The markets for products in each of our reportable segments have been cyclical. Because these products are used principally in the production of vehicles for the automotive, commercial, off-highway and agricultural vehicle markets, revenues and therefore results of operations, are significantly dependent on the general state of the economy and other factors, like the impact of environmental regulations on our customers and end market consumers, which affect these markets. A significant decline in automotive, commercial, off-highway and agricultural vehicle production of our principal customers could adversely affect the Company. Our Control Devices and Electronics segments are moderately seasonal, impacted by mid-year and year-end shutdowns and the ramp-up of new model production at key customers. In addition, the demand for our Stoneridge Brazil segment consumer products is typically higher in the second half of the year.

Customers

We have several customers that account for a significant percentage of our sales. The loss of any significant portion of our sales to these customers, or the loss of a significant customer, would have a material adverse impact on our financial condition and results of operations. We supply numerous different products to each of our principal customers. Contracts with several of our customers provide for supplying their requirements for a particular model, rather than for manufacturing a specific quantity of products. Such contracts range from one year to the life of the model, which is generally three to seven years. These contracts are subject to potential renegotiation from time to time, which may affect product pricing and generally may be terminated by our customers at any time. Therefore, the loss of a contract for a major model or a significant decrease in demand for certain key models or group of related models sold by any of our major customers would have a material adverse impact on the Company. We may enter into contracts to supply products, the introduction of which may then be delayed or cancelled. We also compete to supply products for successor models, and are therefore subject to the risk that the customer will not select the Company to produce products on any such model, which could have a material adverse impact on our financial condition and results of operations.

Due to the competitive nature of the markets we serve, we face pricing pressures from our customers in the ordinary course of business. In response to these pricing pressures we have been able to effectively manage our production costs by the combination of lowering certain costs and limiting the increase of others, the net impact of which has not been material. However, if we are unable to effectively manage production costs in the future to mitigate future pricing pressures, our results of operations would be adversely affected.

Competition

The markets for our products in our reportable segments are highly competitive. We compete based on technological innovation, price, quality, performance, service and delivery. We compete for new business both at the beginning of the development of new models and upon the redesign of existing models for OEM customers. New model development generally begins two to five years before the marketing of such models to the public. Once a supplier has been selected to provide parts for a new program, an OEM customer will usually continue to purchase those parts from the selected supplier for the life of the program, although not necessarily for any model redesigns. We compete for aftermarket and mass merchandiser sales based on price, product functionality, quality and service.

Our diversity in products creates a wide range of competitors, which vary depending on both market and geographic location. We compete based on strong customer relations and a fast and flexible organization that develops technically effective solutions at a competitive price.

Product Development

Our research and development efforts for our reportable segments are largely product design and development oriented and consist primarily of applying known technologies to customer requests or developing new, innovative technologies aligned with industry megatrends or customer requests. A large portion of our development expenses are related to customer-sponsored programs where we are involved in designing custom-engineered solutions for specific applications or for next generation technology. To further our vehicle platform penetration, we have also developed collaborative relationships with

the design and engineering departments of key customers. These collaborative efforts have resulted in the development of new and complimentary products and the enhancement of existing products.

While our engineering and product development departments are organized by market, our segments interact and collaborate on new products. The product development operations are executed by technology groups in Barneveld, Netherlands; Campinas, Brazil; Juarez, Mexico; Lexington, Ohio; Novi, Michigan; Stockholm, Sweden; Suzhou, China and Tallinn, Estonia.

We have invested, and will continue to invest heavily in technology to develop new products for our customers. Product development costs, other than capitalized software development costs, incurred in connection with the development of new products and manufacturing methods, to the extent not recoverable from the customer, are expensed as incurred.

We will continue to prioritize investment spending toward the design and development of new products over sustaining existing product programs for specific customers, which allows us to sell our products to multiple customers. The typical product development process takes three to seven years to show tangible results. As part of our effort to evaluate our investment spending, we review our current product portfolio and adjust our spending to either accelerate or eliminate our investment in these products based on our position in the market and the potential of the market and product.

Environmental and Other Regulations

Our operations are subject to various federal, state, local and foreign laws and regulations governing, among other things, emissions to air, discharge to water and the generation, handling, storage, transportation, treatment and disposal of waste and other materials. We believe that our business, operations and facilities have been and are being operated in compliance, in all material respects, with applicable environmental and health and safety laws and regulations, many of which provide for substantial fines and criminal sanctions for violations.

Human Capital Management

As of December 31, 2022, Stoneridge employed approximately 5,250 full time and temporary employees in 14 countries, with about 88% located outside of the United States. Although we have no collective bargaining agreements covering U.S. employees, a significant number of employees located in Brazil, China, Estonia, Mexico, Netherlands, Sweden and the United Kingdom either (i) are represented by a union and are covered by a collective bargaining agreement, or (ii) are covered by a works council or other employment arrangements required by law. We work to ensure positive relations with our employees.

We strive to create a work environment that enhances employee engagement, fosters productivity, and is aligned with our values of Integrity, Accountability, Teamwork, Adaptability, Customer Orientation, and Social Responsibility. We know that our success is dependent on our employees' engagement, performance, skills, and development. To that end, we have established talent management programs at Stoneridge, which include but are not limited to the following:

- Periodic global employee engagement surveys and subsequent action planning
- Regular talent reviews for employee development and succession planning
- Feedback and coaching to ensure performance is aligned with our goals and strategic direction
- Delivery of Code of Conduct and global policy training
- New employee orientation with globally consistent and locally flexible messaging
- Frequent global "town hall" meetings and other communications
- Employee wellness programs
- Opportunities for community and charitable involvement
- Employee mentoring program
- Internship programs

When we hire new employees, we focus not just on the skills required for current positions, but the ever-changing complex skills and competencies that will be required as we move forward on our path to being the mobility industry's integrated technology partner. We seek diverse sources for candidates and we offer wages and benefits that are competitive in the markets where employees are located.

Stoneridge is committed to creating diverse, equitable and inclusive workplaces that align with our core values and deliver sustainable business success. It is our mission to attract, advance and advocate for a diverse workforce that represents the communities around us. To this end, Stoneridge created a steering committee to drive DEI initiatives across its various sites and functions and report on progress to our executive leadership team and Board of Directors. Additionally, we are challenging and responding to bias and eliminating barriers through fair policies and practices. We are building an inclusive Stoneridge where all employees can grow, excel, and contribute to our success in a meaningful way.

The Human Resources function at Stoneridge is an active and visible partner to the business at all levels. Our Chief Human Resources Officer reports directly to the Chief Executive Officer and interacts frequently with the Company's Board of Directors. Our Human Capital focus will continue to be on employee engagement, employee and leadership development, communications, and employee health and safety.

Information About Our Executive Officers

Each executive officer of the Company serves the Board of Directors at its pleasure. The Board of Directors appoints corporate officers annually. The following table sets forth the names, ages, and positions of the executive officers of the Company:

Name	Age	Position
James Zizelman	62	President, Chief Executive Officer and Director
Matthew R. Horvath	37	Chief Financial Officer and Treasurer
Susan C. Benedict	56	Chief Human Resources Officer and Assistant General Counsel
Laurent P. Borne	48	Chief Strategy Officer and Chief Technology Officer
Caetano R. Ferraiolo	55	President of the Stoneridge Brazil Division
Robert J. Hartman Jr.	56	Chief Accounting Officer
Salvatore Orsini	53	Chief Procurement Officer
Peter Österberg	54	President of the Electronics Division
Rajaey Kased	43	President of the Control Devices Division

James Zizelman, President, Chief Executive Officer and Director. Mr. Zizelman was appointed as President and Chief Executive Officer and elected as Director in January 2023. Previously he served as President of the Control Devices Division since April 2020. Prior to joining Stoneridge, Mr. Zizelman served as the Vice President of Engineering and Program Management for Aptiv from December 2017 to March 2019. Prior to that, Mr. Zizelman was employed at Delphi for more than 20 years, where he was last a Vice President of Engineering from 2016 to 2017.

Matthew R. Horvath, Chief Financial Officer and Treasurer. Mr. Horvath was appointed Chief Financial Officer and Treasurer in August 2021. He previously served as Stoneridge's Executive Director of Corporate Strategy and Investor Relations, and prior to that as Director of Investor Relations. Prior to joining Stoneridge, Mr. Horvath spent six years at EY, formerly known as Ernst & Young, in the Transaction Advisory practice, primarily focused on business and asset valuation with a focus on the automotive and transportation industry.

Susan C. Benedict, Chief Human Resources Officer and Assistant General Counsel. Ms. Benedict was appointed Chief Human Resources Officer and Assistant General Counsel – Labor and Employment in June 2019. Ms. Benedict previously served as Stoneridge's Director of Legal since November 2017. Prior to Stoneridge, Ms. Benedict served as Senior Counsel for Koch Industries in October 2017 and Corporate Counsel for Guardian Industries from December 2012 to September 2017.

Laurent P. Borne, Chief Strategy Officer and Chief Technology Officer. Mr. Borne was appointed Chief Strategy Officer in March 2022. Prior to that he was the President of the Electronics Division from January 2019. Mr. Borne joined the Company in August 2018 as the Company's Chief Technology Officer and has continued to serve in that role. Prior to joining Stoneridge, Mr. Borne served as Vice President of Product Development at Whirlpool Corporation from 2014 until August 2018.

Caetano R. Ferraiolo, President of the PST Electronics Division. Mr. Ferraiolo was appointed to President of the Stoneridge Brazil Electronics Division in June 2017. Mr. Ferraiolo joined the Company in 2015 and previously served as the Chief Operating Officer of Stoneridge Brazil. From 2010 to 2015 he served as Vice President of Operations for Cannondale Sports Group in Brazil. Prior to that, Mr. Ferraiolo served as Director of European Commercial and Development, Autocam Corporation from 2005 to 2010.

Robert J. Hartman Jr., Chief Accounting Officer. Mr. Hartman was appointed as Chief Accounting Officer and to the role of principal accounting officer in July 2016. Prior to that, Mr. Hartman served as Corporate Controller of the Company since 2006 and prior to that as Stoneridge's Director of Internal Audit from 2003.

Salvatore Orsini, Chief Procurement Officer. Mr. Orsini was appointed Chief Procurement Officer in July 2022. Prior to that Mr. Orsini had been employed at Nexteer Automotive as Vice President, Global Chief Supply Management Officer from 2020 until June 2022. From 2019 to 2020 Mr. Orsini served as Supply Chain Director at Aptiv and from 2013 to 2019 Mr. Orsini held various leadership roles at General Motors, most recently Global Commodity Director. Prior to that Mr. Orsini held various positions at Rolls-Royce Aerospace and Delphi.

Peter Österberg, President of the Electronics Division. Mr. Österberg was appointed as president of the Electronics Division in March 2022. Before joining Stoneridge, Peter served as vice president of Supplier Quality and Development at Volvo Group from 2017 to 2022. Before that, he served in a variety of roles at Volvo including vice president of engineering at Volvo CE, global director Volvo Powertrain, and other positions with increasing responsibility over time. Prior to that, he worked at Volvo Cars, both within product development and quality.

Rajaey Kased, President of the Control Devices Division. Mr. Kased was appointed as President of the Control Devices Division in January 2023. He previously was the Vice President of Sales, Strategy, and Product Line Management for the Control Devices Division in 2019. Prior to joining Stoneridge, Mr. Kased served as Head of Business Development, ADAS and Powertrain, North America, at Henkel from 2017 to 2019. Prior to that, Mr. Kased was employed at Delphi from 2005 to 2017 where he served in roles of increasing responsibility.

Available Information

We make available, free of charge through our website (*www.stoneridge.com*), our Annual Report on Form 10-K ("Annual Report"), Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, all amendments to those reports, and other filings with the U.S. Securities and Exchange Commission ("SEC"), as soon as reasonably practicable after they are filed with the SEC. Our Corporate Governance Guidelines, Code of Business Conduct and Ethics, Code of Ethics for Senior Financial Officers, Whistleblower Policy and Procedures and the charters of the Board of Director's Audit, Compensation, Nominating and Corporate Governance and Compliance and Ethics Committees are posted on our website as well. Copies of these documents will be available to any shareholder upon request. Requests should be directed in writing to Investor Relations at Stoneridge, Inc., 39675 MacKenzie Drive, Suite 400, Novi, Michigan 48377. The SEC maintains a website (*www.sec.gov*) that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including the Company.

Item 1A. Risk Factors.

Risks Related to the Coronavirus (COVID-19) Pandemic

Pandemics or disease outbreaks, such as COVID-19, have disrupted, and may continue to disrupt our business, which could adversely affect our results of operation and financial condition.

Pandemics or disease outbreaks, such as COVID-19, have disrupted, and may continue to disrupt, the global economy. In late 2019, a novel strain of the coronavirus (COVID-19) was reported to have been detected in Wuhan, China and on March 11, 2020 it was declared by the World Health Organization to be a global pandemic. The COVID-19 pandemic has negatively affected the global economy, disrupting the financial markets and increasing volatility, and has impeded global supply chains, restricted manufacturing operations and resulted in significantly reduced economic activity and higher unemployment rates. It has disrupted, and may continue to disrupt for an indefinite period of time, the global vehicle industry and customer sales, production volumes and purchases of automotive, commercial, off-highway and agricultural vehicles by end-consumers. International, federal, state and local public health and governmental authorities have taken and may continue to take actions to contain the outbreak and spread of COVID-19 throughout most regions of the world, including travel bans, quarantines, "work-from-home" orders and similar mandates that have caused many businesses to modify normal operations. Beginning in 2020 we took actions to enhance our financial flexibility and minimize the impact on our business, such as the ramping down of certain production facilities in response to customer plant closures and changes in vehicle production schedules, imposing certain travel restrictions, amending our existing Credit Facility three times providing covenant relief through September 2023 and actively managing costs, capital spending and working capital to further strengthen our liquidity. Despite these measures, the ultimate impact to our business continues to remain highly uncertain and we have experienced, and may continue to experience, delays in the production and distribution of our products, supply chain disruptions affecting the availability of production materials and the loss or delay of customers' sales.

Uncertain Economic and Market Conditions

Our business is cyclical and a downturn in the automotive, commercial, off-highway and agricultural vehicle markets as well as overall economic conditions could reduce our sales and profitability.

The demand for products is largely dependent on the domestic and foreign production of automotive, commercial, off-highway and agricultural vehicles. The markets for our products have been cyclical, because new vehicle demand is dependent on, among other things, consumer spending and is tied closely to the overall strength of the economy. Because the majority of our products are used principally in the production of vehicles for the automotive, commercial, off-highway and agricultural vehicle markets, our net sales, and therefore our results of operations, are significantly dependent on the general state of the economy and other factors which affect these markets.

In 2022, approximately 94% of our net sales were derived from automotive, commercial, off-highway and agricultural vehicle markets while approximately 6% were derived from aftermarket distributors, mass merchandisers and monitoring services markets.

Due to the overall global economic conditions in 2022 and 2021, largely as a result of supply chain issues and the impact of the COVID-19 pandemic and resulting supply chain issues, the automotive, commercial, off-highway and agricultural vehicle markets experienced volatility in global customer sales and production volumes. As a result, we have experienced and may continue to experience reductions in orders from our customers in certain regions. An economic downturn or other adverse industry conditions that result in a decline in automotive, commercial, off-highway or agricultural vehicle production, or a

material decline in market share by our significant customers, could adversely affect our results of operations and financial condition.

The loss or insolvency of any of our principal customers would adversely affect our future results.

We are dependent on several principal customers for a significant percentage of our net sales. In 2022, our top five customers were PACCAR, Volvo, VW Group, Ford Motor Company and Daimler AG, which comprised 15%, 11%, 9%, 7% and 7% of our net sales, respectively. In 2022, our top ten customers accounted for 63% of our net sales. The loss of any significant portion of our sales to these customers would have a material adverse effect on our results of operations and financial condition. In addition, we have significant receivable balances related to these customers and other major customers that would be at risk in the event of their insolvency.

The Company's estimated sourced future sales from awarded programs may not be realized.

The Company typically enters into customer agreements at the beginning of a vehicle life cycle with the intent to fulfill customer-purchasing requirements for the entire vehicle production life cycle. The vehicle life cycle typically included the two to four year pre-production period and production for a term covering the life of such vehicle model or platform, generally between three to seven years, although there is no guarantee that this will occur. The Company's customers make no firm commitments regarding volume and may terminate these agreements or orders at any time. Therefore, these arrangements do not represent firm orders. The Company's estimated sourced future sales from awarded programs, also referred to as backlog, is the estimated remaining cumulative awarded life-of-program sales for up to a five year period. Several factors may change forecasted revenue from awarded programs; namely, new business wins, vehicle production volume changes, customer price reductions, foreign currency exchange rates, component take rates by customers and short cycled or cancelled models or platforms.

We must implement and sustain a competitive technological advantage in producing our products to compete effectively.

Our products are subject to changing technology, which could place us at a competitive disadvantage relative to alternative products introduced by competitors. Our success will depend on our ability to continue to meet customers' changing specifications with respect to technological innovation, price, quality, performance, service and delivery by implementing and sustaining competitive technological advances. Our business may, therefore, require significant recurring additional capital expenditures and investment in product development, manufacturing and management information systems. We cannot assure that we will be able to achieve technological advances or introduce new products that may be necessary to remain competitive. Our inability to continuously improve existing products, develop new products and achieve technological advances could have a material adverse effect on our business, financial condition or results of operations.

The discontinuation of, loss of business or lack of commercial success, with respect to a particular vehicle model for which the Company is a significant supplier could reduce the Company's sales and harm its profitability.

Although the Company has purchase orders from many of its customers, these purchase orders generally provide for the supply of a customer's annual requirements for a particular vehicle model and assembly plant, or in some cases, for the supply of a customer's requirements for the life of a particular vehicle model, rather than for the purchase of a specific quantity of products. In addition, it is possible that our customers could elect to manufacture components internally that are currently produced by outside suppliers, such as our Company. The discontinuation of, the loss of business with respect to or a lack of commercial success of a particular vehicle model for which the Company is a significant supplier, could reduce the Company's sales and have a material adverse effect on our business, financial condition or results of operations.

Financial Risks

We have foreign currency translation and transaction risks that may materially adversely affect our operating results, financial condition and liquidity.

The financial position and results of operations of our international subsidiaries are initially recorded in various foreign currencies and then translated into U.S. dollars at the applicable exchange rate for inclusion in our consolidated financial statements. The strengthening of the U.S. dollar against these foreign currencies ordinarily has a negative effect on our reported sales and operating margin (and conversely, the weakening of the U.S. dollar against these foreign currencies has a positive impact). The volatility of currency exchange rates may materially adversely affect our business, financial condition or results of operations.

Our debt obligations could limit our flexibility in managing our business and expose us to risks.

As of December 31, 2022, there was $167.8 million in borrowings outstanding on our Fourth Amended and Restated Credit Agreement, as amended, (the "Credit Facility"). In addition, we are permitted under our Credit Facility to incur additional

debt, subject to specified limitations. Our leverage and the terms of our indebtedness may have important consequences including the following:

- we may have difficulty satisfying our obligations with respect to our indebtedness, and if we fail to comply with these requirements, an event of default could result;
- we may be required to dedicate a substantial portion of our cash flow from operations to required payments on indebtedness, thereby reducing the availability of cash flow for working capital, capital expenditures and other general corporate activities;
- covenants relating to our debt may limit our ability to obtain additional financing for working capital, capital expenditures and other general corporate activities;
- covenants relating to our debt may limit our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate; and
- we may be placed at a competitive disadvantage against less leveraged competitors.

These and other consequences of our leverage and the terms of our indebtedness could have a material adverse effect on our business, financial condition or results of operations.

Covenants in our Credit Facility may limit our ability to pursue our business strategies.

Our Credit Facility limits our ability to, among other things:

- incur additional debt and guarantees;
- pay dividends and repurchase our shares;
- make other restricted payments, including investments;
- create liens;
- sell or otherwise dispose of assets, including capital shares of subsidiaries;
- enter into agreements that restrict dividends from subsidiaries;
- consolidate, merge or sell or otherwise dispose of all or substantially all of our assets; and
- substantially change the nature of our business.

On March 1, 2023, we amended the Credit Facility. As amended the Credit Facility provides for certain financial covenant relief and additional covenant restrictions during the “Amendment No. 4 Specified Period” (the period from March 1, 2023 until the date that the Company delivers a compliance certificate for the quarter ending September 30, 2023 in form and substance satisfactory to the administrative agent). During the Amendment No. 4 Specified Period:

- the maximum net leverage ratio was changed to 4.75 to 1.00 for the quarter ended March 31, 2023 and 4.25 to 1.00 for the quarter ended June 30, 2023;
- the minimum interest coverage ratio of 3.50 was reduced to 3.00 for the quarters ended March 31, 2023 and June 30, 2023;
- drawing on the Credit Facility continues to be restricted if the Company's total of 100% of domestic and 65% of foreign cash and cash equivalents exceeds $70.0 million;
- there continue to be certain additional restrictions on Restricted Payments (as defined); and
- consistent with Amendment No. 3, a Permitted Acquisition (as defined) may not be consummated unless the net leverage ratio is below 3.50 to 1.00 during the Amendment No. 4 Specified Period.

Our ability to comply with these covenants as well as the negative covenants under the terms of our indebtedness may be affected by events beyond our control.

A breach of any of the negative covenants under our indebtedness or our inability to comply with the leverage and interest ratio requirements in the Credit Facility could result in an event of default. If an event of default occurs, the lenders under the Credit Facility could elect to declare all outstanding borrowings, together with accrued interest and other fees, to be immediately due and payable and terminate any commitments they have to provide further borrowings, and the Credit Facility lenders could pursue foreclosure and other remedies against us and our assets.

Our annual effective tax rate could be volatile and materially change as a result of changes in the mix of earnings and other factors including changes in the recognition and/or release of valuation allowances against deferred tax assets.

Our overall effective tax rate is computed by dividing our total tax expense (benefit) by our total earnings (loss) before tax. However, tax expense and benefits are not recognized on a global basis, but rather on a jurisdictional or legal entity basis. Losses in certain jurisdictions may not provide a current financial statement tax benefit as a result of the need to maintain a valuation allowance against the associated deferred tax asset. Also, management periodically evaluates the realizability of our deferred tax assets which may result in the recognition and/or release of valuation allowances. As a result, changes in the mix of earnings between jurisdictions and changes in the recognition and/or release of valuation allowances, among other factors, could have a significant effect on our overall effective tax rate.

Risks Related to Products, Pricing and Supply

We are dependent on the availability and price of raw materials and other supplies.

We require substantial amounts of raw materials and other supplies, and substantially all such materials we require are purchased from outside sources. The availability and prices of raw materials and other supplies may be subject to curtailment or change due to, among other things, new laws or regulations, suppliers' allocations to other purchasers and interruptions in production by suppliers, weather emergencies, natural disasters, commercial disputes, acts of terrorism or war, changes in exchange rates and worldwide price levels. If demand for raw materials we require increases, we may have difficulties obtaining adequate raw materials and other supplies from our suppliers to satisfy our customers. Currently, and at times in the past, we have experienced difficulty obtaining adequate supplies of semiconductors, memory chips and other electronic components. In addition, there have been challenges at times in obtaining timely supply of nylon and resins for our Control Devices segment and audio component parts for our Stoneridge Brazil segment. If we cannot obtain adequate raw materials and other supplies, or if we experience an increase in the price of raw materials and other supplies, our business, financial condition or results of operations could be materially adversely affected.

The adverse impacts of the COVID-19 pandemic led to a significant vehicle production slowdown in the first half of 2020, which was followed by increased consumer demand and vehicle production schedules in the second half of 2020. This surge in demand led to a worldwide semiconductor supply shortage at the end of 2020 and through 2022, as semiconductor suppliers have been unable to rapidly reallocate production lines to serve the transportation industry. In addition, we have experienced longer lead-times, higher costs and delays in procuring other component parts and raw materials. As a result, we are currently experiencing supply chain disruptions. We are assessing the potential supply chain impacts, which may directly or indirectly impact various suppliers, and correspondingly, OEM production. We are working closely with our suppliers and customers to minimize any potential adverse impacts, and we continue to closely monitor the availability of semiconductor microchips and other component parts and raw materials, customer vehicle production schedules and any other supply chain inefficiencies that may arise, due to this or any other issue. However, any direct or indirect supply chain disruptions may have an adverse impact on our business, financial condition, results of operations or cash flows.

The prices that we can charge our customers are typically predetermined and we bear the risk of costs in excess of our estimates, in addition to the risk of adverse effects resulting from general customer demands for cost reductions and quality improvements.

Our supply agreements with our customers typically require us to provide our products at predetermined prices. In some cases, these prices decline over the course of the contract and may require us to meet certain productivity and cost reduction targets. In addition, our customers may require us to share productivity savings in excess of our cost reduction targets. The costs that we incur in fulfilling these contracts may vary substantially from our initial estimates. Unanticipated cost increases or the inability to meet certain cost reduction targets may occur as a result of several factors, including increases in the costs of labor, components or materials. In some cases, we are permitted to pass on to our customers the cost increases associated with specific materials. However, cost overruns that we cannot pass on to our customers could adversely affect our business, financial condition or results of operations.

OEM customers have exerted and continue to exert considerable pressure on component suppliers to reduce costs, improve quality and provide additional design and engineering capabilities and continue to demand and receive price reductions and measurable increases in quality through their use of competitive selection processes, rating programs and various other arrangements. We may be unable to generate sufficient production cost savings in the future to offset required price reductions. Additionally, OEMs have generally required component suppliers to provide more design engineering input at earlier stages of the product development process, the costs of which have, in some cases, been absorbed by the suppliers. Future price reductions, increased quality standards and additional engineering capabilities required by OEMs may reduce our profitability and have a material adverse effect on our business, financial condition or results of operations.

We have limited or no redundancy for certain of our manufacturing facilities, and therefore damage or disruption to those facilities could interrupt our operations, increase our costs of doing business and impair our ability to deliver our products on a timely basis.

If certain of our existing production facilities become incapable of manufacturing products for any reason, we may be unable to meet production requirements, we may lose revenue and we may not be able to maintain our relationships with our customers. Without operation of certain existing production facilities, we may be limited in our ability to deliver products until we restore the manufacturing capability at the particular facility, find an alternative manufacturing facility or arrange an alternative source of supply. We carry business interruption insurance to cover lost revenue and profits in an amount we consider adequate, however, this insurance does not cover all possible situations and may be insufficient. Also, our business interruption insurance would not compensate us for the loss of opportunity and potential adverse impact on relations with our existing customers resulting from our inability to produce products for them.

We rely on independent dealers and distributors to sell certain products in the aftermarket sales channel and a disruption to this channel would harm our business.

Because we sell certain products such as security accessories and driver information products to independent dealers and distributors, we are subject to many risks, including risks related to their inventory levels and support for our products. If dealers and distributors do not maintain sufficient inventory levels to meet customer demand, our sales could be negatively impacted.

Our dealer network also sells products offered by our competitors. If our competitors offer our dealers more favorable terms, those dealers may de-emphasize or decline to carry our products. In the future, we may not be able to retain or attract a sufficient number of qualified dealers and distributors. Our inability to maintain successful relationships with dealers and distributors, or to expand our distribution channels, could have a material adverse effect on our business, financial condition or results of operations.

Our Global Positioning Systems ("GPS") products depend upon satellites maintained by the United States Department of Defense. If a significant number of these satellites become inoperable, unavailable or are not replaced, or if the policies of the United States government for the use of the GPS without charge are changed, our business will suffer.

The GPS is a satellite-based navigation and positioning system consisting of a constellation of orbiting satellites. The satellites and their ground control and monitoring stations are maintained and operated by the United States Department of Defense. The Department of Defense does not currently charge users for access to the satellite signals. These satellites and their ground support systems are complex electronic systems subject to electronic and mechanical failures and possible sabotage.

If a significant number of satellites were to become inoperable, unavailable or are not replaced, it would impair the current utility of our GPS products and the growth of market opportunities. In addition, there can be no assurance that the U.S. government will remain committed to the operation and maintenance of GPS satellites over a long period, or that the policies of the U.S. government that provide for the use of the GPS without charge and without accuracy degradation will remain unchanged. Because of the increasing commercial applications of the GPS, other U.S. government agencies may become involved in the administration or the regulation of the use of GPS signals. Any of the foregoing factors could affect the willingness of buyers of our products to select GPS-based products instead of products based on competing technologies, which could adversely affect our operational revenues, financial condition and results of operation.

Geopolitical Uncertainties

We are subject to risks related to our international operations.

Approximately 51% of our net sales in 2022 were derived from sales outside of North America. At December 31, 2022, significant concentrations of net assets outside of North America included $226.8 million in Europe and Other and $39.4 million in South America. Non-current assets outside of North America accounted for approximately 62% of our non-current assets as of December 31, 2022. International sales and operations are subject to significant risks, including, among others:

- political and economic instability;
- restrictive trade policies;
- economic conditions in local markets;
- currency exchange rates and controls;
- labor unrest;
- difficulty in obtaining distribution support and potentially adverse tax consequences; and
- the imposition of product tariffs and the burden of complying with a wide variety of international and U.S. export laws.

We operate our business on a global basis and policy changes affecting international trade could adversely impact the demand for our products and our competitive position.

We manufacture, sell and service products globally and rely upon a global supply chain to deliver the raw materials, components, systems and parts that we need to manufacture and service our products. Changes in government policies on foreign trade and investment can affect the demand for our products and services, cause non-U.S. customers to shift preferences toward domestically manufactured or branded products and impact the competitive position of our products or prevent us from being able to sell products in certain countries. Our business benefits from free trade agreements, such as the United States-Mexico-Canada Agreement and the U.S. trade relationship with China and Brazil and efforts to withdraw from, or substantially modify such agreements or arrangements, in addition to the implementation of more restrictive trade policies, such as more detailed inspections, higher tariffs import or export licensing requirements, exchange controls or new barriers to entry, could adversely impact our production costs, customer demand and our relationships with customers and suppliers. Any of these consequences could have a material adverse effect on our business, financial condition or results of operations.

Strategic Performance Risks

Our inability to effectively manage the timing, quality and costs of new program launches could adversely affect our financial performance.

In connection with the award of new business, we obligate ourselves to deliver new products and services that are subject to our customers' timing, performance and quality standards. Additionally, as a Tier 1 supplier, we must effectively coordinate the activities of numerous suppliers in order for the program launches of our products to be successful. Given the complexity of new program launches, we may experience difficulties managing product quality, timeliness and associated costs. In addition, new program launches require a significant ramp-up of costs; however, our sales related to these new programs generally are dependent upon the timing and success of our customers' introduction of new vehicles. Our inability to effectively manage the timing, quality and costs of these new program launches could adversely affect our business, financial condition or results of operations.

We may not be able to successfully integrate acquisitions into our business or may otherwise be unable to benefit from pursuing acquisitions.

Failure to successfully identify, complete and/or integrate acquisitions could have a material adverse effect on us. A portion of our growth in sales and earnings has been generated from acquisitions and subsequent improvements in the performance of the businesses acquired. We expect to continue a strategy of selectively identifying and acquiring businesses with complementary products. We cannot assure you that any business acquired by us will be successfully integrated with our operations or prove to be profitable. We could incur substantial indebtedness in connection with our acquisition strategy, which could significantly increase our interest expense.

We anticipate that acquisitions could occur in foreign markets in which we do not currently operate. As a result, the process of integrating acquired operations into our existing operations may result in unforeseen operating difficulties and may require significant financial resources that would otherwise be available for the ongoing development or expansion of existing operations. Any failure to successfully integrate such acquisitions could have a material adverse effect on our business, financial condition or results of operations.

If we do not respond appropriately, the evolution of the global transportation industry toward electrification and shared mobility could adversely affect our business.

The global transportation industry is increasingly focused on the development of more fuel-efficient solutions to meet demands from consumers and governments worldwide to address climate change and an increased desire for environmentally sustainable solutions. The impacts of these changes on us are uncertain and could ultimately prove dramatic. If we do not respond appropriately, the evolution toward electrification and other energy sources could adversely affect our business. The increased adoption of electrified and other non-internal combustion-based powertrains may result in lower demand for some of our products. There has also been an increase in consumer preferences for car and ride sharing, as opposed to automobile ownership, which may result in a long-term reduction in the number of vehicles per capita. The evolution of the industry toward electrification and shared mobility has also attracted increased competition from entrants outside of the traditional light vehicle industry, some of whom may seek to provide products which compete with ours. Failure to innovate and to develop or acquire new and compelling products that capitalize upon new technologies in response to these evolving consumer preferences and demands could adversely affect our business, financial condition or results of operations.

Product Liability Risks

Increased or unexpected product warranty claims could adversely affect us.

We typically provide our customers a warranty covering workmanship, and in some cases materials, on products we manufacture. Our warranty generally provides that products will be free from defects and adhere to customer specifications. If a product fails to comply with the warranty, we may be obligated or compelled, at our expense, to correct any defect by repairing or replacing the defective product. Our customers are increasingly seeking to hold suppliers responsible for product warranties, which could negatively impact our exposure to these costs. We maintain warranty reserves in an amount based on historical trends of units sold and costs incurred, combined with our current understanding of the status of existing claims. To estimate the warranty reserves, we must forecast the resolution of existing claims, as well as expected future claims on products previously sold. The costs of claims estimated to be due and payable could differ materially from what we may ultimately be required to pay. An increase in the rate of warranty claims or the occurrence of unexpected warranty claims could have a material adverse effect on our customer relations, our business, financial condition or results of operations.

We may incur material product liability costs.

We may be subject to product liability claims in the event that the failure of any of our products results in personal injury or death and we cannot assure that we will not experience material product liability losses in the future. We cannot assure that

our product liability insurance will be adequate for liabilities ultimately incurred or that it will continue to be available on terms acceptable to us. In addition, if any of our products prove to be defective, we may be required to participate in government-imposed or customer OEM-instituted recalls involving such products. A successful claim brought against us that exceeds available insurance coverage or a requirement to participate in any product recall could have a material adverse effect on our business, financial condition or results of operations.

Intellectual Property Risks

If we fail to protect our intellectual property rights or maintain our rights to use licensed intellectual property or are found liable for infringing the rights of others, our business could be adversely affected.

Our intellectual property, including our patents, trademarks, copyrights, trade secrets and license agreements, are important in the operation of our businesses, and we rely on the patent, trademark, copyright and trade secret laws of the United States and other countries, as well as nondisclosure agreements, to protect our intellectual property rights. We may not, however, be able to prevent third parties from infringing, misappropriating or otherwise violating our intellectual property, breaching any nondisclosure agreements with us, or independently developing technology that is similar or superior to ours and not covered by our intellectual property. Any of the foregoing could reduce any competitive advantage we have developed, cause us to lose sales or otherwise harm our business. We cannot assure that any intellectual property will provide us with any competitive advantage or will not be challenged, rejected, cancelled, invalidated or declared unenforceable. In the case of pending patent applications, we may not be successful in securing issued patents, or securing patents that provide us with a competitive advantage for our businesses. In addition, our competitors may design products around our patents that avoid infringement and violation of our intellectual property rights.

We cannot be certain that we have rights to all intellectual property currently used in the conduct of our businesses or that we have complied with the terms of agreements by which we acquire such rights, which could expose us to infringement, misappropriation or other claims alleging violations of third party intellectual property rights. Third parties have asserted and may assert or prosecute infringement claims against us in connection with the services and products that we offer, and we may or may not be able to successfully defend these claims. Litigation, either to enforce our intellectual property rights or to defend against claims regarding intellectual property rights of others, could result in substantial costs and a diversion of our resources. Any such claims and resulting litigation could require us to enter into licensing agreements (if available on acceptable terms or at all), pay damages and cease making or selling certain products and could result in a loss of our intellectual property protection. Moreover, in such a situation, we may need to redesign some of our products to avoid future infringement liability. We also may be required to indemnify customers or other third parties at significant expense in connection with such claims and actions. The Company has seen an increase in customer requests for indemnification in connection with third party patent claims related to connectivity-enabled products. These claims are being made by patent-holders seeking royalties and who may enter into litigation based on patent infringement allegations. The Company has taken actions to mitigate this risk from new programs; however, significant indemnification claims related to these products could have a material adverse effect on our business, financial condition or results of operations.

Information Technology and Cybersecurity Risks

A failure of our information technology (IT) networks and systems, or the inability to successfully implement upgrades to our enterprise resource planning (ERP) systems, could adversely impact our business and operations.

We rely upon information technology networks and systems to process, transmit and store electronic information, and to manage or support a variety of business processes and/or activities. The secure operation of these IT networks and systems and the proper processing and maintenance of this information are critical to our business operations.

In addition, we continually expand and update our IT networks and systems in response to the changing needs of our business and periodically upgrade our ERP systems. Should our networks or systems not be implemented successfully, or if the systems do not perform in a satisfactory manner once implementation is complete, our business and operations could be disrupted and our results of operations could be adversely affected, including our ability to report accurate and timely financial results.

We may be subject to risks relating to our information technology systems and cybersecurity.

We rely on information technology systems to process, transmit and store electronic information and manage and operate our business. Despite the implementation of security measures, our IT networks and systems are at risk to damages from computer viruses, unauthorized access, cyber-attack and other similar disruptions. A breach in security could expose us and our customers and suppliers to risks of misuse of confidential information, manipulation and destruction of data, production downtimes and operations disruptions, which in turn could adversely affect our reputation, competitive position, business or results of operations. While we have taken steps to protect the Company from cybersecurity risks and security breaches (including enhancing our firewall, workstation, email security and network monitoring with managed detection and response (MDR) and alerting capabilities, and training employees around phishing, malware and other cybersecurity risks), and we have policies and procedures to prevent or limit the impact of systems failures, interruptions, and security breaches, there

can be no assurance that such events will not occur or that they will be adequately addressed if they do. Although we rely on commonly used security and processing systems to provide the security and authentication necessary to effect the secure transmission of data, these precautions may not protect our systems from all potential compromises or breaches of security. We may be required to incur significant costs to protect against damage caused by these disruptions or security breaches in the future.

Privacy and security concerns relating to the Company's current or future products and services could damage its reputation and deter current and potential users from using them.

We may gain access to sensitive, confidential or personal data or information that is subject to privacy and security laws, regulations and customer-imposed controls. Concerns about our practices with regard to the collection, use, disclosure, or security of personal information or other privacy related matters, even if unfounded, could damage our reputation and adversely affect our business, our financial condition or operating results. Furthermore, regulatory authorities around the world are considering a number of legislative and regulatory proposals concerning cybersecurity and data protection. In addition, the interpretation and application of consumer and data protection laws in the U.S., Europe and elsewhere are often uncertain and in flux. Complying with these various laws could cause the Company to incur substantial costs.

Environmental, Climate and Weather Risks

Compliance with environmental and other governmental regulations could be costly and require us to make significant expenditures.

Our operations are subject to various federal, state, local and foreign laws and regulations governing, among other things:

- the discharge of pollutants into the air and water;
- the generation, handling, storage, transportation, treatment, and disposal of waste and other materials;
- the cleanup of contaminated properties; and
- the health and safety of our employees.

Our business, operations and facilities are subject to environmental and health and safety laws and regulations, many of which provide for substantial fines for violations. The operation of our manufacturing facilities entails risks and we cannot assure you that we will not incur material costs or liabilities in connection with these operations. In addition, potentially significant expenditures could be required in order to comply with evolving environmental, health and safety laws, regulations or requirements that may be adopted or imposed in the future. Changes in environmental, health and safety laws, regulations and requirements or other governmental regulations could increase our cost of doing business or adversely affect the demand for our products.

An emphasis on global climate change and other ESG matters by various stakeholders could negatively affect our business.

Customer, investor, employee and other stakeholder expectations of us and our supply base in areas such as the environment, social matters and corporate governance have been rapidly evolving and increasing. The enhanced stakeholder focus on ESG requires the continuous monitoring of various and evolving standards and their associated requirements. Our failure, or that of our supply base, to adequately meet stakeholder expectations may result in, among other things, the loss of business, diluted market valuation, an inability to attract customers or an inability to attract and retain top talent that could adversely affect our business, financial condition or results of operations.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

At December 31, 2022, the Company owned or leased seven manufacturing facilities, which together contain approximately 0.9 million square feet of manufacturing space. Of these manufacturing facilities, three are used by our Control Devices reportable segment, three are used by our Electronics reportable segment and one is used by our Stoneridge Brazil reportable segment. The following table provides information regarding our facilities:

Location	Owned/ Leased	Use	Square Footage
Control Devices			
Juarez, Mexico (A)	Owned	Manufacturing/Engineering	235,035
Lexington, Ohio	Owned	Manufacturing/Engineering	219,612
Suzhou, China (A)	Leased	Manufacturing/Engineering/Sales Office	145,033
El Paso, Texas (A)	Leased	Warehouse	57,000
Lexington, Ohio	Leased	Warehouse	15,000
Novi, Michigan	Leased	Engineering	6,398
Electronics			
Tallinn, Estonia	Leased	Manufacturing/Engineering	85,911
Orebro, Sweden	Leased	Manufacturing	77,472
Barneveld, Netherlands	Owned	Manufacturing/Engineering	62,700
Stockholm, Sweden	Leased	Engineering/Division Office	41,248
Bayonne, France	Leased	Sales Office/Warehouse	9,655
Jasper, Georgia	Leased	Sales Office/Warehouse	6,250
Dundee, Scotland	Leased	Sales Office/Engineering	4,683
Ottobrunn, Germany	Leased	Sales Office	1,119
Stoneridge Brazil			
Manaus, Brazil	Owned	Manufacturing	102,247
Campinas, Brazil	Owned	Engineering/Division Office	45,467
Hortolândia, Brazil	Leased	Sales Office	3,229
Buenos Aires, Argentina	Leased	Sales Office	2,906
Serra, Brazil	Leased	Sales Office	344
Corporate and Other			
Novi, Michigan (B)	Leased	Headquarters/Division Office	37,713
Esslingen, Germany	Leased	Sales Office	1,722

(A) This facility is also used in the Electronics reportable segment.
(B) This facility is also used in the Control Devices reportable segment.

Item 3. Legal Proceedings.

From time to time we are subject to various legal actions and claims incidental to our business, including those arising out of breach of contracts, product warranties, product liability, patent infringement, regulatory matters, and employment-related matters. It is our opinion that the outcome of such matters will not have a material adverse impact on our consolidated financial position, results of operations, or cash flows. However, the final amounts required to resolve these matters could differ materially from our recorded estimates. See Note 11 to the consolidated financial statements.

Item 4. Mine Safety Disclosure.

Not Applicable.

PART II

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

Our shares are listed on the New York Stock Exchange ("NYSE") under the symbol "SRI." As of February 24, 2023, we had 27,348,198 Common Shares, without par value, outstanding that were owned by approximately 190 shareholders of record. This does not include persons whose stock is in nominee or "street name" accounts held by banks, brokers and other nominees.

The following table presents information with respect to repurchases of Common Shares made by us during the three months ended December 31, 2022. There were 1,403 Common Shares delivered to us by employees as payment for withholding taxes due upon vesting of performance share awards and share unit awards during the three months ended December 31, 2022.

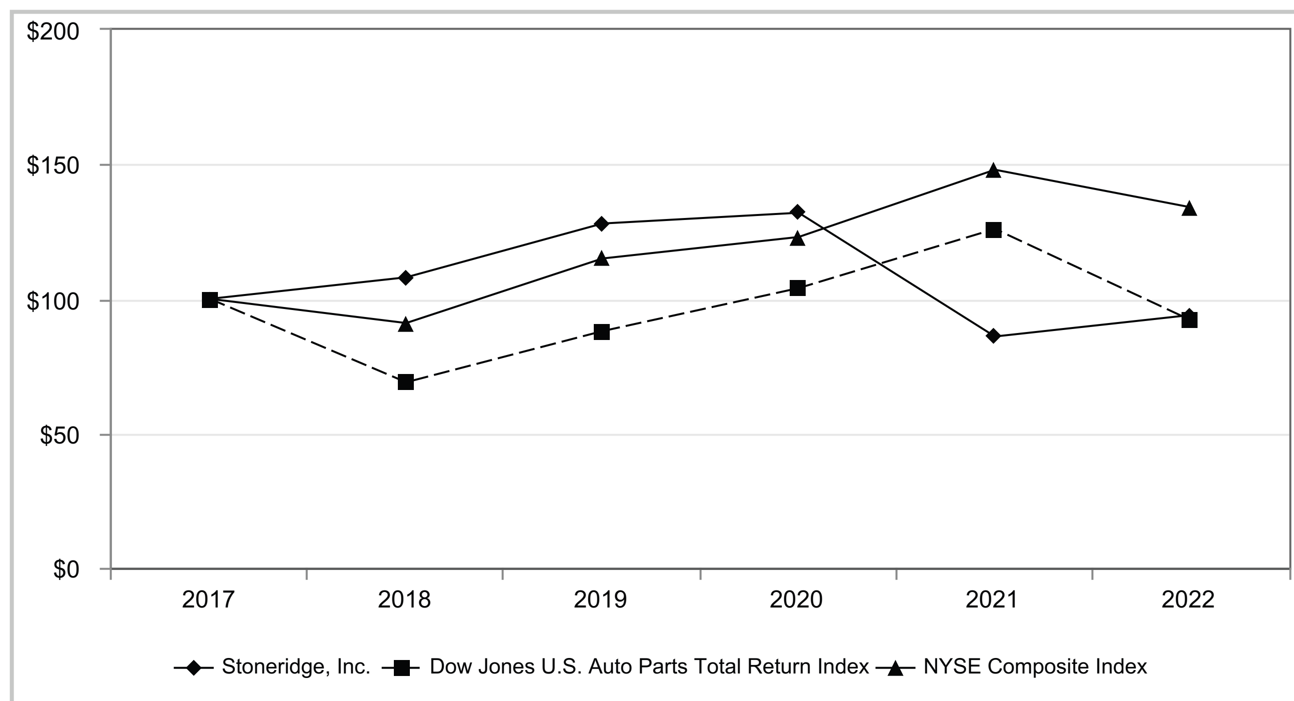
Period	Total number of shares purchased		Average price paid per share	Total number of shares purchased as part of publicly announced plans or programs	Maximum number of shares that may yet be purchased under the plans or programs
10/1/22-10/31/22	**—**	**$**	**—**	**N/A**	**N/A**
11/1/22-11/30/22	**—**	**$**	**—**	**N/A**	**N/A**
12/1/22-12/31/22	**1,403**	**$**	**21.56**	**N/A**	**N/A**
Total	**1,403**				

Other than the repurchase of Common Shares of 42,100 and 79,434, respectively, to satisfy employee tax withholdings associated with the delivery of Common Shares earned by employees pursuant to equity-base awards under the Company's Long-Term Incentive Plan there were no other repurchases of Common Shares made by us during the years ended December 31, 2022 or 2021.

For information on "Related Stockholder Matters" required by Item 201(d) of Regulation S-K, refer to Item 12 of this report.

Performance Graph

Set forth below is a line graph comparing the cumulative total return of a hypothetical investment in our Common Shares with the cumulative total return of hypothetical investments in the Dow Jones U.S. Auto Parts (TR) Index and the NYSE Composite Index. The graph is based on the respective market price of each investment as of December 31, 2017, 2018, 2019, 2020, 2021 and 2022 assuming in each case an initial investment of $100 on December 31, 2017, and reinvestment of dividends.



	2017	2018	2019	2020	2021	2022
Stoneridge, Inc.	$ 100	$ 108	$ 128	$ 132	$ 86	**$ 94**
Dow Jones U.S. Auto Parts Total Return Index	$ 100	$ 69	$ 88	$ 104	$ 126	**$ 92**
NYSE Composite Index	$ 100	$ 91	$ 115	$ 123	$ 148	**$ 134**

Item 6. [Reserved]

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

We are a global designer and manufacturer of highly engineered electrical and electronic systems, components and modules primarily for the automotive, commercial, off-highway and agricultural vehicle markets.

The following discussion and analysis should be read in conjunction with the consolidated financial statements and notes related thereto and other financial information included elsewhere herein.

Global Market Conditions

The coronavirus pandemic ("COVID-19") and the ongoing supply chain disruptions, including the semiconductor shortages, have had a negative impact on the global economy since 2020. These conditions have disrupted, and likely will continue to disrupt, the global vehicle industry and customer sales, production volumes and purchases of automotive, commercial, off-highway and agricultural vehicles by end-consumers.

The adverse impacts of the COVID-19 pandemic led to a significant vehicle production slowdown in the first half of 2020, which was followed by increased consumer demand and vehicle production schedules. This surge in demand led to a worldwide semiconductor supply shortage at the end of 2020, and other supply chain related constraints that have continued through 2022. We have experienced longer lead-times, higher costs, delays in procuring other component parts and raw materials and significant production volume reductions and volatility because of these shortages and continued impact of COVID-19. These supply chain disruptions became incrementally more challenging in the second half of 2021 resulting in higher related costs. Although the supply chain conditions have improved in 2022, we continued to experience production and supply chain volatility in several of our primary end-markets. In addition, rising COVID-19 infections in China and continued production volatility with our North American passenger car customers led to production reductions in 2022. Despite the continued challenges in 2022, we successfully negotiated appropriate, but significant price increases with our customers to offset material and labor cost headwinds. We are working closely with our suppliers and customers to minimize any potential adverse impacts, and we continue to closely monitor the availability of semiconductor microchips and other component parts and raw materials, customer vehicle production schedules and any other supply chain inefficiencies that may arise, due to this or any other issue. As these costs are expected to remain elevated in 2023, we will continue to work with our customers and implement supply chain and material cost reduction strategies to drive margin performance. The Company recognized $58.4 million and $17.6 million in 2022 and 2021, respectively, of cost recoveries related to spot buys of materials purchased for our customers.

North American automotive vehicle volumes are expected to increase in 2022 due to a combination of higher demand and low inventory levels. Whereas North American and European commercial vehicle volumes are expected to slightly decline in 2022. Vehicle production volumes could continue to be negatively impacted by the ongoing supply chain disruptions, including semiconductor shortages. The magnitude of the adverse impact on our financial condition, results of operations and cash flows will depend on the evolution of the semiconductor supply shortage, vehicle production schedules and supply chain impacts.

Segments

We are organized by products produced and markets served. Under this structure, our operations have been reported using the following segments:

Control Devices. This segment includes results of operations that manufacture actuators, sensors, switches and connectors.

Electronics. This segment includes results of operations from the production of driver information systems, vision and safety systems, connectivity and compliance products and electronic control units.

Stoneridge Brazil ("SRB"). This segment includes results of operations that design and manufacture vehicle tracking devices and monitoring services, vehicle security alarms and convenience accessories, in-vehicle audio and infotainment devices, driver information systems and telematics solutions.

Overview

The global macroeconomic environment in 2022 continued to provide a challenging backdrop for the global transportation industry and our served markets. The Company was able to navigate this volatile operating environment while at the same time continuing to execute on our long-term strategy of product development that aligns with industry megatrends, by focusing on product platforms that will drive future growth. The Company continues to work with our customers to preserve gross margin through price increases aligned with current market conditions and is executing on initiatives to reduce supply chain related costs. During 2022, the Company was able to mitigate a significant amount of the material headwinds we experienced, recognizing $32.1 million of negotiated price increases.

The Company had net loss of $14.1 million, or $(0.52) per diluted share, for the year ended December 31, 2022.

Net income in 2022 decreased by $17.5 million, or $(0.64) per diluted share, from $3.4 million, or $0.12 per diluted share, for the year ended December 31, 2021 primarily due to the 2021 pre-tax gain on sale of the Canton Facility of $30.7 million, or $0.93 per diluted share, offset by lower restructuring and business realignment costs of $3.8 million as well as the impact of higher net sales and gross margin in our Electronics segment.

In 2022, our net sales increased by $129.5 million, or 16.8%, while our operating income decreased $12.5 million.

Our Control Devices segment net sales decreased by 3.7% primarily due to decreases in our China commercial, North American commercial and China automotive vehicle markets. Our European automotive and commercial vehicle markets decreased due to our exit of the PM sensor business. Segment gross margin decreased due to costs associated with supply chain disruptions offset by lower restructuring and business realignment costs of $1.5 million and favorable leverage of fixed costs from higher sales levels. Segment operating income decreased due to the 2021 gain on sale of the Canton Facility of $30.7 million, lower restructuring and realignment costs of $2.6 million and the 2021 gain on disposal of the PM sensor business of $1.1 million.

Our Electronics segment net sales increased by 41.1% primarily due to higher sales volumes in our European commercial, North American commercial, European off-highway and North American off-highway vehicle markets as well as favorable customer pricing for recoveries of semiconductor spot buy purchases and negotiated price increases offset by unfavorable foreign exchange fluctuations. Segment gross margin as a percent of sales decreased primarily due to increased material costs associated with supply chain disruptions including spot purchases of electronic components, adverse foreign exchange fluctuations and inflation offset by increased contribution from higher sales levels and negotiated price increases. Segment operating income increased primarily due to higher sales and margin, lower SG&A spending and lower D&D cost from higher customer reimbursements.

Our Stoneridge Brazil segment net sales decreased by 8.0% due to lower sales in most Stoneridge Brazil product lines offset by favorable foreign currency translation and slightly higher sales of tracking devices and monitoring services. Segment gross margin decreased due to lower sales levels compared with the prior year. Operating income increased primarily due to lower SG&A expense due to the unfavorable adjustment to the fair value of the Stoneridge Brazil earn-out consideration of $2.1 million in 2021 and lower selling costs offset by lower gross margin and net unfavorable adjustments for Brazilian indirect tax credits of $0.9 million.

In 2022, SG&A expenses decreased compared to 2021 due to favorable non-recurring 2022 commercial and legal settlements, lower wages, incentive compensation, legal fees and selling costs. In addition, compared to 2021, SG&A was favorably impacted by an unfavorable adjustment to the fair value of the Stoneridge Brazil earn-out consideration in 2021, lower business realignment and restructuring costs and Sarasota environmental remediation costs incurred in 2021. Offsetting these favorable items were the 2021 gain on disposal of the MSIL joint venture, the 2021 gain on disposal of the PM Sensor business and unfavorable net adjustments for Brazilian indirect tax credits.

D&D costs decreased slightly in 2022 as higher customer reimbursements in our Electronics segment for ongoing development activities were offset by increased spend for awarded business program launches and development of advanced technologies and systems in our Electronics, Control Devices and Stoneridge Brazil segments.

At December 31, 2022 and 2021, we had cash and cash equivalents of $54.8 million and $85.5 million, respectively. At December 31, 2022 and 2021, we had $167.8 million and $164.0 million, respectively, in borrowings outstanding on the 2019 Credit Facility. The 2022 decrease in cash and cash equivalents was due to capital expenditures for new product launches and to support higher working capital levels, mostly inventory as a result of supply chain disruptions, new product launches and expectations for increased production and new product launches.

Outlook

The Company believes that focusing on products that address industry megatrends will have a positive effect on both our top-line growth and underlying margins. For example, the Company is aligned with platforms likely to perform well against overall market dynamics including our content on electrified vehicle platforms.

Beginning in the first quarter of 2020, COVID-19 caused worldwide adverse economic conditions and uncertainty in our served markets. Since the first quarter of 2021, we have been experiencing supply chain related disruptions, due to a worldwide semiconductor shortage, as well as other material availability constraints, which continue and have resulted in longer lead-times, higher costs and delays in procuring other component parts and raw materials. Although material cost challenges are moderating, the Company expects to experience ongoing impacts from supply chain disruptions, material cost inflation and COVID-19, which will continue to put pressure on margins. In order to recover these higher costs, we have negotiated and expect to continue to negotiate price increases and cost recoveries with our customers and implement supply chain strategies to help mitigate future costs. During the second half of 2022, we began to see the impacts of improving material availability on net sales, which favorably impacted gross margin.

Based on IHS Market production forecast, the North American automotive market is expected to increase to 15.1 million units in 2023 from 14.3 million units in 2022 as this market continues to recover from supply chain disruptions and economic

headwinds. The Company expects sales volumes in our Control Devices segment to increase from 2022 based on year end production forecasts and market conditions as well as the ramp-up of actuation program launches. We will continue to focus on growing our core product portfolio aligned with powertrain electrification. We will continue to invest in our actuation business as we anticipate greater opportunities as powertrains become increasingly electrified. However, on-going global supply chain disruptions, including the global semiconductor supply shortage, material cost inflation and COVID-19 could adversely impact our sales volumes and gross margin for the remainder of 2023.

For 2023, we expect an increase in our Electronics’ segment sales compared to 2022 primarily due to strong demand for our products in our off-highway and commercial vehicle end markets and the ramp-up of new product launches even though production volumes in our European and North American commercial markets are expected decrease approximately 2.0% to 3.5%. In addition, we expect increased sales from the continued roll out of our MirrorEye camera-based vision system in the retrofit markets and additional launches of our MirrorEye systems for OEM applications. MirrorEye OEM system take-rates continue to exceed prior expectations and customer production forecasts suggest these take-rates could continue to rise significantly as material becomes more readily available and customer truck production continues to shift to new models. Customer recoveries related to spot buys of materials purchased for our customers increased net sales by $58.4 million during 2022. Spot buy material purchasing activity, which is recognized as revenue and material costs, was mostly passed through to the customer and was driven by electronic component shortages. The Company expects spot buy activity to continue in 2023 but cannot predict the duration or magnitude of continued spot buy activity due to volatile supply chains and component availability. We expect to continue to offset a significant majority of spot buy related costs going forward and expect continued reduction in overall spot buy costs in 2023. In addition, we expect customer negotiated price increases to favorably impact sales in 2023.

In 2021 and continuing throughout 2022, our gross D&D spend increased to support near term launches of awarded business in both our Electronics and Control Devices segments. In 2023, we expect that our D&D spending will stabilize as we continue to align our global engineering capabilities in order to develop advanced technologies and systems within our portfolio of products and we expect to sustain current levels of customer reimbursement to support specific programs and products.

Our 2022 Stoneridge Brazil segment revenues decreased compared to the prior year due to lower sales of most of our product lines offset by favorable foreign currency translation and slightly higher sales of tracking devices and monitoring service fees. In October 2022, the International Monetary Fund forecasted the Brazil gross domestic product to grow 2.8% in 2022 and 1.0% in 2023. We expect our served market channels to remain stable based on current market conditions. Stoneridge Brazil will focus on continuing to grow our OEM capabilities in-region to better support our global customers. This will drive steady future growth and provide a platform to continue to rotate our local portfolio to more closely align with our global business. Our financial performance in our Stoneridge Brazil segment is also subject to uncertainty from movements in the Brazilian Real and Argentina Peso foreign currencies.

Beginning in 2021, global transportation vehicle production was impacted by supply chain disruptions, including semiconductor shortages, primarily affecting our commercial vehicle and automotive end-markets. Based on the current market conditions, we expect continued but moderating impacts on production in 2023. We expect incremental costs related to supply chain disruptions and production schedule volatility to continue to adversely affect our gross margin in 2023.

We continued to effectively offset a significant portion of incremental material and supply chain related costs through pricing and supply chain actions resulting in cost pass-throughs and the recovery of both current and historical costs in 2022. While incremental material costs have started to moderate, we expect material cost inflation to persist into 2023. We will continue to evaluate macroeconomic conditions and expect ongoing discussions with our customers regarding price increases and other cost recovery actions to help continue to improve our margin performance.

As a result of these supply chain disruptions and production schedule volatility, our working capital balances, specifically inventory, have increased significantly compared to historical levels. In addition, inventory has also increased from product launches in our Electronics and Control Devices segments. We continue to engage in initiatives to reduce working capital including reducing on-hand inventory by refining our procurement process and managing the on-time collection of our accounts receivable balances.

Our future effective tax rate depends on various factors, such as changes in tax laws, regulations, accounting principles and our jurisdictional mix of earnings. We monitor these factors and adjust our effective tax rate accordingly.

Other Matters

A significant portion of our sales are outside of the United States. These sales are generated by our non-U.S. based operations, and therefore, movements in foreign currency exchange rates can have a significant effect on our results of operations, which are presented in U.S. dollars. A significant portion of our raw materials purchased by our Electronics and Stoneridge Brazil segments are denominated in U.S. dollars, and therefore movements in foreign currency exchange rates can also have a significant effect on our results of operations. The U.S. Dollar strengthened against the euro, Swedish krona

and Argentine peso in 2022 and the euro, Swedish krona, Brazilian real, Argentine peso and Mexican peso in 2021, unfavorably impacting our reported results.

On November 2, 2021, the Company entered into a Share Purchase Agreement (the "SPA") with Minda Corporation Limited ("Minda"), as the buyer, and MSIL. Pursuant to the SPA, the Company agreed to sell to Minda the Company's minority interest in MSIL for approximately $21.5 million equivalent Indian Rupee which was payable in U.S. dollars at closing. On December 30, 2021, pursuant to the SPA, the Company closed the sale of MSIL to Minda for $21.6 million. The Company recognized net proceeds of $21.0 million and a gain, net of direct selling costs, of $1.8 million.

On March 8, 2021, the Company entered into an Asset Purchase Agreement (the "APA") by and among the Company, the Company's wholly owned subsidiary, Stoneridge Electronics AS, as the Sellers, and Standard Motor Products, Inc. ("SMP") and SMP Poland SP Z O.O., as the Buyers. Pursuant to the APA, the Company agreed to sell to the Buyers the Company's assets located in Lexington, Ohio and Tallinn, Estonia related to the manufacturing of particulate matter sensor products and related service part operations (together, the "PM sensor business"). The Buyers did not acquire any of the Company's locations or employees. The purchase price for the sale of the PM sensor business was $4.0 million (subject to a post-closing inventory adjustment, which was a payment to SMP of $1.1 million) plus the assumption of certain liabilities. The purchase price was allocated among PM sensor product lines, Gen 1 and Gen 2 as defined under the APA. The purchase price allocated to Gen 1 fixed assets and inventory and Gen 2 fixed assets was $3.2 million and $0.8 million, respectively. The sale of the Gen 2 assets occurred during November 2021 as the Company's supply commitments to certain customers were completed in September 2021. The Company and SMP also entered into certain ancillary agreements, including a contract manufacturing agreement, a transitional services agreement, and a supply agreement, pursuant to which the Company provided and was compensated for certain manufacturing, transitional, administrative and support services to SMP on a short-term basis.

On May 19, 2020, the Company committed to the strategic exit of its Control Devices particulate matter sensor product line ("PM Sensor Exit"). The costs for the PM Sensor Exit included employee severance and termination costs and other related costs including supplier settlements. Non-cash charges included impairment and accelerated depreciation of fixed assets associated with PM sensor production. We recognized $0.0 million and $2.4 million of expense as a result of this initiative during the years ended December 31, 2022 and 2021, respectively. The only remaining costs relate to potential commercial settlements and legal fees that we continue to negotiate. The estimated additional cost related to these settlements and fees is up to $4.2 million.

In January 2019, we committed to a restructuring plan that resulted in the closure of our Canton, Massachusetts facility ("Canton Facility") as of March 31, 2020 and the consolidation of manufacturing operations at that site into other Company locations ("Canton Restructuring"). The costs for the Canton Restructuring included employee severance and termination costs, contract termination costs, professional fees and other related costs such as moving and set-up costs for equipment and costs to restore the engineering function previously located at the Canton Facility. We recognized expense as a result of these actions during the years ended December 31, 2022 and 2021 of $0.0 million and less than $0.1 million, respectively. We do not expect to incur additional costs related to the Canton Restructuring. During the third quarter of 2020, we leased the Canton Facility to a third party. On June 17, 2021, we sold the Canton Facility for net proceeds of $35.2 million and a net gain of $30.7 million.

On April 1, 2019, the Company entered into an Asset Purchase Agreement by and among the Company, the Company's wholly owned subsidiary, Stoneridge Control Devices, Inc. ("SCD"), and Standard Motor Products, Inc. ("SMP"). On the same day pursuant to the APA, in exchange for $40.0 million (subject to a post-closing inventory adjustment which was a payment to SMP of $1.6 million) and the assumption of certain liabilities, the Company and SCD sold to SMP product lines and assets related to certain non-core switches and connectors (the "Non-core Products"). On April 1, 2019, the Company and SMP also entered into certain ancillary agreements, including a transition services agreement, a contract manufacturing agreement and a supply agreement, pursuant to which the Company provided and was compensated for certain manufacturing, transitional, administrative and support services to SMP on a short-term basis. The products related to the Non-core Products were manufactured in Juarez, Mexico and Canton, Massachusetts, and included ball switches, ignition switches, rotary switches, courtesy lamps, toggle switches, headlamp switches and other related components. On April 1, 2019, the Company's Control Devices segment recognized net sales and costs of goods sold of $4.2 million and $2.8 million, respectively, for the one-time sale of finished goods inventory and a gain on disposal of $33.9 million for the sale of fixed assets, intellectual property and customer lists associated with the Non-core Products less transaction costs. On June 17, 2020, the Company and SMP terminated the transition services agreement and the contract manufacturing agreement.

In the fourth quarter of 2018, the Company undertook restructuring actions for the Electronics segment affecting the European Aftermarket business and China operations. In the second quarter of 2020, the Company finalized plans to move its European Aftermarket sales activities in Dundee, Scotland to a new location, which resulted in incurring contract termination costs as well as employee severance and termination costs. In addition, the Company announced an additional restructuring program to transfer the European production of its Controls product line to China. For the years ended December 31, 2022 and 2021, we recognized expense of $0.0 million and $0.3 million, respectively, as a result of these actions for related costs. The Company does not expect to incur additional restructuring costs related to the Electronics segment.

On October 26, 2018, the Company announced a Board of Directors approved share repurchase program authorizing Stoneridge to repurchase up to $50.0 million of our Common Shares. Thereafter, on May 7, 2019, we announced that the Company had entered into an accelerated share repurchase agreement with Citibank N.A. to repurchase an aggregate of $50.0 million of our Common Shares. Pursuant to the accelerated share repurchase agreement we made an upfront payment of $50.0 million and received an initial delivery of 1,349,528 Common Shares which became treasury shares. On February 25, 2020, Citibank N.A. terminated early its commitment pursuant to the accelerated share repurchase agreement and delivered to the Company, 364,604 Common Shares representing the final settlement of the Company's repurchase program which became treasury shares.

On February 24, 2020, the Board of Directors authorized a new repurchase program of $50.0 million for the repurchase of our Common Shares over an 18 month period. The repurchases could be made from time to time in either open market transactions or in privately negotiated transactions. Repurchases could also have been made under rule 10b-18, which permit Common Shares to be repurchased through pre-determined criteria. The timing, volume and nature of common share repurchases was at the discretion of management, dependent on market conditions, other priorities of cash investment, applicable securities laws and other factors. This Common Share repurchase program authorization did not obligate the Company to acquire any particular amount of its Common Shares, and could have been suspended or discontinued at any time. For the quarter ended March 31, 2020, under this repurchase program, the Company repurchased 242,634 Common Shares for $5.0 million, which became treasury shares, in accordance with this repurchase program authorization. In April 2020, the Company announced that it was temporarily suspending the previously announced share repurchase program in response to uncertainty surrounding the duration and magnitude of the impact of COVID-19. This repurchase program authorization expired during the third quarter of 2021 and no additional shares were repurchased.

We regularly evaluate the performance of our businesses and their cost structures, including personnel, and make necessary changes thereto in order to optimize our results. We also evaluate the required skill sets of our personnel and periodically make strategic changes. As a consequence of these actions, we incur severance related costs which we refer to as business realignment charges. Business realignment costs of $0.3 million and $1.4 million were incurred during the years ended December 31, 2022 and 2021, respectively.

Because of the competitive nature of the markets we serve, we face pricing pressures from our customers in the ordinary course of business. In response to these pricing pressures we have been able to effectively manage our production costs by the combination of lowering certain costs and limiting the increase of others, the net impact of which to date has not been material. However, if we are unable to effectively manage production costs in the future to mitigate future pricing pressures, our results of operations would be adversely affected.

Year Ended December 31, 2022 Compared To Year Ended December 31, 2021

Consolidated statements of operations as a percentage of net sales are presented in the following table (in thousands):

Year ended December 31,		**2022**			**2021**		**Dollar increase / (decrease)**
Net sales	**$**	**899,923**	**100.0 %**	$	770,462	100.0 %	$ 129,461
Costs and expenses:							
Cost of goods sold		**724,997**	**80.6**		603,604	78.3	121,393
Selling, general and administrative		**106,695**	**11.9**		116,000	15.1	(9,305)
Gain on sale of Canton Facility, net		**—**	**—**		(30,718)	(4.0)	30,718
Design and development		**65,296**	**7.3**		66,165	8.6	(869)
Operating income		**2,935**	**0.3**		15,411	2.0	(12,476)
Interest expense, net		**7,097**	**0.8**		5,189	0.7	1,908
Equity in loss (earnings) of investee		**823**	**0.1**		(3,658)	(0.5)	4,481
Other expense, net		**5,711**	**0.6**		1,444	0.3	4,267
(Loss) income before income taxes		**(10,696)**	**(1.2)**		12,436	1.5	(23,132)
Provision for income taxes		**3,360**	**0.4**		9,030	1.2	(5,670)
Net (loss) income	**$**	**(14,056)**	**(1.6)%**	$	3,406	0.3 %	$ (17,462)

Net Sales. Net sales for our reportable segments, excluding inter-segment sales are summarized in the following table (in thousands):

Year ended December 31,		2022			2021		Dollar increase / (decrease)	Percent increase / (decrease)
Control Devices	$	**342,596**	**38.1 %**	$	355,775	46.1 %	$ (13,179)	(3.7)%
Electronics		**505,097**	**56.1**		357,910	46.5	147,187	41.1 %
Stoneridge Brazil		**52,230**	**5.8**		56,777	7.4	(4,547)	(8.0)%
Total net sales	$	**899,923**	**100.0 %**	$	770,462	100.0 %	$ 129,461	16.8 %

Our Control Devices segment net sales decreased $13.2 million due to lower sales volumes in our served markets and unfavorable foreign currency translation of $20.0 million and $2.3 million, respectively, which were offset by negotiated price increases of $9.1 million. Sales volumes decreased in our China commercial, North American commercial and China automotive markets of $5.8 million, $3.4 million and $2.3 million, respectively. European automotive and commercial vehicle markets decreased by $10.3 million and $2.4 million, respectively, due to our exit of the PM sensor business. Net sales for 2022 were favorably impacted by an increase in our North American automotive markets of $2.9 million compared to the prior year.

Our Electronics segment net sales increased $147.2 million due to higher sales volumes in our European commercial, North American commercial, European off-highway vehicle and North American off-highway markets of $55.1 million, $33.8 million, $18.2 million and $6.0 million, respectively. In addition, 2022 net sales were favorably impacted by both customer pricing for recoveries of electronic component spot buy purchases and for negotiated price increases of $40.8 million and $23.0 million, respectively. These increases were offset by unfavorable euro and Swedish krona foreign currency translation compared to the prior year of $28.8 million.

Our Stoneridge Brazil segment net sales decreased $4.5 million due to lower sales in most Stoneridge Brazil product lines of $7.8 million offset by favorable foreign currency translation of $2.6 million and higher sales of tracking devices and monitoring services fees of $0.7 million.

Net sales by geographic location are summarized in the following table (in thousands):

Year ended December 31,		2022			2021		Dollar increase / (decrease)	Percent increase / (decrease)
North America	$	**444,928**	**49.4 %**	$	386,944	50.2 %	$ 57,984	15.0 %
South America		**52,230**	**5.8**		56,777	7.4	(4,547)	(8.0)%
Europe and Other		**402,765**	**44.8**		326,741	42.4	76,024	23.3 %
Total net sales	$	**899,923**	**100.0 %**	$	770,462	100.0 %	$ 129,461	16.8 %

The increase in North American net sales was mostly attributable to increases in sales volume in our Electronics segment commercial vehicle and off-highway markets of $33.8 million and $6.0 million, respectively and in our Control Devices segment automotive market of $2.9 million offset by sales volume decreases in our Control Devices segment commercial vehicle market of $3.4 million. In addition, North American net sales were favorably impacted by negotiated price increases of $16.1 million and customer recoveries of semiconductor spot buy purchases of $0.7 million.

The decrease in net sales in South America was primarily due to lower sales in most Stoneridge Brazil product lines of $7.8 million offset by favorable foreign currency translation of $2.6 million and higher sales of tracking devices and monitoring service fees of $0.7 million.

The increase in net sales in Europe and Other was due to customer recoveries of semiconductor spot buy purchases and negotiated price increases of $40.1 million and $15.9 million, respectively and increases in our Electronics segment European commercial vehicle and European off-highway markets of $52.9 million and $18.2 million, respectively. This increase for Europe and Other was offset by decreases in our Control Devices European automotive and commercial vehicle markets of $10.4 million and $2.4 million, respectively, and China commercial vehicle and automotive markets of $5.8 million and $2.3 million, respectively. In addition, Europe and Other net sales decreased $31.1 million due to unfavorable foreign currency translation.

Cost of Goods Sold and Gross Margin. Cost of goods sold increased compared to 2021 and our gross margin decreased to 19.4% in 2022 compared to 21.7% in 2021. Our material cost as a percentage of net sales increased by 4.8% to 61.8% in 2022 compared to 57.0% in 2021 primarily caused by costs associated with supply chain disruptions including spot purchases of electronic components and inflation. In 2022, cost of goods sold increased by $58.4 million, or 6.5% of net sales, due to semiconductor spot buy purchases that was offset by customer recoveries. The impact of these spot buy

purchases reduced gross margin percent by 1.4%. Overhead as a percentage of net sales decreased by 1.9% to 14.2% for 2022 compared to 16.1% for 2021 primarily due to leverage of fixed costs from higher sales levels.

Our Control Devices segment gross margin decreased due to higher material costs associated with supply chain disruptions and inflation offset by negotiated price increases and lower restructuring and realignment costs of $1.5 million.

Our Electronics segment gross margin increased primarily due to increased contribution from higher sales levels and favorable negotiated pricing offset by higher material costs associated with supply chain disruptions including spot purchases of electronic components, adverse foreign exchange fluctuations and inflation.

Our Stoneridge Brazil segment gross margin as a percentage of sales was consistent with the prior year as adverse leverage of fixed costs from lower product sales was offset by favorable sales mix from a greater percentage of monitoring service fees.

Selling, General and Administrative ("SG&A"). SG&A expenses decreased by $9.3 million compared to 2021 due to favorable non-recurring 2022 commercial and legal settlements, lower wages, incentive compensation, legal fees and selling costs. In addition, compared to 2021, SG&A was favorably impacted by an unfavorable adjustment to the fair value of the Stoneridge Brazil earn-out consideration in 2021, lower business realignment and restructuring costs and Sarasota environmental remediation costs incurred in 2021. Offsetting these favorable items were the 2021 gain on disposal of the MSIL joint venture, the 2021 gain on disposal of the PM Sensor business and unfavorable net adjustments for Brazilian indirect tax credits.

Design and Development ("D&D"). D&D costs decreased by $0.9 million due to higher customer reimbursements for ongoing development activities in our Electronics segment of $8.3 million that were offset by increased spend for awarded business program launches and development of advanced technologies and systems in our Electronics, Control Devices and Stoneridge Brazil segments.

Operating Income (Loss). Operating income (loss) is summarized in the following table by reportable segment (in thousands):

Year ended December 31,	2022	2021	Dollar increase / (decrease)	Percent increase / (decrease)
Control Devices	**$ 23,917**	$ 54,933	$ (31,016)	(56.5)%
Electronics	**5,128**	(12,502)	17,630	141.0 %
Stoneridge Brazil	**3,150**	995	2,155	216.6 %
Unallocated corporate	**(29,260)**	(28,015)	(1,245)	(4.4)%
Operating income (loss)	**$ 2,935**	$ 15,411	$ (12,476)	(81.0)%

Our Control Devices segment operating income decreased due to the gain on sale of the Canton Facility of $30.7 million in 2021 and the gain on disposal of the PM sensor business of $1.1 million in 2021.

Our Electronics segment operating income increased from higher contribution from increased sales levels and lower SG&A and D&D costs from higher customer reimbursements.

Our Stoneridge Brazil segment operating income increased primarily due to lower SG&A expenses from the unfavorable adjustment to the fair value of the Stoneridge Brazil earn-out consideration in 2021 and lower selling costs offset by lower gross margin and unfavorable net adjustments for Brazilian indirect tax credits.

Our unallocated corporate operating loss increased due to the 2021 gain on disposal of the MSIL joint venture offset by lower business realignment.

Operating income (loss) by geographic location is summarized in the following table (in thousands):

Year ended December 31,	2022	2021	Dollar increase / (decrease)	Percent increase / (decrease)
North America	**$ (2,066)**	$ 13,072	$ (15,138)	(115.8)%
South America	**3,150**	995	2,155	216.6 %
Europe and Other	**1,851**	1,344	507	37.7 %
Operating income (loss)	**$ 2,935**	$ 15,411	$ (12,476)	(81.0)%

Our North American operating income decreased due to the 2021 gains on the sale of the Canton Facility, the disposal of the MSIL joint venture and the PM Sensor business. and higher material costs from supply chain disruptions. Offsetting

these gains were increased contribution from higher sales levels and 2022 non-recurring commercial and legal settlements. The increase in operating income in South America was primarily due to an unfavorable change in fair value of earn-out consideration adjustments of $2.1 million in 2021 and lower selling costs offset by lower contribution from lower sales levels and an unfavorable net adjustments for Brazilian indirect tax credits. Our operating results in Europe and Other increased slightly primarily due to higher contribution from increased sales levels and the favorable impact of negotiated pricing offset by higher costs from supply chain disruptions including spot purchases of electronic components net of recoveries and adverse foreign exchange fluctuations and inflation.

Interest Expense, net. Interest expense, net increased by $1.9 million compared to 2021 due to higher Credit Facility interest rates and $0.4 million related to the write-off of deferred financing fees as a result of Amendment No. 3 to the Credit Facility.

Equity in Loss (Earnings) of Investee. Equity loss (earnings) for Autotech were $0.8 million and $(1.9) million for the years ended December 31, 2022 and 2021. The decrease in Autotech earnings was due to unfavorable 2022 fair value adjustments to fund investments. Equity earnings for MSIL were $1.8 million for the year ended December 31, 2021. As discussed in Note 2 to the consolidated financial statements, the Company sold its equity interest in MSIL on December 30, 2021.

Other Expense, net. We record certain foreign currency transaction losses (gains) as a component of other income, net on the consolidated statement of operations. Other expense, net of $5.7 million, increased by $4.3 million in 2022 compared to other expense, net of $1.4 million for 2021 primarily due to foreign currency transaction losses in our Electronics, Control Devices and Stoneridge Brazil segments from the strengthening of the U.S. dollar.

Provision for Income Taxes. In 2022, income tax expense of $3.4 million was attributable to the mix of earnings among tax jurisdictions as well as tax losses for which no benefit is recognized due to valuation allowances in certain jurisdictions and U.S. taxes on foreign earnings offset by tax credits and incentives. The effective tax rate of (31.4)% varies from the statutory tax rate primarily due to tax credits and incentives offset by the impact of tax losses for which no benefit is recognized due to valuation allowances in certain jurisdictions as well as U.S. tax on foreign earnings.

In 2021, income tax expense of $9.0 million was attributable to the gain on the sale of the Canton facility, the gain on the sale of the Company's minority interest in MSIL, the mix of earnings among tax jurisdictions as well as tax losses for which no benefit is recognized due to valuation allowances in certain jurisdictions. The effective tax rate of 72.6% was greater than the statutory tax rate primarily due to the impact of tax losses for which no benefit is recognized due to valuation allowances in certain jurisdictions, the tax impact of the sale of the Company's minority interest in MSIL, partially offset by tax incentives.

Year Ended December 31, 2021 Compared To Year Ended December 31, 2020

Consolidated statements of operations as a percentage of net sales are presented in the following table (in thousands):

Year ended December 31,		**2021**			**2020**		**Dollar increase / (decrease)**
Net sales	$	770,462	100.0 %	$	648,006	100.0 %	$ 122,456
Costs and expenses:							
Cost of goods sold		603,604	78.3		493,810	76.2	109,794
Selling, general and administrative		116,000	15.1		112,474	17.4	3,526
Gain on sale of Canton Facility, net		(30,718)	(4.0)		—	—	(30,718)
Design and development		66,165	8.6		49,386	7.6	16,779
Operating income (loss)		15,411	2.0		(7,664)	(1.2)	23,075
Interest expense, net		5,189	0.7		6,124	0.9	(935)
Equity in earnings of investee		(3,658)	(0.5)		(1,536)	(0.2)	(2,122)
Other expense (income), net		1,444	0.3		(1,528)	(0.2)	2,972
Income (loss) before income taxes		12,436	1.5		(10,724)	(1.7)	23,160
Provision (benefit) for income taxes		9,030	1.2		(2,774)	(0.4)	11,804
Net income (loss)	$	3,406	0.3 %	$	(7,950)	(1.3)%	$ 11,356

Net Sales. Net sales for our reportable segments, excluding inter-segment sales are summarized in the following table (in thousands):

Year ended December 31,		**2021**			**2020**		**Dollar increase / (decrease)**	**Percent increase / (decrease)**
Control Devices	$	355,775	46.1 %	$	342,576	52.9 %	$ 13,199	3.9 %
Electronics		357,910	46.5		257,767	39.7	100,143	38.9 %
Stoneridge Brazil		56,777	7.4		47,663	7.4	9,114	19.1 %
Total net sales	$	770,462	100.0 %	$	648,006	100.0 %	$ 122,456	18.9 %

Our Control Devices segment net sales increased $13.2 million due to recovery from 2020 COVID-19 impacts in our North American automotive and agricultural vehicle markets of $23.4 million and $2.7 million, respectively, and an increase in our China automotive and commercial vehicle markets of $3.8 million and $0.4 million, respectively, as well as a favorable foreign currency translation of $3.2 million. These increases were partially offset by a decrease in volumes in our European automotive market of $16.7 million due to the exit of PM sensor production and a decrease in volumes in our North American commercial vehicle market of $4.3 million.

Our Electronics segment net sales increased $100.1 million due to recovery from 2020 COVID-19 impacts in our North American and European commercial vehicle and European and North American off-highway vehicle markets of $28.7 million, $28.4 million, $14.4 million and $5.3 million, respectively, as well as favorable euro and Swedish krona foreign currency translation of $5.0 million compared to the prior year period. In the fourth quarter, net sales increased by $17.6 million due to customer pricing for recoveries of electronic component spot buy purchases.

Our Stoneridge Brazil segment net sales increased $9.1 million due to higher volumes for all of our product lines and for our Argentina market channel offset by unfavorable foreign currency translation of $3.0 million.

Net sales by geographic location are summarized in the following table (in thousands):

Year ended December 31,		**2021**			**2020**		**Dollar increase**	**Percent increase**
North America	$	386,944	50.2 %	$	330,528	51.0 %	$ 56,416	17.1 %
South America		56,777	7.4		47,663	7.4	9,114	19.1 %
Europe and Other		326,741	42.4		269,815	41.6	56,926	21.1 %
Total net sales	$	770,462	100.0 %	$	648,006	100.0 %	$ 122,456	18.9 %

The increase in North American net sales was attributable to sales volume increases in our North American commercial vehicle, automotive and off-highway markets of $24.5 million, $22.5 million and $6.2 million, respectively and customer pricing for recoveries of semiconductor spot buy purchases of $2.4 million. The increase in net sales in South America was

due to higher volumes for all of our Stoneridge Brazil product lines and for our Argentina market channel offset by unfavorable Brazilian real foreign currency translation of $3.0 million. The increase in net sales in Europe and Other was primarily due to increases in our European commercial vehicle and off-highway markets of $28.4 million and $14.4 million, respectively, and increases in our China automotive and agricultural vehicle markets of $3.8 million and $2.2 million, respectively. Europe and Other net sales also increased due to customer pricing for recoveries of semiconductor spot buy purchases of $15.2 million and favorable foreign currency translation of $8.2 million. These increases were partially offset by a decrease in volumes in our European automotive market of $16.7 million due to the exit of PM sensor production.

Cost of Goods Sold and Gross Margin. Cost of goods sold increased compared to 2020 and our gross margin decreased to 21.7% in 2021 compared to 23.8% in 2020. Our material cost as a percentage of net sales increased by 4.2% to 57.0% in 2021 compared to 52.8% in 2020 primarily caused by costs associated with supply chain disruptions including spot purchases of electronic components. In 2021, cost of goods sold increased by $17.6 million, or 2.3% of net sales, due to semiconductor spot buy purchases which was offset by customer recoveries. Overhead as a percentage of net sales decreased by 2.0% to 16.1% for 2021 compared to 18.0% for 2020 primarily due to leverage of fixed costs from higher sales levels offset by higher incremental freight costs.

Our Control Devices segment gross margin decreased due to costs associated with supply chain disruptions offset by lower restructuring and realignment costs of $1.7 million and favorable leverage of fixed costs from higher sales levels.

Our Electronics segment gross margin decreased primarily due to higher costs associated with supply chain disruptions including spot purchases of electronic components offsetting favorable leverage of fixed costs from higher sales levels.

Our Stoneridge Brazil segment gross margin decreased due to adverse sales mix from higher product sales compared to monitoring fees and higher costs associated with supply chain disruptions offset by favorable leverage of fixed costs.

Selling, General and Administrative. SG&A expenses increased by $3.5 million compared to 2020 due to a $5.3 million increase in net adjustments to the fair value of the Stoneridge Brazil earn-out consideration and higher professional service costs which were offset by lower incentive compensation costs and the 2021 gain on disposal of the PM sensor business of $1.1 million and the MSIL joint venture of $1.8 million.

Design and Development. D&D costs increased by $16.8 million mostly due to increased spend in our Electronics segment of $14.4 million comprised of higher consulting and prototype costs as well as lower customer reimbursements offset by higher capitalized software development costs for ongoing development activities for awarded business programs and development of advanced technologies and systems.

Operating Income (Loss). Operating income (loss) is summarized in the following table by reportable segment (in thousands):

Year ended December 31,	**2021**	**2020**	**Dollar increase / (decrease)**	**Percent increase / (decrease)**
Control Devices	$ 54,933	$ 22,072	$ 32,861	148.9 %
Electronics	(12,502)	(3,672)	(8,830)	(240.5)%
Stoneridge Brazil	995	3,766	(2,771)	(73.6)%
Unallocated corporate	(28,015)	(29,830)	1,815	6.1 %
Operating income (loss)	$ 15,411	$ (7,664)	$ 23,075	301.1 %

Our Control Devices segment operating income increased due to the gain on sale of the Canton Facility of $30.7 million, the gain on disposal of the PM sensor business of $1.1 million and a decrease in restructuring expense of $4.0 million offset by higher costs from supply chain disruptions and higher Sarasota environmental remediation costs.

Our Electronics segment operating loss increased primarily due to higher costs from supply chain disruptions including spot purchases of electronic components net of recoveries and higher D&D costs offset by higher sales.

Our Stoneridge Brazil segment operating income decreased primarily due to a $5.3 million increase in net adjustments to the fair value of the Stoneridge Brazil earn-out consideration and the impairment of Brazilian indirect tax credits of $0.7 million offset by higher sales.

Our unallocated corporate operating loss was lower due to lower incentive compensation benefits as a result of Company performance and the gain on the disposal of the MSIL joint venture offset by higher business realignment costs of $0.8 million and higher professional service costs.

Operating income (loss) by geographic location is summarized in the following table (in thousands):

Year ended December 31,	2021	2020	Dollar increase / (decrease)	Percent increase / (decrease)
North America	$ 13,072	$ (22,179)	$ 35,251	158.9 %
South America	995	3,766	(2,771)	(73.6)%
Europe and Other	1,344	10,749	(9,405)	(87.5)%
Operating income (loss)	$ 15,411	$ (7,664)	$ 23,075	301.1 %

Our North American operating income increased due to the gain on sales of the Canton Facility, the PM sensor business and the MSIL joint venture, higher sales in our automotive and commercial vehicle markets and lower restructuring costs offsetting higher costs from supply chain disruptions. The decrease in operating income in South America was primarily due to an unfavorable change in fair value of earn-out consideration adjustments of $5.3 million offsetting higher sales. Our operating results in Europe and Other decreased primarily due to higher costs from supply chain disruptions including spot purchases of electronic components net of recoveries and higher D&D costs offset by higher sales in our commercial vehicle and off-highway markets as well as a favorable foreign currency translation impact.

Interest Expense, net. Interest expense, net decreased by $0.9 million compared to 2020 due to higher interest income of $1.2 million at Stoneridge Brazil from monetary correction on indirect tax credits. Offsetting this increase was higher interest expense from Credit Facility borrowings.

Equity in Earnings of Investee. Equity earnings for MSIL were $1.8 million and $1.5 million for the years ended December 31, 2021 and 2020, respectively. As discussed in Note 2 to the consolidated financial statements, the Company sold its equity interest in MSIL on December 30, 2021. Equity earnings for Autotech were $1.9 million and $0.1 million for the years ended December 31, 2021 and 2020. The increase in Autotech earnings was due to favorable 2021 fair value adjustments to fund investments.

Other Expense (Income), net. We record certain foreign currency transaction losses (gains) as a component of other income, net on the consolidated statement of operations. Other expense (income), net of $1.4 million, increased by $2.9 million in 2021 compared to other income, net of $1.5 million for 2020 primarily due to 2021 foreign currency losses in our Electronics segment and 2020 foreign currency transaction gains in our Stoneridge Brazil and Electronics segments.

Provision (Benefit) for Income Taxes. In 2021, income tax expense of $9.0 million was attributable to the gain on the sale of the Canton facility, the gain on the sale of the Company’s minority interest in MSIL, the mix of earnings among tax jurisdictions as well as tax losses for which no benefit is recognized due to valuation allowances in certain jurisdictions. The effective tax rate of 72.6% is greater than the statutory tax rate primarily due to the impact of tax losses for which no benefit is recognized due to valuation allowances in certain jurisdictions, the tax impact of the sale of the Company’s minority interest in MSIL, partially offset by tax incentives.

In 2020, income tax benefit of $(2.8) million was attributable to the mix of earnings and losses among tax jurisdictions as well as tax losses for which no benefit is recognized due to valuation allowances in certain jurisdictions. The effective tax rate of 25.9% is slightly greater than the statutory tax rate primarily due to non-deductible expenses and tax losses for which no benefit is recognized due to valuation allowances in certain jurisdictions offset by the impact of certain incentives.

Liquidity and Capital Resources

Summary of Cash Flows for the years ended December 31, 2022 and 2021 (in thousands):

Year ended December 31,	2022	2021	Dollar increase / (decrease)
Net cash provided by (used for):			
Operating activities	**$ 6,806**	$ (36,248)	$ 43,054
Investing activities	**(28,581)**	28,041	(56,622)
Financing activities	**(7,297)**	22,876	(30,173)
Effect of exchange rate changes on cash and cash equivalents	**(1,677)**	(3,041)	1,364
Net change in cash and cash equivalents	**$ (30,749)**	$ 11,628	$ (42,377)

Cash provided by operating activities increased compared to 2021 primarily due to a reduction in cash used to fund working capital levels primarily for inventory due to supply chain disruptions and new product launches. Our receivable terms and collections rates have remained consistent between periods presented.

Net cash used for investing activities increased compared to the prior year due to 2021 proceeds from the sale of the Canton Facility, from the disposal of the MSIL joint venture and from the disposal of the PM sensor business as well as higher capital expenditures and capitalized software costs which were offset by 2022 proceeds from the settlement of the net investment hedges and lower investments in the Autotech Fund II.

Net cash used for financing activities increased compared to the prior year primarily due to lower Credit Facility net borrowings and the 2022 cash payment of Stoneridge Brazil earn-out consideration.

Summary of Cash Flows for the years ended December 31, 2021 and 2020 (in thousands):

Years ended December 31,		**2021**		**2020**		**Dollar increase / (decrease)**
Net cash provided by (used for):						
Operating activities	$	(36,248)	$	28,641	$	(64,889)
Investing activities		28,041		(33,885)		61,926
Financing activities		22,876		6,513		16,363
Effect of exchange rate changes on cash and cash equivalents		(3,041)		3,247		(6,288)
Net change in cash and cash equivalents	$	11,628	$	4,516	$	7,112

Cash used for operating activities increased compared to 2020 primarily due to an increase in cash used to fund working capital levels primarily for inventory, which was impacted by supply chain disruptions and production volatilities, offset by higher net income, net of the reconciling adjustment for the gain on the sale of the Canton Facility. Our receivable terms and collections rates have remained consistent between periods presented.

Net cash provided by investing activities increased compared to 2020 due to proceeds from the sale of the Canton Facility, from the disposal of the MSIL joint venture and from the disposal of the PM sensor business as well as lower capital expenditures and capitalized software costs which were offset by higher investments in the Autotech Fund II.

Net cash used for financing activities increased compared to the prior year primarily due to higher Credit Facility net borrowings.

Summary of Future Cash Flows

The following table summarizes our future cash outflows resulting from financial contracts and commitments, as of December 31, 2022 (in thousands):

		Total		**Less than 1 year**		**2-3 years**		**4-5 years**		**After 5 years**
Credit Facility	**$**	**167,802**	**$**	**—**	**$**	**167,802**	**$**	**—**	**$**	**—**
Debt		**1,450**		**1,450**		**—**		**—**		**—**
Interest payments[(A)]		**15,852**		**10,577**		**5,275**		**—**		**—**
Operating leases		**16,547**		**4,357**		**7,152**		**3,059**		**1,979**
Total contractual obligations[(B)]	**$**	**201,651**	**$**	**16,384**	**$**	**180,229**	**$**	**3,059**	**$**	**1,979**

(A) Includes estimated payments under the Company's Credit Facility and other debt obligations using the most current interest rate and principal balance information available at December 31, 2022, extended through the end of the term.

(B) In December 2018, the Company entered into an agreement to make a $10.0 million investment in a fund ("Autotech Fund II") managed by Autotech Ventures ("Autotech"), a venture capital firm focused on ground transportation technology. The Company's $10.0 million investment in the Autotech Fund II will be contributed over the expected ten year life of the fund. The Company has contributed $8.1 million to the Autotech Fund II since December 2018.

Management will continue to focus on efficiently managing its weighted-average cost of capital and believes that cash flows from operations and the availability of funds from our Credit Facility provides sufficient liquidity to meet our future growth and operating needs.

As outlined in Note 5 to our consolidated financial statements, the Credit Facility permits borrowing up to a maximum level of $300.0 million, as amended on February 28, 2022, by Amendment No. 3 to the Fourth Amended and Restated Credit Agreement ("Amendment No. 3"). This variable rate facility provides the flexibility to refinance other outstanding debt or finance acquisitions through June 2024. The Credit Facility contains certain financial covenants that require the Company to maintain less than a maximum leverage ratio and more than a minimum interest coverage ratio. The Credit Facility also contains affirmative and negative covenants and events of default that are customary for credit arrangements of this type

including covenants that place restrictions and/or limitations on the Company's ability to borrow money, make capital expenditures and pay dividends. The Credit Facility had an outstanding balance of $167.8 million at December 31, 2022.

Due to the expected impact of the COVID-19 pandemic on the Company's end-markets and the resulting expected financial impacts on the Company, on June 26, 2020, the Company entered into a Waiver and Amendment No. 1 to the Fourth Amended and Restated Credit Agreement ("Amendment No. 1"). Amendment No. 1 provided for certain covenant relief and restrictions during the "Covenant Relief Period" (the period ending on the date that the Company delivered a compliance certificate for the quarter ending June 30, 2021). The Covenant Relief Period ended on August 14, 2021. During the Covenant Relief Period:

- the maximum net leverage ratio was suspended;
- the calculation of the minimum interest coverage ratio excluded second quarter 2020 financial results effective for the quarters ended September 30, 2020 through March 31, 2021;
- the minimum interest coverage ratio of 3.50 was reduced to 2.75 and 3.25 for the quarters ended December 31, 2020 and March 31, 2021, respectively;
- the Company's liquidity could not be less than $150,000;
- the Company's aggregate amount of cash and cash equivalents could not exceed $130,000;
- there were certain restrictions on Restricted Payments (as defined); and
- a Permitted Acquisition (as defined) could not be consummated unless otherwise approved in writing by the required lenders.

Amendment No. 1 increased the leverage based LIBOR pricing grid through the maturity date and also provided for a LIBOR floor of 50 basis points on outstanding borrowings excluding any Specified Hedge Borrowings (as defined) which remained subject to a LIBOR floor of 0 basis points.

On December 17, 2021, the Company entered into Amendment No. 2 to the Fourth Amended and Restated Credit Agreement ("Amendment No. 2"). Amendment No. 2 implemented non-LIBOR interest reference rates for borrowings in euros and British pounds.

Due to the ongoing impacts of the COVID-19 pandemic and supply chain disruptions on the Company's end-markets and the resulting financial impacts on the Company, on February 28, 2022, the Company entered into Amendment No. 3. Amendment No. 3 reduced the total revolving credit commitments from $400.0 million to $300.0 million and the maximum permitted amount of swing loans from $40.0 million to $30.0 million. Amendment No. 3 provides for certain financial covenant relief and additional covenant restrictions during the "Specified Period" (the period from February 28, 2022 until the date that the Company delivers a compliance certificate for the quarter ending March 31, 2023 in form and substance satisfactory to the administrative agent). During the Specified Period:

- the maximum net leverage ratio was changed to 4.00 to 1.00 for the year ended December 31, 2021, suspended for the quarters ending March 31, 2022 through September 30, 2022 and cannot exceed 4.75 to 1.00 for the quarter ended December 31, 2022 or 3.50 to 1.00 for the quarter ended March 31, 2023;
- the minimum interest coverage ratio of 3.50 was reduced to 2.50 for the quarter ended March 31, 2022, 2.25 for the quarter ended June 30, 2022 and 3.00 for the quarters ended September 30, 2022 and December 31, 2022;
- an additional condition to drawing on the Credit Facility has been added that restricts borrowings if the Company's total of 100% of domestic and 65% of foreign cash and cash equivalents exceeds $70.0 million;
- there are certain additional restrictions on Restricted Payments (as defined); and
- a Permitted Acquisition (as defined) may not be consummated unless the net leverage ratio is below 3.50 to 1.00 during the Specified Period.

Amendment No. 3 changed the leverage based LIBOR pricing grid through the maturity date and also retained a LIBOR floor of 50 basis points on outstanding borrowings excluding any Specified Hedge Borrowings (as defined) which remained subject to a LIBOR floor of 0 basis points.

Amendment No. 3 also incorporates hardwired mechanics to permit a future replacement of LIBOR as the interest reference rate without lender consent.

Due to continued supply chain disruptions and macroeconomic challenges on the Company's end-markets and the resulting financial impacts on the Company, on March 1, 2023, the Company entered into Amendment No. 4. Amendment No. 4 provides for certain financial covenant relief and additional covenant restrictions during the "Amendment No. 4 Specified Period" (the period from March 1, 2023 until the date that the Company delivers a compliance certificate for the quarter ending September 30, 2023 in form and substance satisfactory to the administrative agent). During the Amendment No. 4 Specified Period:

- the maximum net leverage ratio was changed to 4.75 to 1.00 for the quarter ended March 31, 2023 and 4.25 to 1.00 for the quarter ended June 30, 2023;

- the minimum interest coverage ratio of 3.50 was reduced to 3.00 for the quarters ended March 31, 2023 and June 30, 2023;
- drawing on the Credit Facility continues to be restricted if the Company's total of 100% of domestic and 65% of foreign cash and cash equivalents exceeds $70.0 million;
- there continue to be certain additional restrictions on Restricted Payments (as defined); and
- consistent with Amendment No. 3, a Permitted Acquisition (as defined) may not be consummated unless the net leverage ratio is below 3.50 to 1.00 during the Amendment No. 4 Specified Period.

As a result of the amendments, the Company was in compliance with all covenants at December 31, 2022. The Company has not experienced a violation that would limit the Company’s ability to borrow under the Credit Facility, as amended and does not expect that the covenants under it will restrict the Company’s financing flexibility. However, it is possible that future borrowing flexibility under the Credit Facility may be limited as a result of lower than expected financial performance due to the adverse impact of supply chain disruptions and COVID-19 on the Company’s markets and general global demand. The Company expects to make additional repayments on the Credit Facility when cash exceeds the amount needed for operations and to remain in compliance with all covenants.

Stoneridge Brazil maintained short-term loans used for working capital purposes during 2021 and 2020. There were no borrowings outstanding on these notes at December 31, 2022.

The Company’s wholly-owned subsidiary located in Stockholm, Sweden, has an overdraft credit line which allows overdrafts on the subsidiary’s bank account up to a daily maximum level of 20.0 million Swedish krona, or $1.9 million and $2.2 million, at December 31, 2022 and 2021, respectively. At December 31, 2022, there were no borrowings outstanding on this overdraft credit line. At December 31, 2021, there was 19.0 million Swedish krona, or $2.1 million outstanding on this overdraft credit line. During the year ended December 31, 2022, the subsidiary borrowed 380.7 million Swedish krona, or $36.6 million, and repaid 399.6 million Swedish krona, or $38.4 million.

The Company’s wholly-owned subsidiary located in Suzhou, China, has lines of credit which allow up to a maximum borrowing level of 20.0 million Chinese yuan, or $2.9 million at December 31, 2022 and 50.0 million Chinese yuan, or $7.9 million at December 31, 2021. At December 31, 2022 and 2021 there was $1.5 million and $3.1 million, respectively, in borrowings outstanding recorded within current portion of debt. In addition, the Suzhou subsidiary has a bank acceptance draft line of credit which facilitates the extension of trade payable payment terms by 180 days. The bank acceptance draft line of credit allows up to a maximum borrowing level of 60.0 million Chinese yuan, or $8.7 million, at December 31, 2022 and 15.0 million Chinese yuan, or $2.4 million at December 31, 2021. There was $2.0 million and $2.2 million utilized on the Suzhou bank acceptance draft line of credit at December 31, 2022 and 2021, respectively.

On May 19, 2020, the Company committed to the strategic exit of its Control Devices particulate matter sensor product line. The costs for the PM Sensor Exit include employee severance and termination costs and other related costs including supplier settlements. Non-cash charges included impairment and accelerated depreciation of fixed assets associated with PM sensor production. We recognized $0.0 million and $2.4 million of expense as a result of this initiative during 2022 and 2021, respectively. The only remaining costs relate to potential commercial settlements and legal fees which we continue to negotiate. The estimated additional costs related to these settlements and fees is up to $4.2 million.

In January 2019, the Company committed to a restructuring plan that resulted in the closure of its Canton Facility as of March 31, 2020 and the consolidation of manufacturing operations at that site into other Company locations. The costs for the Canton Restructuring included employee severance and termination costs, contract termination costs, professional fees and other related costs such as moving and set-up costs for equipment and costs to restore the engineering function previously located at the Canton Facility. We recognized expense as a result of these actions during the years ended December 31, 2022 and 2021 of $0.0 million and less than $0.1 million, respectively. During the third quarter of 2020, we leased the Canton facility to a third party. On June 17, 2021, we sold the Canton Facility for net proceeds of $35.2 million and a net gain of $30.7 million.

On October 26, 2018, the Company announced a Board of Directors approved share repurchase program authorizing Stoneridge to repurchase up to $50.0 million of our Common Shares. Thereafter, on May 7, 2019, we announced that the Company had entered into an accelerated share repurchase agreement with Citibank N.A. to repurchase an aggregate of $50.0 million of our Common Shares. Pursuant to the accelerated share repurchase agreement we made an upfront payment of $50.0 million and received an initial delivery of 1,349,528 Common Shares which became treasury shares. On February 25, 2020, Citibank N.A. terminated early its commitment pursuant to the accelerated share repurchase agreement and delivered to the Company, 364,604 Common Shares representing the final settlement of the Company’s repurchase program which became treasury shares.

On February 24, 2020, the Board of Directors authorized a new repurchase program for $50.0 million of our Common Shares over an 18 month period. The repurchases could be made from time to time in either open market transactions or in privately negotiated transactions. Repurchases could also have been made under rule 10b-18, which permits Common Shares to be repurchased through pre-determined criteria. The timing, volume and nature of repurchases of Common Shares was at the discretion of management, dependent on market conditions, other priorities of cash investment,

applicable securities laws and other factors. This Common Share repurchase program authorization did not obligate the Company to acquire any particular amount of its Common Shares, and it could have been suspended or discontinued at any time. For the quarter ended March 31, 2020, the Company repurchased 242,634 Common Shares for $5.0 million in accordance with this repurchase program authorization. In April 2020, the Company announced that it was temporarily suspending the previously announced share repurchase program in response to uncertainty surrounding the duration and magnitude of the impact of COVID-19. This repurchase program authorization expired during the third quarter of 2021 and no additional shares were repurchased.

In January 2020, Stoneridge Brazil paid dividends to former noncontrolling interest holders of Brazilian real ("R$") 24.2 million ($6.0 million). The dividends payable balance included R$3.7 million ($1.0 million) in monetary correction for the year ended December 31, 2019 based on the Brazilian National Extended Consumer Price inflation index.

In December 2018, the Company entered into an agreement to make a $10.0 million investment in a fund ("Autotech Fund II") managed by Autotech Ventures ("Autotech"), a venture capital firm focused on ground transportation technology. The Company's $10.0 million investment in the Autotech Fund II will be contributed over the expected ten-year life of the fund. As of December 31 2022, the Company's cumulative investment in the Autotech Fund II was $8.1 million. The Company contributed $1.0 million and $3.2 million, net to the Autotech Fund II during the years ended December 31, 2022 and 2021, respectively.

Our future results could also be adversely affected by unfavorable changes in foreign currency exchange rates. We have significant foreign denominated transaction exposure in certain locations, especially in Brazil, Argentina, Mexico, Sweden, Estonia, the Netherlands, United Kingdom and China. We have entered into foreign currency forward contracts to reduce our exposure related to certain foreign currency fluctuations. See Note 10 to the consolidated financial statements for additional details. Our future results could also be unfavorably affected by increased commodity prices as commodity fluctuations impact the cost of our raw material purchases.

At December 31, 2022, we had a cash and cash equivalents balance of approximately $54.8 million, of which 91.4% was held in foreign locations. The Company has approximately $132.2 million of undrawn commitments under the Credit Facility as of December 31, 2022, which results in total undrawn commitments and cash balances of more than $185.4 million. However, despite the March 1, 2023 amendment, it is possible that future borrowing flexibility under our Credit Facility may be limited as a result of our financial performance.

Commitments and Contingencies

See Note 11 to the consolidated financial statements for disclosures of the Company's commitments and contingencies.

Seasonality

Our Control Devices and Electronics segments are moderately seasonal, impacted by mid-year and year-end shutdowns and the ramp-up of new model production at key customers. In addition, the demand for our Stoneridge Brazil segment consumer products is generally higher in the second half of the year.

Inflation and International Presence

By operating internationally, we are affected by foreign currency exchange rates and the economic conditions of certain countries. Furthermore, given the current economic climate and recent fluctuations in certain commodity prices, we believe that an increase in such items could significantly affect our profitability. See Note 10 to the consolidated financial statements for additional details on the Company's commodity price and foreign currency exchange rate risks.

Critical Accounting Policies and Estimates

The preparation of financial statements in conformity with U.S. Generally Accepted Accounting Principles ("GAAP") requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent liabilities at the date of the consolidated financial statements, and the reported amounts of revenues and expenses during the reporting period.

On an ongoing basis, we evaluate estimates and assumptions used in our consolidated financial statements. We base our estimates on historical experience and on various other factors that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results could differ from these estimates.

Our critical accounting policies, those most important to the financial presentation and those that are the most complex, subjective or require significant judgment, are as follows. For additional information, see Item 8 of Part II, "Financial Statements and Supplementary Data — Note 2 — Summary of Significant Accounting Policies."

Revenue Recognition and Sales Commitments. We recognize revenue when obligations under the terms of a contract with our customer are satisfied; generally this occurs with the transfer of control of our products and services, which is usually when the parts are shipped or delivered to the customer's premises. Revenue is measured as the amount of consideration we expect to receive in exchange for transferring goods or providing services. The transaction price will include estimates of variable consideration to the extent it is probable that a significant reversal of revenue recognized will not occur. Incidental items that are not significant in the context of the contract are recognized as expense. Revenue for OEM and Tier 1 supplier customers and aftermarket products are recognized at the point in time it satisfies a performance obligation by transferring control of a part to the customer. A small portion of our sales are comprised of monitoring services of which the revenue is recognized over the life of the contract. See Note 3 to the consolidated financial statements for additional information on our revenue recognition policies, including recognizing revenue based on satisfying performance obligations.

Warranties. Our warranty liability is established based on our best estimate of the amounts necessary to settle existing and future claims on products sold as of the balance sheet dates. These accruals are based on several factors including past experience, production changes, industry developments and various other considerations. Our estimate is based on historical trends of units sold and claim payment amounts, combined with our current understanding of the status of existing claims and discussions with our customers. The key factors in our estimate are the stated or implied warranty period, the customer source, customer policy decisions regarding warranties and customers seeking to hold the company responsible for their product warranties. Although we believe that our warranty liability is adequate and that the judgment applied is appropriate, such amounts estimated to be due and payable could differ materially from what will actually transpire in the future.

Contingencies. We are subject to legal proceedings and claims, including product liability claims, commercial or contractual disputes, environmental enforcement actions and other claims that arise in the normal course of business. We routinely assess the likelihood of any adverse judgments or outcomes to these matters, as well as ranges of probable losses, by consulting with internal personnel principally involved with such matters and with our outside legal counsel handling such matters.

We have accrued for estimated losses when it is probable that a liability or loss has been incurred and the amount can be reasonably estimated. Contingencies by their nature relate to uncertainties that require the exercise of judgment both in assessing whether or not a liability or loss has been incurred and estimating that amount of probable loss. The liabilities may change in the future due to new developments or changes in circumstances. The inherent uncertainty related to the outcome of these matters can result in amounts materially different from any provisions made with respect to their resolution.

Income Taxes. Deferred income taxes are provided for temporary differences between the amount of assets and liabilities for financial reporting purposes and the basis of such assets and liabilities as measured by tax laws and regulations. Our deferred tax assets include, among other items, net operating loss carryforwards and tax credits that can be used to offset taxable income in future periods and reduce income taxes payable in those future periods. Our U.S. state and foreign net operating losses expire at various times or have indefinite expiration dates. Our U.S. federal general business credits, if unused, begin to expire in 2026, and the state and foreign tax credits expire at various times.

Accounting standards require that deferred tax assets be reduced by a valuation allowance if, based on all available evidence, it is considered more likely than not that some portion or all of the recorded deferred tax assets will not be realized in future periods. This assessment requires significant judgment, and in making this evaluation, the Company considers available positive and negative evidence, including the potential to carryback net operating losses and credits, the future release of certain taxable temporary differences, actual and forecasted results, and tax planning strategies that are both prudent and feasible. Certain deferred tax assets are dependent on future taxable income to be realized. Risk factors include U.S. and foreign economic conditions that affect the automotive and commercial vehicle markets of which the Company has significant operations.

The Company has recognized deferred taxes related to foreign withholding taxes and the expected foreign currency impact upon repatriation from foreign subsidiaries not considered indefinitely reinvested.

The Company has made an accounting policy election to reflect the impact of global intangible low-taxed income ("GILTI") taxes, if any, as a current period tax expense when incurred.

Recently Adopted Accounting Standards

In December 2019, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2019-12, "Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes." The amendments in this update remove certain exceptions of Topic 740 including: exception to the incremental approach for intraperiod tax allocation when there is a loss from continuing operations and income or gain from other items; exception to the requirement to recognize a deferred tax liability for equity method investments when a foreign subsidiary becomes an equity method investment; exception to the ability not to recognize a deferred tax liability for a foreign subsidiary when a foreign equity method investment becomes a subsidiary; exception to the general methodology for calculating income taxes in an interim period when a year-to-date loss exceeds the anticipated loss for the year. There are also additional areas of guidance in regards to: franchise and other

taxes partially based on income and the interim recognition of enactment of tax laws and rate changes. The provisions of this ASU are effective for years beginning after December 15, 2020, with early adoption permitted. The Company adopted this standard prospectively as of January 1, 2020 using the modified retrospective basis. The impact of the adoption was a reduction to deferred tax liabilities and an increase to retained earnings of $13.8 million on the consolidated balance sheet as of December 31, 2020. The adoption of this standard did not have an impact on the Company's consolidated results of operations and cash flows.

Recently Issued Accounting Standards Not Yet Adopted as of December 31, 2021

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." The guidance in ASU 2020-04 provides temporary optional expedient and exceptions to the guidance in U.S. GAAP on contract modifications and hedge accounting to ease the financial reporting burdens related to expected market transition from the London Interbank Offered Rate ("LIBOR") and other interbank offered rates to alternative reference rates, such as the Secured Overnight Financing Rate ("SOFR") (also known as the "reference rate reform"). The guidance allows companies to elect not to apply certain modification accounting requirements to contracts affected by the reference rate reform, if certain criteria are met. The guidance will also allow companies to elect various optional expedients which would allow them to continue to apply hedge accounting for hedging relationships affected by the reference rate reform, if certain criteria are met. The new standard was effective upon issuance and generally can be applied to applicable contract modifications through December 31, 2022. As of December 31, 2022, the Company has not yet had contracts modified due to rate reform.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Interest Rates

We are exposed to interest rate risk primarily from the effects of changes in interest rates. At December 31, 2022, approximately 99.1% of our outstanding debt was floating-rate and 0.9% was fixed-rate. We estimate that a 1.0% change in the interest costs of our floating-rate debt outstanding as of December 31, 2022 would change interest expense on an annual basis by approximately $1.7 million.

Currency Exchange Rates

In addition to the United States, we have significant operations in Europe, South America, Mexico and China. As a result we are subject to translation risk because of the transactions of our foreign operations are in local currency (particularly the Brazilian real, Chinese renminbi, Mexican peso, euro, Swedish krona and Argentinian peso) and must be translated into U.S. dollars. As currency exchange rates fluctuate, the translation of our consolidated statements of operations into U.S. dollars affects the comparability of revenues, expenses, operating income, net income and earnings per share between years.

We have previously used derivative financial instruments, including foreign currency forward contracts, to mitigate our exposure to fluctuations in foreign currency exchange rates by reducing the effect of such fluctuations on foreign currency denominated intercompany transactions, inventory material purchases and other foreign currency exposures.

As discussed in detail in Note 10 to our consolidated financial statements, we entered into foreign currency forward contracts the purpose of which is to reduce exposure related to the Company's future Mexican peso-denominated purchases.

We estimate that a 10.0% unidirectional change in currency exchange rates relative to the U.S dollar would have changed our income before income taxes for the year ended December 31, 2022 by approximately $0.4 million.

Commodity Price Risk

The competitive marketplace in which we operate may limit our ability to recover increased costs through higher prices. As such, we are subject to market risk with respect to commodity price fluctuations principally related to our purchases of purchase of copper, steel, zinc, resins and certain other commodities through a combination of fixed price agreements, staggered short-term contract maturities and commercial negotiations with our suppliers and customers. In the future, if we believe that the terms of a fixed price agreement become beneficial to us, we will enter into another such instrument. We may also consider pursuing alternative commodities or alternative suppliers to mitigate this risk over a period of time.

Item 8. Financial Statements and Supplementary Data.

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AND FINANCIAL STATEMENT SCHEDULE**

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Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Stoneridge, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Stoneridge, Inc. and subsidiaries (the Company) as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive loss, cash flows and shareholders' equity for each of the three years in the period ended December 31, 2022, and the related notes and financial statement schedule listed in the Index at Item 15 (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles.

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, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated March 2, 2023 expressed an unqualified opinion thereon.

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.

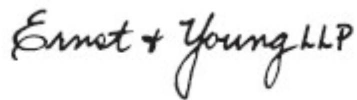
We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures 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 regarding 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 Matters

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 the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing separate opinion on the critical audit matter or on the account or disclosure to which it relates.

Product warranty and recall reserves

Description of the Matter	The Company's reserves for product warranty and recall totaled $13.5 million at December 31, 2022. As described in Note 2 to the consolidated financial statements, the Company's reserve for product warranty and recall is based on several factors, including the historical trends of units sold and claim payment amounts, combined with the Company's current understanding of existing warranty and recall claims. The warranty liability requires a forecast of the resolution of existing claims as well as expected future claims on products previously sold. Auditing the Company's reserve for product warranty and recall is complex due to the measurement uncertainty associated with the estimate, management's judgment in determining the cost and volume estimates used in the computation as well as volume and costing assumptions in determining the expected future claims on products previously sold.
How We Addressed the Matter in Our Audit	We evaluated the design and tested the operating effectiveness of the Company's controls over the product warranty and recall process. For example, we tested management review controls over the appropriateness of assumptions management used in the calculation and the completeness of warranty claims. To evaluate the reserve for product warranty and recall, we performed audit procedures that included, among others, testing the completeness and accuracy of the underlying claims data and costs used in the computation of management's estimate, performing inquiries of the Company's quality control team, and obtaining legal confirmation letters to evaluate the status and assessment of certain reserves. We assessed the historical accuracy of management's product warranty and recall reserves and performed sensitivity analyses of significant assumptions to evaluate the impact to the reserve that would result from changes in the assumptions.



We have served as the Company's auditor since 2002.
Detroit, MI
March 2, 2023

STONERIDGE, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

December 31, (in thousands)	2022	2021
ASSETS		
Current assets:		
Cash and cash equivalents	**$ 54,798**	$ 85,547
Accounts receivable, less reserves of $962 and $1,443, respectively	**158,155**	150,388
Inventories, net	**152,580**	138,115
Prepaid expenses and other current assets	**44,018**	36,774
Total current assets	**409,551**	410,824
Long-term assets:		
Property, plant and equipment, net	**104,643**	107,901
Intangible assets, net	**45,508**	49,863
Goodwill	**34,225**	36,387
Operating lease right-of-use asset	**13,762**	18,343
Investments and other long-term assets, net	**44,416**	42,081
Total long-term assets	**242,554**	254,575
Total assets	**$ 652,105**	$ 665,399
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Current portion of debt	**$ 1,450**	$ 5,248
Accounts payable	**110,202**	97,679
Accrued expenses and other current liabilities	**66,040**	70,139
Total current liabilities	**177,692**	173,066
Long-term liabilities:		
Revolving credit facility	**167,802**	163,957
Deferred income taxes	**8,498**	10,706
Operating lease long-term liability	**10,594**	14,912
Other long-term liabilities	**6,577**	6,808
Total long-term liabilities	**193,471**	196,383
Shareholders' equity:		
Preferred Shares, without par value, 5,000 shares authorized, none issued	**—**	—
Common Shares, without par value, 60,000 shares authorized, 28,966 and 28,966 shares issued and 27,341 and 27,191 shares outstanding at December 31, 2022 and December 31, 2021, respectively, with no stated value	**—**	—
Additional paid-in capital	**232,758**	232,490
Common Shares held in treasury, 1,625 and 1,775 shares at December 31, 2022 and December 31, 2021, respectively, at cost	**(50,366)**	(55,264)
Retained earnings	**201,692**	215,748
Accumulated other comprehensive loss	**(103,142)**	(97,024)
Total shareholders' equity	**280,942**	295,950
Total liabilities and shareholders' equity	**$ 652,105**	$ 665,399

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

STONERIDGE, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

Year ended December 31, (in thousands, except per share data)	2022	2021	2020
Net sales	**$ 899,923**	$ 770,462	$ 648,006
Costs and expenses:			
Cost of goods sold	**724,997**	603,604	493,810
Selling, general and administrative	**106,695**	116,000	112,474
Gain on sale of Canton Facility, net	**—**	(30,718)	—
Design and development	**65,296**	66,165	49,386
Operating income (loss)	**2,935**	15,411	(7,664)
Interest expense, net	**7,097**	5,189	6,124
Equity in loss (earnings) of investee	**823**	(3,658)	(1,536)
Other expense (income), net	**5,711**	1,444	(1,528)
(Loss) income before income taxes	**(10,696)**	12,436	(10,724)
Provision (benefit) for income taxes	**3,360**	9,030	(2,774)
Net (loss) income	**$ (14,056)**	$ 3,406	$ (7,950)
(Loss) earnings per share:			
Basic	**$ (0.52)**	$ 0.13	$ (0.29)
Diluted	**$ (0.52)**	$ 0.12	$ (0.29)
Weighted-average shares outstanding:			
Basic	**27,258**	27,114	27,025
Diluted	**27,258**	27,416	27,025

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

STONERIDGE, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS

Year ended December 31, (in thousands)	2022	2021	2020
Net (loss) income	**$ (14,056)**	$ 3,406	$ (7,950)
Other comprehensive (loss) income, net of tax:			
Foreign currency translation [1]	**(6,171)**	(8,408)	2,677
Unrealized gain (loss) on derivatives [2]	**53**	1,019	(840)
Other comprehensive (loss) income, net of tax	**(6,118)**	(7,389)	1,837
Comprehensive loss	**$ (20,174)**	$ (3,983)	$ (6,113)

(1) Net of tax expense of $514 and $267 for the years ended December 31, 2022 and 2021, respectively.
(2) Net of tax expense (benefit) of $14, $271 and $(223) for the years ended December 31, 2022, 2021 and 2020, respectively.

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

STONERIDGE, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

Year ended December 31, (in thousands)	2022	2021	2020
OPERATING ACTIVITIES:			
Net (loss) income	**$ (14,056)**	$ 3,406	$ (7,950)
Adjustments to reconcile net income to net cash provided by (used for) operating activities:			
Depreciation	**26,687**	27,823	27,309
Amortization, including accretion and write-off of deferred financing costs	**8,055**	6,648	5,926
Deferred income taxes	**(5,110)**	(511)	(7,953)
Loss (earnings) of equity method investee	**823**	(3,658)	(1,536)
(Gain) loss on sale of fixed assets	**(241)**	(165)	185
Share-based compensation expense	**5,942**	5,960	5,888
Excess tax deficiency (benefit) related to share-based compensation expense	**543**	(563)	(46)
Gain on sale of Canton Facility, net	**—**	(30,718)	—
Gain on disposal of business and joint venture, net	**—**	(2,942)	—
Property, plant and equipment impairment charge	**33**	—	2,349
Change in fair value of earn-out contingent consideration	**—**	2,065	(3,196)
Changes in operating assets and liabilities:			
Accounts receivable, net	**(13,161)**	(17,019)	4,164
Inventories, net	**(20,127)**	(51,270)	4,000
Prepaid expenses and other assets	**(5,159)**	(5,116)	1,342
Accounts payable	**18,489**	16,515	3,642
Accrued expenses and other liabilities	**4,088**	13,297	(5,483)
Net cash provided by (used for) operating activities	**6,806**	(36,248)	28,641
INVESTING ACTIVITIES:			
Capital expenditures, including intangibles	**(31,609)**	(27,031)	(32,462)
Proceeds from sale of fixed assets	**158**	268	127
Proceeds from settlement of net investment hedges	**3,820**	—	—
Proceeds from disposal of business, net	**—**	1,837	—
Proceeds from disposal of joint venture, net	**—**	20,999	—
Proceeds from sale of Canton Facility, net	**—**	35,167	—
Investment in venture capital fund, net	**(950)**	(3,199)	(1,550)
Net cash (used for) provided by investing activities	**(28,581)**	28,041	(33,885)
FINANCING ACTIVITIES:			
Revolving credit facility borrowings	**21,562**	91,913	71,500
Revolving credit facility payments	**(18,000)**	(64,000)	(61,500)
Proceeds from issuance of debt	**38,940**	45,753	41,104
Repayments of debt	**(42,732)**	(48,125)	(37,823)
Earn-out consideration cash payment	**(6,276)**	—	—
Common Share repurchase program	**—**	—	(4,995)
Repurchase of Common Shares to satisfy employee tax withholding	**(791)**	(2,665)	(1,773)
Net cash (used for) provided by financing activities	**(7,297)**	22,876	6,513
Effect of exchange rate changes on cash and cash equivalents	**(1,677)**	(3,041)	3,247
Net change in cash and cash equivalents	**(30,749)**	11,628	4,516
Cash and cash equivalents at beginning of period	**85,547**	73,919	69,403
Cash and cash equivalents at end of period	**$ 54,798**	$ 85,547	$ 73,919
Supplemental disclosure of cash flow information:			
Cash paid for interest	**$ 7,293**	$ 6,055	$ 5,620
Cash paid for income taxes, net	**$ 6,178**	$ 11,267	$ (254)
Supplemental disclosure of non-cash activities:			
Adoption of ASU 2019-12 (Note 2)	**$ —**	$ —	$ 13,750

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

STONERIDGE, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

(in thousands)	Number of Common Shares outstanding	Number of treasury shares	Additional paid-in capital	Common Shares held in treasury	Retained earnings	Accumulated other comprehensive loss	Total shareholders' equity
BALANCE , DECEMBER 31, 2019	27,408	1,558	$ 225,607	$ (50,773)	$ 206,542	$ (91,472)	$ 289,904
Net loss	—	—	—	—	(7,950)	—	(7,950)
Unrealized loss on derivatives, net	—	—	—	—	—	(840)	(840)
Currency translation adjustments	—	—	—	—	—	2,677	2,677
Issuance of Common Shares	285	(285)	—	—	—	—	—
Repurchased Common Shares for treasury, net	(80)	80	—	5,286	—	—	5,286
Common Share repurchase program	(607)	607	10,000	(14,995)	—	—	(4,995)
Share-based compensation, net	—	—	(1,198)	—	—	—	(1,198)
Adoption of ASU 2019-12 (Note 2)	—	—	—	—	13,750	—	13,750
BALANCE DECEMBER 31, 2020	27,006	1,960	$ 234,409	$ (60,482)	$ 212,342	$ (89,635)	$ 296,634
Net income	—	—	$ —	$ —	$ 3,406	$ —	$ 3,406
Unrealized gain on derivatives, net	—	—	—	—	—	1,019	1,019
Currency translation adjustments	—	—	—	—	—	(8,408)	(8,408)
Issuance of Common Shares	265	(265)	—	—	—	—	—
Repurchased Common Shares for treasury, net	(80)	80	—	5,218	—	—	5,218
Share-based compensation, net	—	—	(1,919)	—	—	—	(1,919)
BALANCE DECEMBER 31, 2021	27,191	1,775	$ 232,490	$ (55,264)	$ 215,748	$ (97,024)	$ 295,950
Net loss	**—**	**—**	**$ —**	**$ —**	**$ (14,056)**	**$ —**	**$ (14,056)**
Unrealized gain on derivatives, net	**—**	**—**	**—**	**—**	**—**	**53**	**53**
Currency translation adjustments	**—**	**—**	**—**	**—**	**—**	**(6,171)**	**(6,171)**
Issuance of Common Shares	**193**	**(193)**	**—**	**—**	**—**	**—**	**—**
Repurchased Common Shares for treasury, net	**(43)**	**43**	**—**	**4,898**	**—**	**—**	**4,898**
Share-based compensation, net	**—**	**—**	**268**	**—**	**—**	**—**	**268**
BALANCE DECEMBER 31, 2022	**27,341**	**1,625**	**$ 232,758**	**$ (50,366)**	**$ 201,692**	**$ (103,142)**	**$ 280,942**

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

1. Organization and Nature of Business

Stoneridge, Inc. and its subsidiaries are global designers and manufacturers of highly engineered electrical and electronic systems, components and modules for the automotive, commercial, off-highway and agricultural vehicle markets.

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements include the accounts of Stoneridge, Inc. and its wholly-owned subsidiaries (collectively, the "Company"). Intercompany transactions and balances have been eliminated in consolidation. The Company analyzes its ownership interests in accordance with Accounting Standards Codification ("ASC") "Consolidations (Topic 810)" to determine whether they are a variable interest entity and, if so, whether the Company is the primary beneficiary.

Prior to the sale of our investment in Minda Stoneridge Instruments Ltd. ("MSIL") on December 30, 2021, the Company accounted for its 49% ownership in MSIL under the equity method of accounting.

Accounting Estimates

The preparation of financial statements in conformity with U.S. Generally Accepted Accounting Principles ("GAAP") requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, including certain self-insured risks and liabilities, disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Because actual results could differ from those estimates, the Company revises its estimates and assumptions as new information becomes available.

Cash and Cash Equivalents

The Company's cash and cash equivalents include actively traded money market funds with short-term investments in marketable securities, primarily U.S. government securities. Cash and cash equivalents are stated at cost, which approximates fair value, due to the highly liquid nature and short-term duration of the underlying securities with original maturities of 90 days or less.

Accounts Receivable and Concentration of Credit Risk

Revenues are principally generated from the automotive, commercial, off-highway and agricultural vehicle markets. The Company's largest customers are PACCAR and Volvo, primarily related to the Electronics reportable segment and accounted for the following percentages of consolidated net sales:

	2022	**2021**	**2020**
PACCAR	**15%**	6%	4%
Volvo	**11%**	9%	8%

Accounts receivable are recorded at the invoice price, net of an estimate of allowance for doubtful accounts and other reserves.

Allowance for Doubtful Accounts

The Company evaluates the collectability of accounts receivable based on a combination of factors. In circumstances where the Company is aware of a specific customer's inability to meet its financial obligations, a specific allowance for doubtful accounts is recorded against amounts due to reduce the net recognized receivable to the amount the Company reasonably believes will be collected. Additionally, the Company reviews historical trends for collectability in determining an estimate for its allowance for doubtful accounts. If economic circumstances change substantially, estimates of the recoverability of amounts due to the Company could be reduced by a material amount. The Company does not have collateral requirements with its customers.

Inventories

Inventories are valued at the lower of cost (using either the first-in, first-out ("FIFO") or average cost methods) or net realizable value. The Company evaluates and adjusts as necessary its excess and obsolescence reserve on a quarterly basis. Excess inventories are quantities of items that exceed anticipated sales or usage for a reasonable period. The Company has guidelines for calculating provisions for excess inventories based on the number of months of inventories on

2. Summary of Significant Accounting Policies – (continued)

hand compared to anticipated sales or usage. Management uses its judgment to forecast sales or usage and to determine what constitutes a reasonable period. Inventory cost includes material, labor and overhead. Inventories consist of the following:

December 31	2022	2021
Raw materials	**$ 121,983**	$ 107,034
Work-in-progress	**7,812**	9,755
Finished goods	**22,785**	21,326
Total inventories, net	**$ 152,580**	$ 138,115

Inventory valued using the FIFO method was $139,996 and $127,939 at December 31, 2022 and 2021, respectively. Inventory valued using the average cost method was $12,584 and $10,176 at December 31, 2022 and 2021, respectively.

Long Term Supply Commitment

In 2022, the Company entered into a long term supply agreement with a supplier for the purchase of certain electronic semiconductor components through December 31, 2026. Pursuant to the agreement, the Company paid a $1,000 capacity deposit in 2022 and is obligated to pay an additional $1,000 capacity deposit in 2023. The capacity deposit is recognized in prepaid and other current assets on our consolidated balance sheet. This long term supply agreement requires the Company to purchase minimum annual volumes while requiring the supplier to sell these components at a fixed price. The Company purchased $1,174 of these components during the year ended December 31, 2022. The Company is required to purchase $5,871, $7,828, $10,764 and $10,764 of components in each of the years 2023 through 2026, respectively.

Pre-production Costs Related to Long-term Supply Arrangements

Engineering, research and development and other design and development costs for products sold on long-term supply arrangements are expensed as incurred unless the Company has a contractual guarantee for reimbursement from the customer which are capitalized as pre-production costs. Costs for molds, dies and other tools used to make products sold on long-term supply arrangements for which the Company either has title to the assets or has the noncancelable right to use the assets during the term of the supply arrangement are capitalized in property, plant and equipment and amortized to cost of sales over the shorter of the term of the arrangement or over the estimated useful lives of the assets, typically three to seven years. Costs for molds, dies and other tools used to make products sold on long-term supply arrangements for which the Company has a contractual guarantee to a lump sum reimbursement from the customer are capitalized either as a component of prepaid expenses and other current assets or an investment and other long-term assets, net within the consolidated balance sheets. Capitalized pre-production costs were $19,539 and $16,292 at December 31, 2022 and 2021, respectively, and were recorded as a component of prepaid expenses and other current assets on the consolidated balance sheets.

Disposal of Particulate Matter Sensor Business

On March 8, 2021, the Company entered into an Asset Purchase Agreement (the “APA”) by and among the Company, the Company’s wholly owned subsidiary, Stoneridge Electronics AS, as the Sellers, and Standard Motor Products, Inc. (“SMP”) and SMP Poland SP Z O.O., as the Buyers. Pursuant to the APA the Company agreed to sell to the Buyers the Company’s assets located in Lexington, Ohio and Tallinn, Estonia related to the manufacturing of particulate matter sensor products and related service part operations (together, the “PM sensor business”). In the past, the Company has sometimes referred to the PM sensor assets as the Company’s soot sensing business. The Buyers did not acquire any of the Company’s locations or employees. The purchase price for the sale of the PM sensor assets was $4,000 (subject to a post-closing inventory adjustment which was a payment to SMP of $1,133) plus the assumption of certain liabilities. The purchase price was allocated among PM sensor product lines, Gen 1 and Gen 2 as defined under the APA. The purchase price allocated to Gen 1 fixed assets and inventory and Gen 2 fixed assets was $3,214 and $786, respectively. The sale of the Gen 2 assets occurred during November 2021, upon completion of the Company’s supply commitments to certain customers. The Company and SMP also entered into certain ancillary agreements, including a contract manufacturing agreement, a transitional services agreement, and a supply agreement, pursuant to which the Company provided and was compensated for certain manufacturing, transitional, administrative and support services to SMP on a short-term basis.

On March 8, 2021 the Company’s Control Devices segment recognized net sales and cost of goods sold ("COGS") of $971 and $898, respectively, for the one-time sale of Gen 1 inventory and a gain on disposal of $740 for the sale of Gen 1 fixed assets less transaction costs of $60 within selling, general and administrative ("SG&A") during the three months ended March 31, 2021.

2. Summary of Significant Accounting Policies – (continued)

Pursuant to the contract manufacturing agreement, the Company produced and sold PM sensor Gen 1 finished goods inventory to SMP for net sales of $8,042 in the year ended December 31, 2021. In addition, the Company received $308 and $783 for services provided pursuant to the transition services agreement which were recognized as a reduction in SG&A for the years ended December 31, 2022 and 2021, respectively.

PM sensor Gen 1 net sales, including sales of $8,042 to SMP pursuant to the contract manufacturing agreement and the sale of Gen 1 inventory components of $2,283 and operating income were $12,592 and $1,415, respectively, for the year ended December 31, 2021. PM sensor Gen 1 net sales and operating income were $8,814 and $1,090, respectively, for the year ended December 31, 2020.

The Company completed the PM sensor Gen 2 product supply commitments and ended production on September 23, 2021. In November 2021, the Company's Control Devices segment recognized proceeds of $786 and a gain on disposal of $408 for the sale of the Gen 2 fixed assets within SG&A, for the year ended December 31, 2021.

Sale of Canton Facility

On May 7, 2021, the Company entered into a Real Estate Purchase and Sale Agreement (the "Agreement") with Sun Life Assurance Company of Canada, a Canadian corporation (the "Buyer"), to sell the Canton Facility for $38,200 (subject to adjustment pursuant to the Agreement).

On June 17, 2021, pursuant to the Agreement, as amended after May 7, 2021, the Company closed the sale of the Canton Facility to the Buyer for an adjusted purchase price of $37,900. The Company recognized in the Control Devices segment, net proceeds of $35,167 and a gain, net of direct selling costs, of $30,718.

Sale of MSIL

On November 2, 2021, the Company entered into a Share Purchase Agreement (the "SPA") with Minda Corporation Limited ("Minda"), as the buyer, and MSIL. Pursuant to the SPA the Company agreed to sell to Minda the Company's minority interest in MSIL for approximately $21,500 equivalent Indian Rupee which was payable in U.S. dollars at closing.

On December 30, 2021, pursuant to the SPA, the Company closed the sale of MSIL to Minda for $21,587. The Company recognized net proceeds of $20,999 and a gain, net of transaction costs, of $1,794.

Property, Plant and Equipment

Property, plant and equipment are recorded at cost and consist of the following:

December 31	2022	2021
Land and land improvements	**$ 3,030**	$ 3,064
Buildings and improvements	**29,703**	28,842
Machinery and equipment	**247,237**	249,365
Office furniture and fixtures	**9,100**	8,701
Tooling	**42,950**	41,391
Information technology	**32,584**	30,454
Vehicles	**783**	741
Leasehold improvements	**5,199**	5,592
Construction in progress	**20,676**	12,584
Total property, plant, and equipment	**391,262**	380,734
Less: accumulated depreciation	**(286,619)**	(272,833)
Property, plant and equipment, net	**$ 104,643**	$ 107,901

2. Summary of Significant Accounting Policies – (continued)

Depreciation is provided using the straight-line method over the estimated useful lives of the assets. Depreciation expense for the years ended December 31, 2022, 2021 and 2020 was $26,687, $27,823 and $27,309, respectively. Depreciable lives within each property classification are as follows:

Buildings and improvements	10-40 years
Machinery and equipment	3-10 years
Office furniture and fixtures	3-10 years
Tooling	2-7 years
Information technology	3-7 years
Vehicles	3-7 years
Leasehold improvements	shorter of lease term or 3-10 years

Maintenance and repair expenditures that are not considered improvements and do not extend the useful life of the property, plant and equipment are charged to expense as incurred. Expenditures for improvements and major renewals are capitalized. When assets are retired or otherwise disposed of, the related cost and accumulated depreciation are removed from the accounts, and any gain or loss on the disposition is recorded in the consolidated statements of operations as a component of SG&A expenses.

Impairment of Long-Lived or Finite-Lived Assets

The Company reviews the carrying value of its long-lived assets and finite-lived intangible assets for impairment when events or circumstances indicate that their carrying value may not be recoverable. Factors the Company considers important that could trigger testing of the related asset groups for an impairment include current period operating or cash flow losses combined with a history of operating or cash flow losses, a projection or forecast that demonstrates continuing losses, significant adverse changes in the business climate within a particular business or current expectations that a long-lived asset will be sold or otherwise disposed of significantly before the end of its estimated useful life. To test for impairment, the estimated undiscounted cash flows expected to be generated from the use and disposal of the asset or asset group is compared to its carrying value. An asset group is established by identifying the lowest level of cash flows generated by the group of assets that are largely independent of cash flows of other assets. If cash flows cannot be separately and independently identified for a single asset, we will determine whether an impairment has occurred for the group of assets for which we can identify projected cash flows. If these undiscounted cash flows are less than their respective carrying values, an impairment charge would be recognized to the extent that the carrying values exceed estimated fair values. The estimation of undiscounted cash flows and fair value requires us to make assumptions regarding future operating results over the life of the asset or the life of the primary asset in the asset group. The results of the impairment testing are dependent on these estimates which require judgment. The occurrence of certain events, including changes in economic and competitive conditions, could impact cash flows eventually realized and management's ability to accurately assess whether an asset is impaired.

On May 19, 2020, the Company committed to the strategic exit of its Control Devices particulate matter ("PM") sensor product line. As a result of the strategic exit of the PM sensor product line the Company determined an impairment indicator existed and performed a recoverability test of the related long-lived assets. The Company identified that there were two asset groups comprised of PM sensor fixed assets at the Company's Lexington, Ohio and Tallinn, Estonia facilities. As a result of the recoverability test performed, the Company determined that the undiscounted cash flows did not exceed the carrying value of the PM sensor fixed assets at the Company's Tallinn, Estonia facility. As such, an impairment loss of $2,326 was recorded based on the difference between the fair value and the carrying value of the assets. The Company used the income approach to determine the fair value of the PM sensor fixed assets at the Tallinn, Estonia facility. During the year ended December 31, 2020, the impairment loss of $2,326 was recorded on the Company's consolidated statement of operations within SG&A expense.

2. Summary of Significant Accounting Policies – (continued)

Goodwill and Other Intangible Assets

Goodwill

The total purchase price associated with acquisitions is allocated to the acquisition date fair values of identifiable assets acquired and liabilities assumed with the excess purchase price assigned to goodwill.

Goodwill was $34,225 and $36,387 at December 31, 2022 and 2021, respectively, all of which relates to the Electronics segment. Goodwill is not amortized, but instead is tested for impairment at least annually, or earlier when events and circumstances indicate that it is more likely than not that such assets have been impaired, by applying a fair value-based test. In conducting our annual impairment assessment testing, we first perform a qualitative assessment of whether it is more likely than not that a reporting unit's fair value is less than its carrying amount. If not, no further goodwill impairment testing is performed. If it is more likely than not that a reporting unit's fair value is less than its carrying amount, or if we elect not to perform a qualitative assessment of a reporting unit, we then compare the fair value of the reporting unit to the related net book value. If the net book value of a reporting unit exceeds its fair value, an impairment loss is measured and recognized.

The Company utilizes an income statement approach to estimate the fair value of a reporting unit and a market valuation approach to further support this analysis. The income approach is based on projected debt-free cash flow which is discounted to the present value using discount factors that consider the timing and risk of cash flows. We believe that this approach is appropriate because it provides a fair value estimate based on the reporting unit's expected long-term operating cash flow performance. This approach also mitigates the impact of cyclical trends that occur in the industry. Fair value is estimated using internally developed forecasts, as well as commercial and discount rate assumptions. The discount rate used is the value-weighted average of our estimated cost of equity and of debt ("cost of capital") derived using both known and estimated customary market metrics. Our weighted average cost of capital is adjusted to reflect a risk factor, if necessary. Other significant assumptions include terminal value growth rates, terminal value margin rates, future capital expenditures and changes in future working capital requirements. While there are inherent uncertainties related to the assumptions used and to management's application of these assumptions to this analysis, we believe that the income statement approach provides a reasonable estimate of the fair value of a reporting unit. The market valuation approach is used to further support our analysis. There was no impairment of goodwill for the years ended December 31, 2022, 2021 or 2020.

Goodwill and changes in the carrying amount of goodwill for the Electronics segment for the years ended December 31, 2022 and 2021 were as follows:

	2022	2021
Balance at January 1	**$ 36,387**	$ 39,104
Currency translation	**(2,162)**	(2,717)
Balance at December 31	**$ 34,225**	$ 36,387

The Company's cumulative goodwill impairment loss since inception was $300,083 at December 31, 2022 and 2021, which includes Stoneridge Brazil's goodwill impairment in 2014 and goodwill impairment recorded by the Company's Control Devices segment in 2008 and 2004.

2. Summary of Significant Accounting Policies – (continued)

Other Intangible Assets

Other intangible assets, net at December 31, 2022 and 2021 consisted of the following:

As of December 31, 2022		Acquisition cost		Accumulated amortization		Net
Customer lists	**$**	**44,394**	**$**	**(23,355)**	**$**	**21,039**
Tradenames		**16,430**		**(7,761)**		**8,669**
Technology and patents		**12,921**		**(10,100)**		**2,821**
Capitalized software development		**15,591**		**(2,612)**		**12,979**
Total	**$**	**89,336**	**$**	**(43,828)**	**$**	**45,508**

As of December 31, 2021		Acquisition cost		Accumulated amortization		Net
Customer lists	$	45,000	$	(20,240)	$	24,760
Tradenames		16,016		(6,655)		9,361
Technology and patents		12,855		(8,922)		3,933
Capitalized software development		12,433		(624)		11,809
Total	$	86,304	$	(36,441)	$	49,863

Other intangible assets, net at December 31, 2022 for customer lists, tradenames, technology and patents, and capitalized software development include $16,521, $3,589, $575 and $10,218, respectively, related to the Electronics segment. Customer lists, tradenames and technology of $4,518, $5,080 and $2,173, respectively, related to the Stoneridge Brazil segment at December 31, 2022. Capitalized software development and patents of $2,761 and $73, respectively, related to the Control Devices segment at December 31, 2022.

The Company designs and develops software that will be embedded into certain products and sold to customers. Software development costs are capitalized after the software product development reaches technological feasibility and until the software product becomes available for general release to customers. These intangible assets are amortized using the straight-line method over estimated useful lives generally ranging from three to seven years.

The Company recognized $7,003, $6,006 and $5,420 of amortization expense related to intangible assets in 2022, 2021 and 2020, respectively. Amortization expense is included as a component of COGS, SG&A and design and development ("D&D") on the consolidated statements of operations. Annual amortization expense for intangible assets is estimated to be approximately $8,000 for the year 2023 and approximately $7,600 for the years 2024 through 2027. The weighted-average remaining amortization period is approximately 7 years.

There were no intangible impairment charges for the years ended December 31, 2022, 2021 or 2020.

Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consist of the following:

As of December 31		2022		2021
Compensation related liabilities	**$**	**19,015**	$	18,716
Product warranty and recall obligations		**9,040**		6,752
Other [(A)]		**37,985**		44,671
Total accrued expenses and other current liabilities	**$**	**66,040**	$	70,139

(A) "Other" is comprised of miscellaneous accruals, none of which individually contributed a significant portion of the total.

2. Summary of Significant Accounting Policies – (continued)

Income Taxes

The Company accounts for income taxes using the liability method. Deferred income taxes reflect the tax consequences on future years of differences between the tax basis of assets and liabilities and their financial reporting amounts. Future tax benefits are recognized to the extent that realization of such benefits is more likely than not to occur. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in the period that includes the enactment date.

Deferred tax assets are recognized to the extent that these assets are more likely than not to be realized (See Note 6). In making such a determination, the Company considers all available positive and negative evidence, including future release of existing taxable temporary differences, projected future taxable income, tax planning strategies, and results of recent operations. Certain deferred tax assets are dependent on future taxable income to be realized. Release of some or all of a valuation allowance would result in the recognition of certain deferred tax assets and a decrease to income tax expense for the period the release is recorded.

The Company's policy is to provide for uncertain tax positions and the related interest and penalties based upon management's assessment of whether a tax benefit is more likely than not to be sustained upon examination by tax authorities. To the extent the Company prevails in matters for which a liability for an unrecognized tax benefit is established or is required to pay amounts in excess of the liability, the Company's effective tax rate in a given financial statement period may be affected. The Company adjusts this liability in the period in which an uncertain tax position is effectively settled, the statute of limitations expires for the relevant taxing authority to examine the tax position, or more information becomes available.

The Company has made an accounting policy election to reflect global intangible low-taxed income ("GILTI") taxes, if any, as a current period tax expense when incurred.

Currency Translation

The financial statements of foreign subsidiaries, where the local currency is the functional currency, are translated into U.S. dollars using exchange rates in effect at the period end for assets and liabilities and average exchange rates during each reporting period for the results of operations. Adjustments resulting from translation of financial statements are reflected as a component of accumulated other comprehensive loss in the Company's consolidated balance sheets.

Foreign currency transactions are remeasured into the functional currency using translation rates in effect at the time of the transaction with the resulting adjustments included on the consolidated statements of operations within other expense (income), net. These foreign currency transaction losses (gains), including the impact of hedging activities, were $5,534, $2,037 and $(997) for the years ended December 31, 2022, 2021 and 2020, respectively.

Revenue Recognition and Sales Commitments

The Company recognizes revenue when obligations under the terms of a contract with our customer are satisfied; generally this occurs with the transfer of control of our products and services, which is usually when the parts are shipped or delivered to the customer's premises. The Company recognizes monitoring service revenues over time, as the services are provided to customers. Revenue is measured as the amount of consideration we expect to receive in exchange for transferring goods or providing services. The transaction price will include estimates of variable consideration to the extent it is probable that a significant reversal of revenue recognized will not occur. Incidental items that are not significant in the context of the contract are recognized as expense. The Company collects certain taxes and fees on behalf of government agencies and remits such collections on a periodic basis. The taxes are collected from customers but are not included in net sales. Estimated returns are based on historical authorized returns. The Company often enters into agreements with its customers at the beginning of a given vehicle's expected production life. Once such agreements are entered into, it is the Company's obligation to fulfill the customers' purchasing requirements for the entire production life of the vehicle. These agreements are subject to potential renegotiation from time to time, which may affect product pricing. See Note 3 for additional disclosure.

Shipping and Handling Costs

Shipping and handling costs are included in COGS on the consolidated statements of operations.

2. Summary of Significant Accounting Policies – (continued)

Product Warranty and Recall Reserves

Amounts accrued for product warranty and recall claims are established based on the Company's best estimate of the amounts necessary to settle existing and future claims on products sold as of the balance sheet dates. These accruals are based on several factors including past experience, production changes, industry developments and various other considerations. Our estimate is based on historical trends of units sold and claim payment amounts, combined with our current understanding of the status of existing claims, forecasts of the resolution of existing claims, expected future claims on products sold and commercial discussions with our customers. The key factors in our estimate are the warranty period and the customer source. The Company can provide no assurances that it will not experience material claims or that it will not incur significant costs to defend or settle such claims beyond the amounts accrued. The current portion of the product warranty and recall reserve is included as a component of accrued expenses and other current liabilities on the consolidated balance sheets. Product warranty and recall includes $4,437 and $3,094 of a long-term liability at December 31, 2022 and 2021, respectively, which is included as a component of other long-term liabilities on the consolidated balance sheets.

The following provides a reconciliation of changes in the product warranty and recall reserve:

Year ended December 31,	**2022**	2021
Product warranty and recall at beginning of period	**$ 9,846**	$ 12,691
Accruals for warranties established during period	**9,917**	7,037
Aggregate changes in pre-existing liabilities due to claim developments	**1,502**	201
Settlements made during the period	**(7,351)**	(9,647)
Foreign currency translation	**(437)**	(436)
Product warranty and recall at end of period	**$ 13,477**	$ 9,846

Design and Development Costs

Expenses associated with the development of new products, and changes to existing products, other than capitalized software development costs, are charged to expense as incurred, and are included in the Company's consolidated statements of operations as a separate component of costs and expenses. These product development costs amounted to $65,296, $66,165 and $49,386 for the years ended December 31, 2022, 2021 and 2020, respectively, or 7.3%, 8.6% and 7.6% of net sales for these respective periods.

Research and Development Activities

The Company enters into research and development contracts with certain customers, which generally provide for reimbursement of costs. The Company incurred and was reimbursed for contracted research and development costs of $23,784, $15,849 and $19,302 for the years ended December 31, 2022, 2021 and 2020, respectively.

Share-Based Compensation

At December 31, 2022, the Company had two types of share-based compensation plans: (1) 2016 Long-Term Incentive Plan for employees and (2) the 2018 Amended and Restated Directors' Restricted Shares Plan, for non-employee directors. See Note 8 for additional details on share-based compensation plans.

Total compensation expense recognized as a component of SG&A expense on the consolidated statements of operations for share-based compensation arrangements was $5,942, $5,960 and $5,888 for the years ended December 31, 2022, 2021 and 2020, respectively. There was no share-based compensation expense capitalized in inventory during 2022, 2021 or 2020. Share-based compensation expense is calculated using estimated volatility and forfeitures based on historical data, future expectations and the expected term of the share-based compensation awards.

Financial Instruments and Derivative Financial Instruments

Financial instruments, including derivative financial instruments, held by the Company include cash and cash equivalents, accounts receivable, accounts payable, long-term debt, net investment hedge, interest rate swap agreement and foreign currency forward contracts. The carrying value of cash and cash equivalents, accounts receivable and accounts payable is considered to be representative of fair value because of the short maturity of these instruments. See Note 10 for fair value disclosures of the Company's financial instruments.

2. Summary of Significant Accounting Policies – (continued)

Common Shares Held in Treasury

The Company accounts for Common Shares held in treasury under the cost method (applied on a FIFO basis) and includes such shares as a reduction of total shareholders' equity.

(Loss) Earnings Per Share

Basic (loss) earnings per share was computed by dividing net (loss) income by the weighted-average number of Common Shares outstanding for each respective period. Diluted earnings per share was calculated by dividing net (loss) income by the weighted-average of all potentially dilutive Common Shares that were outstanding during the periods presented. However, for all periods in which the Company recognized a net loss, the Company did not recognize the effect of the potential dilutive securities as their inclusion would be anti-dilutive. Potential dilutive shares of 232,458 and 372,937 for the years ended December 31, 2022 and December 31, 2020, respectively, were excluded from diluted loss per share because the effect would have been anti-dilutive.

Actual weighted-average Common Shares outstanding used in calculating basic and diluted net (loss) income per share were as follows:

Year ended December 31,	2022	2021	2020
Basic weighted-average Common Shares outstanding	**27,258,456**	27,114,359	27,024,571
Effect of dilutive shares	**—**	301,175	—
Diluted weighted-average Common Shares outstanding	**27,258,456**	27,415,534	27,024,571

There were 767,593, 580,116 and 752,784 performance-based right to receive Common Shares outstanding at December 31, 2022, 2021 and 2020. These performance-based restricted and right to receive Common Shares are included in the computation of diluted earnings per share based on the number of Common Shares that would be issuable if the end of the year were the end of the contingency period.

Deferred Financing Costs, net

Deferred financing costs are amortized over the life of the related financial instrument using the straight-line method, which approximates the effective interest method. Deferred financing cost amortization and debt discount accretion, for the years ended December 31, 2022, 2021 and 2020 was $1,051, $643 and $506, respectively, and is included as a component of interest expense, net in the consolidated statements of operations. In 2020, the Company capitalized $1,086 of deferred financing costs as a result of entering into Amendment No. 1 to the Credit Facility. In 2022, the Company capitalized $484 of deferred financing costs as a result of entering into Amendment No. 3 to the Credit Facility. In connection with Amendment No. 3, the Company wrote off a portion of the previously recorded deferred financing costs of $365 in interest expense, net during the year ended December 31, 2022. See Note 5 to the consolidated financial statements for additional details regarding the Credit Facility and related deferred financing costs. The Company has elected to continue to present deferred financing costs within long-term assets in the Company's consolidated balance sheets. Deferred financing costs, net, were $996 and $1,563, as of December 31, 2022 and 2021, respectively.

Equity and Changes in Accumulated Other Comprehensive Loss by Component

Common Share Repurchase

On October 26, 2018, the Company's Board of Directors authorized the Company to repurchase up to $50,000 of Common Shares. Thereafter, on May 7, 2019, the Company entered into a Master Confirmation (the "Master Confirmation") and a Supplemental Confirmation, together with the Master Confirmation, the Accelerated Share Repurchase Agreement ("ASR Agreement"), with Citibank N.A. (the "Bank") to purchase Company Common Shares for a payment of $50,000 (the "Prepayment Amount"). Under the terms of the ASR Agreement, on May 7, 2019, the Company paid the Prepayment Amount to the Bank and received on May 8, 2019 an initial delivery of 1,349,528 Company Common Shares, which was approximately 80% of the total number of Company Common Shares expected to be repurchased under the ASR Agreement based on the closing price of the Company's Common Shares on May 7, 2019. These Common Shares became treasury shares and were recorded as a $40,000 reduction to shareholder's equity. The remaining $10,000 of the Prepayment Amount was recorded as a reduction to shareholders' equity as an unsettled forward contract indexed to our Common Shares.

2. Summary of Significant Accounting Policies – (continued)

On February 25, 2020, the Bank notified the Company that it terminated early its commitment pursuant the ASR Agreement and would deliver 364,604 Common Shares on February 27, 2020 based on the volume weighted average price of our Common Shares during the term set forth in the ASR Agreement. The Bank's notice of early termination and the subsequent delivery of Common Shares represented the final settlement of the Company's share repurchase program pursuant to the accelerated share repurchase agreement. These Common Shares became treasury shares and were recorded as a $10,000 reduction to shareholders' equity as Common Shares held in treasury with the offset of $10,000 to additional paid-in capital.

On February 24, 2020, the Company's Board of Directors authorized a new repurchase program of $50,000 for the repurchase of the Company's outstanding Common Shares over the next 18 months. The repurchases could be made from time to time in either open market transactions or in privately negotiated transactions. Repurchases could also be made under Rule 10b-18 plans, which permit Common Shares to be repurchased through pre-determined criteria.

On March 3, 2020, under the new repurchase program the Company entered into a 10b-18 Agreement Letter (the "10b-18 Agreement"), with the Bank to purchase Company Common Shares, under purchasing conditions of Rule 10b-18 promulgated under the Securities Exchange Act of 1934, as amended ("Rule 10b-18"), for up to $5,000. Under the terms of the 10b-18 Agreement, commencing March 3, 2020 and ending March 6, 2020, the Company received delivery of a total of 242,634 Company Common Shares for the amount of $4,995. These Common Shares became treasury shares and were recorded as a $4,995 reduction to shareholders' equity as Common Shares held in treasury. In April 2020, the Company announced that it was temporarily suspending the share repurchase program in response to uncertainty surrounding the duration and magnitude of the impact of COVID-19. This repurchase program authorization expired during the third quarter of 2021 and no additional shares were repurchased.

Accumulated Other Comprehensive Loss

Changes in accumulated other comprehensive loss for the years ended December 31, 2022 and 2021 were as follows:

	Foreign currency translation	Unrealized gain (loss) on derivatives	Total
Balance at January 1, 2022	**$ (97,203)**	**$ 179**	**$ (97,024)**
Other comprehensive (loss) income before reclassifications	**(6,171)**	**1,816**	**(4,355)**
Amounts reclassified from accumulated other comprehensive loss	**—**	**(1,763)**	**(1,763)**
Net other comprehensive (loss) income, net of tax	**(6,171)**	**53**	**(6,118)**
Balance at December 31, 2022	**$ (103,374)**	**$ 232**	**$ (103,142)**
Balance at January 1, 2021	$ (88,795)	$ (840)	$ (89,635)
Other comprehensive (loss) income before reclassifications	(8,408)	859	(7,549)
Amounts reclassified from accumulated other comprehensive loss	—	160	160
Net other comprehensive (loss) income, net of tax	(8,408)	1,019	(7,389)
Balance at December 31, 2021	$ (97,203)	$ 179	$ (97,024)

Reclassifications

Certain prior period amounts have been reclassified to conform to their 2022 presentation in the consolidated financial statements.

Recently Adopted Accounting Standards

In December 2019, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2019-12, "Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes." The amendments in this update remove certain exceptions of Topic 740 including: exception to the incremental approach for intraperiod tax allocation when there is a loss from continuing operations and income or gain from other items; exception to the requirement to recognize a deferred tax liability for equity method investments when a foreign subsidiary becomes an equity method investment; exception to the ability not to recognize a deferred tax liability for a foreign subsidiary when a foreign equity method investment becomes a subsidiary; exception to the general methodology for calculating income taxes in an interim period when a year-to-date loss exceeds the anticipated loss for the year. There are also additional areas of guidance in regards to: franchise and other

2. Summary of Significant Accounting Policies – (continued)

taxes partially based on income and the interim recognition of enactment of tax laws and rate changes. provisions of this ASU are effective for years beginning after December 15, 2020, with early adoption permitted. The Company adopted this standard prospectively as of January 1, 2020 using the modified retrospective basis. The impact of the adoption was a reduction to deferred tax liabilities and an increase to retained earnings of $13,750 on the consolidated balance sheet as of December 31, 2020. The adoption of this standard did not have an impact on the Company's consolidated results of operations and cash flows.

Recently Issued Accounting Standards Not Yet Adopted as of December 31, 2022

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." The guidance in ASU 2020-04 provides temporary optional expedient and exceptions to the guidance in U.S. GAAP on contract modifications and hedge accounting to ease the financial reporting burdens related to expected market transition from the London Interbank Offered Rate ("LIBOR") and other interbank offered rates to alternative reference rates, such as the Secured Overnight Financing Rate ("SOFR") (also known as the "reference rate reform"). The guidance allows companies to elect not to apply certain modification accounting requirements to contracts affected by the reference rate reform, if certain criteria are met. The guidance will also allow companies to elect various optional expedients which would allow them to continue to apply hedge accounting for hedging relationships affected by the reference rate reform, if certain criteria are met. The new standard was effective upon issuance and generally can be applied to applicable contract modifications through December 31, 2022. As of December 31, 2022, the Company has not yet had contracts modified due to rate reform.

3. Revenue

Revenue is recognized when obligations under the terms of a contract with our customer are satisfied; generally this occurs with the transfer of control of our products and services, which is usually when the parts are shipped or delivered to the customer's premises. Revenue is measured as the amount of consideration we expect to receive in exchange for transferring goods or providing services. The transaction price will include estimates of variable consideration to the extent it is probable that a significant reversal of revenue recognized will not occur. Incidental items that are not significant in the context of the contract are recognized as expense. The expected costs associated with our base warranties are recognized as expense when the products are sold. Customer returns only occur if products do not meet the specifications of the contract and are not connected to any repurchase obligations of the Company.

The Company does not have any financing components or significant payment terms as payment occurs shortly after the point of sale. Taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction that are collected by the Company from a customer are excluded from revenue. Amounts billed to customers related to shipping and handling costs are included in net sales in the consolidated statements of operations. Shipping and handling costs associated with outbound freight after control over a product is transferred to the customer are accounted for as a fulfillment cost and are included in cost of sales.

Revenue by Reportable Segment

Control Devices. Our Control Devices segment designs and manufactures products that monitor, measure or activate specific functions within a vehicle. This segment includes product lines such as actuators, sensors, switches and connectors. We sell these products principally to the automotive market in the North American and Asia Pacific regions. To a lesser extent, we also sell these products to the commercial vehicle and agricultural markets in the North American and Asia Pacific regions. Our customers included in these markets primarily consist of original equipment manufacturers ("OEM") and companies supplying components directly to the OEMs ("Tier 1 supplier").

Electronics. Our Electronics segment designs and manufactures driver information systems, vision and safety systems, connectivity and compliance products and electronic control units. These products are sold principally to the commercial vehicle market primarily through our OEM and aftermarket channels in the European, North American and Asia Pacific regions. The vision and safety systems are sold principally to the commercial vehicle and off-highway vehicle markets in the European and North American regions.

Stoneridge Brazil. Our Stoneridge Brazil segment ("SRB") primarily serves the South American region and specializes in the design, manufacture and sale of vehicle tracking devices and monitoring services, vehicle security alarms and convenience accessories, in-vehicle audio and infotainment devices, driver information systems and telematics solutions. Stoneridge Brazil sells its products through the aftermarket distribution channel, to factory authorized dealer installers, also referred to as original equipment services, directly to OEMs and through mass merchandisers. In addition, monitoring services and tracking devices are sold directly to corporate customers and individual consumers.

3. Revenue – (continued)

The following tables disaggregate our revenue by reportable segment and geographical location[(1)] for the periods ended December 31, 2022, 2021 and 2020:

	Control Devices			Electronics			Stoneridge Brazil			Consolidated		
Year ended December 31,	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**
Net Sales:												
North America	**$291,808**	$282,525	$261,967	**$153,120**	$104,419	$ 68,561	**$ —**	$ —	$ —	**$444,928**	$386,944	$330,528
South America	**—**	—	—	**—**	—	—	**52,230**	56,777	47,663	**52,230**	56,777	47,663
Europe	**—**	12,681	29,679	**347,129**	248,468	184,579	**—**	—	—	**347,129**	261,149	214,258
Asia Pacific	**50,788**	60,569	50,930	**4,848**	5,023	4,627	**—**	—	—	**55,636**	65,592	55,557
Total net sales	**$342,596**	$355,775	$342,576	**$505,097**	$357,910	$257,767	**$ 52,230**	$ 56,777	$ 47,663	**$899,923**	$770,462	$648,006

(1) Company sales based on geographic location are where the sale originates not where the customer is located.

Performance Obligations

For OEM and Tier 1 supplier customers, the Company typically enters into contracts to provide serial production parts that consist of a set of documents including, but not limited to, an award letter, master purchase agreement and master terms and conditions. For each production product, the Company enters into separate purchase orders that contain the product specifications and an agreed-upon price. The performance obligation does not exist until a customer release is received for a specific number of parts. The majority of the parts sold to OEM and Tier 1 supplier customers are customized to the specific customer, with the exception of camera monitoring systems (“CMS”) sold through our aftermarket channel that are common across all customers. The transaction price is equal to the contracted price per part and there is no expectation of material variable consideration in the transaction price. For most customer contracts, the Company does not have an enforceable right to payment at any time prior to when the parts are shipped or delivered to the customer; therefore, the Company recognizes revenue at the point in time it satisfies a performance obligation by transferring control of a part to the customer. Certain customer contracts contain an enforceable right to payment if the customer terminates the contract for convenience and therefore are recognized over time using the cost to complete input method.

Our aftermarket products are focused on meeting the demand for repair and replacement parts, compliance parts and accessories and are sold primarily to aftermarket distributors and mass retailers in our South American, European and North American markets. Aftermarket products have one type of performance obligation which is the delivery of aftermarket parts and spare parts. For aftermarket customers, the Company typically has standard terms and conditions for all customers. In addition, aftermarket products have alternative use as they can be sold to multiple customers. Revenue for aftermarket part production contracts is recognized at a point in time when the control of the parts transfer to the customer which is based on the shipping terms. Aftermarket contracts may include variable consideration related to discounts and rebates which is included in the transaction price upon recognizing the product revenue.

A small portion of the Company’s sales are comprised of monitoring services that include both monitoring devices and fees to individual, corporate, fleet and cargo customers in our Stoneridge Brazil segment. These monitoring service contracts are generally not capable of being distinct and are accounted for as a single performance obligation. We recognize revenue for our monitoring products and services contracts over the life of the contract. There is no variable consideration associated with these contracts. The Company has the right to consideration from a customer in the amount that corresponds directly with the value to the customer of the Company’s performance to date. Therefore, the Company recognizes revenue over time using the practical expedient ASC 606-10-55-18 in the amount the Company has a “right to invoice” rather than selecting an output or input method.

Contract Balances

The Company had no material contract assets, contract liabilities or capitalized contract acquisition costs as of December 31, 2022 or 2021.

4. Investments

Minda Stoneridge Instruments Ltd.

The Company had a 49% equity interest in MSIL, a company based in India that manufactures electronics, instrumentation equipment and sensors primarily for the motorcycle, commercial vehicle and automotive markets. As discussed in Note 2, the Company sold its equity interest in MSIL on December 30, 2021. The investment was accounted for under the equity method of accounting. The Company's investment in MSIL, recorded as a component of investments and other long-term assets, net on the consolidated balance sheet as of December 31, 2020 was $13,547. Equity in earnings of MSIL included in the consolidated statements of operations were $1,776 and $1,477 for the years ended December 31, 2021 and 2020, respectively.

PST Eletrônica Ltda.

The Company had a 74% controlling interest in Stoneridge Brazil from December 31, 2011 through May 15, 2017. On May 16, 2017, the Company acquired the remaining 26% noncontrolling interest in Stoneridge Brazil. As part of the acquisition agreement, the Company was required to pay additional earn-out consideration based on Stoneridge Brazil's financial performance in 2021. The final earn-out consideration of $8,272 was paid in the second quarter of 2022. See Note 10 for the fair value and foreign currency adjustments of the earn-out consideration for the current and prior periods.

Stoneridge Brazil had dividends payable to former noncontrolling interest holders of Brazilian real ("R$") 24,154 ($6,010) as of December 31, 2019. These dividends were paid in January 2020.

Other Investments

In December 2018, the Company entered into an agreement to make a $10,000 investment in a fund ("Autotech Fund II") managed by Autotech Ventures ("Autotech"), a venture capital firm focused on ground transportation technology which is accounted for under the equity method of accounting. The Company's $10,000 investment in the Autotech Fund II will be contributed over the expected ten year life of the fund. The Company contributed $950 to the Autotech Fund II during the year ended December 31, 2022. The Company contributed $3,450 to and received $251 in distributions from the Autotech Fund II during the year ended December 31, 2021. The Company has a 6.5% interest in Autotech Fund II. The Company recognized loss (earnings) of $823, $(1,882) and $(59) during the years ended December 31, 2022, 2021 and 2020, respectively. The Autotech Fund II investment recorded in investments and other long-term assets, net in the consolidated balance sheets was $8,644 and $8,517 as of December 31, 2022 and 2021, respectively.

5. Debt

	December 31, 2022	December 31, 2021	Interest rates at December 31, 2022	Maturity
Revolving Credit Facility				
Credit Facility	**$ 167,802**	$ 163,957	**6.29 %**	**June 2024**
Debt				
Sweden short-term credit line	—	2,099		
Suzhou short-term credit line	**1,450**	3,149	**3.70 %**	**June 2023**
Total debt	**1,450**	5,248		
Less: current portion	**(1,450)**	(5,248)		
Total long-term debt, net	**$ —**	$ —		

Revolving Credit Facility

On June 5, 2019, the Company entered into the Fourth Amended and Restated Credit Agreement (the "Credit Facility"). The Credit Facility provided for a $400,000 senior secured revolving credit facility (which, as described below in the discussion of Amendment No. 3 to the Credit Facility was amended to be a $300,000 credit commitment) and it replaced and superseded the Third Amended and Restated Credit Agreement that provided for a $300,000 revolving credit facility. The Credit Facility had an accordion feature which allowed the Company to increase the availability by up to $150,000 upon the satisfaction of certain conditions and includes a letter of credit subfacility, swing line subfacility and multicurrency subfacility. The Credit Facility has a termination date of June 5, 2024. Borrowings under the Credit Facility bear interest at either the Base Rate or the LIBOR rate, at the Company's option, plus the applicable margin as set forth in the Credit Facility. The Credit Facility contains certain financial covenants that require the Company to maintain less than a maximum leverage ratio and more than a minimum interest coverage ratio.

5. Debt – (continued)

The Credit Facility contains customary affirmative covenants and representations. The Credit Facility also contains customary negative covenants, which, among other things, are subject to certain exceptions, including restrictions on (i) indebtedness, (ii) liens, (iii) liquidations, mergers, consolidations and acquisitions, (iv) disposition of assets or subsidiaries, (v) affiliate transactions, (vi) creation or ownership of certain subsidiaries, partnerships and joint ventures, (vii) continuation of or change in business, (viii) restricted payments, (ix) prepayment of subordinated and junior lien indebtedness, (x) restrictions in agreements on dividends, intercompany loans and granting liens on the collateral, (xi) loans and investments, (xii) sale and leaseback transactions, (xiii) changes in organizational documents and fiscal year and (xiv) transactions with respect to bonding subsidiaries. The Credit Facility contains customary events of default, subject to customary thresholds and exceptions, including, among other things, (i) non-payment of principal and non-payment of interest and fees, (ii) a material inaccuracy of a representation or warranty at the time made, (iii) a failure to comply with any covenant, subject to customary grace periods in the case of certain affirmative covenants, (iv) cross default of other debt, final judgments and other adverse orders in excess of $30,000, (v) any loan document shall cease to be a legal, valid and binding agreement, (vi) certain uninsured losses or proceedings against assets with a value in excess of $30,000, (vii) ERISA events, (viii) a change of control, or (ix) bankruptcy or insolvency proceedings.

Due to the expected impact of the COVID-19 pandemic on the Company’s end-markets and the resulting expected financial impacts to the Company, on June 26, 2020, the Company entered into a Waiver and Amendment No. 1 to the Fourth Amended and Restated Credit Agreement (“Amendment No. 1”). Amendment No. 1 provided for certain covenant relief and restrictions during the “Covenant Relief Period” (the period ending on the date that the Company delivered a compliance certificate for the quarter ending June 30, 2021 in form and substance satisfactory to the administrative agent). The Covenant Relief Period ended on August 14, 2021. During the Covenant Relief Period:

- the maximum net leverage ratio was suspended;
- the calculation of the minimum interest coverage ratio excluded second quarter 2020 financial results effective for the quarters ended September 30, 2020 through March 31, 2021;
- the minimum interest coverage ratio of 3.50 was reduced to 2.75 and 3.25 for the quarters ended December 31, 2020 and March 31, 2021, respectively;
- the Company’s liquidity could not be less than $150,000;
- the Company’s aggregate amount of cash and cash equivalents could not exceed $130,000;
- there were certain restrictions on Restricted Payments (as defined); and
- a Permitted Acquisition (as defined) could not be consummated unless otherwise approved in writing by the required lenders.

Amendment No. 1 changed the leverage based LIBOR pricing grid through the maturity date of the Credit Facility and also provides for a LIBOR floor of 50 basis points on outstanding borrowings excluding any Specified Hedge Borrowings (as defined) which remain subject to a LIBOR floor of 0 basis points. As of December 31, 2022, Specified Hedge Borrowings were $50,000.

The Company capitalized $1,086 of deferred financing costs as a result of entering into Amendment No. 1.

On December 17, 2021, the Company entered into Amendment No. 2 to the Fourth Amended and Restated Credit Agreement (“Amendment No. 2”). Amendment No. 2 implemented non-LIBOR interest reference rates for borrowings in euros and British pounds.

Due to the ongoing impacts of the COVID-19 pandemic and supply chain disruptions on the Company’s end-markets and the resulting financial impacts on the Company, on February 28, 2022, the Company entered into Amendment No. 3 to the Fourth Amended and Restated Credit Agreement (“Amendment No. 3”). Amendment No. 3 reduced the total revolving credit commitments from $400.0 million to $300.0 million and the maximum permitted amount of swing loans from $40.0 million to $30.0 million. Amendment No. 3 provides for certain financial covenant relief and additional covenant restrictions during the “Specified Period” (the period from February 28, 2022 until the date that the Company delivers a compliance certificate for the quarter ending March 31, 2023 in form and substance satisfactory to the administrative agent). During the Specified Period:

- the maximum net leverage ratio was changed to 4.00 to 1.00 for the year ended December 31, 2021, suspended for the quarters ending March 31, 2022 through September 30, 2022 and could not exceed 4.75 to 1.00 for the quarter ended December 31, 2022 or 3.50 to 1.00 for the quarter ended March 31, 2023;
- the minimum interest coverage ratio of 3.50 was reduced to 2.50 for the quarter ended March 31, 2022, 2.25 for the quarter ended June 30, 2022 and 3.00 for the quarters ended September 30, 2022 and December 31, 2022;
- an additional condition to drawing on the Credit Facility has been added that restricts borrowings if the Company’s total of 100% of domestic and 65% of foreign cash and cash equivalents exceeds $70.0 million;

5. Debt – (continued)

- there are certain additional restrictions on Restricted Payments (as defined); and
- a Permitted Acquisition (as defined) may not be consummated unless the net leverage ratio is below 3.50 to 1.00 during the Specified Period.

Amendment No. 3 changes the leverage based LIBOR pricing grid through the maturity date and also retains a LIBOR floor of 50 basis points on outstanding borrowings excluding any Specified Hedge Borrowings (as defined) which remain subject to a LIBOR floor of 0 basis points.

Amendment No. 3 also incorporates hardwired mechanics to permit a future replacement of LIBOR as the interest reference rate without lender consent.

The Company capitalized $484 of deferred financing costs as a result of entering into Amendment No. 3. In connection with Amendment No. 3, the Company wrote off a portion of the previously recorded deferred financing costs of $365 in interest expense, net during the year ended December 31, 2022.

Due to continued supply chain disruptions and macroeconomic challenges on the Company's end-markets and the resulting financial impacts on the Company, on March 1, 2023, the Company entered into Amendment No. 4 to the Fourth Amended and Restated Credit Agreement ("Amendment No. 4"). Amendment No. 4 provides for certain financial covenant relief and additional covenant restrictions during the "Amendment No. 4 Specified Period" (the period from March 1, 2023 until the date that the Company delivers a compliance certificate for the quarter ending September 30, 2023 in form and substance satisfactory to the administrative agent). During the Amendment No. 4 Specified Period:

- the maximum net leverage ratio was changed to 4.75 to 1.00 for the quarter ended March 31, 2023 and 4.25 to 1.00 for the quarter ended June 30, 2023;
- the minimum interest coverage ratio of 3.50 was reduced to 3.00 for the quarters ended March 31, 2023 and June 30, 2023;
- drawing on the Credit Facility continues to be restricted if the Company's total of 100% of domestic and 65% of foreign cash and cash equivalents exceeds $70.0 million;
- there continue to be certain additional restrictions on Restricted Payments (as defined); and
- consistent with Amendment No. 3, a Permitted Acquisition (as defined) may not be consummated unless the net leverage ratio is below 3.50 to 1.00 during the Amendment No. 4 Specified Period.

Borrowings outstanding on the Credit Facility were $167,802 and $163,957 at December 31, 2022 and 2021, respectively.

As a result of the amendments, the Company was in compliance with all credit facility covenants at December 31, 2022 and 2021.

The Company also had outstanding letters of credit of $1,626 and $1,698 at December 31, 2022 and 2021, respectively.

Debt

The Company's wholly-owned subsidiary located in Stockholm, Sweden, has an overdraft credit line which allows overdrafts on the subsidiary's bank account up to a daily maximum level of 20,000 Swedish krona, or $1,922 and $2,213 at December 31, 2022 and 2021, respectively. At December 31, 2022 there were no borrowings outstanding on this overdraft credit line. At December 31, 2021, there was 18,973 Swedish krona, or $2,099, outstanding on this overdraft credit line. During the year ended December 31, 2022, the subsidiary borrowed 380,652 Swedish krona, or $36,574, and repaid 399,625 Swedish krona, or $38,397.

The Company's wholly-owned subsidiary located in Suzhou, China (the "Suzhou subsidiary"), has lines of credit (the "Suzhou credit line") which allow up to a maximum borrowing level of 20,000 Chinese yuan, or $2,900 at December 31, 2022 and 50,000 Chinese yuan, or $7,871 at December 31, 2021. At December 31, 2022 and 2021 there was $1,450 and $3,149, respectively, in borrowings outstanding on the Suzhou credit line with weighted-average interest rates of 3.70% and 4.15%, respectively. The Suzhou credit line is included on the consolidated balance sheet within current portion of debt. In addition, the Suzhou subsidiary has a bank acceptance draft line of credit which facilitates the extension of trade payable payment terms by 180 days. The bank acceptance draft line of credit allows up to a maximum borrowing level of 60,000 Chinese yuan, or $8,699 at December 31, 2022 and 15,000 Chinese yuan, or $2,361, at December 31, 2021. There was $1,998 and $2,182 utilized on the Suzhou bank acceptance draft line of credit at December 31, 2022 and 2021, respectively. The Suzhou bank acceptance draft line of credit is included on the consolidated balance sheet within accounts payable.

5. Debt – (continued)

At December 31, 2022, the future maturities of the Credit Facility and debt were as follows:

Year ended December 31,	
2023	**$ 1,450**
2024	**167,802**
2025	**—**
2026	**—**
2027	**—**
Total	**$ 169,252**

6. Income Taxes

The income tax expense (benefit) included in the accompanying consolidated statement of operations represents federal, state and foreign income taxes. The components of (loss) income before income taxes and the provision (benefit) for income taxes consist of the following:

Year ended December 31,	2022	2021	2020
(Loss) income before income taxes:			
Domestic	**$ (11,944)**	$ 11,596	$ (25,403)
Foreign	**1,248**	840	14,679
Total (loss) income before income taxes	**$ (10,696)**	$ 12,436	$ (10,724)
Provision (benefit) for income taxes:			
Current:			
Federal	**$ 435**	$ —	$ (3)
State and foreign	**8,035**	9,542	5,182
Total current expense	**$ 8,470**	$ 9,542	$ 5,179
Deferred:			
Federal	**$ (3,282)**	$ 714	$ (8,512)
State and foreign	**(1,828)**	(1,226)	559
Total deferred benefit	**(5,110)**	(512)	(7,953)
Total income tax expense (benefit)	**$ 3,360**	$ 9,030	$ (2,774)

6. Income Taxes – (continued)

A summary of the differences between the statutory federal income tax rate of 21.0% and the consolidated provision for income taxes is shown below.

Year ended December 31,	2022	2021	2020
Statutory U.S. federal income tax (benefit) provision	**$ (2,246)**	$ 2,612	$ (2,252)
State income taxes, net of federal tax benefit	**495**	942	(647)
Tax credits and incentives	**(4,060)**	(3,316)	(2,791)
Foreign tax rate differential	**910**	730	90
Impact of change in enacted tax law	**300**	227	1,108
Change in valuation allowance	**5,248**	5,070	2,174
U.S. tax on foreign earnings	**1,376**	(347)	(519)
Tax impact of unconsolidated subsidiaries	**395**	1,828	(323)
Unremitted earnings on foreign subsidiaries	**(898)**	835	86
Non-deductible expenses	**657**	740	498
Compensation and benefits	**774**	358	362
Other	**409**	(649)	(560)
Provision (benefit) for income taxes	**$ 3,360**	$ 9,030	$ (2,774)

Significant components of the Company's deferred tax assets and liabilities were as follows:

As of December 31,	2022	2021
Deferred tax assets:		
Inventories	**$ 1,479**	$ 1,692
Employee compensation and benefits	**2,078**	2,420
Accrued liabilities and reserves	**5,862**	4,486
Property, plant and equipment	**2,794**	751
Tax loss carryforwards	**16,997**	13,479
Tax credit carryforwards	**20,802**	24,173
Capitalized research and development	**4,785**	—
Lease liability	**2,817**	3,712
Other	**1,213**	647
Gross deferred tax assets	**58,827**	51,360
Less: Valuation allowance	**(18,496)**	(14,516)
Deferred tax assets less valuation allowance	**40,331**	36,844
Deferred tax liabilities:		
Property, plant and equipment	**(2,038)**	(1,235)
Intangible assets	**(10,056)**	(11,767)
Right-of-use-assets	**(2,595)**	(3,493)
Other	**(4,991)**	(5,021)
Gross deferred tax liabilities	**(19,680)**	(21,516)
Net deferred tax assets	**$ 20,651**	$ 15,328

6. Income Taxes – (continued)

The balance sheet classification of our net deferred tax asset is shown below:

Year ended December 31,	2022	2021
Long-term deferred tax assets	**$ 29,149**	$ 26,034
Long-term deferred tax liabilities	**(8,498)**	(10,706)
Net deferred tax assets	**$ 20,651**	$ 15,328

The Company has recognized deferred taxes related to foreign withholding taxes and the expected foreign currency impact upon repatriation from foreign subsidiaries not considered indefinitely reinvested. At December 31, 2022, the aggregate undistributed earnings of our foreign subsidiaries amounted to $36,155.

Based on the Company's review of both positive and negative evidence regarding the realizability of deferred tax assets at December 31, 2022, a valuation allowance is recorded against certain deferred tax assets based upon the conclusion that it was more likely than not they would not be realized. Certain deferred tax assets are dependent on future taxable income to be realized.

The Company has net operating loss carry forwards of $48,430 and $73,553 for state and foreign tax jurisdictions, respectively. The state net operating losses expire from 2023-2041 and the foreign net operating losses expire from 2023-2027 or have indefinite lives. The Company has general business and foreign tax credit carry forwards of $19,055, $1,083 and $664 for U.S. federal, state and foreign jurisdictions, respectively. The U.S. federal general business credits, if unused, begin to expire in 2026, and the state and foreign tax credits expire at various times.

The following is a reconciliation of the Company's total gross unrecognized tax benefits:

	2022	2021	2020
Balance as of January 1	**$ 2,891**	$ 3,449	$ 3,449
Tax positions related to the current year:			
Additions	**—**	—	—
Tax positions related to the prior years:			
Reductions	**—**	—	—
Expirations of statutes of limitation	**(346)**	(558)	—
Balance as of December 31	**$ 2,545**	$ 2,891	$ 3,449

The Company has classified its uncertain tax positions as a reduction to non-current deferred income tax assets. If the Company's tax positions are sustained by the taxing authorities in favor of the Company, the amount that would affect the Company's effective tax rate is approximately $2,545 and $2,891 at December 31, 2022 and 2021, respectively.

The Company classifies interest expense and, if applicable, penalties which could be assessed related to unrecognized tax benefits as a component of income tax expense. For the years ended December 31, 2022, 2021 and 2020, the Company recognized no expense related to interest and penalties.

On August 16, 2022, the U.S. enacted the Inflation Reduction Act of 2022, which, among other things, implemented a 15% minimum tax on financial statement income of certain large corporations, a 1% excise tax on net stock repurchases and several tax incentives to promote clean energy. Based on its current analysis of the provisions, the Company does not believe this legislation will have a material impact on our results of operations, but the Company is continuing to evaluate the implications.

6. Income Taxes – (continued)

The Company conducts business globally and, as a result, files income tax returns in the U.S. federal jurisdiction and various state and foreign jurisdictions. In the normal course of business, the Company is subject to examination by taxing authorities throughout the world. The following table summarizes the open tax years for each jurisdiction:

Jurisdiction	Open Tax Years
U.S. Federal	2017-2022
Argentina	2017-2022
Brazil	2015-2022
China	2018-2022
France	2019-2022
Germany	2019-2022
Italy	2017-2022
Mauritius	2019-2022
Mexico	2017-2022
Netherlands	2018-2022
Sweden	2017-2022
United Kingdom	2021-2022

7. Leases

Lessee

The Company has various cancelable and noncancelable leased assets within all segments, which include certain properties, vehicles and equipment of which are all classified as operating leases. Payments for these leases are generally fixed; however, several of our leases are composed of variable lease payments including index-based payments or inflation-based payments based on a Consumer Price Index ("CPI") or other escalators. Our lease agreements do not contain any material residual value guarantees or material restrictive covenants.

Under Leases (Topic 842), the Company determines an arrangement is a lease when we have the right to control the use of identified property, plant or equipment for a period of time in exchange for consideration. Other than the leases that we have already identified, we are not aware of any material leases that have not yet commenced. For leases that have a calculated lease term of 12 months or less and do not include an option to purchase the underlying asset which we are reasonably certain to exercise, the Company has made the policy election to not apply the recognition requirements in Leases (Topic 842). For these short-term leases, the Company recognizes the lease payments in profit or loss on a straight-line basis over the lease term and variable lease payments in the period in which the obligation for those payments is incurred.

For the leases identified, right of use ("ROU") assets and lease liabilities are recognized at commencement date based on the present value of lease payments over the lease term. As most of our leases do not provide an implicit rate, the Company used the calculated incremental borrowing rate based on the information available at the implementation date, and going forward at the commencement date, in determining the present value of lease payments. The Company will use the implicit rate when readily determinable. The ROU asset includes the carrying amount of the lease liability, plus (minus) any prepaid (accrued) lease payments, less the unamortized balance of lease incentives received. The Company's lease terms may include options to extend or terminate the lease and such options are included in the lease term when it is reasonably certain that the Company will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term. Lease expenses are recognized within COGS, SG&A and D&D costs in the consolidated statements of operations. The Company has made the policy election to account for lease and non-lease components as a single lease component for all of its leases.

7. Leases – (continued)

The components of lease expense are as follows:

Year ended December 31,	2022	2021
Operating lease cost	**$ 4,736**	$ 5,581
Short-term lease cost	**958**	843
Variable lease cost	**585**	553
Total lease cost	**$ 6,279**	$ 6,977

Balance sheet information related to leases is as follows:

As of December 31,	2022	2021
Assets:		
Operating lease right-of-use assets	**$ 13,762**	$ 18,343
Liabilities:		
Operating lease current liability, included in other current liabilities	**$ 3,938**	$ 4,203
Operating lease long-term liability	**10,594**	14,912
Total leased liabilities	**$ 14,532**	$ 19,115

Maturities of operating lease liabilities are as follows:

As of December 31,	2022
2023	**$ 4,357**
2024	**3,926**
2025	**3,226**
2026	**2,039**
2027	**1,020**
Thereafter	**1,979**
Total future minimum lease payments	**$ 16,547**
Less: imputed interest	**(2,015)**
Total lease liabilities	**$ 14,532**

Weighted-average remaining lease term and discount rate for operating leases is as follows:

As of December 31,	2022	2021
Weighted-average remaining lease term (in years)	**4.64**	5.44
Weighted-average discount rate	**5.67 %**	5.56 %

Other information:

Year ended December 31,	2022	2021
Operating cash flows:		
Cash paid related to operating lease obligations	**$ 4,649**	$ 5,092
Non-cash activity:		
Right-of-use assets obtained in exchange for operating lease obligations	**$ 594**	$ 4,596

7. Leases – (continued)

Lessor

The Company, as lessor, entered into a lease with a third-party lessee effective July 1, 2020, of its Canton, Massachusetts facility. In conjunction with the Canton restructuring plan outlined in Note 12, the Company ceased operations at this facility in March 2020. As discussed in Note 2, the Company sold the Canton facility and assigned the lease to the buyer on June 17, 2021. The Company recognized lease income on a straight-line basis over the lease term until the time of the sale. The Company recognized, in its Control Devices segment, operating and variable lease income from leases in our consolidated statements of operations of $602 and $199, respectively, for the year ended December 31, 2021 and $674 and $199, respectively for the year ended December 31, 2020.

8. Share-Based Compensation Plans

In May 2016, the Company's shareholders approved the 2016 Long-Term Incentive Plan (the "2016 Plan") and reserved 1,800,000 Common Shares (of which the maximum number of Common Shares which may be issued). In May 2020, the Company's shareholders approved an amendment to the 2016 Plan to increase by 1,100,000 the number of Common Shares authorized for issuance. The amendment to the 2016 Plan brought the total Common Shares available for issuance to 2,900,000. Under the 2016 Plan, as of December 31, 2022, the Company has granted 2,905,947 share units, of which 1,194,460 were time-based with cliff vesting using the straight-line method and 1,711,487 were performance-based. As of December 31, 2022, 871,369 of the shares granted have been forfeited. There are 865,422 shares available to be granted under the 2016 Plan at December 31, 2022.

In 2022, 2021 and 2020, pursuant to the 2016 Plan, the Company granted time-based share units and performance-based performance shares. The majority of the time-based share units cliff vest three years after the date of grant. The performance-based performance shares vest and are no longer subject to forfeiture upon the recipient remaining an employee of the Company for three years from the date of grant and, for a portion of the annual awards, upon the Company attaining certain targets of performance measured against a peer group's three year performance in terms of total shareholder return and, for the remaining portion of the annual awards, upon achieving certain earnings per share targets and return on invested capital targets established by the Company during the performance period of the award.

The allocation of performance shares granted between total shareholder return, earnings per share and return on invested capital were as follows for the years ended December 31:

	2022	2021	2020
Total shareholder return	**45 %**	45 %	45 %
Earnings per share	**36 %**	36 %	36 %
Return on invested capital	**18 %**	18 %	18 %

In April 2005, the Company adopted the Directors' Restricted Shares Plan (the "Director Share Plan") and reserved 500,000 Common Shares for issuance under the Director Share Plan. In May 2013, shareholders approved an amendment to the Director Share Plan to increase the number of shares for issuance by 200,000 to 700,000. In May 2018, the Company's shareholders approved the 2018 Amended and Restated Director's Restricted Shares Plan (the "2018 Director Share Plan") to increase the number of shares for issuance by 150,000 to 850,000. In May 2022, the Company's shareholders approved Amendment No. 1 to the 2018 Director Share Plan to increase the number of shares for issuance by 100,000 to 950,000. Under the 2018 Director Share Plan, the Company has cumulatively issued 797,011 restricted Common Shares. As such, there are 152,989 restricted Common Shares available to be issued on December 31, 2022. Shares issued annually under the 2018 Director Share Plan are no longer subject to forfeiture one year after the date of grant.

Share Units and Performance Shares

The fair value of the non-vested time-based share unit awards was calculated using the market value of the Common Shares on the date of issuance. The weighted-average grant-date fair value of time-based share units granted during the years ended December 31, 2022, 2021 and 2020 was $18.71, $35.13, and $17.78, respectively.

8. Share-Based Compensation Plans – (continued)

The fair value of the non-vested performance-based performance share awards with a performance condition requiring the Company to obtain certain earnings per share and return on invested capital targets were estimated using the market value of the shares on the date of grant. The fair value of non-vested performance-based performance share awards with a market condition requiring the Company to obtain a total shareholder return target relative to a group of peer companies was estimated using a Monte Carlo valuation model taking into consideration the probability of achievement using multiple simulations. The awards that use earnings per share and return on invested capital as the performance target are expensed beginning when it is probable that the Company will meet the underlying performance condition.

A summary of the status of the Company's non-vested share units and performance shares as of December 31, 2022 and the changes during the year then ended, are presented below:

	Time-based awards		Performance-based awards	
	Share units	Weighted-average grant date fair value	Performance shares	Weighted-average grant date fair value
Non-vested as of January 1, 2022	**450,331**	**$ 26.55**	**578,985**	**$ 28.42**
Granted	**335,044**	**$ 18.71**	**361,982**	**$ 20.64**
Vested	**(168,222)**	**$ 27.12**	**(2,317)**	**$ 22.70**
Forfeited or cancelled	**(46,350)**	**$ 20.17**	**(171,058)**	**$ 31.75**
Non-vested as of December 31, 2022	**570,803**	**$ 22.29**	**767,592**	**$ 24.03**

A summary of the status of the Company's non-vested share units and performance shares as of December 31, 2021 and the changes during the year then ended, are presented below:

	Time-based awards		Performance-based awards	
	Share units	Weighted-average grant date fair value	Performance shares	Weighted-average grant date fair value
Non-vested as of January 1, 2021	502,728	$ 21.89	752,783	$ 24.32
Granted	202,599	$ 35.13	215,936	$ 43.34
Vested	(159,755)	$ 22.52	(126,242)	$ 29.61
Forfeited or cancelled	(95,241)	$ 26.96	(263,492)	$ 28.35
Non-vested as of December 31, 2021	450,331	$ 26.55	578,985	$ 28.42

As of December 31, 2022 total unrecognized compensation cost related to non-vested time-based share units granted was $5,592. That cost is expected to be recognized over a weighted-average period of 1.15 years.

For the years ended December 31, 2022, 2021 and 2020, the total fair value of awards vested was $3,334, $9,637 and $5,288, respectively.

As of December 31, 2022, there was no unrecognized compensation cost related to non-vested performance shares granted that are probable to vest. As noted above, the Company has issued and outstanding performance-based share units that use different performance targets (total shareholder return, earnings per share and return on invested capital).

The excess tax deficiency (benefit) realized from the vesting of share units and performance shares of the share-based payment arrangements was $543, $(563) and $(46) for the years ended December 31, 2022, 2021 and 2020, respectively.

9. Employee Benefit Plans

The Company has certain defined contribution profit sharing and 401(k) plans covering substantially all of its employees in the United States and Europe. The Company provides matching contributions to the Company's 401(k) plan. Company contributions are generally discretionary. For the years ended December 31, 2022, 2021 and 2020, expenses related to these plans amounted to $4,883, $5,082 and $3,812, respectively.

10. Financial Instruments and Fair Value Measurements

Financial Instruments

A financial instrument is cash or a contract that imposes an obligation to deliver or conveys a right to receive cash or another financial instrument. The carrying values of cash and cash equivalents, accounts receivable and accounts payable are considered to be representative of fair value because of the short maturity of these instruments. The fair value of debt approximates the carrying value of debt, due to the variable interest rate on the Credit Facility and the maturity of the remaining outstanding debt.

Derivative Instruments and Hedging Activities

On December 31, 2022, the Company had no open foreign currency forward contracts. The Company used foreign currency forward contracts solely for hedging and not for speculative purposes during 2022 and 2021. Management believes that its use of these instruments to reduce risk is in the Company's best interest. The counterparties to these financial instruments have been financial institutions with investment grade credit ratings.

Foreign Currency Exchange Rate Risk

The Company conducts business internationally and, therefore, is exposed to foreign currency exchange rate risk. The Company uses derivative financial instruments as cash flow hedges and net investment hedges to manage its exposure to fluctuations in foreign currency exchange rates by reducing the effect of such fluctuations on foreign currency denominated intercompany transactions, inventory purchases and other foreign currency exposures.

Net Investment Hedges

During 2021, the Company entered into two cross-currency swaps, designated as net investment hedges, with notional values of $25,000 each that were scheduled to mature in August 2026 and August 2028. These swaps hedged a portion of the net investment in a euro-denominated subsidiary. As a result of favorable market conditions, on May 5, 2022, the Company unwound the two net investment hedges and recognized a net gain of $3,716, which was recorded on the Company's consolidated statement of operations as a component of other expense, net for the second quarter ended June 30, 2022. The cash received from the settlement of these swaps of $3,820 was classified in investing activities in the consolidated statement of cash flows. In the fourth quarter ended December 31, 2022, the Company determined it had incorrectly recognized the net gain in the consolidated statement of operations and reclassified the net gain of $3,716 to other comprehensive (loss) income, net of tax and accumulated other comprehensive loss. This item would have increased the loss for the three-months ended June 30, 2022, six-months ended June 30, 2022 and nine-months ended September 30, 2022 by $0.10 per share and recording the item in the three-months ended December 31, 2022 decreased the income per share by $0.10. The Company assessed the materiality of this matter from a qualitative and quantitative perspective and concluded that the impact of the error is not material to the current or previous quarterly results.

The Company elected to assess hedge effectiveness of the net investment hedges under the spot method. Accordingly, periodic changes in the fair value of the derivative instruments attributable to factors other than spot exchange rate variability were excluded from the measurement of hedge ineffectiveness and reported directly in earnings each reporting period. The change in fair value of these derivative instruments was recorded in cumulative translation adjustment, which is a component of accumulated other comprehensive loss in the consolidated balance sheets. The Company had no outstanding net investment hedges as of December 31, 2022.

Cash Flow Hedges

The Company entered into foreign currency forward contracts to hedge the Mexican peso currency in 2022 and 2021. These forward contracts were executed to hedge forecasted transactions and have been accounted for as cash flow hedges. As such, gains and losses on derivatives qualifying as cash flow hedges are recorded in accumulated other comprehensive loss, to the extent that hedges are effective, until the underlying transactions are recognized in earnings. Unrealized amounts in accumulated other comprehensive loss will fluctuate based on changes in the fair value of hedge derivative contracts at each reporting period. The cash flow hedges were highly effective. The effectiveness of the transactions has been and will be measured on an ongoing basis using regression analysis and forecasted future purchases of the currency.

In certain instances, the foreign currency forward contracts may not qualify for hedge accounting or are not designated as hedges and, therefore, are marked-to-market with gains and losses recognized in the Company's consolidated statements of operations as a component of other expense, net. During 2022, all of the Company's foreign currency forward contracts were designated as cash flow hedges.

10. Financial Instruments and Fair Value Measurements – (continued)

The Company's foreign currency forward contracts offset a portion of the gains and losses on the underlying foreign currency denominated transactions as follows:

U.S. dollar-denominated Foreign Currency Forward Contracts – Cash Flow Hedges

The Company entered into U.S. dollar-denominated currency contracts on behalf of one of its European Electronics subsidiaries, whose functional currency is the euro, and expired ratably on a monthly basis during 2020. There were no such contracts at December 31, 2022 or 2021.

Mexican peso-denominated Foreign Currency Forward Contracts – Cash Flow Hedges

The Company held Mexican peso-denominated foreign currency forward contracts which expired ratably on a monthly basis from January 2022 to December 2022. The notional amounts at December 31, 2022 and 2021 related to Mexican peso-denominated foreign currency forward contracts were $0 and $23,923, respectively.

The Company evaluated the effectiveness of the Mexican peso-denominated foreign currency forward contracts held as of December 31, 2021 and the year then ended, and concluded that the hedges were highly effective.

Interest Rate Risk

Interest Rate Risk – Cash Flow Hedge

On February 18, 2020, the Company entered into a floating-to-fixed interest rate swap agreement (the "Swap") with a notional amount of $50,000 to hedge its exposure to interest payment fluctuations on a portion of its Credit Facility borrowings. The Swap was designated as a cash flow hedge of the variable interest rate obligation under the Company's Credit Facility that has a current balance of $167,802 at December 31, 2022. Accordingly, the change in fair value of the Swap is recognized in accumulated other comprehensive loss. The Swap agreement requires monthly settlements on the same days that the Credit Facility interest payments are due and has a maturity date of March 10, 2023, which is prior to the Credit Facility maturity date of June 4, 2024. Under the Swap terms, the Company pays a fixed interest rate and receives a floating interest rate based on the one-month LIBOR, with a floor. The critical terms of the Swap are aligned with the terms of the Credit Facility, resulting in no hedge ineffectiveness. The difference between amounts to be received and paid under the Swap is recognized as a component of interest expense, net on the consolidated statements of operations. The swap settlements (reduced) increased interest expense, net by $(156), $651 and $433 for the years ended December 31, 2022, 2021 and 2020, respectively.

The notional amounts and fair values of derivative instruments in the consolidated balance sheets were as follows:

	Notional amounts [(A)]		Prepaid expenses and other current assets		Accrued expenses and other current liabilities	
As of December 31,	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
Derivatives designated as hedging instruments:						
Cash flow hedges:						
Forward currency contracts	**$ —**	$ 23,923	**$ —**	$ 730	**$ —**	$ —
Interest rate swap	**$ 50,000**	$ 50,000	**$ 294**	$ —	**$ —**	$ 503
Net investment hedges:						
Cross-currency swaps	**$ —**	$ 50,000	**$ —**	$ 1,450	**$ —**	$ —

(A) Notional amounts represent the gross contract of the derivatives outstanding in U.S. dollars.

10. Financial Instruments and Fair Value Measurements – (continued)

Gross amounts recorded for the cash flow hedges in other comprehensive (loss) income and in net (loss) income for the years ended December 31 were as follows:

	Gain (loss) recorded in other comprehensive (loss) income			Gain (loss) reclassified from other comprehensive (loss) income into net (loss) income [A]		
	2022	**2021**	**2020**	**2022**	**2021**	**2020**
Derivatives designated as cash flow hedges:						
Forward currency contracts	**$ 1,346**	$ 923	$ (1,244)	**$ 2,076**	$ 448	$ (1,499)
Interest rate swap	**$ 953**	$ 164	$ (1,751)	**$ 156**	$ (651)	$ (433)
Derivatives designated as net investment hedges:						
Cross-currency swaps	**$ 2,446**	$ 1,270	—	**$ —**	$ —	$ —

(A) Gains (losses) reclassified from comprehensive loss into net (loss) income recognized in COGS in the Company's consolidated statements of operations for the years ended December 31, 2022, 2021 and 2020 were $1,572, $341 and $(1,146), respectively. Gains (losses) reclassified from other comprehensive loss into net (loss) income recognized in D&D in the Company's consolidated statements of operations were $0, $0 and $(29) for the years ended December 31, 2022, 2021 and 2020, respectively. Gains (losses) reclassified from other comprehensive loss into net (loss) income recognized in SG&A in the Company's consolidated statements of operations were $504, $107 and $(324) for the years ended December 31, 2022, 2021 and 2020, respectively. Gains (losses) reclassified from other comprehensive loss into net (loss) income recognized in interest expense, net in the Company's consolidated statements of operations were $156, $(651) and $(433) for the years ended December 31, 2022, 2021 and 2020, respectively.

For the year ended December 31, 2022, the total net gains on the interest rate swap cash flow hedge of $294 are expected to be included in interest expense, net within the next 12 months.

Cash flows from derivatives used to manage foreign exchange and interest rate risks are classified as operating activities within the consolidated statements of cash flows.

The Company has measured the ineffectiveness of the forward currency contracts and any amounts recognized in the consolidated financial statements were immaterial for the years ended December 31, 2022, 2021 and 2020.

Fair Value Measurements

Certain assets and liabilities held by the Company are measured at fair value on a recurring basis and are categorized using the three levels of the fair value hierarchy based on the reliability of the inputs used. Fair values estimated using Level 1 inputs consist of quoted prices in active markets for identical assets or liabilities that the Company has the ability to access at the measurement date. Fair values estimated using Level 2 inputs, other than quoted prices, are observable for the asset or liability, either directly or indirectly and include among other things, quoted prices for similar assets or liabilities in markets that are active or inactive as well as inputs other than quoted prices that are observable. For forward currency and cross-currency contracts, inputs include forward foreign currency exchange rates. For the interest rate swap, inputs include LIBOR. Fair values estimated using Level 3 inputs consist of significant unobservable inputs.

10. Financial Instruments and Fair Value Measurements – (continued)

The following table presents our assets and liabilities that are measured at fair value on a recurring basis and are categorized using the three levels of the fair value hierarchy based on the reliability of inputs used.

December 31,	2022				2021
		Fair values estimated using			
	Fair value	Level 1 inputs	Level 2 inputs	Level 3 inputs	Fair value
Financial assets carried at fair value:					
Forward currency contract	$ —	$ —	$ —	$ —	$ 730
Cross-currency swaps	—	—	—	—	1,450
Interest rate swap	**294**	—	**294**	—	—
Total financial assets carried at fair value	$ **294**	$ —	$ **294**	$ —	$ 2,180
Financial liabilities carried at fair value:					
Interest rate swap	$ —	$ —	$ —	$ —	$ 503
Earn-out consideration	—	—	—	—	7,351
Total financial liabilities carried at fair value	$ —	$ —	$ —	$ —	$ 7,854

The following table sets forth a summary of the change in fair value of the Company's Level 3 financial liabilities related to earn-out consideration that are measured at fair value on a recurring basis.

	Stoneridge Brazil	
	2022	**2021**
Balance at January 1	$ **7,351**	$ 5,813
Change in fair value	—	2,065
Foreign currency adjustments	**921**	(527)
Earn-out consideration cash payment	**(8,272)**	—
Balance at December 31	$ —	$ 7,351

The Company was required to pay the Stoneridge Brazil earn-out consideration based on Stoneridge Brazil's financial performance in 2021. The fair value of the Stoneridge Brazil earn-out consideration was based on 2021 earnings before interest, taxes, depreciation and amortization ("EBITDA"). The Stoneridge Brazil earn-out consideration obligation was recorded within accrued expenses and other current liabilities in the consolidated balance sheet as of December 31, 2021. The earn-out consideration obligation of $8,272 was paid in April 2022 and recorded in the consolidated statement of cash flows within operating and financing activities in the amounts of $1,996 and $6,276, respectively, for the year ended December 31, 2022.

The 2021 change in fair value of the earn-out consideration for Stoneridge Brazil was due to updated financial performance projections during 2021 and foreign currency translation fluctuations through settlement. The change in fair value of the Stoneridge Brazil earn-out consideration was recorded in SG&A expense and the foreign currency impact was included in other expense, net in the consolidated statements of operations.

There were no transfers in or out of Level 3 from other levels in the fair value hierarchy for the year ended December 31, 2022.

No non-recurring fair value adjustments were required for nonfinancial assets for the years ended December 31, 2022 and 2021.

Impairment of Long-Lived Assets or Finite-Lived Assets

The Company reviews the carrying value of its long-lived assets and finite-lived intangible assets for impairment when events or circumstances indicate that their carrying value may not be recoverable. Factors the Company considers important that could trigger testing of the related asset groups for an impairment include current period operating or cash flow losses combined with a history of operating or cash flow losses, a projection or forecast that demonstrates continuing losses, significant adverse changes in the business climate within a particular business or current expectations that a long-lived asset will be sold or otherwise disposed of significantly before the end of its estimated useful life. To test for impairment, the

10. Financial Instruments and Fair Value Measurements – (continued)

estimated undiscounted cash flows expected to be generated from the use and disposal of the asset or asset group is compared to its carrying value. An asset group is established by identifying the lowest level of cash flows generated by the group of assets that are largely independent of cash flows of other assets. If cash flows cannot be separately and independently identified for a single asset, we will determine whether an impairment has occurred for the group of assets for which we can identify projected cash flows. If these undiscounted cash flows are less than their respective carrying values, an impairment charge would be recognized to the extent that the carrying values exceed estimated fair values. The estimation of undiscounted cash flows and fair value requires us to make assumptions regarding future operating results over the life of the asset or the life of the primary asset in the asset group. The results of the impairment testing are dependent on these estimates which require judgment. The occurrence of certain events, including changes in economic and competitive conditions, could impact cash flows eventually realized and management's ability to accurately assess whether an asset is impaired.

On May 19, 2020, the Company committed to the strategic exit of its Control Devices particulate matter ("PM") sensor product line. As a result of the strategic exit of the PM sensor product line the Company determined an impairment indicator existed and performed a recoverability test of the related long-lived assets. The Company identified that there were two asset groups comprised of PM sensor fixed assets at the Company's Lexington, Ohio and Tallinn, Estonia facilities. As a result of the recoverability test performed, the Company determined that the undiscounted cash flows did not exceed the carrying value of the PM sensor fixed assets at the Company's Tallinn, Estonia facility. As such, an impairment loss of $2,326 was recorded based on the difference between the fair value and the carrying value of the assets. The Company used the income approach to determine the fair value of the PM sensor fixed assets at the Tallinn, Estonia facility. During the year ended December 31, 2020, the impairment loss of $2,326 was recorded on the Company's consolidated statement of operations within SG&A expense. The inputs utilized in the analyses are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement."

11. Commitments and Contingencies

From time to time we are subject to various legal actions and claims incidental to our business, including those arising out of breach of contracts, product warranties, product liability, patent infringement, regulatory matters and employment-related matters. The Company establishes accruals for matters which it believes that losses are probable and can be reasonably estimated. Although it is not possible to predict with certainty the outcome of these matters, the Company is of the opinion that the ultimate resolution of these matters will not have a material adverse effect on its consolidated results of operations or financial position.

As a result of environmental studies performed at the Company's former facility located in Sarasota, Florida, the Company became aware of soil and groundwater contamination at this site. The Company engaged an environmental engineering consultant to assess the level of contamination and to develop a remediation and monitoring plan for the site. Soil remediation at the site was completed during the year ended December 31, 2010. A remedial action plan was approved by the Florida Department of Environmental Protection and ground water remediation began in the fourth quarter of 2015. During the years ended December 31, 2022, 2021 and 2020, the Company recognized expense of $0, $407 and $225, respectively, related to ground water remediation. At December 31, 2022 and 2021, the Company had accruals of $246 and $391 respectively, related to future remediation costs. At December 31, 2022 and 2021, $132 and $216, respectively, were recorded as a component of accrued expenses and other current liabilities on the consolidated balance sheets while the remaining amounts as of December 31, 2022 and 2021 were recorded as a component of other long-term liabilities. Costs associated with the recorded liability will be incurred to complete the groundwater remediation and monitoring. The recorded liability is based on assumptions in the remedial action plan as well as estimates for future remediation activities. Although the Company sold the Sarasota facility and related property in December 2011, the liability to remediate the site contamination remains the responsibility of the Company. Due to the ongoing site remediation, the Company is currently required to maintain a $1,489 letter of credit for the benefit of the buyer.

The Company's Stoneridge Brazil subsidiary has civil, labor and other tax contingencies (excluding income tax) for which the likelihood of loss is deemed to be reasonably possible, but not probable, by the Company's legal advisors in Brazil. As a result, no provision has been recorded with respect to these contingencies, which amounted to R$47,820 ($9,165) and R$46,530 ($8,338) at December 31, 2022 and 2021, respectively. An unfavorable outcome on these contingencies could result in significant cost to the Company and adversely affect its results of operations and cash flows.

On August 12, 2020, the Brazilian Administrative Counsel for Economic Defense ("CADE") issued a ruling against Stoneridge Brazil for abuse of dominance and market foreclosure through its prior use of exclusivity provisions in agreements with its distributors. The CADE tribunal imposed a R$7,995 ($1,532) fine which is included in the reasonably possible contingencies noted above. The Company is challenging this ruling in Brazilian federal court to reverse this decision by the CADE tribunal.

12. Restructuring and Business Realignment

On May 19, 2020, the Company committed to the strategic exit of its Control Devices particulate matter (“PM”) sensor product line. The decision to exit the PM sensor product line was made after consideration of the decline in the market outlook for diesel passenger vehicles, the current and expected profitability of the product line and the Company’s strategic focus on aligning resources with the greatest opportunities. In conjunction with the strategic exit of the PM sensor product line, the Company entered into an asset purchase agreement related to the sale of the PM sensor product line during the first quarter of 2021. Refer to Note 2 of the consolidated financial statements for additional details regarding this sale.

As a result of the PM sensor restructuring actions, the Company recognized expense of $0, $2,360 and $3,428 for the years ended December 31, 2022, 2021 and 2020, respectively, for non-cash fixed asset charges, including impairment and accelerated depreciation of PM sensor related fixed assets, employee severance and termination costs and other related costs including supplier settlements. For the year ended December 31, 2021 restructuring related costs of $1,510, $642 and $208 were recognized in COGS, SG&A and D&D, respectively. For the year ended December 31, 2020 restructuring related costs of $817 and $2,611 were recognized in COGS and SG&A, respectively. The only remaining costs relate to potential commercial settlements and legal fees which we continue to negotiate. The estimated additional costs related to these settlements and fees is up to $4,200.

The expenses for the exit of the PM sensor line that relate to the Control Devices reportable segment include the following:

	Accrual as of January 1, 2022	2022 Charge to Expense	Utilization: Cash	Utilization: Non-Cash	Accrual as of December 31, 2022
Employee termination benefits	**$ 35**	**$ —**	**$ (35)**	**$ —**	**$ —**
Other related costs	**—**	**—**	**—**	**—**	**—**
Total	**$ 35**	**$ —**	**$ (35)**	**$ —**	**$ —**

	Accrual as of January 1, 2021	2021 Charge to Expense	Utilization: Cash	Utilization: Non-Cash	Accrual as of December 31, 2021
Fixed asset impairment and accelerated depreciation	$ —	$ 188	$ —	$ (188)	$ —
Employee termination benefits	—	139	(104)	—	35
Other related costs	—	2,033	(2,033)	—	—
Total	$ —	$ 2,360	$ (2,137)	$ (188)	$ 35

	Accrual as of January 1, 2020	2020 Charge to Expense	Utilization: Cash	Utilization: Non-Cash	Accrual as of December 31, 2020
Fixed asset impairment and accelerated depreciation	$ —	$ 3,326	$ —	$ (3,326)	$ —
Other related costs	—	102	(102)	—	—
Total	$ —	$ 3,428	$ (102)	$ (3,326)	$ —

On January 10, 2019, the Company committed to a restructuring plan that resulted in the closure of the Canton, Massachusetts facility (“Canton Facility”) on March 31, 2020 and the consolidation of manufacturing operations at that site into other Company locations (“Canton Restructuring”). Company management informed employees at the Canton Facility of this restructuring decision on January 11, 2019. The costs for the Canton Restructuring included employee severance and termination costs, contract terminations costs, professional fees and other related costs such as moving and set-up costs for equipment and costs to restore the engineering function previously located at the Canton facility.

As a result of the Canton Restructuring actions, the Company recognized expense of $0, $13 and $2,978 for the years ended December 31, 2022, 2021 and 2020, respectively, for employee severance and termination costs and other restructuring related costs. For the year ended December 31, 2021 severance and other restructuring related costs of $13 were recognized in D&D in the consolidated statement of operations. For the year ended December 31, 2020 severance and other related restructuring costs of $1,659, $551 and $768 were recognized in COGS, SG&A and D&D, respectively, in the consolidated statement of operations. We do not expect to incur additional costs related to the Canton Restructuring. Refer to Note 7 and Note 2 to the consolidated financial statements for additional details regarding the third-party lease and sale, respectively, of the Canton Facility.

12. Restructuring and Business Realignment – (continued)

The expenses for the Canton Restructuring that relate to the Control Devices reportable segment include the following:

	Accrual as of January 1, 2022	2022 Charge to Expense	Utilization		Accrual as of December 31, 2022
			Cash	Non-Cash	
Employee termination benefits	**$ 93**	**$ —**	**$ (93)**	**$ —**	**$ —**
Other related costs	**—**	**—**	**—**	**—**	**—**
Total	**$ 93**	**$ —**	**$ (93)**	**$ —**	**$ —**

	Accrual as of January 1, 2021	2021 Charge to Expense	Utilization		Accrual as of December 31, 2021
			Cash	Non-Cash	
Employee termination benefits	$ 165	$ —	$ (72)	$ —	$ 93
Other related costs	—	13	(13)	—	—
Total	$ 165	$ 13	$ (85)	$ —	$ 93

	Accrual as of January 1, 2020	2020 Charge to Expense	Utilization		Accrual as of December 31, 2020
			Cash	Non-Cash	
Employee termination benefits	$ 2,636	$ 1,119	$ (3,590)	$ —	$ 165
Other related costs	—	1,859	(1,859)	—	—
Total	$ 2,636	$ 2,978	$ (5,449)	$ —	$ 165

In the fourth quarter of 2018, the Company undertook restructuring actions for the Electronics segment affecting the European Aftermarket business and China operations. In the second quarter of 2020, the Company finalized plans to move its European Aftermarket sales activities in Dundee, Scotland to a new location which resulted in incurring contract termination costs as well as employee severance and termination costs. In addition, the Company announced a restructuring program to transfer the European production of its controls product line to China. As a result of these actions, the Company recognized expense of $0, $290 and $2,400 respectively, for the years ended December 31, 2022, 2021 and 2020 for employee severance and termination costs, non-cash fixed asset charges for accelerated depreciation of fixed assets, contract termination costs and other related costs. Electronics segment restructuring costs recognized in COGS, SG&A and D&D in the consolidated statement of operations for the year ended December 31, 2021 were $37, $210 and $43, respectively. Electronics segment restructuring costs recognized in COGS, SG&A and D&D in the consolidated statement of operations for the year ended December 31, 2020 were $147, $1,774 and $479, respectively. We do not expect to incur additional costs related to these Electronics segment restructuring actions.

The expenses for the restructuring activities that relate to the Electronics reportable segment include the following:

	Accrual as of January 1, 2021	2021 Charge to Expense	Utilization		Accrual as of December 31, 2021
			Cash	Non-Cash	
Employee termination benefits	$ 227	$ 50	$ (277)	$ —	$ —
Other related costs	—	240	(240)	—	—
Total	$ 227	$ 290	$ (517)	$ —	$ —

	Accrual as of January 1, 2020	2020 Charge to Expense	Utilization		Accrual as of December 31, 2020
			Cash	Non-Cash	
Employee termination benefits	$ 52	$ 1,034	$ (859)	$ —	$ 227
Contract termination costs	—	452	(452)	—	—
Other related costs	—	914	(914)	—	—
Total	$ 52	$ 2,400	$ (2,225)	$ —	$ 227

12. Restructuring and Business Realignment – (continued)

In addition to the specific restructuring activities, the Company regularly evaluates the performance of its businesses and cost structures, including personnel, and makes necessary changes thereto in order to optimize its results. The Company also evaluates the required skill sets of its personnel and periodically makes strategic changes. As a consequence of these actions, the Company incurs severance related costs which are referred to as business realignment charges.

Business realignment charges by reportable segment were as follows:

Year ended December 31,	2022	2021	2020
Control Devices [(A)]	**$ —**	$ 192	$ 1,752
Electronics [(B)]	**—**	3	1,690
Stoneridge Brazil [(C)]	**98**	59	234
Unallocated Corporate [(D)]	**190**	1,138	361
Total business realignment charges	**$ 288**	$ 1,392	$ 4,037

(A) Severance costs for the year ended December 31, 2021 related to SG&A were $192. Severance costs for the year ended December 31, 2020 related to COGS, D&D and SG&A were $724, $283 and $745 respectively.

(B) Severance costs (benefit) for the year ended December 31, 2021 related to COGS, SG&A and D&D were $1, $(7) and $9, respectively. Severance costs for the year ended December 31, 2020 related to COGS, D&D and SG&A were $383, $402 and $905 respectively.

(C) Severance costs for the year ended December 31, 2022 related to SG&A were $98. Severance costs for the year ended December 31, 2021 related to COGS and SG&A were $7 and $52, respectively. Severance costs for the year ended December 31, 2020 related to COGS and SG&A were $124 and $110, respectively.

(D) Severance costs for the years ended December 31, 2022, 2021 and 2020 related to SG&A were $190, $1,138 and $361, respectively.

Business realignment charges classified by statement of operations line item were as follows:

Year ended December 31,	2022	2021	2020
Cost of goods sold	**$ —**	$ 8	$ 1,231
Selling, general and administrative	**288**	1,375	2,121
Design and development	**—**	9	685
Total business realignment charges	**$ 288**	$ 1,392	$ 4,037

13. Segment Reporting

Operating segments are defined as components of an enterprise that are evaluated regularly by the Company’s chief operating decision maker in deciding how to allocate resources and in assessing performance. The Company’s chief operating decision maker is the chief executive officer.

The Company has three reportable segments, Control Devices, Electronics and Stoneridge Brazil, which also represent its operating segments. The Control Devices reportable segment produces actuators, sensors, switches and connectors. The Electronics reportable segment produces driver information systems, vision and safety systems, connectivity and compliance products and electronic control units. The Stoneridge Brazil reportable segment designs and manufactures vehicle tracking devices and monitoring services, vehicle security alarms and convenience accessories, in-vehicle audio and infotainment devices, driver information systems and telematics solutions.

The accounting policies of the Company’s reportable segments are the same as those described in Note 2. The Company’s management evaluates the performance of its reportable segments based primarily on revenues from external customers, capital expenditures and operating income. Inter-segment sales are accounted for on terms similar to those to third parties and are eliminated upon consolidation.

The financial information presented below is for our three reportable operating segments and includes adjustments for unallocated corporate costs and intercompany eliminations, where applicable. Such costs and eliminations do not meet the requirements for being classified as an operating segment. Corporate costs include various support functions, such as accounting/finance, executive administration, human resources, information technology and legal.

13. Segment Reporting – (continued)

A summary of financial information by reportable segment is as follows:

December 31,	2022	2021	2020
Net Sales:			
Control Devices	**$ 342,596**	$ 355,775	$ 342,576
Inter-segment sales	**2,719**	3,502	5,475
Control Devices net sales	**345,315**	359,276	348,051
Electronics	**505,097**	357,910	257,767
Inter-segment sales	**28,709**	26,192	24,027
Electronics net sales	**533,806**	384,103	281,794
Stoneridge Brazil	**52,230**	56,777	47,663
Inter-segment sales	**32**	—	—
Stoneridge Brazil net sales	**52,262**	56,777	47,663
Eliminations	**(31,460)**	(29,694)	(29,502)
Total net sales	**$ 899,923**	$ 770,462	$ 648,006
Operating Income (Loss):			
Control Devices	**$ 23,917**	$ 54,933	$ 22,072
Electronics	**5,128**	(12,502)	(3,672)
Stoneridge Brazil	**3,150**	995	3,766
Unallocated Corporate [(A)]	**(29,260)**	(28,015)	(29,830)
Total operating income (loss)	**$ 2,935**	$ 15,411	$ (7,664)
Depreciation and Amortization:			
Control Devices	**$ 13,521**	$ 15,351	$ 15,377
Electronics	**13,913**	12,487	10,501
Stoneridge Brazil	**3,939**	3,856	4,766
Unallocated Corporate	**2,318**	2,134	2,086
Total depreciation and amortization [(B)]	**$ 33,691**	$ 33,828	$ 32,730
Interest Expense (Income), net:			
Control Devices	**$ 93**	$ 132	$ 173
Electronics	**1,009**	462	320
Stoneridge Brazil	**(1,282)**	(1,353)	(4)
Unallocated Corporate	**7,277**	5,948	5,635
Total interest expense, net	**$ 7,097**	$ 5,189	$ 6,124
Capital Expenditures:			
Control Devices	**$ 12,620**	$ 9,154	$ 11,760
Electronics	**10,479**	9,735	11,617
Stoneridge Brazil	**3,480**	2,918	2,839
Unallocated Corporate[(C)]	**653**	1,142	1,444
Total capital expenditures	**$ 27,232**	$ 22,949	$ 27,660

13. Segment Reporting – (continued)

December 31,	2022	2021
Total Assets:		
Control Devices	**$ 174,535**	$ 181,968
Electronics	**369,232**	338,080
Stoneridge Brazil	**60,861**	59,100
Corporate (C)	**419,469**	438,175
Eliminations	**(371,992)**	(351,924)
Total assets	**$ 652,105**	$ 665,399

The following table presents net sales and long-term assets for the geographic areas in which the Company operates:

December 31,	2022	2021	2020
Net Sales:			
North America	**$ 444,928**	$ 386,944	$ 330,528
South America	**52,230**	56,777	47,663
Europe and Other	**402,765**	326,741	269,815
Total net sales	**$ 899,923**	$ 770,462	$ 648,006

December 31,	2022	2021
Long-term Assets:		
North America	**$ 92,149**	$ 91,039
South America	**31,796**	30,272
Europe and Other	**118,609**	133,264
Total long-term assets	**$ 242,554**	$ 254,575

(A) Unallocated Corporate expenses include, among other items, accounting/finance, human resources, information technology and legal costs as well as share-based compensation.

(B) These amounts represent depreciation and amortization on property, plant and equipment and certain intangible assets.

(C) Assets located at Corporate consist primarily of cash, intercompany receivables, fixed and leased assets for the headquarter building, information technology assets, equity investments and investments in subsidiaries.

14. Subsequent Events

Credit Facility Amendment

On March 1, 2023, the Company entered into Amendment No. 4 to the Credit Facility. Refer to Note 5 of the consolidated financial statements for details regarding this amendment.

SCHEDULE II - VALUATION AND QUALIFYING ACCOUNTS

The following schedule provides the activity for accounts receivable reserves and valuation allowance for deferred tax assets for the years ended December 31, 2022, 2021 and 2020 (in thousands):

	Balance at beginning of period	Charged to costs and expenses	Write-offs	Balance at end of period
Accounts receivable reserves:				
Year ended December 31, 2022	**$ 1,443**	**$ 1,255**	**$ (1,736)**	**$ 962**
Year ended December 31, 2021	$ 817	$ 1,030	$ (404)	$ 1,443
Year ended December 31, 2020	$ 1,289	$ 1,130	$ (1,602)	$ 817

	Balance at beginning of period	Net additions charged to income (expense)	Exchange rate fluctuations and other items	Balance at end of period
Valuation allowance for deferred tax assets:				
Year ended December 31, 2022	**$ 14,516**	**$ 4,975**	**$ (995)**	**$ 18,496**
Year ended December 31, 2021	$ 10,237	$ 4,768	$ (489)	$ 14,516
Year ended December 31, 2020	$ 8,586	$ 2,174	$ (523)	$ 10,237

Item 9. Changes In and Disagreements With Accountants On Accounting and Financial Disclosure.

There have been no disagreements between the management of the Company and its Independent Registered Public Accounting Firm on any matter of accounting principles or practices of financial statement disclosures, or auditing scope or procedure.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

As of December 31, 2022, an evaluation was performed under the supervision and with the participation of the Company's management, including the principal executive officer ("PEO") and principal financial officer ("PFO"), of the effectiveness of the design and operation of the Company's disclosure controls and procedures as defined in Rule 13a-15(e) and Rule 15d-15(e) of the Securities Exchange Act of 1934, as amended. Based on that evaluation, the Company's PEO and PFO, concluded that the Company's disclosure controls and procedures were effective as of December 31, 2022.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). In evaluating the Company's internal control over financial reporting, management has adopted the framework in *Internal Control-Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 Framework). Under the supervision and with the participation of our management, including the PEO and PFO, we conducted an evaluation of the effectiveness of our internal control over financial reporting, as of December 31, 2022. Based on our evaluation under the framework in *Internal Control-Integrated Framework* (2013 Framework), our management has concluded that our internal control over financial reporting was effective as of December 31, 2022.

Because of 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.

Ernst & Young LLP, an independent registered public accounting firm, as auditor of the Company's financial statements, has issued an attestation report on the Company's internal control over financial reporting as of December 31, 2022. Ernst & Young's report is included herein.

Changes in Internal Control Over Financial Reporting

There were no changes to our internal controls over financial reporting during the quarter ended December 31, 2022 that has materially or is reasonably likely to materially affect internal control over financial reporting.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Stoneridge, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Stoneridge, Inc. and subsidiaries' internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Stoneridge, Inc. and subsidiaries (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive loss, cash flows and shareholders' equity for each of the three years in the period ended December 31, 2022, and the related notes and financial statement schedule of the Company and our report dated March 2, 2023 expressed an unqualified opinion thereon.

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 Report on Internal Control Over Financial Reporting. 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.

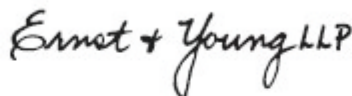
We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

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.



Detroit, Michigan
March 2, 2023

Item 9B. Other Information.

Credit Facility Amendment

Due to continued supply chain disruptions and macroeconomic challenges on the Company's end-markets and the resulting financial impacts on the Company, on March 1, 2023, the Company entered into Amendment No. 4 to the Fourth Amended and Restated Credit Agreement by and among the Company and certain of its subsidiaries as Borrowers, certain of its subsidiaries as Guarantors, PNC Bank, National Association, as Administrative Agent, and the financial parties thereto (the, "Lenders") ("Amendment No. 4"). Amendment No. 4 provides for certain financial covenant relief and additional covenant restrictions during the "Amendment No. 4 Specified Period" (the period from March 1, 2023 until the date that the Company delivers a compliance certificate for the quarter ending September 30, 2023 in form and substance satisfactory to the administrative agent). During the Amendment No. 4 Specified Period:

- the maximum net leverage ratio was changed to 4.75 to 1.00 for the quarter ended March 31, 2023 and 4.25 to 1.00 for the quarter ended June 30, 2023;
- the minimum interest coverage ratio of 3.50 was reduced to 3.00 for the quarters ended March 31, 2023 and June 30, 2023;
- drawing on the Credit Facility continues to be restricted if the Company's total of 100% of domestic and 65% of foreign cash and cash equivalents exceeds $70.0 million;
- there continue to be certain additional restrictions on Restricted Payments (as defined); and
- consistent with Amendment No. 3, a Permitted Acquisition (as defined) may not be consummated unless the net leverage ratio is below 3.50 to 1.00 during the Amendment No. 4 Specified Period.

The description of Amendment No. 4 to the Credit Agreement does not purport to be complete and is qualified in its entirety to the full text of Amendment No. 4 to the Credit Agreement which is filed as Exhibit 10.23 to this Form 10-K and incorporated herein by reference.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.

Not Applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this Item 10 regarding our directors is incorporated by reference to the information under the sections and subsections entitled, "Proposal One: Election of Directors," "Section 16(a) Beneficial Ownership Reporting Compliance" and "Corporate Governance" contained in the Company's Proxy Statement in connection with its Annual Meeting of Shareholders to be held on May 16, 2023. The information required by this Item 10 regarding our executive officers appears as a Supplementary Item following Item 1 under Part I, hereof.

Item 11. Executive Compensation.

The information required by this Item 11 is incorporated by reference to the information under the sections and subsections "Compensation Committee," "Compensation Committee Interlocks and Insider Participation," "Compensation Committee Report" and "Executive Compensation" contained in the Company's Proxy Statement in connection with its Annual Meeting of Shareholders to be held on May 16, 2023.

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

The information required by this Item 12 (other than the information required by Item 201(d) of Regulation S-K which is set forth below) is incorporated by reference to the information under the heading "Security Ownership of Certain Beneficial Owners and Management" contained in the Company's Proxy Statement in connection with its Annual Meeting of Shareholders to be held on May 16, 2023.

In May 2010, we adopted an Amended Directors' Restricted Share Plan and an Amended and Restated Long-Term Incentive Plan, as amended. In May 2013, we adopted an Amended Directors' Restricted Shares Plan and an Amended and Restated Long-Term Incentive Plan, as amended, to increase the number of shares available for issuance under the plans. In May 2016, we adopted the 2016 Long-Term Incentive Plan. In May 2018, we adopted the 2018 Amended and Restated Director's Restricted Shares Plan. In May 2022, we adopted the 2018 Amended and Restated Director's Restricted Shares Plan, as amended, to increase the number of shares available for issuance under the plan. Our shareholders approved each plan.

Equity compensation plan information as of December 31, 2022 is as follows:

	Number of securities remaining available for future issuance under equity compensation plans (A)
Equity compensation plans approved by shareholders	**1,018,411**
Equity compensation plans not approved by shareholders	**—**

(A) Excludes 1,286,196 share units issued to key employees pursuant to the Company’s 2016 Long-Term Incentive Plan.

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

The information required by this Item 13 is incorporated by reference to the information under the subsections “Transactions with Related Persons”, “Review and Approval of Transactions with Related Persons” and “Director Independence” contained in the Company’s Proxy Statement in connection with its Annual Meeting of Shareholders to be held on May 16, 2023.

Item 14. Principal Accounting Fees and Services.

The information required by this Item 14 is incorporated by reference to the information under the subsections “Service Fees Paid to Independent Registered Accounting Firm” and “Pre-Approval Policies and Procedures” contained in the Company’s Proxy Statement in connection with its Annual Meeting of Shareholders to be held on May 16, 2023.

PART IV

Item 15. Exhibits, Financial Statement Schedule.

(a) The following documents are filed as part of this Form 10-K.

		Page in Form 10-K
(1)	Consolidated Financial Statements:	
	Report of Independent Registered Public Accounting Firm	35
	Consolidated Balance Sheets as of December 31, 2022 and 2021	37
	Consolidated Statements of Operations for the Years Ended December 31, 2022, 2021 and 2020	38
	Consolidated Statements of Comprehensive Loss for the Years Ended December 31, 2022, 2021 and 2020	39
	Consolidated Statements of Cash Flows for the Years Ended December 31, 2022, 2021 and 2020	40
	Consolidated Statements of Shareholders' Equity for the Years Ended December 31, 2022, 2021 and 2020	41
	Notes to Consolidated Financial Statements	42
(2)	Financial Statement Schedule:	
	Schedule II – Valuation and Qualifying Accounts	74
(3)	Exhibits:	

Exhibit Number	Exhibit
3.1	Second Amended and Restated Articles of Incorporation of the Company, filed herewith.
3.2	Amended and Restated Code of Regulations of the Company (incorporated by reference to Exhibit 3.1 to the Company’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2007).
4.1	Common Share Certificate (incorporated by reference to Exhibit 4.1 to the Company’s Annual Report on Form 10-K for the year ended December 31, 1997).
4.2	Description of Stoneridge, Inc. Common Shares registered under Section 12 of the Securities Exchange Act of 1934, as amended (incorporated by reference to Exhibit 4.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019).
10.1	Stoneridge, Inc. Deferred Compensation Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on June 2, 2017)*.
10.2	First Amendment to the Stoneridge, Inc. Deferred Compensation Plan (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed on October 26, 2018)*.
10.3	Stoneridge, Inc. Long-Term Cash Incentive Plan (incorporated by reference to Exhibit 10.3 to the Company’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2009)*.
10.4	Stoneridge, Inc. 2016 Long-Term Incentive Plan (incorporated by reference to Exhibit 99.2 to the Company’s Current Report on Form 8-K filed on May 12, 2016)*.
10.5	First Amendment to the Stoneridge, Inc. 2016 Long-Term Incentive Plan (incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed on May 20, 2020)*.
10.6	Form of Stoneridge, Inc. Long-Term Incentive Plan 2022 Performance Shares Grant Agreement (incorporated by reference to Exhibit 10.3 to the Company’s Quarterly Report on 10-Q for the quarter ended March 31, 2022)*.
10.7	Form of Stoneridge, Inc. Long-Term Incentive Plan 2022 Restricted Share Units Agreement (incorporated by reference to Exhibit 10.4 to the Company’s Quarterly Report on 10-Q for the quarter ended March 31, 2022)*.
10.8	Form of Stoneridge, Inc. Long-Term Incentive Plan 2022 Restricted Share Units Agreement (one-time two-year vesting under 2021 AIP payment) (incorporated by reference to Exhibit 10.5 to the Company’s Quarterly Report on 10-Q for the quarter ended March 31, 2022)*.
10.9	Stoneridge, Inc. Annual Incentive Plan (incorporated by reference to Exhibit 10.2 to the Company’s Current Report on Form 8-K filed on May 12, 2021)*.
10.10	Stoneridge, Inc. 2018 Amended and Restated Directors' Restricted Shares Plan (incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed on May 16, 2018)*.
10.11	Amendment No. 1 to the Stoneridge, Inc. 2018 Amended and Restated Directors’ Restricted Shares Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 19, 2022)*.
10.12	Form of Stoneridge, Inc. Directors’ Restricted Shares Plan 2022 Grant Agreement (incorporated by reference to Exhibit 10.2 to the Company’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2022)*.

Exhibit Number	Exhibit
10.13	Amended and Restated Officers’ and Key Employees’ Severance Plan of Stoneridge, Inc. (incorporated by reference to Exhibit 10.6 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2020)*.
10.14	Form of Change in Control Agreement (incorporated by reference to Exhibit 10.13 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2020)*.
10.15	Employment Agreement, dated March 16, 2015, between the Company and Jonathan B. DeGaynor (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on March 19, 2015)*.
10.16	Amendment No. 1, dated February 23, 2021, to Employment Agreement, dated March 16, 2015 between the Company and Jonathan B. DeGaynor (incorporated by reference to Exhibit 10.15 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2020)*.
10.17	Indemnification Agreement between the Company and Jonathan B. DeGaynor (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on March 19, 2015).
10.18	Employment Agreement, dated January 29, 2021, by and between the Company and James Zizelman (incorporated by reference to Exhibit 10.22 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2020)*.
10.19	Fourth Amended and Restated Credit Agreement (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on June 7, 2019).
10.20	Waiver and Amendment No. 1 to the Fourth Amended and Restated Credit Agreement (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on July 1, 2020)*.
10.21	Amendment No. 2 to the Fourth Amended and Restated Credit Agreement (incorporated by reference to Exhibit 10.22 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2021).
10.22	Amendment No. 3 to the Fourth Amended and Restated Credit Agreement (incorporated by reference to Exhibit 10.23 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2021).
10.23	Amendment No. 4 to the Fourth Amended and Restated Credit Agreement, filed herewith.
21.1	Principal Subsidiaries and Affiliates of the Company, filed herewith.
23.1	Consent of Independent Registered Public Accounting Firm, filed herewith.
31.1	Chief Executive Officer certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, filed herewith.
31.2	Chief Financial Officer certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, filed herewith.
32.1	Chief Executive Officer certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, filed herewith.
32.2	Chief Financial Officer certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, filed herewith.

Exhibit Number	Exhibit
101.INS	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File – the cover page XBRL tags are embedded within the Inline XBRL document

* - Reflects management contract or compensatory plan or arrangement required to be filed as an exhibit pursuant to Item 15(b) of this Annual Report on Form 10-K.

(b) The exhibits listed are filed as part of or incorporated by reference into this report.

(c) Additional Financial Statement Schedules. None.

Item 16. Form 10-K Summary.

None.

SIGNATURES

Pursuant to the requirements of the 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.

STONERIDGE, INC.

Date: March 1, 2023	/s/ MATTHEW R. HORVATH Matthew R. Horvath *Chief Financial Officer and Treasurer* (Principal Financial 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: March 1, 2023	/s/ JAMES ZIZELMAN James Zizelman *President, Chief Executive Officer and Director* (Principal Executive Officer)
Date: March 1, 2023	/s/ MATTHEW R. HORVATH Matthew R. Horvath *Chief Financial Officer and Treasurer* (Principal Financial Officer)
Date: March 1, 2023	/s/ ROBERT J. HARTMAN JR. Robert J. Hartman Jr. *Chief Accounting Officer* (Principal Accounting Officer)
Date: March 1, 2023	/s/ WILLIAM M. LASKY William M. Lasky *Chairman of the Board of Directors*
Date: March 1, 2023	/s/ JEFFREY P. DRAIME Jeffrey P. Draime *Director*
Date: March 1, 2023	/s/ IRA C. KAPLAN Ira C. Kaplan *Director*
Date: March 1, 2023	/s/ KIM KORTH Kim Korth *Director*
Date: March 1, 2023	/s/ GEORGE S. MAYES, JR. George S. Mayes, Jr. *Director*
Date: March 1, 2023	Carsten J. Reinhardt *Director*
Date: March 1, 2023	/s/ PAUL J. SCHLATHER Paul J. Schlather *Director*
Date: March 1, 2023	/s/ FRANK S. SKLARSKY Frank S. Sklarsky *Director*

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