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
(Mark one)	for the fiscal year ended January 01, 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 0-20388

LITTELFUSE, INC.

(Exact name of registrant as specified in its charter)	Delaware (State or other jurisdiction of incorporation or organization)	36-3795742 (I.R.S. Employer Identification No.)

8755 West Higgins Road Suite 500
Chicago, Illinois 60631
(Address of principal executive offices)

773-628-1000
(Registrant's telephone number, including area code)

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

Title of Each Class	Trading Symbol	Name of Each Exchange On Which Registered
Common Stock, $0.01 par value	LFUS	NASDAQ Global Select Market[SM]

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 and posted pursuant to Rule 405 of Regulation S-T (Section 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ 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 emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "small 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. ☒

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

The aggregate market value of 24,616,682 shares of voting stock held by non-affiliates of the registrant was approximately $6,125,123,061 based on the last reported sale price of the registrant's Common Stock as reported on the NASDAQ Global Select Market[SM] on June 26, 2021.

As of February 11, 2022, the registrant had outstanding 24,689,579 shares of Common Stock, net of Treasury Shares.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Littelfuse, Inc. Proxy Statement for the 2022 Annual Meeting of Stockholders (the "Proxy Statement") are incorporated by reference into Part III of this Form 10-K.

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FORWARD-LOOKING STATEMENTS

Certain statements contained in this Annual Report on Form 10-K that are not historical facts are intended to constitute “forward-looking statements” entitled to the safe-harbor provisions of the Private Securities Litigation Reform Act of 1995 (“PSRLA”). The Company cautions that forward-looking statements, which speak only as of the date they are made, are subject to risks, uncertainties and other factors, and actual results and outcomes may differ materially from those indicated or implied by the forward-looking statements. These risks, uncertainties and other factors include, but are not limited to, risks and uncertainties relating to general economic conditions; the severity and duration of the coronavirus disease 2019 ("COVID-19") pandemic and the measures taken in response thereto and the effects of those items on the Company’s business; product demand and market acceptance; economic conditions; the impact of competitive products and pricing; product quality problems or product recalls; capacity and supply difficulties or constraints; coal mining exposures reserves; cybersecurity matters; failure of an indemnification for environmental liability; exchange rate fluctuations; commodity price fluctuations; the effect of the Company's accounting policies; labor disputes; restructuring costs in excess of expectations; pension plan asset returns less than assumed; uncertainties related to political or regulatory changes; integration of acquisitions may not be achieved in a timely manner, or at all; and other risks that may be detailed in Item 1A. "Risk Factors" below and in the Company’s other Securities and Exchange Commission filings.

AVAILABLE INFORMATION

The Company is subject to the reporting and information requirements of the Securities Exchange Act of 1934, as amended and as a result, are obligated to file annual, quarterly, and current reports, proxy statements, and other information with the United States Securities and Exchange Commission (“SEC”). The Company makes these filings available free of charge on its website (http://investor.littelfuse.com) as soon as reasonably practicable after it electronically files them with, or furnish them to, the SEC. Information on the Company’s website does not constitute part of this Annual Report on Form 10-K. In addition, the SEC maintains a website (http://www.sec.gov) that contains the Company’s annual, quarterly, and current reports, proxy and information statements, and other information the Company electronically files with, or furnishes to, the SEC. The Company’s website and the information contained therein or connected thereto are not incorporated into this Annual Report on Form 10-K.

PART I

ITEM 1. BUSINESS.

GENERAL

Littelfuse, Inc., was incorporated under the laws of the State of Delaware in 1991. References herein to the “Company,” “we,” “our” or “Littelfuse” refer to Littelfuse, Inc. and its subsidiaries. References herein to “2021”, “fiscal 2021” or “fiscal year 2021” refer to the fiscal year ended January 1, 2022. References herein to “2020”, “fiscal 2020” or “fiscal year 2020” refer to the fiscal year ended December 26, 2020. References herein to “2019”, “fiscal 2019” or “fiscal year 2019” refer to the fiscal year ended December 28, 2019. The Company operates on a 52-53 week fiscal year (4-4-5 basis) ending on the Saturday closest to December 31. Therefore, the financial results of certain fiscal years and the associated 14 week quarters will not be exactly comparable to the prior 52 week fiscal years and the associated quarters having only 13 weeks. As a result of using this convention, the fiscal year 2021 contained 53 weeks while each of fiscal 2020 and fiscal 2019 contained 52 weeks.

OVERVIEW

Founded in 1927, Littelfuse is an industrial technology manufacturing company empowering a sustainable, connected, and safer world. Across more than 15 countries, and with approximately 17,000 global associates, the Company partners with customers to design and deliver innovative, reliable solutions. Serving over 100,000 end customers, the Company’s products are found in a variety of industrial, transportation and electronics end markets – everywhere, every day.

Segments

The Company conducts its business through three reportable segments: Electronics, Transportation, and Industrial. Within these segments, the Company designs, manufactures and sells components, modules and subassemblies to empower the long-term structural themes of sustainability, connectivity and safety. Over the last decade the Company has positioned itself within the center of these global structural growth themes by helping to enable its customers’ applications focused on a more sustainable, connected, and safer world. The ever-increasing complexity of applications surrounding these themes continues to drive greater demand for the Company’s reliable products and a higher level of product content. As a result, the Company has evolved its presence across the industrial, transportation and electronics end markets it serves, which is relatively balanced. With a long list of target applications within each primary end market, the Company believes its balanced approach is healthy for the long-term sustainability of its business, increases diversification and creates additional growth opportunities. Across electronics end markets, product demand is largely driven by the amplified themes of electrification, energy efficiency, automation, and connectivity. In transportation end markets, including passenger and commercial vehicles, the ongoing electronification and electrification of applications is driving increased product demand. Across industrial end markets, product demand is driven by a more sustainable ecosystem. For example, solar and wind energy, and energy storage systems that enable lower carbon emissions, the ongoing proliferation of electric vehicles and charging stations, more efficient climate control units, increasing requirements for electrical safety, and the rising demand for factory and process automation. For segment and geographical information and consolidated net sales and operating income see Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations* and Note 16, *Segment Information*, of the Notes to Consolidated Financial Statements included in this Annual Report.

- *Electronics Segment*: Consists of one of the broadest product offerings in the industry, including fuses and fuse accessories, positive temperature coefficient ("PTC") resettable fuses, polymer electrostatic discharge ("ESD") suppressors, varistors, reed switch based magnetic sensing, gas discharge tubes; semiconductor products such as discrete transient voltage suppressor ("TVS") diodes, TVS diode arrays, protection and switching thyristors, silicon and silicon carbide metal-oxide-semiconductor field effect transistors ("MOSFETs") and diodes; and insulated gate bipolar transistors ("IGBT") technologies. The segment covers a broad range of end markets, including industrial motor drives and power conversion, automotive electronics, electric vehicle and related infrastructure, power supplies, data centers and telecommunications, medical devices, alternative energy and energy storage, building and home automation, appliances, and mobile electronics.

- *Transportation Segment:* Formerly known as Automotive segment. The term "Transportation" represents a more comprehensive description of the Company's broad range of products, and the applications and end markets it serves. Consists of a wide range of circuit protection, power control and sensing technologies for global original equipment manufacturers ("OEMs"), Tier-one suppliers and parts and aftermarket distributors in passenger vehicle, heavy duty truck, off-road vehicles, material handling, agricultural, construction and other commercial vehicle end markets. Passenger vehicle products are used in internal combustion engine, hybrid and electric vehicles including blade fuses, battery cable protectors, resettable fuses, high-current fuses, high-voltage fuses, and sensor products designed to monitor the occupant's safety and environment as well as the vehicle's powertrain. Commercial vehicle products include fuses, switches, circuit breakers, relays, and power distribution modules and units used in applications serving a number of end markets, including heavy-duty truck, construction, agriculture, material handling and marine.

- *Industrial Segment:* Consists of industrial circuit protection (industrial fuse), industrial controls (protection relay, contactors, transformers) and temperature sensors for use in various applications such as renewable energy and energy storage systems, electric vehicle infrastructure, HVAC systems, industrial safety, non-residential construction, MRO, mining and industrial automation.

Strategy

In February 2021, the Company announced its new five-year strategic plan which builds upon its strengths from its previous strategy. The Company is well-positioned within the center of the global structural growth themes of sustainability, connectivity, and safety, which will continue to drive increased demand for the company's products across the transportation, industrial and electronics end markets that it serves. The Company is targeting average annual organic sales growth of 5-7 percent and average annual sales growth from strategic acquisitions of 5-7 percent. The Company expects to achieve this through content and share gains, expanded presence in high-growth markets and geographies, and targeting high-growth and niche applications. The Company will continue to invest in its people, as well as customer-driven innovation, eMobility, and its digital infrastructure to improve customer experience, and its operating systems. It plans to capitalize on growth opportunities where technologies and applications are converging across its product segments, while continuing to acquire and integrate businesses that fit its strategic focus areas.

Recent Acquisitions

- *Carling Technologies:* On November 30, 2021, the Company acquired Carling Technologies ("Carling"), a leader in switching, circuit protection and power distribution technologies with a strong global presence in commercial transportation, communications infrastructure and marine markets. At the time of acquisition, Carling had annualized sales of approximately $170 million. The purchase price for Carling was $315 million subject to change for working capital adjustments and the operations of Carling are included in the Transportation segment.

- *Hartland Controls:* On January 28, 2021, the Company acquired Hartland Controls ("Hartland"), a manufacturer and leading supplier of electrical components used primarily in heating, ventilation, air conditioning ("HVAC") and other industrial and control systems applications. At the time of acquisition, Hartland had annualized sales of approximately

$70 million. The purchase price for Hartland was $111.0 million and the operations of Hartland are included in the Industrial segment.

- *IXYS Corporation:* On January 17, 2018, the Company acquired IXYS corporation ("IXYS"), a global pioneer in the power semiconductor and integrated circuit markets with a focus on medium to high voltage power semiconductors across the industrial, communications, consumer and medical markets. IXYS had a broad customer base, serving more than 3,500 customers through its direct sales force and global distribution partners. The purchase price for IXYS was $856.5 million, which included consideration of cash, Littelfuse common stock, and the value of converted, or cash settled IXYS equity awards. The operations of IXYS are included in the Electronics segment.

- *U.S. Sensor:* On July 7, 2017, the Company acquired the assets of U.S. Sensor Corporation ("U.S. Sensor") for $24.3 million. U.S. Sensor manufactures a variety of high quality negative temperature coefficient thermistor probes and assemblies across a number of industrial end markets. The operations of U.S. Sensor are included in the Industrial segment.

- *Monolith Semiconductor Inc.*: On February 28, 2017, pursuant to a Securities Purchase Agreement between the Company and the stockholders of Monolith Semiconductor Inc. ("Monolith"), a U.S. start-up Company developing silicon carbide technology, the Company increased its investment in Monolith by acquiring approximately 62% of the outstanding common stock of Monolith for $15.0 million. During 2018, the Company acquired the remaining outstanding stock of Monolith for $9.0 million based on Monolith meeting certain technical and sales targets, and now owns 100% of Monolith. The operations of Monolith are included in the Electronics segment.

Sales and Operations

The Company conducts its business through three reportable segments: Electronics, Transportation, and Industrial.

Net sales by segment for the periods indicated are as follows:

	Fiscal Year		
(in millions)	**2021**	**2020**	**2019**
Electronics	$ 1,300.7	$ 937.7	$ 961.1
Transportation	528.1	395.8	428.5
Industrial	251.1	112.2	114.3
Total	$ 2,079.9	$ 1,445.7	$ 1,503.9

The Company operates in three geographic regions: Asia-Pacific, the Americas, and Europe. The Company designs, manufactures products and sells to customers in all three regions.

Net sales in the Company's three geographic regions, based upon the shipped-to destination, are as follows:

	Fiscal Year		
(in millions)	**2021**	**2020**	**2019**
Asia-Pacific	$ 955.7	$ 670.5	$ 656.8
Americas	694.3	457.8	508.4
Europe	429.9	317.4	338.7
Total	$ 2,079.9	$ 1,445.7	$ 1,503.9

The Company's products are sold worldwide through distributors, direct sales force and manufacturers' representatives in certain regions. For the fiscal year 2021, approximately 69% of the Company's net sales were to customers outside the United States ("U.S."), including approximately 30% to China.

The Company manufactures many of its products on fully integrated manufacturing and assembly equipment. The Company maintains product quality through a Global Quality Management System with most manufacturing sites certified under ISO 9001:2000. In addition, several of the Littelfuse manufacturing sites are also certified under IATF 16949 and ISO 14001.

Additional information regarding the Company's sales by geographic area and long-lived assets in different geographic areas is in Note 16, *Segment Information,* of the Notes to Consolidated Financial Statements included in this Annual Report.

BUSINESS ENVIRONMENT

Electronics Segment

The Company designs, manufactures and sells components and modules to empower the long-term mega sustainability themes. Over the last decade the Company has positioned itself within the center of these global structural growth themes by helping to enable its customers' applications focused on a more sustainable, connected, and safer world. The ever-increasing complexity of applications surrounding these themes continues to drive greater demand for the Company's reliable products and a higher level of product content. As a result, the Company has evolved its presence across the industrial, transportation and electronics end markets it serves.

Circuit protection technologies in the Electronics Segment are designed to protect against harmful occurrences like voltage spikes, short circuits, power surges and electrostatic discharge. Products include fuses and fuse accessories, PTC resettable fuses, ESD suppressors, varistors, gas discharge tubes, and semiconductor products such as discrete TVS diodes, TVS diode arrays, and protection thyristors.

The Company also offers a wide range of power control products used to convert and regulate energy and safely and efficiently control power across a broad spectrum of industrial applications like renewable energy and energy storage systems, motor drives and power conversion. Products include a comprehensive portfolio of semiconductor components and modules including thyristors, MOSFETs, rectifiers and fast recovery diodes, IGBTs and wide band gap devices. The 2018 acquisition of IXYS expanded the Company's power semiconductor portfolio in medium and high-power industrial applications and technology expertise. The Company expects to continue to diversify and expand its presence within the industrial market, leveraging the strong IXYS industrial OEM customer base.

As products become increasingly sophisticated, smarter and more connected, the need for complex sensor technologies continues to grow. Sensor products in the Electronics Segment are used in a wide variety of applications including appliances, building and home automation, industrial controls, and commercial vehicles.

Transportation Segment

The Company is a primary supplier of fuses and circuit protection technologies to global automotive OEMs, through sales made to Tier One automotive suppliers, main-fuse box, and wire harness manufacturers that incorporate the fuses into their products, as well as automotive component parts manufacturers, and automotive parts distributors. The Company also sells its fuses in the replacement parts market, with its products being sold through merchandisers, discount stores, and service stations, as well as under private label by national firms.

Passenger vehicle products are used in internal combustion engine, hybrid and electric vehicles including blade fuses, battery cable protectors, resettable fuses, high-current fuses, high-voltage fuses, and sensor products designed to monitor the occupant's safety and environment as well as the vehicle's powertrain.

The Company's commercial vehicle business includes a variety of products including power distribution modules and units, low and high current switches, circuit breakers, relays, battery management products, ignition key switches, and trailer connectors. These products are used in applications serving a number of end markets, including heavy-duty truck, construction, agriculture, material handling and marine. Products are sold directly to a mix of OEMs, Tier One suppliers, aftermarket channels, as well as through general distribution. The acquisition of Carling Technologies significantly expanded the Company's switching, circuit protection and power distribution product portfolios. The Company expects to continue to expand its presence within transportation end markets, leveraging its strong OEM, Tier One and distributor customer base and go-to-market strength, and by continuing to expand its product portfolio through organic and inorganic investments.

Industrial Segment

The Company designs and sells a broad range of power fuses and holders, protection relays and controls, temperature sensors and other circuit protection products, contactors and transformers, for use in various industrial applications such as renewable energy and energy storage systems, electric vehicle infrastructure, HVAC systems, industrial safety, non-residential construction, MRO, mining and industrial automation. These products are used to protect personnel and equipment from excessive currents, over voltages, and electrical shock hazards.

Products are sold direct to OEMs, and through electrical distributors and electronics distribution channels. The 2021 acquisition of Hartland expanded the Company's contactors and transformers product portfolios. The Company expects to continue to expand its presence within industrial end markets, leveraging its strong customer base, and go-to-market strength, and by continuing to expand its product portfolio through organic and inorganic investments.

PRODUCT DESIGN AND DEVELOPMENT

The Company employs scientific, engineering, and other personnel to continually improve its existing product lines and to develop new products at its research, product design, and development ("R&D") and engineering facilities with primary locations in China, Germany, Italy, Japan, Lithuania, Mexico, Philippines, Taiwan (China), United Kingdom ("U.K."), and the U.S. The Company maintains a staff of engineers, chemists, material scientists and technicians whose primary responsibility is to design and develop new products.

Proposals for the development of new products are initiated primarily by sales, marketing, and product management personnel with input from customers. The entire product development process usually ranges from a few months to a few years based on the complexity of development, with continuous efforts to reduce the development cycle. During fiscal years 2021, 2020, and 2019, the Company expended $65.9 million, $52.5 million, and $80.0 million, respectively, on R&D.

PATENTS, TRADEMARKS, AND OTHER INTELLECTUAL PROPERTY

The Company generally relies on patents, trademarks, licenses, and nondisclosure agreements to protect its intellectual property and proprietary products. In cases where it is deemed necessary by management, key employees are required to sign an agreement that they will maintain the confidentiality of the Company's proprietary information and trade secrets.

The Company owns a large portfolio of patents worldwide and new products are continually being developed to replace older products. The Company regularly applies for patent protection on such new products. While, in the aggregate, the Company's patents are important in the operation of its businesses, the Company believes that the loss by expiration or otherwise of any one patent or group of patents would not materially affect its business.

MANUFACTURING

The Company's manufacturing facilities are in China, Germany, Italy, Japan, Lithuania, Mexico, Philippines, Portugal, the U.K., and the U.S. The Company performs the majority of its own fabrication and maintains in-house capabilities for metal stamping, surface mount assembly, plating (silver, nickel, zinc, and oxides) and thermoplastic molding. In addition, the Company fabricates semiconductor wafers for certain applications and maintains in-house capability for epitaxy fabrication, die attach, and wafer probe testing. After sub-components are readied for assembly, final assembly is accomplished on fully automatic and semi-automatic assembly machines. Quality assurance and operations personnel, using techniques such as statistical process control, perform tests, checks and measurements during the production process to maintain the highest levels of product quality, including safety and reliability, and customer satisfaction. Additionally, the Company utilizes external wafer foundries and subcontracted test and assembly facilities for a portion of its semiconductor business.

The principal raw materials for the Company's products include copper and copper alloys, resin and heat-resistant plastics, zinc, melamine, glass, silver, gold, raw silicon, solder, rubber, and various gases. The Company's strategy is to prequalify suppliers for quality assurance and supply continuity, and when possible, to localize supply sources close to its manufacturing sites. This helps to minimize the transportation of materials, and ultimately reduces the Company's environmental footprint by decreasing emissions, consistent with its sustainability strategy. For critical materials, the Company looks to diversify its supplier base by prequalifying second sources.

SALES AND MARKETING

The Company goes to market through selling organizations consisting of worldwide direct sales personnel, distribution partners and manufacturers' representatives. The direct sales force closely works with global OEM, Tier One automotive, consulting engineers, and major end customers to design-in and sell all of the Company's products. The distributors provide fulfillment for a majority of customers including those partnered with electronic manufacturing services ("EMS"). The Company has sales offices and direct sales channels in a number of countries around the world.

Electronics Segment

Our Electronics segment products are used across a variety of applications. While certain of our products require less design support for our customers, many of our products are incorporated into applications with complex design technical support requirements. Most Electronics segment products are sold through our direct salesforce or through our channel distribution partners. The fulfillment of these products is primarily through our broad line distribution partners, including global distributors such as Arrow Electronics, Inc., Future Electronics and TTI, Inc., regional and high service distributors, including Digi-Key and Mouser, as well as directly to OEM's.

Transportation Segment

The Company primarily uses a direct sales force to service all of the major automotive and commercial vehicle OEMs, system suppliers, and Tier One automotive and aftermarket customers globally. In selected areas, the Company also uses distributors to service smaller customers and to provide supply chain fulfillment for certain customers.

The Company also leverages its transportation customer relationships to sell products from the Electronics segment into transportation end markets, primarily to Tier One automotive customers. These revenues are reported in the Electronics segment.

Industrial Segment

The Company markets and sells its Industrial segment products direct to OEMs, and through electrical distributors and electronics distribution channels to various end customers including electrical contractors, factories, municipalities, and utilities.

CUSTOMERS

The Company directly sells to over 6,900 customers and distributors worldwide. Sales to Arrow Electronics, Inc., which were reported in our Electronics, Transportation and Industrial segments, were 10.7%, 10.4% and 10.7% of consolidated net sales in 2021, 2020, and 2019, respectively. No other single customer accounted for more than 10% of net sales during any of the last three years. During fiscal 2021, 2020, and 2019, net sales to customers outside the U.S. accounted for approximately 69%, 73%, and 71%, respectively, of the Company’s total net sales.

CYBERSECURITY

The Company relies on its information technology systems and networks in connection with many of its business activities. Some of these networks and systems are managed directly by the Company, while others are managed by third-party service providers and are not under the Company's day-to-day control. We oversee the services provided by the third-party service providers. We continually evaluate ourselves for appropriate business continuity and disaster recovery planning, with test scenarios that include simulations and penetration tests. Our networks are monitored by intrusion detection services, and our systems and applications are routinely tested for vulnerabilities and are operated with an appropriate patch management program. We employ a skilled IT workforce to implement our cybersecurity programs and to handle specific security responsibilities. Our IT workforce is trained to address security and compliance-related issues as they arise.

COMPETITION

The Company’s products compete with similar products of other manufacturers, some of which may have substantially greater financial resources than the Company. In the Electronics segment, the Company’s competitors include Eaton Corporation, Bourns Inc., TDK, ON Semiconductor Corporation, Infineon Technologies, STMicroelectronics NV, Semtech Corporation, and Vishay Intertechnology Inc. In the Transportation segment, the Company’s competitors include Eaton Corporation, Pacific Engineering, MTA (Meccanotecnica Codognese), CTS Corporation, Amphenol Corporation, Sensata Technologies Holding NV, and TE Connectivity Ltd. In the Industrial segment, the Company’s major competitors include Eaton Corporation, GE Multilin, and Mersen. The Company believes that it globally competes on the basis of innovative products, the breadth of its product line, the quality, design and performance of its products based on their reliability, consistency and safety, its technical capabilities and application expertise, and the responsiveness of its customer service.

BACKLOG

The backlog of unfilled orders at January 1, 2022 was approximately $1,657.1 million, compared to $709.9 million at December 26, 2020 with the increase primarily driven by all segments and acquisition. Substantially all the orders currently in backlog are scheduled for delivery in 2022.

HUMAN CAPITAL MANAGEMENT

A passion for engineering excellence and an innovative spirit have been a part of what it means to work at Littelfuse since its founding in 1927. The Company hires bright minds who want to make a big impact and are committed to improve the safety, reliability and performance of our customers' products. As the Company's human capital is critical to its success, the Company strives to make Littelfuse a safe, diverse, and inclusive workplace, provide competitive compensation, benefits, and health and wellness programs, offer appropriate training and promote community involvement.

Employee Data

At January 1, 2022, the Company had approximately 17,000 full-time, part-time and temporary employees; of which 53% are female and 47% are male; and of which 52%, 37% and 11% are located in the Americas, Asia-Pacific region, and Europe, respectively.

Core Values

Littelfuse core values – Customer Focus, Teamwork, Results Driven, Integrity and Innovation – guide conversations, decisions, and interactions for our business. Together, they are the foundation of the Company's working relationships both internally and externally and the Company asks each of associates to exemplify these high standards every day.

Governance & Oversight

The Chief Human Resources Officer ("CHRO") is responsible for developing and executing the Company's human capital strategy. This includes establishing and implementing the Company's global policies and programs for leadership and employee development, compensation, benefits, workforce planning, human resources systems, and ensuring effective and efficient internal company operations. The CHRO is responsible for developing and integrating the Company's diversity, inclusion, and belonging strategy in its business operations. The Chief Executive Officer ("CEO") and CHRO regularly update the Company's board of directors on human capital matters.

Leadership and Employee Development

The Company is committed to identifying and developing our next generation of leaders. The Company's talent review and succession planning processes support the development of the Company's talent pipeline, as well as the diversity of its talent. The Company is focused on both the recruitment of diverse candidates and the development of the Company's diverse employees to provide the opportunity to advance their careers and move into leadership positions within the Company. Globally, the Company conducts enterprise-wide talent review processes with the CEO, business unit and function leaders focusing on the Company's high-performing and high-potential talent, diverse talent, and the succession for the Company's most critical roles. Also, the Company's board of directors reviews and assesses management development plans for senior executives and the succession plans relating to those positions.

From the Company's production lines to its engineering labs, the office or distribution center, the contributions of the Company's talented teams make a critical difference. The Company's goal is to ensure that every employee is provided with the appropriate resources and opportunities to enjoy a successful and rewarding career at Littelfuse. The Company's training programs cover topics including job-skills, enterprise six-sigma, Lean manufacturing, information security, and ethics and compliance. All global associates are required to take the Company's annual Code of Conduct training, which is made available in local languages for the Company's global workforce. The Company also has regional development programs that assist the Company's current and future leaders to develop leadership skills and grow their careers in Littelfuse.

Diversity and Inclusion

As part of driving sustainable success, The Company values and celebrates diversity in every aspect of work with customers, stakeholders, suppliers and each other. The Company's commitment to diversity and equity empowers its associates to innovate, deliver bold solutions and drive growth with the multifaceted insight that comes from true community. The Company believes that when everyone is included, everyone wins.
Our Diversity, Inclusion and Belonging Council focuses on enhancing the diversity across the Company's stakeholders through bold solutions, to drive sustainable success across the company. In addition, the Company also has a number of employee resource groups, each sponsored by a member of our executive leadership team, that enhance its inclusive and diverse culture.

One example is the Company's Women's Initiative Network (WiN). WiN was established to provide a forum to inspire and accelerate associate advancement and development through networking, mentoring, coaching and education.

Compensation and Benefits

The Company provides compensation and benefits programs designed to be both competitive and equitable, in order to attract, retain and motivate highly qualified associates. The components of the Company's compensation program vary by region and employee-type, and include items such as base salary, performance-based bonus plans, equity awards, paid time off, and tuition reimbursement. Global programs include a combination of statutory and additional supplemental benefits in the areas of health, welfare and retirement.

Health, Safety and Wellness

The Company is committed to the safety, health, human rights, and well-being of our employees. The Company continuously evaluates opportunities to raise safety and health standards through the Company's environmental, health, and safety teams. Compliance audits and internal processes are in place to stay ahead of workplace hazards, and the Company strives for a zero-injury workplace and to further our strong culture of safety. The Company further supports the mental and physical well-being of the Company's employees through a range of wellness programs that promote a healthy lifestyle.

During the COVID-19 pandemic, the Company has prioritized the health and safety of its associates and their families. In an effort to protect the health and safety of our associates, the Company has taken proactive steps in our facilities globally to implement safety procedures including hygiene and disinfection protocols, social distancing, and providing transportation alternatives for employees to get to work and personal protective equipment.

Community Involvement

The Company encourages and sponsors employees to donate their time and other resources to improve the communities where they live and work. The Company's teams around the globe regularly engage in local community outreach, sponsoring activities and initiatives that align with its overall community involvement strategy. The causes the Company supports include science, technology, engineering and mathematics ("STEM") education, community improvement and environmental stewardship.

SUSTAINABILITY

The Company is focused on creating long-term value for customers, employees, investors, and the communities where they live and work through sustainable business practices. Many of the Company's key end markets are linked to sustainable applications such as electric vehicles and charging infrastructure, renewable energy, and power management. Sustainable end markets have been a focus of the Company for decades and the Company published its first Sustainability Report in 2021, as the Company aims to further communicate its commitment and progress towards key internal sustainability initiatives. The initial focus areas in the Company's Sustainability Report include:

- business ethics
- innovation
- climate change and greenhouse gas emissions
- training, education, and career development
- water and wastewater management
- sustainable supply chain
- health and safety in the workplace
- diversity and equal opportunity
- community involvement
- economic performance
- energy management
- waste and hazardous material management

Additional information on how the Company manages each of these topics and the sustainability program progress is available in the Company's Sustainability Report, located on the Company's website at https://www.littelfuse.com/about-us/sustainability.aspx. The contents of the Company's Sustainability Report and website are not incorporated by reference in this Annual Report on Form 10-K.

ENVIRONMENTAL REGULATION

The Company is subject to numerous foreign, federal, state, and local regulations relating to air and water quality, the disposal of hazardous waste materials, safety and health. Compliance with applicable environmental regulations has not significantly changed the Company's competitive position, capital spending or earnings in the past and the Company does not presently anticipate that compliance with such regulations will change its competitive position, capital spending or earnings for the foreseeable future.

The Company believes that it is currently in compliance in all material respects with applicable environmental laws and regulations.

Littelfuse GmbH, which was acquired by the Company in May 2004, is responsible for maintaining closed coal mines in Germany from legacy operations. The Company is compliant with German regulations pertaining to the maintenance of the mines and has an accrual related to certain of these coal mine shafts based on an engineering study estimating the cost of remediating the dangers (such as a shaft collapse) of certain of these closed coal mine shafts in Germany. The accrual is reviewed annually and calculated based upon the estimated costs of remediating the shafts. Further information regarding the coal mine liability accrual is provided in Note 1, *Summary of Significant Accounting Policies and Other Information*, of the Notes to Consolidated Financial Statements included in this Annual Report.

ITEM 1A. RISK FACTORS.

The Company's business, financial condition, and results of operations are subject to various risks and uncertainties, including the risk factors it has identified below. Any of the following risk factors could materially and adversely affect the Company's business, financial condition, or results of operations. These factors are not necessarily listed in order of importance.

1) Operational Risks:

The Company's industry is subject to intense competitive pressures.

The Company operates in markets that are highly competitive. The Company competes on the basis of price, product performance and quality, service, and / or brand name across the industries and markets it serves. Competitive pressures could affect the prices the Company is able to charge its customers or demand for its products.

The Company may not always be able to compete on price, particularly when compared to manufacturers with lower cost structures. Some of the Company's competitors have substantially greater sales, financial and manufacturing resources and may have greater access to capital than the Company. As other companies enter its markets or develop new products, competition may further intensify. The Company's failure to compete effectively could materially adversely affect its business, financial condition, and results of operations.

The Company engages in strategic acquisitions and may not realize the anticipated benefits of the acquisitions and / or may encounter difficulties in integrating these businesses.

The Company seeks to grow through strategic acquisitions. In the past, the Company has acquired a number of businesses or companies and additional product lines and assets. The Company intends to continue to expand and diversify its operations with additional future acquisitions.

An acquired business, technology, service or product could under-perform relative to the Company's expectations and the price paid for it, or not perform in accordance with the Company's anticipated timetable. This could cause the Company's financial results to differ from expectations in any given fiscal period, or over the long term. The success of these transactions also depends on the Company's ability to integrate the assets, operations, and personnel associated with these acquisitions. The Company may encounter difficulties in integrating acquisitions with the Company's operations and may not realize the degree or timing of the benefits that are anticipated from an acquisition.

The Company may also discover liabilities or deficiencies associated with the companies or assets it acquires that were not identified in advance, which may result in significant unanticipated costs. The effectiveness of the Company's due diligence review and its ability to evaluate the results of such due diligence are dependent upon the accuracy and completeness of statements and disclosures made or actions taken by the companies acquired or their representatives, as well as the limited amount of time in which acquisitions are executed. In addition, the Company may fail to accurately forecast the financial impact of an acquisition transaction, including tax and accounting charges. Acquisitions may also result in recording of significant additional expenses to the results of operations and recording of substantial intangible assets on the balance sheet upon closing. Any of these factors may adversely affect the Company's financial condition and results of operations.

Disruptions in the Company's manufacturing, supply or distribution chain could result in an adverse impact on results of operations.

The Company sources materials and sells product through various global network channels. A disruption could occur within the Company's manufacturing, distribution or supply chain network. This could include damage or destruction due to various causes including natural disasters or political instability which would cause one or more of these network channels to become non-operational. This could adversely affect the Company's ability to manufacture or deliver its products in a timely manner, impair its ability to meet customer demand for products and result in lost sales or damage to its reputation. Such a disruption could have a material adverse effect on the Company's business, financial condition and results of operations.

The Company may be unable to manufacture and deliver products in a manner that is responsive to its customers' needs.

The end markets for the Company's products are characterized by technological change, frequent new product introductions and enhancements, changes in customer requirements and emerging industry standards. The introduction of products embodying new technologies and the emergence of new industry standards could render its existing products obsolete and unmarketable before it can recover any or all of its research, development, and commercialization expenses on capital investments. Furthermore, the life cycles of its products may change and are difficult to estimate.

The Company's future success will depend upon its ability to manufacture and deliver products in a manner that is responsive to its customers' needs. The Company will need to develop and introduce new products and product enhancements on a timely basis that keep pace with technological developments and emerging industry standards and address increasingly sophisticated requirements of its customers. The Company invests heavily in research and development without knowing if it will recover these costs. The Company's competitors may develop products or technologies that will render its products non-competitive or obsolete. If it cannot develop and market new products or product enhancements in a timely and cost-effective manner, its business, financial condition and results of operations could be materially adversely affected.

The Company's business may be interrupted by labor disputes or other interruptions of supplies.

A work stoppage could occur at certain Company facilities, most likely as a result of disputes under collective bargaining agreements or in connection with negotiations of new collective bargaining agreements. In addition, the Company may experience a shortage of supplies for various reasons, such as financial distress, work stoppages, natural disasters, or production difficulties that may affect one of its suppliers. A significant work stoppage, or an interruption or shortage of supplies for any reason, if protracted, could substantially adversely affect the Company's business, financial condition and results of operations.

Failure to attract and retain qualified personnel could affect the Company's business results.

The Company's success in its existing and acquired businesses, depends on the Company's ability to attract, retain, and motivate a highly-skilled and diverse management team and workforce. Failure to ensure that the Company has the depth and breadth of personnel with the necessary skill set and experience could impede its ability to deliver growth objectives and execute the Company's strategy. Competition for qualified employees among companies that rely heavily upon engineering and technology is at times intense, and the loss of qualified employees could hinder the Company's ability to conduct research activities successfully and develop marketable products.

The Company may not be successful protecting its intellectual property.

The Company considers its intellectual property, including patents, trade names, and trademarks, to be of significant value to its business as a whole. The Company's products are manufactured, marketed, and sold under a portfolio of patents, trademarks, licenses, and other forms of intellectual property, some of which expire or are allowed to lapse at various dates in the future. The Company develops and acquires new intellectual property on an ongoing basis and considers all of its intellectual property to be valuable. The Company's policy is to file applications and obtain patents for the great majority of its novel and innovative new products including product modifications and improvements. Based on the broad scope of its product lines, the Company believes that the loss or expiration of any single intellectual property right would not have a material adverse effect upon its consolidated results of operations, financial position and cash flows; however, multiple losses or expirations could have a material adverse effect upon the Company's consolidated results of operations, financial position and cash flows.

2) Regulatory Risks:

Climate change, and the regulatory and legislative developments related to climate change, may have a material adverse impact on our business and results of operations.

The potential physical impacts of climate change on our business operations are highly uncertain and differ in each geographic region where we operate. These impacts may include changes in weather patterns and increased weather intensity, water shortages, changing sea levels and changing temperatures. The impacts of climate change may materially and adversely impact the cost of production, insurance availability, and financial performance of our operations. Further, any impacts to our business and financial condition as a result of climate change are likely to occur over a sustained period of time and are therefore difficult to quantify with any degree of specificity. For example, extreme weather events may result in adverse physical effects on portions of our or others infrastructure, which could disrupt our supply chain and our customers and ultimately our business operations. In addition, disruption of transportation and distribution systems could result in reduced operational efficiency and customer service interruption. Climate-related events have the potential to disrupt our business, including the business of our suppliers and customers, and may cause us to experience higher attrition, and additional costs to resume operations.

Increased government or governmental bodies contemplating legislative and regulatory changes in response to the potential impact of climate change could impose significant costs on us and our suppliers and customers, including increased cost of materials and natural resources, sources and supply of energy, capital equipment, environmental monitoring and reporting, or other costs to comply with such regulations. Potential regulations or standards could mandate more restrictive manufacturing requirements, such as stricter limits on greenhouse gas emissions and material used in production. Any future climate change regulations could also adversely impact our ability to compete with companies not subject to such regulations.

Changes in U.S. and other countries trade policy, including the imposition of tariffs and the resulting consequences, may have a material adverse impact on our business and results of operations.

In the past several years, the U.S. government adopted a new approach to trade policy and in some cases to renegotiate, or potentially terminate, certain existing bilateral or multi-lateral trade agreements. It also imposed tariffs on certain foreign goods and products. These measures may materially increase costs for goods imported into the U.S. This in turn could require us to materially increase prices to our customers which may reduce demand, or, if we do not or are unable to increase prices, could result in lower margins on products sold. Changes in U.S. trade policy have resulted in, and could result in more, U.S. trading partners adopting responsive trade policies making it more difficult or costly for us to export our products to those countries. Additionally, continued geo-political issues may result in customers in China seeking to source products from local suppliers, which could result in lower sales or lost customers.

The Company is exposed to political, economic, and other risks that arise from operating a multinational business.

The Company's customers, suppliers, employees and operations are located in numerous countries around the world, and contribute significantly to its revenues and earnings. Sales to customers outside the U.S. constituted approximately 69% of the Company's net sales in fiscal 2021. Many of the Company's key customers are located outside of U.S. and maintain global operations. Serving a global customer base and remaining competitive in the global marketplace requires the Company to diversify its operations outside the U.S. to capitalize on customer and market opportunities, build a global workforce and maintain a cost efficient structure. In addition, the Company sources a significant amount of raw materials, components and finished goods from third-party suppliers and contract manufacturers. The Company’s operating activities are subject to a number of risks generally associated with multi-national operations, including risks relating to the following:

- general economic conditions;
- currency fluctuations and exchange restrictions;
- import and export duties and restrictions;
- the imposition of tariffs and other import or export barriers;
- compliance with regulations governing import and export activities;
- current and changing regulatory requirements;
- political and economic instability;
- potentially adverse income tax consequences;
- transportation delays and interruptions;
- labor unrest;
- natural disasters;
- terrorist activities;
- public health concerns, including the outbreak of the coronavirus or other pandemics;
- difficulties in staffing and managing multi-national operations; and

- limitations on the Company’s ability to enforce legal rights and remedies.

Any of these factors could have a material adverse effect on the Company’s consolidated results of operations, financial position and cash flows.

The COVID-19 pandemic could have a material adverse effect on our ability to operate, results of operations, financial condition, liquidity, and capital investments.

The World Health Organization declared the COVID-19 outbreak a pandemic in 2020, and the virus continues to spread in areas where we operate and sell our products. The COVID-19 pandemic and similar situations/circumstances in the future could have a material adverse effect on our ability to operate, results of operations, financial condition, liquidity, and capital investments. Several public health organizations have recommended, and some local governments have implemented, certain measures to slow and limit the transmission of the virus, including travel restrictions, shelter-in-place requirements and social distancing requirements. Such preventive measures, or others we may voluntarily put in place, may have a material adverse effect on our business for an indefinite period of time, such as the potential shut down of certain locations, decreased employee availability, potential increased vulnerability to cybersecurity incidents, including breaches of information systems security due to widespread remote working arrangements, potential border closures. Our suppliers and customers, including OEMs and distribution partners, may also face similar disruptions to their operations, which could lead to a disruption in our supply chain as well as decreased demand for our products. These issues may also materially affect our future access to our sources of liquidity, particularly our cash flows from operations, financial condition, capitalization, and capital investments. These disruptions may continue to occur and may result in future impairment, restructuring and other charges. To the extent the COVID-19 pandemic adversely affects our business and financial results, it may also have the effect of heightening many of the other risks described in the risk factors disclosed in *Part I, Item 1A. Risk Factors*, including those relating to our products and services, financial performance, debt covenant compliance and debt obligations. The ultimate magnitude of COVID-19, including the extent of its impact on our financial and operational results, which could be material, will be determined by the length of time that the pandemic continues, its effect on the demand for our services, as well as the effect of governmental regulations imposed in response to the pandemic. We cannot at this time predict the impact of the COVID-19 pandemic, but it could have a material adverse effect on our business, financial condition, results of operations and/or cash flows.

Environmental liabilities could adversely impact the Company’s financial position.

Foreign, federal, state and local laws and regulations impose various restrictions and controls on the discharge of materials, chemicals and gases used in the Company’s manufacturing processes or in its finished goods. These environmental regulations have required the Company to expend a portion of its resources and capital on relevant compliance programs. Under these laws and regulations, the Company could be held financially responsible for remedial measures if its current or former properties are contaminated or if it sends waste to a landfill or recycling facility that becomes contaminated, even if the Company did not cause the contamination. The Company may be subject to additional common law claims if it releases substances that damage or harm third parties. In addition, future changes in environmental laws or regulations may require additional investments in capital equipment or the implementation of additional compliance programs. Any failure to comply with new or existing environmental laws or regulations could subject the Company to significant liabilities and could have a material adverse effect on its consolidated results of operations, financial position and cash flows.

In the conduct of manufacturing operations, the Company has handled and does handle materials that are considered hazardous, toxic or volatile under federal, state, and local laws. The risk of accidental release of such materials cannot be completely eliminated. In addition, the Company operates or owns facilities located on or near real property that was formerly owned and operated by others. Certain of these properties were used in ways that involved hazardous materials. Contaminants may migrate from, within or through these properties. These releases or migrations may give rise to claims. Where third parties are responsible for contamination, the third parties may not have funds, or not make funds available when needed, to pay remediation costs imposed upon the Company under environmental laws and regulations.

The Company is responsible for the maintenance of discontinued coal mining operations in Germany. The risk of environmental remediation exists, and the Company is in the process of remediating the mines considered to be the most at risk.

<u>3) Financial Risks:</u>

Reorganization activities may lead to additional costs and material adverse effects.

In the past, the Company has taken actions to restructure and optimize its production and manufacturing capabilities and efficiencies through relocations, consolidations, plant closings or asset sales. In the future, the Company may take additional restructuring actions including the consolidating, closing or selling of additional facilities. These actions could result in impairment charges and various charges for such items as idle capacity, disposition costs and severance costs, in addition to normal or attendant risks and uncertainties. The Company may be unsuccessful in any of its current or future efforts to restructure or consolidate its business. Plans to minimize or eliminate any loss of revenues during restructuring or consolidation may not be achieved. These activities may have a material adverse effect upon the Company's business, financial condition and results of operations.

The Company's ability to manage currency or commodity price fluctuations or supply shortages is limited.

As a resource-intensive manufacturing operation, the Company is exposed to a variety of market and asset risks, including the effects of changes in commodity prices, foreign currency exchange rates, and interest rates. The Company has multiple sources of supply for the majority of its commodity requirements. However, significant shortages that disrupt the supply of raw materials or result in price increases could affect prices the Company charges its customers, its product costs, and the competitive position of its products and services. The Company monitors and manages these exposures as an integral part of its overall risk management program, which recognizes the unpredictability of markets and seeks to reduce the potentially adverse effects on its results. Nevertheless, changes in currency exchange rates, commodity prices and interest rates cannot always be predicted. In addition, because of intense price competition and the Company's high level of fixed costs, it may not be able to address such changes even if they are foreseeable. Substantial changes in these rates and prices could have a material adverse effect on the Company's results of operations and financial condition. In addition, significant portions of its revenues and earnings are exposed to changes in foreign currency rates. As it operates in multiple foreign currencies, changes in those currencies relative to the U.S. dollar will impact its revenues and expenses. The impact of possible currency devaluation in countries experiencing high inflation rates or significant exchange fluctuations can impact the Company's results and financial guidance. For additional discussion of interest rate, currency or commodity price risk, see Item 7A, *Quantitative and Qualitative Disclosures about Market Risk*.

The Company's effective tax rate could materially increase as a consequence of various factors, including U.S. and/or international tax legislation, mix of the Company's earnings by jurisdiction, and U.S. and non-U.S. jurisdictional tax audits.

The Company is subject to taxes in the U.S. and numerous non-U.S. jurisdictions. Therefore, it is subject to changes in tax laws in each of these jurisdictions, including changes discussed in the paragraphs below. The outcome of these and other legislative developments, including changes to interpretations of recently enacted legislation, could have a material adverse effect on the Company's future effective tax rate and cash flows.

U.S. tax legislative proposals currently being considered in a bill referred to as "Build Back Better" could, among other things, increase the Company's U.S. taxes on non-U.S. earnings, effective in 2023. In addition, the Organization for Economic Cooperation and Development ("OECD") is working with a group of more than 100 countries to significantly change the tax treatment of multinational businesses, subjecting them to tax in additional jurisdictions, modifying the methods by which they allocate profits among jurisdictions, and subjecting them to a minimum level of tax. As part of this effort, during 2021, the OECD reached a near-unanimous agreement among the working group jurisdictions to apply a minimum income tax rate of 15%, on a country-by-country basis. In December of 2021, the OECD published model rules to assist with implementation of the minimum tax regime, proposed to be effective in 2023, and the European Union published a directive that would incorporate the OECD-led minimum tax proposals into European Union law. The Company's income tax rate in certain non-U.S. jurisdictions is lower than 15%. Enactment of these minimum tax proposals, and the other proposals discussed above, could have a material adverse effect on the Company's future effective tax rate and cash flows.

Certain European jurisdictions, including Germany and the Netherlands, have enacted or will enact tax legislation based upon directives from the European Union. Such legislation could potentially deny tax deductions for certain expenses and/or subject to tax the income earned in certain low tax jurisdictions.

The Company has two subsidiaries in China which benefit from lower income tax rates due to "tax holidays" which apply for three-year periods. The tax holiday for one of the subsidiaries expires at the end of 2022, and for the other subsidiary the tax holiday will expire at the end of 2023. Future year tax benefits will depend upon the Company's ability to obtain extensions, after the three-year periods expire. There can be no assurance that future extensions will be granted.

The tax rates applicable in the jurisdictions within which the Company operates vary widely. Therefore, the Company's effective tax rate may be adversely affected by changes in the mix of its earnings by jurisdiction.

The Company's tax returns are subject to examination by various U.S. and non-U.S. tax authorities, including the U.S. Internal Revenue Service. The Company regularly assesses the likelihood of an adverse outcome resulting from these examinations to determine the adequacy of its provision for income taxes. However, there can be no assurance as to the outcome of these examinations.

A decline in expected profitability of the Company or individual reporting units of the Company could result in the impairment of assets, including goodwill and other long-lived assets.

The Company continues to hold material amounts of goodwill and other long-lived assets on its balance sheet. A decline in expected profitability, particularly if there is a decline in the global economy, could call into question the recoverability of the Company's related goodwill and other long-lived tangible and intangible assets and require the write-down or write-off of these assets. Such an occurrence could have a material adverse effect on the Company's consolidated results of operations, financial position and cash flows.

A significant fluctuation between the U.S. dollar and other currencies could adversely impact the Company's revenue and earnings.

Although the Company's financial results are reported in U.S. dollars, the majority of the Company's operations consist of manufacturing and sales activities in foreign countries. The Company's most significant net long exposure is to the euro. The Company's most significant net short exposures are to the Chinese renminbi, Mexican peso, and Philippine peso. Changes in foreign exchange rates could have an adverse effect on the Company's results of operations, financial position and cash flows.

The Company's revenues may vary significantly from period to period.

The Company's revenues may vary significantly from one period to another due to a variety of factors including:

- changes in customers' buying decisions;
- changes in demand for its products;
- changes in its distributor inventory stocking;
- the Company's product mix;
- the Company's effectiveness in managing manufacturing processes;
- costs and timing of its component purchases;
- the effectiveness of its inventory control;
- the degree to which it is able to utilize its available manufacturing capacity;
- the Company's ability to meet delivery schedules;
- general economic and industry conditions;
- local conditions and events that may affect its production volumes, such as labor conditions and political instability; and
- seasonality of certain product lines.

The bankruptcy or insolvency of a major customer could adversely affect the Company.

The bankruptcy or insolvency of a major customer could result in lower sales revenue and cause a material adverse effect on the Company's consolidated results of operations, financial position and cash flows. In addition, the bankruptcy or insolvency of a major auto manufacturer or significant supplier likely could lead to substantial disruptions in the automotive supply base, resulting in lower demand for the Company's products, which would likely cause a decrease in sales revenue and have a substantial adverse impact on the Company's consolidated results of operations, financial position and cash flows.

The inability to maintain access to capital markets may adversely affect the Company's business and financial results.

The Company's ability to invest in its businesses, make strategic acquisitions, and refinance maturing debt obligations may require access to the capital markets and sufficient bank credit lines to support short-term borrowings. If the Company is unable to access the capital markets or bank credit facilities, it could experience a material adverse effect on its consolidated results of operations, financial position and cash flows.

Fixed costs may reduce operating results if sales fall below expectations.

The Company's expense levels are based, in part, on its expectations for future sales. Many of the Company's expenses, particularly those relating to capital equipment and manufacturing overhead, are relatively fixed. The Company might not be able to reduce spending quickly enough to compensate for reductions in sales. Accordingly, shortfalls in sales could materially and adversely affect the Company's consolidated results of operations, financial position and cash flows.

The volatility of the Company's stock price could affect the value of an investment in the Company's stock and future financial position.

The market price of the Company's stock can fluctuate widely. Between December 26, 2020 and January 1, 2022, the closing sale price of the Company's common stock ranged between a low of $234.59 and a high of $334.84. The volatility of the stock price may be related to any number of factors, such as volatility in the financial markets, general macroeconomic conditions, industry conditions, market expectations concerning the Company's results of operations, or the volatility of its revenues as discussed above under "The Company's Revenues May Vary Significantly from Period to Period." The historic market price of the Company's common stock may not be indicative of future market prices. The Company may not be able to sustain or increase the value of its common stock. Declines in the market price of the Company's stock could adversely affect the Company's ability to retain personnel with stock incentives, to acquire businesses or assets in exchange for stock and/or to conduct future financing activities with or involving the Company's common stock.

The Company is exposed to, and may be adversely affected by, potential security breaches or other disruptions to its information technology systems and data security.

The Company relies on its information technology systems and networks in connection with many of its business activities. Some of these networks and systems are managed directly by the Company, while others are managed by third-party service providers and are not under the Company's direct control. The Company's operations routinely involve receiving, storing, processing and transmitting sensitive information pertaining to its business, customers, dealers, suppliers, employees, and other sensitive matters. As with most companies, the Company has experienced cyber-attacks, attempts to breach its systems, and other similar incidents, none of which have been material. Any future cyber incidents could, however, materially disrupt operational systems; result in loss of trade secrets or other proprietary or competitively sensitive information; compromise personally identifiable information regarding employees or customers or other third parties; and jeopardize the security of the Company's facilities. A cyber incident could be caused by malicious outsiders using sophisticated methods to circumvent firewalls, encryption, and other security defenses. Because techniques used to obtain unauthorized access or to sabotage systems change frequently and generally are not recognized until they are launched against a target, the Company may be unable to anticipate these techniques or to implement adequate preventative measures. Information technology security threats, including security breaches, computer malware, and other cyber-attacks are increasing in both frequency and sophistication and could create financial liability, subject the Company to legal or regulatory sanctions or damage the Company's reputation with customers, dealers, suppliers, and other stakeholders. The Company continuously seeks to maintain a robust program of information security and controls, but the impact of a material information technology event could have a material adverse effect on the Company's competitive position, reputation, results of operations, financial position and cash flows.

Customer demands and regulations related to conflict-free minerals may force the Company to incur additional expenses.

The Dodd-Frank Wall Street Reform and Consumer Protection Act requires disclosure of use of "conflict" minerals mined from the Democratic Republic of Congo and adjoining countries and efforts to prevent the use of such minerals. In the semiconductor industry, these minerals are most commonly found in metals. As there may be only a limited number of suppliers offering "conflict free" metals, the Company cannot be certain that it will be able to obtain necessary metals in sufficient quantities or at competitive prices. Also, the Company may face challenges with its customers and suppliers if it is unable to sufficiently verify that the metals used in its products are "conflict free."

ITEM 1B. UNRESOLVED STAFF COMMENTS.
None.

ITEM 2. PROPERTIES.

The Company's engineering and research and development, manufacturing, sales, and distribution centers are located in approximately 77 owned or leased facilities worldwide with primary operations in China, Germany, Italy, Japan, Lithuania, Mexico, Netherlands, Philippines, South Korea, U.K, and the U.S. totaling approximately 3.9 million square feet. The Company's owned facilities include approximately 2.1 million square feet and the Company's leased facilities include approximately 1.8 million square feet. The Company's corporate headquarters is located in the U.S. in Chicago, Illinois.

The Company believes its facilities are adequate to meet its requirements for the foreseeable future.

ITEM 3. LEGAL PROCEEDINGS.

The Company is not a party to any material legal proceedings, other than routine litigation incidental to its business.

ITEM 4. MINE SAFETY DISCLOSURES.

Not applicable.

Information about our Executive Officers.

The executive officers of the Company are as follows:

Name	Age	Position
David W. Heinzmann	58	President and Chief Executive Officer
Meenal A. Sethna	52	Executive Vice President and Chief Financial Officer
Ryan K. Stafford	54	Executive Vice President, Mergers and Acquisitions, Chief Legal Officer and Corporate Secretary
Maggie Chu	53	Senior Vice President and Chief Human Resources Officer
Matthew J. Cole	50	Senior Vice President, eMobility and Corporate Strategy
Alexander Conrad	56	Senior Vice President and General Manager, Passenger Vehicle Business
Deepak Nayar	62	Senior Vice President and General Manager, Electronics Business

David W. Heinzmann, President and Chief Executive Officer and a member of the Board of Directors. Mr. Heinzmann began his career at Littelfuse in 1985 as a manufacturing engineer and has held positions of increasing responsibility since that time, including Vice President, Global Operations, from 2007 to 2014, and Chief Operating Officer from 2014 until assuming his current position in 2017.

Meenal A. Sethna, Executive Vice President and Chief Financial Officer. Ms. Sethna joined Littelfuse in 2015 as Senior Vice President of Finance until assuming her current position in 2016. Prior to joining Littelfuse, Ms. Sethna served from 2011 to 2015 as Vice President and Corporate Controller of Illinois Tool Works Inc., a diversified manufacturer of specialized industrial equipment, consumables, and related service businesses. Ms. Sethna is a Certified Public Accountant in Illinois.

Ryan K. Stafford, Executive Vice President, Mergers and Acquisitions, Chief Legal Officer and Corporate Secretary. Mr. Stafford joined Littelfuse as its first General Counsel and Chief Human Resources Officer in 2007, became Corporate Secretary in 2017, and assumed his current position in 2021. Prior to joining Littelfuse, Mr. Stafford served in a number of roles at Tyco International Ltd., including Vice President of China Operations and Vice President & General Counsel for its Engineered Products & Services Business Segment.

Maggie Chu, Senior Vice President and Chief Human Resources Officer. Ms. Chu joined Littelfuse in 2021 as Senior Vice President and Chief Human Resources Officer. Prior to joining Littelfuse, Ms. Chu served from 2018 to 2021 at Caterpillar, Inc., a leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives, as Segment Human Resources Director for the Energy & Transportation segment and Corporate Services group. Prior to Caterpillar, Ms. Chu spent 15 years with General Electric Company, a high-tech industrial company, in a number of global human resources leadership roles across several of General Electric’s industrial businesses.

Matthew J. Cole, Senior Vice President, eMobility and Corporate Strategy. Mr. Cole joined Littelfuse in 2015 as Senior Vice President and General Manager, Industrial Business Unit, and in 2019 became Senior Vice President, Business Development and Corporate Strategy until assuming his current position in 2021. Prior to joining Littelfuse, Mr. Cole served from 2009 to 2015 as Vice President and General Manager of the Advanced Measurement Technology division of AMETEK, a global leader in electronic instruments and electromechanical devices.

Alexander Conrad, Senior Vice President and General Manager, Passenger Vehicle Business. Mr. Conrad joined Littelfuse in 2005 as Sales Manager, Germany & Eastern Europe. He then held various positions of increasing responsibility at Littelfuse including Sales Director EMEA; Global Director of Sales; Managing Director, Passenger Car Products from 2013 to 2014; and Vice President, Passenger Car Products, from 2015 until assuming his current position in 2018.

Deepak Nayar, Senior Vice President and General Manager, Electronics Business. Mr. Nayar joined Littelfuse in 2005 as Business Line Director of the Electronics Business Unit. He then held various positions of increasing responsibility at Littelfuse including Vice President, Global Sales, Electronics Business Unit, and from 2011 until assuming his current position in 2020, Senior Vice President, Electronics Business Unit.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS, AND ISSUER PURCHASES OF EQUITY SECURITIES.

Shares of the Company's common stock are traded under the symbol "LFUS" on the NASDAQ Global Select Market℠.

Number of Holders

As of February 11, 2022, there were 56 holders of record of the Company's common stock.

Dividend Policy

The future dividend policy will be determined by the Board of Directors based upon its evaluation of earnings, cash availability, and general business prospects. Currently, there are restrictions on the payment of dividends contained in the Company's credit agreements that relate to the maintenance of certain financial ratios. However, the Company expects to continue paying cash dividends on a quarterly basis for the foreseeable future.

Recent Sales of Unregistered Securities

There were no sales of unregistered securities by us or affiliates during the fiscal year ended January 1, 2022.

Purchases of Equity Securities

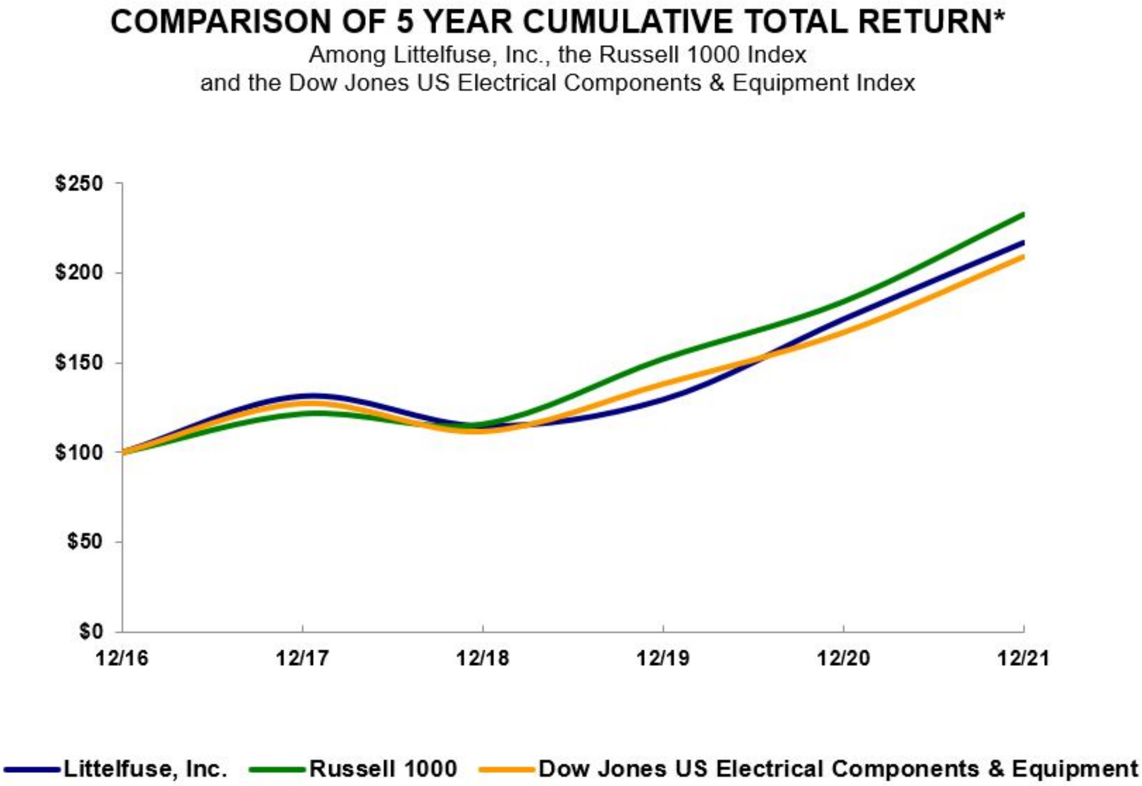
On April 26, 2019, the Company's Board of Directors authorized a program to repurchase up to 1,000,000 shares of the Company's common stock for the period May 1, 2019 to April 30, 2020 ("2019 program"). On April 29, 2020, the Company announced that the Board of Directors authorized a new program to repurchase up to 1,000,000 shares of the Company's common stock for the period May 1, 2020 to April 30, 2021 (the "2020 program") to replace its previous expired 2019 program. On April 28, 2021, the Company announced that the Board of Directors authorized a new three-year program to repurchase up to $300 million in the aggregate of shares of the Company's common stock for the period May 1, 2021 to April 30, 2024 to replace its previous 2020 program.

The Company did not repurchase shares of its common stock during the fiscal year ended January 1, 2022. There are $300 million in the aggregate of shares available for purchase under the new program as of January 1, 2022.

Stock Performance Graph

The following stock performance graph and related information shall not be deemed "soliciting material" or "filed" with the Securities and Exchange Commission, nor shall such information be incorporated by reference into any future filings under the Securities Act of 1933 or Securities Exchange Act of 1934, each as amended, except to the extent that the Company specifically incorporates it by reference into such filing.

The following stock performance graph compares the five-year cumulative total return on Littelfuse common stock to the five-year cumulative total returns on the Russell 1000 Index and the Dow Jones Electrical Components and Equipment Industry Group Index. The Company believes that the Russell 1000 Index and the Dow Jones Electrical Components and Equipment Industry Group Index represent a broad market index and peer industry group for total return performance comparison. The stock performance shown on the graph below represents historical stock performance and is not necessarily indicative of future stock price performance.



*$100 invested on 12/31/16 in stock or index, including reinvestment of dividends.
Fiscal year ending December 31.

	12/2016	12/2017	12/2018	12/2019	12/2020	12/2021
Littelfuse, Inc.	$ 100	$ 131	$ 115	$ 129	$ 174	$ 217
Russell 1000	100	122	116	152	184	233
Dow Jones US Electrical Components & Equipment	100	127	112	138	167	209

The Dow Jones Electrical Components and Equipment Industry Group Index includes the common stock of A. O. Smith Corp.; AAON, Inc.; American Superconductor Corp.; AMETEK, Inc.; Amphenol Corp.; Arrow Electronics, Inc.; Avnet, Inc.; AVX Corp.; Capstone Turbine Corp.; CTS Corp.; General Cable Corp.; Hubbell Inc. Class B; Jabil Circuit, Inc.; Littelfuse, Inc.; Methode Electronics, Inc.; Plexus Corp.; Powerwave Technologies, Inc.; Regal-Beloit Corp.; Vicor Corp.; and Vishay Intertechnology, Inc.

For Littelfuse, Inc. and all indexes noted above, a $100 investment made on December 31, 2016 and reinvestment of all dividends is assumed. Returns for the Company’s fiscal years presented above are as of the last day of the respective fiscal year which was December 30, 2017, December 29, 2018, December 28, 2019, December 26, 2020, and January 1, 2022 for the fiscal years 2017, 2018, 2019, 2020 and 2021, respectively.

ITEM 6. SELECTED FINANCIAL DATA.

The information presented below provides selected financial data of the Company during the past five fiscal years and should be read in conjunction with Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations*, and Item 8, *Financial Statements and Supplementary Data*, for the respective years presented:

(in thousands, except per share data)	2021	2020	2019	2018	2017
Net sales	$ 2,079,928	$ 1,445,695	$ 1,503,873	$ 1,718,468	$ 1,221,534
Gross profit	771,926	501,172	546,295	653,415	506,533
Operating income	385,642	162,372	192,791	225,049	218,511
Net income	283,806	129,986	139,082	164,565	119,519
Per share of common stock:					
Income from continuing operations					
- Basic	11.54	5.33	5.66	6.62	5.27
- Diluted	11.38	5.29	5.60	6.52	5.21
Cash dividends paid	2.02	1.92	1.82	1.60	1.40
Cash and cash equivalents	478,473	687,525	531,139	489,733	429,676
Total assets	3,151,704	2,747,593	2,559,898	2,614,306	1,740,102
Short-term debt	25,000	—	10,000	10,000	6,250
Long-term debt, less current portion	611,897	687,034	669,158	684,730	489,361

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

The following discussion of the Company's financial condition and results of operations should be read together with the Consolidated Financial Statements and notes to those statements included in Item 8 of Part II of this Annual Report on Form 10-K.

BUSINESS

For a description of the Company's business, segments and product offerings, see Item 1, *Business*.

2021 EXECUTIVE OVERVIEW

Net sales increased by $634.2 million or 43.9% including $27.4 million or 1.9% of favorable changes in foreign exchange rates in 2021 compared to 2020. The increase was due to volume growth across all segments and businesses while 2020 had temporary closures of manufacturing facilities resulting from government directives due to the impact of COVID-19. The increase was due to higher sales of $363.0 million, $138.9 million, and $132.3 million in the Electronics, Industrial, and Transportation segments, respectively, driven by higher volumes across all businesses within these segments. The volume increase within the Electronics segment was led by broad-based demand across electronics, transportation and industrial end markets. The increase with the Industrial segment was primarily due to $100.5 million of net sales resulting from the Hartland acquisition and volume growth across all businesses within the Industrial segment. The increase within the Transportation segment was due to volume growth driven by higher demand in the global auto and commercial vehicle markets, greater content growth across passenger vehicles due to vehicle mix, including growth in electric vehicles and some customers maintaining additional inventory of our products, and $15.3 million of net sales resulting from the Carling acquisition. The Company recognized net income of $283.8 million, or $11.38 per diluted share, in 2021 compared to net income of $130.0 million, or $5.29 per diluted share in 2020. The increase in net income reflects higher operating income of $223.3 million driven by a $156.9 million increase in operating income in the Electronics segment, the 2020 goodwill impairment charge of $33.8 million, a $24.3 million increase in operating income in the Transportation segment partially offset by higher foreign exchange losses of $32.0 million and a $19.9 million non-cash pension settlement charge associated with the completion of the buy-out of one of our U.K. pension plans.

Supply chain constraints, including transportation capacity shortages have and are expected to continue to impact the Company, our suppliers and our customers. This has resulted in higher transportation and input costs incurred by the Company.

Net cash provided by operating activities was $373.3 million for the fiscal year ended January 1, 2022 representing an increase of $115.3 million as compared to the fiscal year ended December 26, 2020. The increase in net cash provided by operating activities was primarily due to higher cash earnings partially offset by increases in working capital resulting from higher sales growth.

On January 28, 2021, the Company acquired Hartland Controls, a manufacturer and leading supplier of electrical components used primarily in HVAC and other industrial and control systems applications. At the time of acquisition, Hartland had annualized sales of approximately $70 million. The purchase price for Hartland was $111.0 million and the operations of Hartland are included in the Industrial segment.

On November 30, 2021, the Company acquired Carling, a leader in switching, circuit protection and power distribution technologies with a strong global presence in commercial transportation, communications infrastructure and marine markets. At the time of acquisition, Carling had annualized sales of approximately $170 million. The purchase price for Carling was approximately $315 million and the operations of Carling are included in the Transportation segment.

Impact of COVID-19 on Business

The effects from COVID-19 continue to drive increased costs, though less than net costs incurred in 2020. Ongoing costs include spending on personal protective equipment ("PPE"), additional personnel and employee transportation costs, and manufacturing inefficiencies. as well as an increase in material costs and transportation costs due to global supply chain and logistics constraints around the world.

During 2021, all of our manufacturing facilities were operational and were generally running at normal capacity levels.

The Company anticipates that the disruptions caused by COVID-19 may continue to impact its business activity for the foreseeable future. It is currently difficult to estimate the magnitude of the COVID-19 disruption, if future disruptions will occur due to a resurgence in COVID-19 cases and its impact on our employees, customers, suppliers and vendors. The Company will continue to actively monitor the situation and may take further actions altering our business operations that we determine are in the best interests of our employees, customers, partners, suppliers, and other stakeholders, or as required by federal, state, or local authorities. It is not clear what the potential effects any such alterations or modifications may have on our business and operations, including the effects on our customers, employees, and prospects, or on our financial results for the fiscal year 2022.

OUTLOOK

Vision and Strategy

The Company closely collaborates with strategic customers to design and manufacture innovative and reliable solutions to help empower a sustainable, connected, and safer world in virtually every market that uses electrical energy.

Within transportation end markets, the Company’s products are found in passenger vehicles and commercial vehicles, like material handling equipment, heavy-duty truck and bus, off-road and recreational vehicles, construction equipment, agricultural machinery, rail and marine. The Company is also a key enabler of electrification, or eMobility, across these transportation applications, and EV charging infrastructure. The Company continues to advance its existing customer relationships with OEM, Tier one and channel partners while driving product content growth for advanced, high-growth applications.

Within industrial end markets, the Company’s products are found in renewable energy and energy storage applications, HVAC, factory automation and safety, industrial motor drives and power conversion, and heavy and general industrial type applications. The Company utilizes its deep technical engineering capabilities and design support to drive product content growth across high-growth applications like renewables, energy storage, HVAC, and industrial automation.

Within electronics end markets, the Company’s products are found in data center, cloud storage and telecom infrastructure applications, building technologies and automation, appliances, mobile electronics, medical devices, and gaming and entertainment applications. The Company leverages its strategic distribution partnerships and deep OEM relationships, coupled with its comprehensive product offerings, to drive product content growth across a broad range of applications.

The Company expects the ever-increasing complexity of application architectures, driven by ongoing electronification and electrification across these end markets, to drive increasing product content opportunities. Built upon that framework, the Company has positioned itself around the structural growth themes of sustainability, connectivity, and safety, which will continue to drive increased demand for the Company's innovative, reliable solutions across the transportation, industrial and electronics end markets that it serves.

The Company's five-year strategic plan, built around these structural growth themes, is focused on delivering top tier shareholder returns by driving double-digit sales growth, best-in-class profitability, earnings per share growth, strong cash flow generation, and deploying capital to drive value creation. The Company pursues the following major strategic objectives, which are summarized below, along with more specific areas of focus. The Company uses the financial measures below to gauge progress toward achieving these strategic objectives. These measures include organic sales growth, operating margins, cash flow from operations, and returns on invested capital.

Strategic Objectives	Priorities
Double-digit sales growth	● Increased product content with existing and new customers, and expand market share
5-7% average annual growth from annual organic sales growth	● Expand portfolio into new and underpenetrated, high-growth geographies and end markets
5-7% average annual growth from strategic acquisitions	● Increase innovation capabilities and investments
	● Leverage breadth of go-to-market strategies
	● Targeted mergers and acquisitions to enhance and sustain organic growth
EPS growth	● Focus on higher profitability growth opportunities
Earnings per share growth greater than revenue growth	● Improve operating margins through operational and commercial excellence
	● Disciplined approach to balancing costs with long-term strategic investments
Capital allocation and returns	● Disciplined management of working capital
Cash flow from operations less capital expenditures is targeted to approximate or exceed net income	● Deployment of capital consistent with capital allocation priorities
Target 40% of free cash flow returned to shareholders	● Mergers and acquisitions that align with strategy and financial metrics
Remainder focused on strategic acquisitions	● Grow dividend in line with earnings
Return on invested capital percentage in the high-teens	● Opportunistic share repurchases

The Company's strategy is focused on accelerating organic growth by increasing its product content in applications and share gains, enhancing technology efforts to drive innovation, capitalizing on cross segment opportunities, and gaining traction in underpenetrated, high-growth geographies and end markets. The Company also leverages strategic acquisitions to enhance and sustain its organic growth. The Company will continue to make targeted strategic acquisitions that align to its strategy and financial metrics to drive growth across its business, products, markets, and technologies while leveraging existing customers and targeting new customers.

Management believes that profitable growth through a combination of organic growth and strategic acquisitions is critical to the Company's competitiveness, while enhancing value the Company delivers to all of its stakeholders. In addition, the Company continues to implement initiatives across all platforms to enhance productivity while managing its cost structure to align with business conditions. Areas of focus include integration of operations and streamlining administrative and support activities to drive improved operating margins.

The Company seeks to deploy its capital consistent with capital allocation priorities. These priorities include investments to drive increased organic growth, targeted acquisitions that align to the Company's strategic and financial metrics, and enhance and sustain its organic growth, and returning capital to shareholders through dividends and opportunistic share repurchases.

Critical Estimates and Significant Accounting Policies

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. The Company's most critical accounting policies are those that are most important to the portrayal of its financial condition and results of operations, and which require the Company to make its most difficult and subjective judgments, often as a result of the need to make estimates of matters that are inherently uncertain. The Company has identified the following as its most critical accounting policies and judgments. Although management believes that its estimates and assumptions are reasonable, they are based upon information available when they are made, and therefore, actual results may differ from these estimates under different assumptions or conditions. The Company has reviewed these critical accounting policies and related disclosures with the Audit Committee of its Board of Directors. Significant accounting policies are more fully described in the Notes to Consolidated Financial Statements included elsewhere in this Annual Report.

Critical Accounting Estimates

Goodwill

The Company's methodology for allocating the purchase price of acquisitions is based on established valuation techniques that reflect the consideration of a number of factors, including valuations performed by third-party appraisers when appropriate. Goodwill is measured as the excess of the cost of an acquired entity over the fair value assigned to identifiable assets acquired and liabilities assumed. Based on its current organization structure, the Company has seven reporting units for which cash flows are determinable and to which goodwill has been allocated.

The Company annually tests goodwill for impairment on the first day of its fiscal fourth quarter, or more frequently if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value. The Company also performs an interim review for indicators of impairment each quarter to assess whether an interim impairment review is required for any reporting unit. As part of its interim reviews, management analyzes potential changes in the value of individual reporting units based on each reporting unit's operating results for the period compared to expected results as of the prior year's annual impairment test. In addition, management considers how other key assumptions, including discount rates and expected long-term growth rates, used in the last annual impairment test, could be impacted by changes in market conditions and economic events.

During the second quarter of 2020, the Company recorded a non-cash charge of $33.8 million to recognize the impairment of goodwill in the automotive sensors reporting unit within the Transportation segment. As of January 1, 2022, the automotive sensors reporting unit had $9.2 million of remaining goodwill.

Quantitative Assessment for Impairment

For the seven reporting units with goodwill, the Company compares the estimated fair value of each reporting unit to its carrying value. If the carrying value of a reporting unit exceeds the estimated fair value, the difference between the estimated fair value and carrying value is recorded as the amount of the goodwill impairment charge. The results of the goodwill impairment test as of September 26, 2021 indicated that the estimated fair values for each of the seven reporting units exceeded their respective carrying values. Accordingly, there were no goodwill impairment charges recorded as part of the Company's 2021 annual goodwill impairment test.

As part of its impairment test for these reporting units, the Company engaged a third-party appraisal firm to assist in the Company's determination of the estimated fair values. This determination included estimating the fair value of each reporting unit using both the income and market approaches. The income approach requires management to estimate a number of factors for each reporting unit, including projected operating results, economic projections, anticipated future cash flows, discount rates and the allocation of shared or corporate items. The market approach estimates fair values using comparable marketplace fair value data from within a comparable industry grouping. The Company weighted both the income and market approach equally to estimate the concluded fair value of each reporting unit. The determination of fair value requires the Company to make significant estimates and assumptions, which primarily include, but are not limited to: the selection of appropriate peer group companies; control premiums appropriate for acquisitions in which the Company competes; the discount rate; terminal growth rates; and forecasts of revenue, operating income, depreciation and amortization and capital expenditures.

Goodwill Impairment Assumptions

Although the Company believes its estimates of fair value are reasonable, actual financial results could differ from those estimates due to the inherent uncertainty involved in making such estimates. Changes in assumptions concerning future financial results or other underlying assumptions could have a significant impact on the fair value of the reporting units. Future declines in the overall market value of the Company's equity may also result in a conclusion that the fair value of one or more reporting units has declined below its carrying value.

One measure of the sensitivity of the amount of goodwill impairment charges to key assumptions is the amount by which each reporting unit "passed" (fair value exceeds the carrying value) the goodwill impairment test. All seven of the reporting units passed the goodwill impairment test, with fair values that exceeded the carrying values between 95% and 380% of their respective estimated fair values. As of the most recent annual test conducted on September 26, 2021, the Company noted that the excess of fair value over the carrying value was 380%, 104%, 255%, 217%, 95%, 144%, and 231% for its reporting units: Electronics-Passive Products and Sensors, Electronics-Semiconductor, Passenger Car Products, Commercial Vehicle Products, Automotive Sensors, Relays, and Power Fuse, respectively. Relatively small changes in the Company's key assumptions would not have resulted in any reporting units failing the goodwill impairment test.

Generally, changes in estimates of expected future cash flows would have a similar effect on the estimated fair value of the reporting unit. That is, a 1.0% decrease in estimated annual future cash flows would decrease the estimated fair value of the reporting unit by approximately 1.0%. The estimated long-term net sales growth rate can have a significant impact on the estimated future cash flows, and therefore, the fair value of each reporting unit. A 1.0% decrease in the long-term net sales growth rate would have resulted in no reporting units failing the goodwill impairment test. Of the other key assumptions that impact the estimated fair values, most reporting units have the greatest sensitivity to changes in the estimated discount rate. The estimated discount rate was 8.9% for the Electronics-Passive Products and Sensors and the Passenger Car Products reporting units, 9.9% for the Electronics-Semiconductor, Commercial Vehicle Products and the Automotive Sensors reporting units, 10.9% for the Power Fuse reporting unit and 11.9% for the Relays reporting unit. A 1.0% increase in the estimated discount rates would have resulted in no reporting units failing the annual goodwill impairment test. The Company believes that its estimates of future cash flows and discount rates are reasonable, but future changes in the underlying assumptions could differ due to the inherent uncertainty in making such estimates. Additionally, price deterioration or lower volume could have a significant impact on the fair values of the reporting units.

Income Taxes

The Company accounts for income taxes using the asset and liability method. Deferred taxes are recognized for the future effects of temporary differences between financial and income tax reporting using tax rates in effect for the years in which the differences are expected to reverse. The Company recognizes deferred taxes for temporary differences, operating loss carryforwards and tax credit and other tax attribute carryforwards (excluding carryforwards where usage has been determined to be remote). Deferred tax assets are reduced by a valuation allowance if it is more likely than not that some portion, or all, of the deferred tax assets will not be realized. U.S. state and non-U.S. income taxes are provided on the portion of non-U.S. income that is expected to be remitted to the U.S. and be taxable (and non-U.S. income taxes are provided on the portion of non-U.S. income that is expected to be remitted to an upper-tier non-U.S. entity). Deferred tax assets and liabilities are adjusted for the effects of changes in tax laws and rates on the date of enactment.

Deferred income taxes are not provided on the excess of the investment value for financial reporting over the tax basis of investments in those non-U.S. subsidiaries for which such excess is considered to be permanently reinvested in those operations. Management regularly evaluates whether non-U.S. earnings are expected to be permanently reinvested. This evaluation requires judgment about the future operating and liquidity needs of the Company and its non-U.S. subsidiaries. Changes in economic and business conditions, non-U.S. or U.S. tax laws, or the Company's financial situation could result in changes to these judgments and the need to record additional tax liabilities.

The Company recognizes the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities, based on the technical merits of the position. The tax benefits recognized in the financial statements from such a position are measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement.

The 2017 Tax Cuts and Jobs Act (the "Tax Act"), among other things, imposed a one-time tax (the "Toll Charge") on accumulated earnings of certain non-U.S. subsidiaries and included base broadening provisions commonly referred to as the global intangible low-taxed income provisions ("GILTI").

In accordance with guidance issued by the FASB staff, the Company has adopted an accounting policy to treat any GILTI inclusions as a period cost if and when incurred. Thus, for the fiscal years ended January 1, 2022, December 26, 2020, and

December 28, 2019, deferred taxes were computed without consideration of the possible future impact of the GILTI provisions, and any current year impact was recorded as a part of the current portion of income tax expense.

Further information regarding income taxes, including a detailed reconciliation of current year activity, is provided in Note 14, *Income Taxes*, of the Notes to Consolidated Financial Statements included in this Annual Report.

Critical Accounting Policies

Revenue Recognition

Revenue Disaggregation

The following table disaggregates the Company's revenue by primary business units for the fiscal years ended January 1, 2022 and December 26, 2020:

	Fiscal Year Ended January 1, 2022			
(in thousands)	**Electronics Segment**	**Transportation Segment**	**Industrial Segment**	**Total**
Electronics – Semiconductor	$ 678,861	$ —	$ —	$ 678,861
Electronics – Passive Products and Sensors	621,883	—	—	621,883
Passenger Car Products	—	266,020	—	266,020
Commercial Vehicle Products	—	160,300	—	160,300
Automotive Sensors	—	101,738	—	101,738
Industrial Products	—	—	251,126	251,126
Total	$ 1,300,744	$ 528,058	$ 251,126	$ 2,079,928

	Fiscal Year Ended December 26, 2020			
(in thousands)	**Electronics Segment**	**Transportation Segment**	**Industrial Segment**	**Total**
Electronics – Semiconductor	$ 522,352	$ —	$ —	$ 522,352
Electronics – Passive Products and Sensors	415,410	—	—	415,410
Passenger Car Products	—	200,455	—	200,455
Commercial Vehicle Products	—	101,324	—	101,324
Automotive Sensors	—	93,985	—	93,985
Industrial Products	—	—	112,169	112,169
Total	$ 937,762	$ 395,764	$ 112,169	$ 1,445,695

See Note 16, *Segment Information*, for net sales by segment and countries.

Revenue Recognition

The Company recognizes revenue on product sales in the period in which the Company satisfies its performance obligation and control of the product is transferred to the customer. The Company's sales arrangements with customers are predominately short term in nature and generally provide for transfer of control at the time of shipment as this is the point at which title and risk of loss of the product transfers to the customer. At the end of each period, for those shipments where title to the products and the risk of loss and rewards of ownership do not transfer until the product has been received by the customer, the Company adjusts revenues and cost of sales for the delay between the time that the products are shipped and when they are received by the customer. The amount of revenue recorded reflects the consideration to which the Company expects to be entitled in exchange for goods and may include adjustments for customer allowance, rebates and price adjustments. The Company's sales channels are primarily through direct sales and independent third-party distributors.

The Company has elected the practical expedient under Accounting Standards Codification ("ASC") 340-40-25-4 to expense commissions when incurred as the amortization period of the commission asset the Company would have otherwise recognized is less than one year.

Revenue and Billing

The Company generally accepts orders from customers through receipt of purchase orders or electronic data interchange based on written sales agreements and purchasing contracts. Contract pricing and selling agreement terms are based on market factors, costs, and competition. Pricing is often negotiated as an adjustment (premium or discount) from the Company’s published price lists. The customer is invoiced when the Company’s products are shipped to them in accordance with the terms of the sales agreement. As the Company’s standard payment terms are less than one year, the Company has elected the practical expedient under ASC 606-10-32-18 to not assess whether a contract has a significant financing component. The Company also elected the practical expedient provided in ASC 606-10-25-18B to treat all product shipping and handling activities as fulfillment activities, and therefore recognize the gross revenue associated with the contract, inclusive of any shipping and handling revenue.

Ship and Debit Program

Some of the terms of the Company’s sales agreements and normal business conditions provide customers (distributors) the ability to receive price adjustments on products previously shipped and invoiced. This practice is common in the industry and is referred to as a “ship and debit” program. This program allows the distributor to debit the Company for the difference between the distributors’ contracted price and a lower price for specific transactions. Under certain circumstances (usually in a competitive situation or large volume opportunity), a distributor will request authorization for pricing allowances to reduce its price. When the Company approves such a reduction, the distributor is authorized to “debit” its account for the difference between the contracted price and the lower approved price. The Company establishes reserves for this program based on historic activity, electronic distributor inventory levels and actual authorizations for the debit and recognizes these debits as a reduction of revenue.

Return to Stock

The Company has a return to stock policy whereby certain customers, with prior authorization from the Company's management, can return previously purchased goods for full or partial credit. The Company establishes an estimated allowance for these returns based on historic activity. Sales revenue and cost of sales are reduced to anticipate estimated returns.

Volume Rebates

The Company offers volume-based sales incentives to certain customers to encourage greater product sales. If customers achieve their specific quarterly or annual sales targets, they are entitled to rebates. The Company estimates the projected amount of rebates that will be achieved by the customer and recognizes this estimated cost as a reduction to revenue as products are sold.

Allowance for Doubtful Accounts

The Company currently measures the expected credit losses based on our historical credit loss experience. The Company has not experienced significant recent or historical credit losses and is not forecasting any significant credit losses which would require adjustments to our methodology. If current conditions and supportable forecasts indicate that our historical loss experience is not reasonable and no longer supportable, the Company may adjust its historical credit loss experience and to reflect these conditions and forecasts. The Company regularly analyzes its significant customer accounts and, when the Company becomes aware of a customer’s inability to meet its financial obligations, the Company records a specific reserve for bad debt to reduce the related receivable to the amount the Company reasonably believes is collectible. The Company also analyzes all other customers based on a variety of factors including the length of time the receivables are past due, the financial health of the customer, macroeconomic considerations and historical collection and loss experience. Historically, the allowance for doubtful accounts has been adequate to cover bad debts. If circumstances related to specific customers change, the estimates of the recoverability of receivables could be further adjusted.

Inventory

The Company performs regular detailed assessments of inventory, which include a review of, among other factors, demand requirements, product life cycle and development plans, component cost trends, product pricing, shelf life, and quality issues. Based on the analysis, the Company records adjustments to inventory for excess quantities, obsolescence or impairment when appropriate to reflect inventory at net realizable value. Historically, inventory reserves have been adequate to reflect inventory at net realizable value.

Long-Lived Assets

The Company evaluates the recoverability of other long-lived assets, including property, plant and equipment and certain identifiable intangible assets, whenever events or changes in circumstances indicate that the carrying value of an asset or asset group may not be recoverable. Factors which could trigger an impairment review include significant underperformance relative to historical or projected operating results, significant changes in the manner of use of the assets or the strategy for the overall business, a significant decrease in the market value of the assets or significant negative industry or economic trends. When the Company determines that the carrying value of long-lived assets may not be recoverable based upon the existence of one or more of the indicators, the assets are assessed for impairment based on the estimated future undiscounted cash flows expected to result from the use of the asset and its eventual disposition. If the carrying value of an asset exceeds its estimated future undiscounted cash flows, an impairment loss is recorded for the excess of the asset's carrying value over its fair value. For the fiscal year ended December 26, 2020, the Company recognized a $2.2 million impairment charge related to the land and building associated with the Company's announced consolidation of a manufacturing facility within the Industrial segment. For the year-ended December 28, 2019, the Company recognized non-cash impairment charges of $0.3 million for certain machinery and equipment related to the closure of a European manufacturing facility in the automotive sensors business within the Transportation segment.

Environmental Liabilities

Environmental liabilities are accrued based on estimates of the probability of potential future environmental exposure. Costs related to on-going maintenance of environmental sites are expensed as incurred. If actual or estimated probable future losses exceed the Company's recorded liability for such claims, it would record additional charges as other expense during the period in which the actual loss or change in estimate occurred. The Company evaluates its reserve for coal mine remediation annually utilizing a third-party expert.

Pension Plans

The Company records annual income and expense amounts relating to its pension and postretirement benefits plans based on calculations which include various actuarial assumptions including discount rates, expected long-term rates of return and compensation increases. The Company reviews its actuarial assumptions on an annual basis as of the fiscal year-end balance sheet date (or more frequently if a significant event requiring remeasurement occurs) and modifies the assumption based on current rates and trends when it is appropriate to do so. The effects of modifications are recognized immediately on the Consolidated Balance Sheets but are generally amortized into operating earnings over future periods, with the deferred amount recorded in accumulated other comprehensive (loss) income. The Company believes that the assumptions utilized in recording its obligations under its plans are reasonable based on its experience, market conditions and input from its actuaries and investment advisors. The Company maintains several pension plans in international locations. The expected returns on plan assets and discount rates are determined based on each plan's investment approach, local interest rates and plan participant profiles. The weighted-average discount rates for the Company's defined benefit plans primarily in Europe and the Asia-Pacific regions at January 1, 2022 and December 26, 2020 were 3.1% and 1.2%, respectively.

A 50 basis point change in the discount rates at January 1, 2022 would have the following effect on the projected benefit obligation:

(in millions)	**0.5% Increase**	**0.5% Decrease**
Projected benefit obligation	$ (5.9)	$ 6.4

On April 7, 2020, the Company entered into a definitive agreement to purchase a group annuity contract, under which an insurance company will be required to directly pay and administer pension payments to certain of the Company's U.K. pension plan participants, or their designated beneficiaries. The Company completed the buy-out of this U.K. pension plan during the fourth quarter of 2021 and as a result recorded a non-cash pension settlement charge of $19.9 million (£14.9 million), inclusive of the accelerated recognition of prior service cost of $0.5 million (£0.4 million). The purchase of this group annuity contract reduced the Company's outstanding pension benefit obligation by $47.1 million, representing 35% of the total obligation of the Company's qualified pension plans.

Equity-based Compensation

Equity-based compensation expense is recorded for stock-option awards and restricted share units based upon the fair values of the awards. The fair value of stock-option awards is estimated at the grant date using the Black-Scholes option pricing model, which includes assumptions for volatility, expected term, risk-free interest rate and dividend yield. Expected volatility is based on implied volatilities from traded options on Littelfuse stock, historical volatility of Littelfuse stock and other factors. Historical data is used to estimate employee termination experience and the expected term of the options. The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant. The Company initiated a quarterly cash dividend in 2010 and expects to continue making cash dividend payments for the foreseeable future. The fair value of restricted share units is determined based on the Company's stock price on the grant date reduced by the present value of expected dividends through the vesting period.

Total equity-based compensation expense for all equity compensation plans was $21.4 million, $19.1 million, and $19.9 million in 2021, 2020, and 2019, respectively. Further information regarding this expense is provided in Note 12, *Stock-Based Compensation*, of the Notes to Consolidated Financial Statements included in this Annual Report.

Off-Balance Sheet Arrangements

The Company does not have off-balance sheet arrangements as defined under SEC rules. The Company does not participate in transactions that generate relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities.

In the financial review that follows, the Company discusses its consolidated results of operations, financial position, cash flows and certain other information. This discussion should be read in conjunction with the Company’s Consolidated Financial Statements and related notes.

RESULTS OF OPERATIONS FOR THE YEAR ENDED JANUARY 01, 2022 AS COMPARED TO THE YEAR ENDED DECEMBER 26, 2020

The fiscal year 2021 included approximately $12.6 million of non-segment charges, of which $8.4 million relates to purchase accounting inventory step-up charges, $7.0 million of acquisition-related and integration charges related to the Carling and Hartland acquisitions and other contemplated acquisitions, and $2.2 million of restructuring, impairment and other charges, primarily related to employee termination costs. See Note 8, *Restructuring, Impairment and Other Charges*, for further discussion. Additionally, partially offsetting the above amounts was a gain of $5.0 million recorded for the sale of buildings within the Electronics segment.

The fiscal year 2020 included approximately $44.0 million of non-segment charges, of which $2.3 million of charges are acquisition-related and integration charges related to the IXYS acquisition and other contemplated acquisitions. In addition, there were $41.7 million of restructuring, impairment and other charges, primarily related to the goodwill impairment charge of $33.8 million recorded in the second quarter associated with the automotive sensors reporting unit within the Transportation segment, employee termination costs of $5.5 million, $2.2 million of impairment charges recorded in the first quarter associated with the announced consolidation of a manufacturing facility within the Industrial segment and other restructuring charges of $0.2 million.

Fiscal year 2021 also included approximately $17.2 million in foreign currency exchange losses primarily attributable to changes in the value of the Euro, Chinese renminbi, Mexican peso, and Philippine peso against the U.S. dollar, while fiscal year 2020 included approximately $14.9 million in foreign currency exchange gains primarily attributable to changes in the value of the Euro, Philippine peso, and Chinese renminbi against the U.S. dollar.

	Fiscal Year			
(in thousands, except % change)	**2021**	**2020**	**Change**	**% Change**
Net sales	$ 2,079,928	$ 1,445,695	$ 634,233	43.9 %
Cost of sales	1,308,002	944,523	363,479	38.5 %
Gross profit	771,926	501,172	270,754	54.0 %
Operating expenses	386,284	338,800	47,484	14.0 %
Operating income	385,642	162,372	223,270	137.5 %
Other expense (income), net	8,932	(5,083)	14,015	(275.7)%
Income before income taxes	341,025	161,253	179,772	111.5 %
Income taxes	57,219	31,267	25,952	83.0 %
Net income	283,806	129,986	153,820	118.3 %

Net Sales

Net sales increased $634.2 million or 43.9% including $27.4 million or 1.9% of favorable changes in foreign exchange rates for 2021 compared to 2020. The increase was due to volume growth across all segments and businesses while 2020 had temporary closures of manufacturing facilities resulting from government directives due to the impact of COVID-19. The increase was due to higher sales of $363.0 million, $138.9 million, and $132.3 million in the Electronics, Industrial, and Transportation segments, respectively, primarily driven by higher volumes across all businesses within these segments. The volume increase within the Electronics segment was led by broad-based demand across electronics, transportation and industrial end markets. The increase within the Industrial segment was primarily due to $100.5 million of net sales resulting from the Hartland acquisition and volume growth across all businesses within the Industrial segment. The increase within the Transportation segment was due to volume growth driven by higher demand in the global auto and commercial vehicle markets, greater content growth across passenger vehicles due to vehicle mix, including growth in electric vehicles and some customers maintaining additional inventory of our products, and $15.3 million of net sales resulting from the Carling acquisition.

Cost of Sales

Cost of sales was $1,308.0 million, or 62.9% of net sales, in 2021, compared to $944.5 million, or 65.3% of net sales, in 2020. The increase in cost of sales was primarily due to greater volume across all segments driven by the factors discussed above along with the Hartland and Carling acquisitions. As a percent of net sales, cost of sales decreased 2.4% driven by volume leverage, partially offset by higher transportation, duty and tariff charges of 2.2%, the purchase accounting inventory charges of $8.4 million or 0.4% resulting from the Hartland and Carling acquisitions, and higher material costs.

Gross Profit

Gross profit was $771.9 million, or 37.1% of net sales, in 2021, compared to $501.2 million, or 34.7% of net sales, in 2020. The $270.8 million increase in gross profit was primarily due to higher volume across all segments while 2020 had additional costs associated with government-directed plant shutdowns and supply chain constraints. The increase in gross margin of 2.4% was primarily driven by volume leverage and favorable product mix within the Electronics segment, partially offset by higher transportation, duty and tariff charges as a percent of net sales of 2.2%, the purchase accounting inventory charges of $8.4 million or 0.4%, and higher material costs.

Operating Expenses

Total operating expenses were $386.3 million, or 18.6% of net sales, for 2021 compared to $338.8 million, or 23.4% of net sales, for 2020. The increase in operating expenses of $47.5 million is primarily due to higher selling, general, and administrative expenses of $71.0 million largely due to higher accrued incentive compensation, the Hartland and Carling acquisitions and higher acquisition-related and integration charges of $4.7 million, and higher research and development expenses of $13.4 million, partially offset by the 2020 goodwill impairment charge of $33.8 million, or 2.3% of net sales, in the automotive sensors reporting unit within the Transportation segment and impairment charges of $2.2 million related to the Company's 2020 first quarter announcement to consolidate a manufacturing facility within the Industrial segment.

Operating Income

Operating income for 2021 was $385.6 million, an increase of $223.3 million or 137.5% compared to $162.4 million for 2020. The increase in operating income was primarily due to higher gross margin across all segments, led by the Electronics segment partially offset by higher operating expenses noted above. Operating margins increased from 11.2% in 2020 to 18.5% in 2021 primarily driven by the factors mentioned above. The 2020 goodwill impairment charge of $33.8 million negatively impacted the 2020 operating margin by 2.3%.

Income Before Income Taxes

Income before income taxes for 2021 was $341.0 million, or 16.4% of net sales compared to $161.3 million, or 11.2% of net sales, for 2020. In addition to the factors impacting comparative results for operating income discussed above, income before income taxes was impacted by foreign exchange losses of $17.2 million during the fiscal year ended January 1, 2022 compared to foreign exchange gains of $14.9 million during the fiscal year ended December 26, 2020, and a $19.9 million non-cash pension settlement charge, partially offset by a $4.0 million increase in unrealized investment gains associated with our equity investment, and lower interest expense of $2.6 million due to lower outstanding borrowings under the credit facility along with a lower effective interest rate and a reduction in coal mining charges of $1.6 million compared to 2020.

Income Taxes

Income tax expense for 2021 was $57.2 million, or an effective tax rate of 16.8%, compared to income tax expense of $31.3 million, or an effective tax rate of 19.4% for 2020. The Company's tax rates are lower than the applicable U.S. statutory tax rate primarily due to income earned in lower tax jurisdictions, partially offset by the impact of taxes on unremitted earnings, the GILTI tax provisions, and non-U.S. losses and expenses with no tax benefit. The effective tax rate for 2021 is lower than the effective tax rate for 2020, primarily due to an increase in the income earned in lower tax jurisdictions in 2021 as compared to 2020, as well as the impact of the goodwill impairment charge of $33.8 million recorded in 2020, the substantial majority of which did not result in a tax benefit. Further information regarding these items is provided in Note 14, *Income Taxes*, of the Notes to Consolidated Financial Statements included in this Annual Report.

Segment Information

The Company reports its operations by the following segments: Electronics, Transportation and Industrial. Segment information is described more fully in Note 16, *Segment Information*, of the Notes to Consolidated Financial Statements included in this Annual Report.

The following table is a summary of the Company's net sales by segment:

	Fiscal Year			
(in millions)	**2021**	**2020**	**Change**	**% Change**
Electronics	$ 1,300.7	$ 937.7	$ 363.0	38.7 %
Transportation	528.1	395.8	132.3	33.4 %
Industrial	251.1	112.2	138.9	123.8 %
Total	$ 2,079.9	$ 1,445.7	$ 634.2	43.9 %

Electronics Segment

Net sales for the Electronics segment increased $363.0 million, or 38.7%, in 2021 compared to 2020 and included favorable changes in foreign exchange rates of $14.5 million or 1.5%. The sales increase was primarily due to increased volume for the electronics and semiconductor products businesses of $206.5 million and $156.5 million, respectively. The volume increases were driven by broad-based demand across electronics, transportation and industrial end markets while 2020 were negatively impacted by production disruptions and temporary plant shutdowns due to the impact of COVID-19.

Transportation Segment

Net sales in the Transportation segment increased $132.3 million, or 33.4%, in 2021 compared to 2020 and included favorable changes in foreign exchange rates of $12.0 million or 3.0%. The sales increase was due to higher volume in passenger car products, commercial vehicle products, and the automotive sensors businesses of $65.6 million, $59.0 million, and $7.8 million, respectively, including the incremental net sales of $15.3 million from the Carling acquisition within the commercial vehicle products business. These increases were due to volume growth driven by higher demand in the global auto and commercial vehicle markets, greater content growth across passenger vehicles due to vehicle mix, including growth in electric vehicles and some customers maintaining additional inventory of our products as compared to 2020, which had production disruptions and temporary plant shutdowns due to the impact of COVID-19.

Industrial Segment

The Industrial segment net sales increased by $138.9 million, or 123.8%, in 2021 compared to 2020 and included favorable changes in foreign exchange rates of $0.9 million or 0.8%. The increase in net sales was primarily due to the incremental net sales of $100.5 million or 90% from the Hartland acquisition, growth across all product lines, and the transfer of the temperature sensor product line totaling $4.7 million which was previously reported in the Electronics segment and moved to Industrial segment in the third quarter of 2020. Additionally, 2020 was negatively impacted by production disruptions and temporary plant shutdowns due to the impact of COVID-19.

Geographic Net Sales Information

Net sales by geography represent net sales to customer or distributor locations. The following table is a summary of the Company's net sales by geography:

(in millions)	Fiscal Year 2021	2020	Change	% Change
Asia-Pacific	$ 955.7	$ 670.5	$ 285.2	42.5 %
Americas	694.3	457.8	236.5	51.7 %
Europe	429.9	317.4	112.5	35.4 %
Total	$ 2,079.9	$ 1,445.7	$ 634.2	43.9 %

Asia-Pacific

Asia-Pacific net sales increased $285.2 million, or 42.5%, in 2021 compared to 2020 and included favorable changes in foreign exchange rates of $12.5 million. The increase in net sales was primarily due to higher volume across all segments and businesses compared to 2020 that had production disruptions due to the impact of COVID-19.

Americas

Net sales in the Americas increased $236.5 million, or 51.7%, in 2021 compared to 2020 and included favorable changes in foreign exchange rates of $0.7 million. The increase in net sales was primarily due to incremental sales from the Hartland and Carling acquisitions, higher volume across all segments and businesses compared to 2020 that had production disruptions due to the impact of COVID-19.

Europe

European net sales increased $112.5 million, or 35.4%, in 2021 compared to 2020 and included favorable changes in foreign exchange rates of $14.2 million. The increase in net sales was primarily due to higher volume across all businesses within the Electronics and Transportation segments compared to the 2020 that had production disruptions due to the impact of COVID-19.

RESULTS OF OPERATIONS FOR THE YEAR ENDED DECEMBER 26, 2020 AS COMPARED TO THE YEAR ENDED DECEMBER 28, 2019

The fiscal year 2020 included approximately $44.0 million of non-segment charges, of which $2.3 million of charges are acquisition-related and integration charges related to the IXYS acquisition and other contemplated acquisitions. In addition, there were $41.7 million of restructuring, impairment and other charges, primarily related to the goodwill impairment charge of $33.8 million recorded in the second quarter associated with the automotive sensors reporting unit within the Transportation segment, employee termination costs of $5.5 million, $2.2 million of impairment charges recorded in the first quarter associated with the announced consolidation of a manufacturing facility within the Industrial segment and other restructuring charges of $0.2 million. See Note 8, *Restructuring, Impairment and Other Charges*, for further discussion.

The fiscal year 2019 included approximately $21.9 million of non-segment charges, of which $8.9 million of charges are acquisition-related and integration charges primarily related to the IXYS acquisition and other contemplated acquisitions, and $13.0 million of restructuring charges primarily related to employee termination costs.

Fiscal year 2020 also included approximately $14.9 million in foreign currency exchange gains primarily attributable to changes in the value of the Euro, Philippine peso, and Chinese renminbi against the U.S. dollar, while fiscal year 2019 included approximately $5.2 million in foreign currency exchange losses primarily attributable to changes in the value of the Euro, Chinese renminbi, and Japanese yen against the U.S. dollar.

	Fiscal Year			
(in thousands, except % change)	**2020**	**2019**	**Change**	**% Change**
Net sales	$ 1,445,695	$ 1,503,873	$ (58,178)	(3.9)%
Cost of sales	944,523	957,578	(13,055)	(1.4)%
Gross profit	501,172	546,295	(45,123)	(8.3)%
Operating expenses	338,800	353,504	(14,704)	(4.2)%
Operating income	162,372	192,791	(30,419)	(15.8)%
Other income, net	(5,083)	(583)	(4,500)	771.9 %
Income before income taxes	161,253	165,884	(4,631)	(2.8)%
Income taxes	31,267	26,802	4,465	16.7 %
Net income	129,986	139,082	(9,096)	(6.5)%

Net Sales

Net sales of $1,445.7 million decreased $58.2 million, or 3.9%, for 2020 compared to the prior year primarily due to lower volume in the Transportation and Electronics segments which had net sales decreases of $32.7 million and $23.4 million, respectively, partially offset by $7.7 million or 0.5% of favorable changes in foreign exchange rates. These decreases were primarily driven by the production disruption due to temporary closures of manufacturing facilities resulting from government directives due to the impact of COVID-19 and a decline in global auto production driven by the temporary closures of customer manufacturing facilities during the first half of 2020. These sales declines were partially offset by increases in customer demand for consumer devices for work from home needs and strength in various end market demand across all businesses in the second half of the year. All businesses within the Transportation segment experienced lower sales in 2020 due to the production disruptions in the first half of 2020 mentioned above, which was partially offset in the second half of the year, driven by stronger end market demand.

Cost of Sales

Cost of sales was $944.5 million, or 65.3% of net sales, in 2020, compared to $957.6 million, or 63.7% of net sales, in 2019. The decrease in cost of sales was primarily due to lower volume in the Electronics and Transportation segments driven by the factors discussed above. As a percent of net sales, cost of sales increased 1.6% driven by higher freight costs of $5.6 million, additional costs associated with government-directed plant shutdowns and supply chain constraints, supplies and other costs due to the impact of COVID-19, and unfavorable product mix.

Gross Profit

Gross profit was $501.2 million, or 34.7% of net sales, in 2020, compared to $546.3 million, or 36.3% of net sales, in 2019. The decrease of $45.1 million in gross profit reflected lower volume across all segments driven by the disruption across all segments due to temporary closures of manufacturing facilities in the first half of the year resulting from government directives due to the impact of COVID-19. The decrease in gross margin of 1.6% was primarily from the lower volume mentioned previously, unfavorable price and product mix primarily in the Industrial segment. Additionally, higher freight cost of $5.6 million, costs associated with government-directed plant shutdowns and supply chain constraints, supplies and other costs due to the impact of COVID-19 negatively impacted gross margins.

Operating Expenses

Total operating expenses were $338.8 million, or 23.4% of net sales, for 2020 compared to $353.5 million, or 23.5% of net sales, for 2019. The decrease in operating expenses of $14.7 million is primarily due to lower research and development expenses of $27.5 million, or 1.7% of net sales, a reduction in discretionary expenses including travel and marketing expenses and a $6.6 million reduction in acquisition-related and integration charges, partially offset by the second quarter goodwill impairment charge of $33.8 million, or 2.3% of net sales, in the automotive sensors reporting unit within the Transportation segment and impairment charges of $2.2 million related to the Company’s first quarter announcement to consolidate a manufacturing facility within the Industrial segment.

Operating Income

Operating income for 2020 was $162.4 million, a decrease of $30.4 million or 15.8% compared to $192.8 million for 2019. The decrease in operating income is primarily due to lower gross margin across all segments and the $33.8 million goodwill impairment charge noted above partially offset by a reduction in operating expenses described above. Operating margins decreased from 12.8% in 2019 to 11.2% in 2020 primarily driven by the factors mentioned above. The second quarter goodwill impairment charge of $33.8 million negatively impacted the 2020 operating margin by 2.3% which was partially offset by the lower operating expenses and cost reductions noted above.

Income Before Income Taxes

Income before income taxes for 2020 was $161.3 million, or 11.2% of net sales compared to $165.9 million, or 11.0% of net sales, for 2019. In addition to the factors impacting comparative results for operating income discussed above, income before income taxes benefited from foreign exchange gains of $14.9 million during the fiscal year ended December 26, 2020 compared to foreign exchange losses of $5.2 million during the fiscal year ended December 28, 2019. Additionally, the increase in other income of $4.5 million was primarily due to the 2019 fiscal year impairment charges of $7.3 million for certain other investments and a $2.6 million loss on the disposal of a business within the Electronics segment and $1.7 million increase in unrealized investment gains associated with our equity investments, partially offset by lower interest income of $2.0 million and a $1.2 million increase in coal mining reserves in 2020 versus 2019.

Income Taxes

Income tax expense for 2020 was $31.3 million, or an effective tax rate of 19.4% compared to income tax expense of $26.8 million, or an effective tax rate of 16.2% for 2019. The Company’s tax rates are lower than the applicable U.S. statutory tax rate primarily due to income earned in lower tax jurisdictions, partially offset by the impact of taxes on unremitted earnings, the GILTI tax provisions, and non-U.S. losses and expenses with no tax benefit. Changes in the amount of these items from year to year impact the effective tax rates. In addition, the 2020 income tax expense included the impact of the goodwill impairment charge of $33.8 million that was recorded in the second quarter of 2020, the substantial majority of which related to non-U.S. entities and did not result in a tax benefit, and the 2019 income tax expense included a benefit of $3.3 million from the recognition of previously unrecognized tax benefits (and the reversal of the related accrued interest) due to a lapse in the statute of limitations. The impact of the items discussed above resulted in an increase in the effective tax rate in 2020, as compared to the effective tax rate in 2019. Further information regarding these items is provided in Note 14, *Income Taxes*, of the Notes to Consolidated Financial Statements included in this Annual Report.

Segment Information

The Company reports its operations by the following segments: Electronics, Transportation and Industrial. Segment information is described more fully in Note 16, Segment Information, of the Notes to Consolidated Financial Statements included in this Annual Report.

The following table is a summary of the Company’s net sales by segment:

(in millions)	Fiscal Year 2020		Fiscal Year 2019		Change		% Change
Electronics	$	937.7	$	961.1	$	(23.4)	(2.4)%
Transportation		395.8		428.5		(32.7)	(7.6)%
Industrial		112.2		114.3		(2.1)	(1.8)%
Total	$	1,445.7	$	1,503.9	$	(58.2)	(3.9)%

Electronics Segment

Net sales for the Electronics segment decreased $23.4 million, or 2.4%, in 2020 compared to 2019 primarily due to declines in net sales for the semiconductor and electronics products businesses of $17.5 million and $5.9 million, respectively, driven by the production disruption due to temporary closures of manufacturing facilities resulting from government directives due to the impact of COVID-19 during the first half of the year. These declines were partially offset by increases in customer demand for consumer devices for work from home needs and strength in various end markets during the second half of the year along with favorable changes in foreign exchange rates of $3.6 million.

Transportation Segment

Net sales in the Transportation segment decreased $32.7 million, or 7.6%, in 2020 compared to 2019 due to decreased volume in passenger car products, commercial vehicle products, and automotive sensors businesses of $18.1 million, $10.6 million, and $4.0 million, respectively, driven by the production disruption due to temporary closures of manufacturing facilities resulting from government directives due to the impact of COVID-19 and a decline in global auto production driven by the temporary closures of customer manufacturing facilities during the first half of 2020. These sales declines were partially offset by increases in end market demand across all businesses in the second half of 2020 and favorable changes in foreign exchange rates of $4.1 million.

Industrial Segment

The Industrial segment net sales decreased slightly by $2.1 million, or 1.9%, in 2020 compared to 2019 primarily due to decreased volume across all businesses driven by the production disruption due to temporary closures of manufacturing facilities resulting from government directives due to the impact of COVID-19 in the first half of 2020, partially offset by the transfer of the temperature sensor product line in the third quarter of 2020 previously reported in the Electronics segment.

Geographic Net Sales Information

Net sales by geography represent net sales to customer or distributor locations. The following table is a summary of the Company's net sales by geography:

(in millions)	Fiscal Year 2020		Fiscal Year 2019		Change		% Change
Asia-Pacific	$	670.5	$	656.8	$	13.7	2.1 %
Americas		457.8		508.4		(50.6)	(10.0)%
Europe		317.4		338.7		(21.3)	(6.3)%
Total	$	1,445.7	$	1,503.9	$	(58.2)	(3.9)%

Asia-Pacific

Asia-Pacific net sales increased $13.7 million, or 2.1%, in 2020 compared to 2019. The increase in net sales was primarily due to higher volume in the semiconductor business within the Electronics segment and favorable changes in foreign exchange rates of $2.2 million, partially offset by lower volume in the passenger car products business within the Transportation segment due to the production disruption associated with temporary closures of manufacturing facilities resulting from government directives due to the impact of COVID-19 in the first half of 2020.

Americas

Net sales in the Americas decreased $50.6 million, or 10.0%, in 2020 compared to 2019 primarily due to lower volume across all segments driven by the production disruption due to temporary closures of manufacturing facilities resulting from government directives due to the impact of COVID-19, the temporary closures of customer manufacturing facilities during the first half of 2020 and unfavorable changes in foreign exchange rates of $0.3 million. These sales declines were partially offset by increases in end market demand across all businesses in the second half of the year.

Europe

European net sales decreased $21.3 million, or 6.3%, in 2020 compared to 2019. The decrease in net sales was primarily due to lower volume in the semiconductor business within the Electronics segment, lower volume in passenger car products and commercial vehicle products businesses within the Transportation segment driven by the production disruption due to temporary closures of manufacturing facilities resulting from government directives due to the impact of COVID-19 and the temporary closures of customer manufacturing facilities during the first half of 2020, partially offset by increased volume in the second half of 2020 due to higher end market demand in Electronics and Transportation businesses and favorable changes in foreign exchange rates of $5.8 million.

Liquidity and Capital Resources

Cash and cash equivalents were $478.5 million as of January 1, 2022, a decrease of $209.1 million as compared to December 26, 2020.

As of January 1, 2022, $326.1 million of the Company's $478.5 million cash and cash equivalents was held by non-U.S. subsidiaries. Of the $326.1 million, at least $171.2 million can be repatriated with minimal tax consequences, although in certain cases a non-U.S. withholding tax would be payable but subsequently refunded. With respect to the remaining $154.9 million, the Company has recognized deferred tax liabilities on approximately $68.6 million as of January 1, 2022 because the amounts are not considered to be permanently reinvested, and the Company may access additional amounts through loans and other means. Repatriation of some non-U.S. cash balances is restricted by local laws. Management regularly evaluates whether foreign earnings are expected to be permanently reinvested. This evaluation requires judgment about the future operating and liquidity needs of the Company and its foreign subsidiaries. Changes in economic and business conditions, non-U.S. or U.S. tax laws could result in changes to these judgments and the need to record additional tax liabilities.

The Company has historically supported its liquidity needs through cash flows from operations. Management expects that the Company’s (i) current level of cash, cash equivalents, and marketable securities, (ii) current and forecasted cash flows from operations, (iii) availability under existing funding arrangements, and (iv) access to capital in the capital markets will provide sufficient funds to support the Company’s operations, capital expenditures, investments, and debt obligations on both a short-term and long-term basis.

Revolving Credit Facility

On April 3, 2020, the Company amended its existing credit agreement to effect certain changes, including, among others: (i) eliminating the $200.0 million unsecured term loan credit facility, the remaining outstanding balance ($140.0 million) of which was repaid in full on April 3, 2020 through the revolving credit facility; (ii) making certain financial and non-financial covenants less restrictive on the Company; (iii) modifying performance-based interest rate margins and undrawn fees; and (iv) extending the maturity date to April 3, 2025. The amended Credit Agreement also allows the Company to increase the size of the revolving credit facility or enter into one or more tranches of term loans if there is no event of default and the Company is in compliance with certain financial covenants. The Company made payments of $30.0 million on the amended revolving credit facility during the fiscal year ended January 1, 2022. The balance under the facility was $100.0 million as of January 1, 2022.

Outstanding borrowings under the amended credit agreement bear interest, at the Company’s option, at either LIBOR, fixed for interest periods of one, two, three or six-month periods, plus 1.25% to 2.00%, or at the bank’s Base Rate, as defined, plus 0.25% to 1.00%, based upon the Company’s Consolidated Leverage Ratio, as defined. The Company is also required to pay commitment fees on unused portions of the credit agreement ranging from 0.125% to 0.20%, based on the Consolidated Leverage Ratio, as defined in the agreement. The credit agreement includes representations, covenants and events of default that are customary for financing transactions of this nature. The effective interest rate on outstanding borrowings under the credit facility was 1.35% at January 1, 2022.

As of January 1, 2022, the Company had no outstanding in letters of credit and had available $600.0 million of borrowing capacity under the revolving credit facility. At January 1, 2022, the Company was in compliance with all covenants under the credit agreement.

Senior Notes

On December 8, 2016, the Company entered into a Note Purchase Agreement, pursuant to which the Company issued and sold €212 million aggregate principal amount of senior notes in two series. The funding date for the Euro denominated senior notes occurred on December 8, 2016 for €117 million in aggregate amount of 1.14% Senior Notes, Series A, due December 8, 2023 ("Euro Senior Notes, Series A due 2023"), and €95 million in aggregate amount of 1.83% Senior Notes, Series B due December 8, 2028 ("Euro Senior Notes, Series B due 2028") (together, the "Euro Senior Notes"). Interest on the Euro Senior Notes is payable semiannually on June 8 and December 8, commencing June 8, 2017.

On December 8, 2016, the Company entered into a Note Purchase Agreement, pursuant to which the Company issued and sold $125 million aggregate principal amount of senior notes in two series. On February 15, 2017, $25 million in aggregate principal amount of 3.03% Senior Notes, Series A, due February 15, 2022 ("U.S. Senior Notes, Series A due 2022"), and $100 million in aggregate principal amount of 3.74% Senior Notes, Series B, due February 15, 2027 ("U.S. Senior Notes, Series B due 2027") (together, the "U.S. Senior Notes due 2022 and 2027") were funded. Interest on the U.S. Senior Notes due 2022 and 2027 is payable semiannually on February 15 and August 15, commencing August 15, 2017.

On November 15, 2017, the Company entered into a Note Purchase Agreement pursuant to which the Company issued and sold $175 million in aggregate principal amount of senior notes in two series. On January 16, 2018, $50 million aggregate principal amount of 3.48% Senior Notes, Series A, due February 15, 2025 ("U.S. Senior Notes, Series A due 2025") and $125 million in aggregate principal amount of 3.78% Senior Notes, Series B, due February 15, 2030 ("U.S. Senior Notes, Series B due 2030") (together, the "U.S. Senior Notes due 2025 and 2030" and with the Euro Senior Notes and the U.S. Senior Notes due 2022 and 2027, the "Senior Notes") were funded. Interest on the U.S. Senior Notes due 2025 and 2030 is payable semiannually on February 15 and August 15, commencing August 15, 2018.

The Company was in compliance with its debt covenants as of January 1, 2022. As of January 1, 2022, the Company met all the conditions required to borrow under the Credit Agreement and management expects the Company to continue to meet the applicable borrowing conditions.

Acquisitions

On January 28, 2021, the Company acquired Hartland, a manufacturer and leading supplier of electrical components used primarily in HVAC and other industrial and control systems applications. At the time of acquisition, Hartland had annualized sales of approximately $70 million. The total purchase price for Hartland was $111.0 million and the operations of Hartland are included in the Industrial segment. The net cash payment of $108.5 million was funded by the Company's cash on hand.

On November 30, 2021, the Company acquired Carling, a leader in switching, circuit protection and power distribution technologies with a strong global presence in commercial transportation, communications infrastructure and marine markets. At the time of acquisition, Carling had annualized sales of approximately $170 million. The purchase price for Carling was $315 million subject to change for working capital adjustments and the operations of Carling are included in the Transportation segment. The net cash payment of $313.6 million was funded by the Company's cash on hand.

Cash Flow Overview

Operating cash inflows are largely attributable to sales of the Company's products. Operating cash outflows are largely attributable to recurring expenditures for raw materials, labor, rent, interest, taxes and other operating activities.

The following describes the Company's cash flows for the fiscal year ended January 1, 2022 and December 26, 2020:

(in millions)	Fiscal Year 2021	Fiscal Year 2020
Net cash provided by operating activities	$ 373.3	$ 258.0
Net cash used in investing activities	(499.2)	(51.4)
Net cash used in financing activities	(69.0)	(67.8)
Effect of exchange rate changes on cash, cash equivalents, and restricted cash	(9.9)	17.6
(Decrease) increase in cash, cash equivalents, and restricted cash	(204.7)	156.4
Cash, cash equivalents, and restricted cash at beginning of period	687.5	531.1
Cash, cash equivalents, and restricted cash at end of period	$ 482.8	$ 687.5

Cash Flow from Operating Activities

Net cash provided by operating activities was $373.3 million for the fiscal year 2021, an increase of $115.3 million, compared to $258.0 million during the fiscal year 2020. The increase in net cash provided by operating activities was primarily due to higher cash earnings partially offset by increases in working capital resulting from higher sales growth.

Cash Flow from Investing Activities

Net cash used in investing activities was $499.2 million for the fiscal year 2021, compared to $51.4 million during the fiscal year 2020. Capital expenditures were $90.6 million, representing a decrease of $34.4 million compared to the fiscal year 2020. Net cash paid for the Hartland and Carling acquisitions was $422.1 million during the fiscal year 2021. The Company also received proceeds of $15.4 million from the sale of buildings within the Electronics segment during the fiscal year 2021 as compared to proceeds of $4.8 million as a result of the sale of a property within the Industrial segment during the fiscal year 2020.

Cash Flow from Financing Activities

Net cash used in financing activities was $69.0 million for the fiscal year 2021 compared to $67.8 million for the fiscal year 2020. The Company made payments of $30.0 million on the amended revolving credit facility during the fiscal year 2021. On March 25, 2020, the Company borrowed $100.0 million from its revolving credit facility to preserve financial flexibility and enhance liquidity, given the increasing levels of uncertainty related to COVID-19. On April 3, 2020, the Company amended the Credit Agreement to eliminate the $200.0 million unsecured term loan credit facility, with the remaining outstanding balance of $140.0 million repaid in full on April 3, 2020 through a new borrowing of $140.0 million under the amended revolving credit facility. The Company also made principal payments of $5.0 million on the term loan during fiscal year 2020 before amended the Credit Agreement. During the fiscal year 2020, the Company made payments of $110.0 million on the amended revolving credit facility.

During the fiscal year 2020, the Company repurchased 175,110 shares of its common stock totaling $22.9 million. Additionally, dividends paid increased $2.9 million from $46.8 million for the fiscal year 2020 to $49.7 million for the fiscal year 2021.
The following describes the Company's cash flows for the twelve months ended December 26, 2020 and December 28, 2019:

(in millions)	Fiscal Year 2020	Fiscal Year 2019
Net cash provided by operating activities	$ 258.0	$ 245.3
Net cash used in investing activities	(51.4)	(56.4)
Net cash used in financing activities	(67.8)	(146.3)
Effect of exchange rate changes on cash, cash equivalents, and restricted cash	17.6	(1.2)
Increase in cash, cash equivalents, and restricted cash	156.4	41.4
Cash, cash equivalents, and restricted cash at beginning of period	531.1	489.7
Cash, cash equivalents, and restricted cash at end of period	$ 687.5	$ 531.1

Cash Flow from Operating Activities

Net cash provided by operating activities was $258.0 million for the fiscal year 2020, compared to $245.3 million during the fiscal year 2019. The increase in net cash provided by operating activities was primarily due to lower annual incentive payments and favorable changes in net working capital partially offset by lower earnings largely due to the impact of COVID-19.

Cash Flow from Investing Activities

Net cash used in investing activities was $51.4 million for the fiscal year 2020, compared to $56.4 million during the fiscal year 2019. Capital expenditures were $56.2 million, representing a decrease of $5.7 million compared to the fiscal year 2019. The Company also received proceeds of $4.8 million and $6.2 million, respectively, in the fiscal year 2020 and the fiscal year 2019 primarily as a result of the sale of properties within the Industrial segment.

Cash Flow from Financing Activities

Net cash used in financing activities was $67.8 million for 2020 compared to $146.3 million for the fiscal year 2019. The Company made principal payments of $5.0 million and $10.0 million on the term loan during fiscal year 2020 and 2019, respectively. During fiscal year 2020, the company borrowed $100.0 million from its revolving credit facility to preserve financial flexibility and enhance liquidity, given the increasing levels of uncertainty related to COVID-19. On April 3, 2020, the Company amended the Credit Agreement to eliminate the $200.0 million unsecured term loan credit facility, with the remaining outstanding balance of $140.0 million repaid in full on April 3, 2020 through a new borrowing of $140.0 million under the recently amended revolving credit facility. The Company made payments of $110.0 million on the amended revolving credit facility during the fiscal year 2020. The balance under the facility was $130.0 million as of December 26, 2020.

For the fiscal year 2020 and 2019, the Company repurchased 175,110 and 579,916 shares of its common stock totaling $22.9 million and $95.0 million, respectively, but made payments of $99.4 million related to settled share repurchases during the fiscal year 2019. Additionally, dividends paid increased $2.2 million from $44.7 million for the fiscal year 2019 to $46.8 million for the fiscal year 2020.

Contractual Obligations and Commitments

The following table summarizes outstanding contractual obligations and commitments as of January 1, 2022:

	Payments Due By Period				
(in thousands)	**Total**	**Less than 1 Year**	**1 to 3 Years**	**3 to 5 Years**	**Greater than 5 Years**
Long-term debt[(a)]	$ 639,984	$ 25,000	$ 132,444	$ 150,000	$ 332,540
Interest payments[(b)]	80,435	14,488	26,710	20,202	19,035
Operating lease payments[(c)]	34,307	10,080	15,163	4,457	4,607
Income tax obligation[(d)]	20,754	3,000	9,515	8,239	—
Purchase obligations[(e)]	13,544	10,091	1,263	1,166	1,024
Total	$ 789,024	$ 62,659	$ 185,095	$ 184,064	$ 357,206

(a) Excludes offsetting issuance costs of $3.1 million. Euro denominated debt amounts are converted based on the Euro to U.S. Dollar spot rate at year end. For more information see Note 9, *Debt*, of the Notes to Consolidated Financial Statements.

(b) Amounts represent estimated contractual interest payments on outstanding debt. Rates in effect as of January 1, 2022 are used for variable rate debt. For more information see Note 9, *Debt*, of the Notes to Consolidated Financial Statements.

(c) For more information see Note 7, *Lease Commitments*, of the Notes to Consolidated Financial Statements.

(d) The Income tax obligation represents the remaining amounts payable regarding the 2017 Littelfuse Toll Charge. The Company has elected to pay the 2017 Littelfuse Toll Charge over the eight-year period prescribed by the Tax Act. For more information see Note 14, *Income Taxes*, of the Notes to Consolidated Financial Statements.

(e) Purchase obligations include purchase commitments and commitments for capital expenditures not recognized in the Company’s Consolidated Balance Sheets.

In addition to the above contractual obligations and commitments, the Company had the following obligations at January 1, 2022:

The Company has Company-sponsored defined benefit pension plans covering employees at various non-U.S. subsidiaries including the U.K., Germany, the Philippines, China, Japan, Mexico, Italy and France. At January 1, 2022, the Company had a net unfunded status of $38.2 million. The Company expects to make approximately $2.6 million of contributions to the plans in 2022. For additional information, see Note 11, *Benefit Plans*, of the Notes to Consolidated Financial Statements.

Dividends

Cash dividends paid totaled $49.7 million, $46.8 million and $44.7 million for 2021, 2020 and 2019, respectively. On January 27, 2022, the Board of Directors of the Company declared a quarterly cash dividend of $0.53 per share, payable on March 10, 2022 to stockholders of record as of February 24, 2022.

Capital Resources

The Company expends capital to support its operating and strategic plans. Such expenditures include strategic acquisitions, investments to maintain capital assets, develop new products or improve existing products, and to enhance capacity or productivity. Many of the associated projects have long lead-times and require commitments in advance of actual spending.

Share Repurchase Program

On April 26, 2019, the Company's Board of Directors authorized a program to repurchase up to 1,000,000 shares of the Company's common stock for the period May 1, 2019 to April 30, 2020 (the "2019 program"). On April 29, 2020, the Company announced that the Board of Directors authorized a new program to repurchase up to 1,000,000 shares of the Company's common stock for the period May 1, 2020 to April 30, 2021 (the "2020 program") to replace its previous expired 2019 program. On April 28, 2021, the Company announced that the Board of Directors authorized a new three-year program to repurchase up to $300 million in the aggregate of shares of the Company’s common stock for the period May 1, 2021 to April 30, 2024 to replace its previous 2020 program. There are $300 million in the aggregate of shares available for purchase under the new program as of January 1, 2022.

During the fiscal year 2021, the Company did not repurchase any shares of its common stock. During the fiscal year 2020 and 2019, the Company repurchased 175,110, and 579,916 shares of its common stock totaling $22.9 million and $95.0 million, respectively.

Off-Balance Sheet Arrangements

As of January 1, 2022, the Company did not have any off-balance sheet arrangements, as defined under SEC rules. Specifically, the Company was not liable for guarantees of indebtedness owed by third parties, the Company was not directly liable for the debt of any unconsolidated entity and the Company did not have any retained or contingent interest in assets. The Company does not participate in transactions that generate relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities.

Recent Accounting Pronouncements

Recently issued accounting standards and their estimated effect on the Company’s Consolidated Financial Statements are described in Note 1, *Summary of Significant Accounting Policies and Other Information*, of the Notes to Consolidated Financial Statements.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

The Company is exposed to market risk from changes in interest rates, foreign exchange rates and commodity prices.

Interest Rates Risk

The Company made payments of $30.0 million on the amended revolving credit facility during the fiscal year 2021. The balance under the facility was $100.0 million as of January 1, 2022. With variable interest rates, the Company is subject to future interest rate fluctuations in relation to these borrowings which could potentially have a negative impact on cash flows of the Company. A prospective increase of 100 basis points in the interest rate applicable to the Company’s outstanding borrowings under its credit facility would result in an increase of approximately $1.0 million in annual interest expense. This exposure would be partially if not fully offset by higher interest income from the Company's investments. The Company is not party to any currency exchange or interest rate protection agreements as of January 1, 2022.

Foreign Exchange Rate Risk

The majority of the company’s operations consist of manufacturing and sales activities in foreign countries. The Company has operations in China, Germany, Mexico, Philippines, U.K., Japan, Lithuania, Netherlands, Portugal, Singapore, South Korea, Spain, and the U.S. During 2021, sales to customers outside the U.S. were approximately 69% of total net sales. During 2020, sales to customers outside the U.S. were approximately 73% of total net sales. Substantially all sales in Europe are denominated in euros and substantially all sales in the Asia-Pacific region are denominated in U.S. dollars, Chinese renminbi, Japanese yen, or Korean won.

The company’s foreign exchange exposures result primarily from inter-company loans, external borrowings, sale of products in foreign currencies, foreign currency denominated purchases, employee-related and other costs of running operations in foreign countries. The company’s most significant foreign currency exposures are to the euro, the Chinese renminbi, Mexican peso, and Philippine peso. Changes in foreign exchange rates could affect the company’s sales, costs, balance sheet values and earnings.

At January 1, 2022, the net value of the Company’s assets with exposure to foreign currency risk was approximately $148 million, with the largest exposure being a Japanese yen denominated inter-company loan with a Euro functional currency subsidiary. The reduction in earnings from a hypothetical instantaneous 10% adverse change in quoted foreign currency spot rates applied to foreign currency sensitive asset instruments would be $15 million at January 1, 2022. At January 1, 2022, the net value of the Company’s liabilities with exposure to foreign currency risk was $389 million, with the largest exposure being U.S. Dollar denominated inter-company loans with a Euro functional currency subsidiary. The reduction in earnings from a hypothetical instantaneous 10% adverse change in quoted foreign currency spot rates applied to foreign currency sensitive liability instruments would be $39 million at January 1, 2022. As a result of the mix in currencies impacting the hypothetical 10% changes, the movements in some instruments would offset movements in other instruments reducing the hypothetical exposure to the Company.

Commodity Price Risk

The Company uses various metals in the manufacturing of its products, including copper, zinc, tin, gold, and silver. Prices of these and other commodities can rise and result in materially higher costs of producing our products. The Company believes it has adequate primary and secondary sources of supply for each of our key materials. While the Company is exposed to significant changes in certain metal prices and expects higher material costs, the Company actively monitors these exposures and may take various actions, including price increases and productivity improvements to mitigate any negative impacts of these exposures.

Due to the continued impact from COVID-19, transportation costs increased significantly in 2021 and may further increase in 2022. The Company has taken and, in the future, may take further various actions, including price increases and changing freight modes or other alternative solutions to mitigate the impact of rising transportation costs.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA.

Report of Independent Registered Public Accounting Firm

Board of Directors and Shareholders
Littelfuse, Inc.

Opinion on the financial statements

We have audited the accompanying consolidated balance sheets of Littelfuse, Inc. (a Delaware corporation) and subsidiaries (the "Company") as of January 1, 2022 and December 26, 2020, the related consolidated statements of net income, comprehensive income, equity, and cash flows for each of the three years in the period ended January 1, 2022, and the related notes and financial statement schedule included under Item 15(a) (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of January 1, 2022 and December 26, 2020, and the results of its operations and its cash flows for each of the three years in the period ended January 1, 2022, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of January 1, 2022, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"), and our report dated February 17, 2022 expressed an unqualified opinion.

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 January 1, 2022, based on criteria established in the 2013 Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"), and our report dated February 17, 2022, expressed an unqualified opinion.

Basis for opinion

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

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence 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 matter

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

Business Acquisition – Carling Technologies – Valuation of acquired Intangible Assets

As discussed in Note 2, the Company acquired Carling Technologies, Inc., on November 30, 2021 for a total purchase price of approximately $314 million, net of cash acquired. The Company allocated the purchase price, on a preliminary basis, to the assets acquired and liabilities assumed based on their respective fair values, including identified intangible assets of $125.9 million. We identified the valuation of acquired intangible assets as a critical audit matter.

The principal considerations for our determination that the valuation of acquired intangible assets is a critical audit matter are (i) the significant judgment by management when determining assumptions used in the fair value measurement of acquired intangible assets (ii) the high degree of auditor judgment and subjectivity in performing procedures and evaluating management’s significant assumptions relating to revenue growth, royalty rates, and customer attrition rates and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Our audit procedures related to the valuation of the acquired intangible assets included the following, among others:

- we tested the design and operating effectiveness of the controls over the Company’s acquisition and valuation process, including review of the valuation model, significant assumptions used, and the completeness and accuracy of the underlying data used
- we tested the forecasted revenues and cash flows by assessing the reasonableness of management’s forecasts compared to historical results and forecasted industry trends
- with the assistance of our valuation specialists, we assessed the royalty, customer attrition, and revenue growth rates by developing a range of independent estimates and comparing those to the rates selected by management. We also involved our valuation specialists to evaluate the assumptions and methodologies used in valuing the intangible assets.

/s/ GRANT THORNTON LLP

We have served as the Company’s auditor since 2014.

Southfield, Michigan
February 17, 2022

Report of Independent Registered Public Accounting Firm

Board of Directors and Shareholders
Littelfuse, Inc.

Opinion on internal control over financial reporting
We have audited the internal control over financial reporting of Littelfuse, Inc. (a Delaware corporation) and subsidiaries (the “Company”) as of January 1, 2022, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of January 1, 2022, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by COSO.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the consolidated financial statements of the Company as of and for the year ended January 1, 2022, and our report dated February 17, 2022 expressed an unqualified opinion on those financial statements.

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

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

Our audit of, and opinion on, the Company’s internal control over financial reporting does not include the internal control over financial reporting of Carling Technologies, Inc., a wholly-owned subsidiary, whose financial statements reflect total assets and revenues constituting 5% and 1%, respectively, of the related consolidated financial statement amounts as of and for the year ended January 1, 2022. As indicated in Management’s Report, Carling Technologies, Inc. was acquired during 2021. Management’s assertion on the effectiveness of the Company’s internal control over financial reporting excluded internal control over financial reporting of Carling Technologies, Inc.

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

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

/s/ GRANT THORNTON LLP

Southfield, Michigan
February 17, 2022

LITTELFUSE, INC.
CONSOLIDATED BALANCE SHEETS

(in thousands, except share and per share data)	January 1, 2022	December 26, 2020
ASSETS		
Current assets:		
Cash and cash equivalents	$ 478,473	$ 687,525
Short-term investments	28	54
Trade receivables, less allowances of $59,232 and $45,237, respectively	275,192	232,760
Inventories	445,671	258,002
Prepaid income taxes and income taxes receivable	2,035	3,029
Prepaid expenses and other current assets	68,812	35,939
Total current assets	1,270,211	1,217,309
Net property, plant, and equipment	437,889	344,178
Intangible assets, net of amortization	407,126	291,887
Goodwill	929,790	816,812
Investments	39,211	30,547
Deferred income taxes	13,127	11,224
Right of use assets, net	29,616	17,615
Other assets	24,734	18,021
Total assets	$ 3,151,704	$ 2,747,593
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable	$ 222,039	$ 145,984
Accrued liabilities	159,689	110,478
Accrued income taxes	27,905	19,186
Current portion of long-term debt	25,000	—
Total current liabilities	434,633	275,648
Long-term debt, less current portion	611,897	687,034
Deferred income taxes	81,289	50,134
Accrued post-retirement benefits	37,037	45,802
Non-current operating lease liabilities	22,305	12,950
Other long-term liabilities	71,023	67,252
Shareholders' equity:		
Common stock, par value $0.01 per share: 34,000,000 shares authorized; shares issued, 26,350,763 and 26,131,544, respectively	260	259
Additional paid-in capital	946,588	907,858
Treasury stock, at cost: 1,664,711 and 1,644,283 shares, respectively	(248,120)	(242,366)
Accumulated other comprehensive loss	(73,463)	(91,157)
Retained earnings	1,268,124	1,034,048
Littelfuse, Inc. shareholders' equity	1,893,389	1,608,642
Non-controlling interest	131	131
Total equity	1,893,520	1,608,773
Total liabilities and equity	$ 3,151,704	$ 2,747,593

See accompanying Notes to Consolidated Financial Statements.

LITTELFUSE, INC.
CONSOLIDATED STATEMENTS OF NET INCOME

	Fiscal Year Ended		
(in thousands, except per share data)	**January 1, 2022**	**December 26, 2020**	**December 28, 2019**
Net sales	$ 2,079,928	$ 1,445,695	$ 1,503,873
Cost of sales	1,308,002	944,523	957,578
Gross profit	771,926	501,172	546,295
Selling, general, and administrative expenses	275,457	204,507	220,448
Research and development expenses	65,940	52,538	79,997
Amortization of intangibles	42,729	40,039	40,026
Restructuring, impairment, and other charges	2,158	41,716	13,033
Total operating expenses	386,284	338,800	353,504
Operating income	385,642	162,372	192,791
Interest expense	18,527	21,077	22,266
Foreign exchange loss (gain)	17,158	(14,875)	5,224
Other expense (income), net	8,932	(5,083)	(583)
Income before income taxes	341,025	161,253	165,884
Income taxes	57,219	31,267	26,802
Net income	$ 283,806	$ 129,986	$ 139,082
Income per share:			
Basic	$ 11.54	$ 5.33	$ 5.66
Diluted	$ 11.38	$ 5.29	$ 5.60
Weighted average shares and equivalent shares outstanding:			
Basic	24,603	24,371	24,576
Diluted	24,932	24,592	24,818

See accompanying Notes to Consolidated Financial Statements.

LITTELFUSE, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended		
(in thousands)	**January 1, 2022**	**December 26, 2020**	**December 28, 2019**
Net income	$ 283,806	$ 129,986	$ 139,082
Other comprehensive income (loss):			
Pension and postemployment adjustments, net of tax	22,213	(16,095)	(8,087)
Foreign currency translation adjustments	(4,519)	31,761	(812)
Comprehensive income	$ 301,500	$ 145,652	$ 130,183

See accompanying Notes to Consolidated Financial Statements.

LITTELFUSE, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended		
(in thousands)	**January 1, 2022**	**December 26, 2020**	**December 28, 2019**
OPERATING ACTIVITIES			
Net income	$ 283,806	$ 129,986	$ 139,082
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation	55,906	56,139	52,477
Amortization of intangibles	42,729	40,039	40,026
Non-cash pension settlement charges	19,855	—	—
Impairment charges	—	36,078	322
Deferred revenue	(2,570)	(593)	(318)
Non-cash inventory charges	8,397	—	—
Stock-based compensation	19,611	18,129	19,046
(Gain) loss on investments and other assets	(8,907)	(4,663)	4,854
Deferred income taxes	(8,020)	(3,214)	(1,147)
Other	20,275	(18,230)	6,638
Changes in operating assets and liabilities:			
Trade receivables	(10,234)	(25,588)	28,497
Inventories	(104,555)	(12,425)	22,094
Accounts payable	40,481	28,820	(22,574)
Accrued liabilities and income taxes	30,793	6,765	(54,242)
Prepaid expenses and other assets	(14,223)	6,788	10,573
Net cash provided by operating activities	373,344	258,031	245,328
INVESTING ACTIVITIES			
Acquisitions of businesses, net of cash acquired	(423,633)	—	(775)
Purchases of property, plant, and equipment	(90,562)	(56,191)	(61,895)
Proceeds from sale of property, plant, and equipment	15,425	4,758	6,213
Other	(390)	—	—
Net cash used in investing activities	(499,160)	(51,433)	(56,457)
FINANCING ACTIVITIES			
Proceeds of revolving credit facility	—	240,000	—
Payments of revolving credit facility	(30,000)	(110,000)	—
Payments of term loan and other loans	(2,619)	(145,000)	(10,000)
Net proceeds related to stock-based award activities	13,365	18,744	7,800
Cash dividends paid	(49,730)	(46,839)	(44,689)
Purchases of common stock	—	(22,927)	(99,387)
Debt issuance costs	—	(1,786)	—
Net cash used in financing activities	(68,984)	(67,808)	(146,276)
Effect of exchange rate changes on cash, cash equivalents, and restricted cash	(9,889)	17,596	(1,189)
(Decrease) increase in cash, cash equivalents, and restricted cash	(204,689)	156,386	41,406
Cash, cash equivalents, and restricted cash at beginning of period	687,525	531,139	489,733
Cash, cash equivalents, and restricted cash at end of period	$ 482,836	$ 687,525	$ 531,139
Supplementary Cash Flow Information			
Reconciliation of cash and cash equivalents:			
Cash and cash equivalents	$ 478,473	$ 687,525	$ 531,139
Restricted cash included in prepaid expenses and other current assets	$ 2,718	$ —	$ —
Restricted cash included in other assets	$ 1,645	$ —	$ —
Cash paid during the period for interest	$ 17,420	$ 20,095	$ 21,240
Cash paid during the period for income taxes, net of refunds	$ 55,561	$ 27,619	$ 40,518
Capital expenditures, not yet paid	$ 11,872	$ 6,126	$ 11,110

See accompanying Notes to Consolidated Financial Statements.

LITTELFUSE, INC.
CONSOLIDATED STATEMENTS OF EQUITY

	Littelfuse, Inc. Shareholders' Equity						
(in thousands, except share and per share data)	Common Stock	Addl. Paid in Capital	Treasury Stock	Accum. Other Comp. Inc. (Loss)	Retained Earnings	Non-controlling Interest	Total
Balance at December 29, 2018	$ 254	$ 835,828	$ (116,454)	$ (97,924)	$ 856,507	$ 131	$ 1,478,342
Net income	—	—	—	—	139,082	—	139,082
Other comprehensive income (loss), net of tax				(8,899)			(8,899)
Stock-based compensation	—	19,046	—	—	—	—	19,046
Withheld 25,940 shares on restricted share units for withholding taxes	—		(4,957)	—	—	—	(4,957)
Stock options exercised	2	13,122	—	—	—	—	13,124
Repurchases of common stock	—	—	(95,036)	—	—	—	(95,036)
Cash dividends paid ($1.82 per share)	—	—	—	—	(44,688)	—	(44,688)
Balance at December 28, 2019	$ 256	$ 867,996	$ (216,447)	$ (106,823)	$ 950,901	$ 131	$ 1,496,014
Net income	—	—	—	—	129,986	—	129,986
Other comprehensive income (loss), net of tax				15,666			15,666
Stock-based compensation	—	18,129	—	—	—	—	18,129
Withheld 20,250 shares on restricted share units for withholding taxes	—	—	(2,992)	—	—	—	(2,992)
Stock options exercised	3	21,733	—	—	—	—	21,736
Repurchases of common stock	—	—	(22,927)	—	—	—	(22,927)
Cash dividends paid ($1.92 per share)	—	—	—	—	(46,839)	—	(46,839)
Balance at December 26, 2020	$ 259	$ 907,858	$ (242,366)	$ (91,157)	$ 1,034,048	$ 131	$ 1,608,773
Net income	—	—	—	—	283,806	—	283,806
Other comprehensive income (loss), net of tax				17,694			17,694
Stock-based compensation	—	19,611	—	—	—	—	19,611
Withheld 20,428 shares on restricted share units for withholding taxes	—	—	(5,754)	—	—	—	(5,754)
Stock options exercised	1	19,119	—	—	—	—	19,120
Cash dividends paid ($2.02 per share)	—	—	—	—	(49,730)	—	(49,730)
Balance at January 1, 2022	$ 260	$ 946,588	$ (248,120)	$ (73,463)	$ 1,268,124	$ 131	$ 1,893,520

See accompanying Notes to Consolidated Financial Statements.

1. Summary of Significant Accounting Policies and Other Information

Nature of Operations

Littelfuse, Inc. and subsidiaries (the “Company”) is an industrial technology manufacturing company empowering a sustainable, connected, and safer world. Across more than 15 countries, and with approximately 17,000 global associates, the company partners with customers to design and deliver innovative, reliable solutions. Serving over 100,000 end customers, the company’s products are found in a variety of industrial, transportation and electronics end markets – everywhere, every day.

Fiscal Year

References herein to “2021”, “fiscal 2021” or “fiscal year 2021” refer to the fiscal year ended January 1, 2022. References herein to “2020”, “fiscal 2020” or “fiscal year 2020” refer to the fiscal year ended December 26, 2020. References herein to “2019”, “fiscal 2019” or “fiscal year 2019” refer to the fiscal year ended December 28, 2019. The Company operates on a 52-53 week fiscal year (4-4-5 basis) ending on the Saturday closest to December 31. Therefore, the financial results of certain fiscal years and the associated 14 week quarters will not be exactly comparable to the prior 52 week fiscal years and the associated quarters having only 13 weeks. As a result of using this convention, the fiscal year 2021 contained 53 weeks while each of fiscal 2020 and fiscal 2019 contained 52 weeks.

Basis of Presentation

The Consolidated Financial Statements include the accounts of Littelfuse, Inc. and its subsidiaries. All significant intercompany accounts and transactions have been eliminated. The Company’s Consolidated Financial Statements were prepared in accordance with generally accepted accounting principles in the United States of America ("U.S.") and include the assets, liabilities, sales and expenses of all wholly-owned subsidiaries and majority-owned subsidiaries over which the Company exercises control.

Use of Estimates

The process of preparing financial statements in conformity with generally accepted accounting principles in the U.S. requires management to make estimates and assumptions that affect the amounts of assets and liabilities at the date of the Consolidated Financial Statements, and the reported amounts of revenues and expenses and the accompanying notes. The Company evaluates and updates its assumptions and estimates on an ongoing basis and may employ outside experts to assist in its evaluation, as considered necessary. Actual results could differ from those estimates.

Cash, Cash Equivalents and Restricted Cash

All highly liquid investments, with an original maturity of three months or less when purchased, are considered to be cash equivalents. The Company maintains several pools including multicurrency notional pools and physical pools internationally and a zero balance account ("ZBA") structure in the U.S. In the notional pools, actual cash balances are not physically converted and are not commingled between participating legal entities. The Company will classify any overdraft balances within accrued expenses and other current liabilities on the Consolidated Balance Sheets.

The following table provides a reconciliation of cash, cash equivalents and restricted cash at January 1, 2022 and December 26, 2020 reported within the Consolidated Balance Sheets that sum to the total of the same such amounts shown in the Consolidated Statement of Cash Flows.

(in millions)	**2021**	**2020**
Cash and cash equivalents	$ 478,473	$ 687,525
Restricted cash included in prepaid expenses and other current assets	2,718	—
Restricted cash included in other assets	1,645	$ —
Total cash, cash equivalents and restricted cash	$ 482,836	$ 687,525

Short-Term and Long-Term Investments

As of January 1, 2022, the Company has an investment in Polytronics Technology Corporation Ltd. (“Polytronics”). The Company’s Polytronics shares held at the end of fiscal 2021 and 2020 represent approximately 6.8% and 7.2% of total Polytronics shares outstanding, respectively. The Polytronics investment is carried at fair value. The fair value of the Polytronics investment was €23 million (approximately $26.1 million) at January 1, 2022 and €15.7 million (approximately $19.2 million) at December 26, 2020.

As a result of the Company’s acquisition of IXYS, the Company has equity ownerships in various investments that are accounted for under the equity method. The Company owns 45% of the outstanding equity of Powersem GmbH, a module manufacturer based in Germany, approximately 19% of the outstanding equity of EB Tech Ltd., a company with expertise in radiation technology based in South Korea, and approximately 24% of the outstanding common shares of Automated Technology, Inc., a supplier located in the Philippines that provides assembly and test services. All equity-level investments are less than majority owned. The Company recognized $1.3 million gains from its equity method investment for the fiscal year ended January 1, 2022. The Company recognized no gains and losses from its equity method investments for the fiscal year ended December 26, 2020. The balance of these equity method investments was $12.4 million and $11.4 million as of the fiscal years ended January 1, 2022 and December 26, 2020, respectively. See Note 18, *Related Party Transactions*, for further discussion.

The Company does not have any remaining book value of investments accounted for under the cost method as of January 1, 2022. As of December 26, 2020, the Company had a net book value of $0.5 million. During the fiscal year ended January 1, 2022, the Company impaired the remaining book value of these investments and recorded an impairment charge of $0.5 million, and during the fiscal year ended December 26, 2020, the Company recorded $0.1 million in *Other expense (income), net* in the Consolidated Statements of Net Income. See Note 10, *Fair Value of Assets and Liabilities*, for further discussion.

The Company has investments related to its non-qualified Supplemental Retirement and Savings Plan. The Company maintains accounts for participants through which participants make investment elections. The investment securities are subject to the claims of the Company’s creditors. The investment securities are all mutual funds. The investment securities are measured at net asset value. As of January 1, 2022 and December 26, 2020, the investment securities balance was $15.0 million and $13.2 million, respectively, related to the plan and are included in *Other assets* on the Consolidated Balance Sheets.

Trade Receivables

The Company performs credit evaluations of customers’ financial condition and generally does not require collateral. Credit losses are provided for in the financial statements based upon specific knowledge of a customer’s inability to meet its financial obligations to the Company. Historically, credit losses have consistently been within management’s expectations and have not been a material amount. A receivable is considered past due if payments have not been received within agreed upon invoice terms. Write-offs are recorded at the time a customer receivable is deemed uncollectible.

The Company also maintains allowances against trade receivables for the settlement of rebates and sales discounts to customers. These allowances are based upon specific customer sales and sales discounts as well as actual historical experience.

Inventories

Inventories are stated at the lower of cost or net realizable value, which approximates current replacement cost. Cost is principally determined using the first-in, first-out method. The Company maintains excess and obsolete reserves against inventory to reduce the carrying value to the expected net realizable value. These reserves are based upon a combination of factors including historical sales volume, market conditions, lower of cost or market analysis and expected realizable value of the inventory.

Property, Plant, and Equipment

Land, buildings, and equipment are carried at cost. Depreciation is calculated using the straight-line method with useful lives of up to 21 years for buildings, three to ten years for equipment, seven years for furniture and fixtures, five years for tooling and three years for computer equipment. Leasehold improvements are depreciated over the lesser of their useful life or the lease term. Maintenance and repair costs are charged to expense as incurred. Major overhauls that extend the useful lives of existing assets are capitalized.

Goodwill

The Company annually tests goodwill for impairment on the first day of its fiscal fourth quarter, or more frequently if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value.

The Company compares each reporting unit's fair value, estimated based on comparable company market valuations and expected future discounted cash flows to be generated by the reporting unit, to its carrying value. The results of the annual goodwill impairment test as of September 26, 2021 indicated that the estimated fair values for each of the seven reporting units exceeded their respective carrying values. As of the most recent annual test conducted on September 26, 2021, the Company noted that the excess of fair value over the carrying value, was 380%, 104%, 255%, 217%, 95%, 144%, and 231% for its reporting units; Electronics-Passive Products and Sensors, Electronics-Semiconductor, Passenger Car Products, Commercial Vehicle Products, Automotive Sensors, Relays, and Power Fuse, respectively. Relatively small changes in the Company's key assumptions would not have resulted in any reporting units failing the goodwill impairment test. See Note 5, *Goodwill and Other Intangible Assets*, for additional information.

During the second quarter of 2020, the Company recorded a non-cash charge of $33.8 million to recognize the impairment of goodwill in the automotive sensors reporting unit within the Transportation segment. The goodwill impairment charge was due to reductions in the estimated fair value for the automotive sensors reporting unit based on lower expectations for future revenue, profitability and cash flows as compared to the expectations of the 2019 annual goodwill impairment test. These lower future expectations were driven by projected extended declines in end market demand due to the COVID-19 pandemic. In addition, during the second quarter of 2020, certain customers notified the Company of their decision to delay future programs along with a customer canceling an existing program. As of January 1, 2022, the automotive sensors reporting unit had $9.2 million of remaining goodwill.

The Company also performs an interim review for indicators of impairment each quarter to assess whether an interim impairment review is required for any reporting unit. As part of its interim reviews, management analyzes potential changes in the value of individual reporting units based on each reporting unit's operating results for the period compared to expected results as of the prior year's annual impairment test. In addition, management considers how other key assumptions, including discount rates and expected long-term growth rates, used in the last annual impairment test, could be impacted by changes in market conditions and economic events. Based on the interim assessments as of January 1, 2022, management concluded that no events or changes in circumstances indicated that it was more likely than not that the fair value for any reporting unit had declined below its carrying value.

Long-Lived Assets

Customer relationships, trademarks and tradenames are amortized using the straight-line method over estimated useful lives that have a range of 5 to 20 years. Patents, licenses and software are amortized using the straight-line method or an accelerated method over estimated useful lives that have a range of 5 to 17 years. The distribution networks are amortized on either a straight-line or accelerated basis over estimated useful lives that have a range of 4 to 10 years. Land use rights are amortized using the straight-line method over 50 years which is the term of the land use rights.

The Company assesses potential impairments to its long-lived assets if events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. An impaired asset is written down to its estimated fair value based upon the most recent information available. Estimated fair market value is generally measured by discounting estimated future cash flows. Long-lived assets, other than goodwill and other intangible assets, that are held for sale are recorded at the lower of carrying value or the fair market value less the estimated cost to sell.

Environmental Liabilities

Environmental liabilities are accrued based on engineering studies estimating the cost of remediating sites. Expenses related to on-going maintenance of environmental sites are expensed as incurred. If actual or estimated probable future losses exceed the Company's recorded liability for such claims, the Company would record additional charges during the period in which the actual loss or change in estimate occurred.

Pension and Other Post-retirement Benefits

The Company records annual income and expense amounts relating to its pension and post-retirement benefits plans based on calculations which include various actuarial assumptions including discount rates, expected long-term rates of return and compensation increases. The Company reviews its actuarial assumptions on an annual basis as of the fiscal year-end balance sheet date (or more frequently if a significant event requiring remeasurement occurs) and modifies the assumption based on current rates and trends when it is appropriate to do so. The effects of modifications are recognized immediately on the Consolidated Balance Sheets, but are generally amortized into operating earnings over future periods, with the deferred amount recorded in accumulated other comprehensive income (loss). The Company believes that the assumptions utilized in recording its obligations under its plans are reasonable based on its experience, market conditions and input from its actuaries and investment advisors.

Revenue Recognition

Revenue Disaggregation

The following table disaggregates the Company's revenue by primary business units for the fiscal years ended January 1, 2022 and December 26, 2020:

	Fiscal Year Ended January 1, 2022			
(in thousands)	**Electronics Segment**	**Transportation Segment (1)**	**Industrial Segment**	**Total**
Electronics – Semiconductor	$ 678,861	$ —	$ —	$ 678,861
Electronics – Passive Products and Sensors	621,883	—	—	621,883
Passenger Car Products	—	266,020	—	266,020
Commercial Vehicle Products	—	160,300	—	160,300
Automotive Sensors	—	101,738	—	101,738
Industrial Products	—	—	251,126	251,126
Total	$ 1,300,744	$ 528,058	$ 251,126	$ 2,079,928

	Fiscal Year Ended December 26, 2020			
(in thousands)	**Electronics Segment**	**Transportation Segment (1)**	**Industrial Segment**	**Total**
Electronics – Semiconductor	$ 522,352	$ —	$ —	$ 522,352
Electronics – Passive Products and Sensors	415,410	—	—	415,410
Passenger Car Products	—	200,455	—	200,455
Commercial Vehicle Products	—	101,324	—	101,324
Automotive Sensors	—	93,985	—	93,985
Industrial Products	—	—	112,169	112,169
Total	$ 937,762	$ 395,764	$ 112,169	$ 1,445,695

(1) Formerly known as Automotive segment.

See Note 16, *Segment Information*, for net sales by segment and countries.

The Company recognizes revenue on product sales in the period in which the Company satisfies its performance obligation and control of the product is transferred to the customer. The Company's sales arrangements with customers are predominately short term in nature and generally provide for transfer of control at the time of shipment as this is the point at which title and risk of loss of the product transfers to the customer. At the end of each period, for those shipments where title to the products and the risk of loss and rewards of ownership do not transfer until the product has been received by the customer, the Company adjusts revenues and cost of sales for the delay between the time that the products are shipped and when they are received by the customer. The amount of revenue recorded reflects the consideration to which the Company expects to be entitled in exchange for goods and may include adjustments for customer allowance, rebates and price adjustments. The Company's distribution channels are primarily through direct sales and independent third-party distributors.

The Company has elected the practical expedient under Accounting Standards Codification ("ASC") 340-40-25-4 to expense commissions when incurred as the amortization period of the commission asset the Company would have otherwise recognized is less than one year.

Revenue and Billing

The Company generally accepts orders from customers through receipt of purchase orders or electronic data interchange based on written sales agreements and purchasing contracts. Contract pricing and selling agreement terms are based on market factors, costs, and competition. Pricing is often negotiated as an adjustment (premium or discount) from the Company’s published price lists. The customer is invoiced when the Company’s products are shipped to them in accordance with the terms of the sales agreement. As the Company’s standard payment terms are less than one year, the Company has elected the practical expedient under ASC 606-10-32-18 to not assess whether a contract has a significant financing component. The Company also elected the practical expedient provided in ASC 606-10-25-18B to treat all product shipping and handling activities as fulfillment activities, and therefore recognize the gross revenue associated with the contract, inclusive of any shipping and handling revenue.

Ship and Debit Program

Some of the terms of the Company’s sales agreements and normal business conditions provide customers (distributors) the ability to receive price adjustments on products previously shipped and invoiced. This practice is common in the industry and is referred to as a “ship and debit” program. This program allows the distributor to debit the Company for the difference between the distributors’ contracted price and a lower price for specific transactions. Under certain circumstances (usually in a competitive situation or large volume opportunity), a distributor will request authorization for pricing allowances to reduce its price. When the Company approves such a reduction, the distributor is authorized to “debit” its account for the difference between the contracted price and the lower approved price. The Company establishes reserves for this program based on historic activity, electronic distributor inventory levels and actual authorizations for the debit and recognizes these debits as a reduction of revenue.

Return to Stock

The Company has a return to stock policy whereby certain customers, with prior authorization from the Company's management, can return previously purchased goods for full or partial credit. The Company establishes an estimated allowance for these returns based on historic activity. Sales revenue and cost of sales are reduced to anticipate estimated returns.

Volume Rebates

The Company offers volume-based sales incentives to certain customers to encourage greater product sales. If customers achieve their specific quarterly or annual sales targets, they are entitled to rebates. The Company estimates the projected amount of rebates that will be achieved by the customer and recognizes this estimated cost as a reduction to revenue as products are sold.

Allowance for Doubtful Accounts

The Company currently measures the expected credit losses based on our historical credit loss experience. The Company has not experienced significant recent or historical credit losses and is not forecasting any significant credit losses which would require adjustments to our methodology. If current conditions and supportable forecasts indicate that our historical loss experience is not reasonable and no longer supportable, the Company may adjust its historical credit loss experience and to reflect these conditions and forecasts. The Company regularly analyzes its significant customer accounts and, when the Company becomes aware of a customer’s inability to meet its financial obligations, the Company records a specific reserve for bad debt to reduce the related receivable to the amount the Company reasonably believes is collectible. The Company also analyzes all other customers based on a variety of factors including the length of time the receivables are past due, the financial health of the customer, macroeconomic considerations and historical collection and loss experience. Historically, the allowance for doubtful accounts has been adequate to cover bad debts. If circumstances related to specific customers change, the estimates of the recoverability of receivables could be further adjusted.

As of January 1, 2022 and December 26, 2020, the Company’s allowance for doubtful accounts was $1.9 million and $1.4 million, respectively. Additionally, the Company had $2.1 million and $1.0 million of trade receivables greater than 90 days past due as of January 1, 2022 and December 26, 2020, respectively.

Advertising Costs

The Company expenses advertising costs as incurred, which amounted to $2.1 million, $2.1 million, and $2.7 million in fiscal years 2021, 2020 and 2019, respectively, and are included as a component of selling, general, and administrative expenses.

Shipping and Handling Fees and Costs

Amounts billed to customers related to shipping and handling are classified as revenue. Costs incurred for shipping and handling of $15.4 million, $11.1 million, and $11.0 million in fiscal years 2021, 2020, and 2019, respectively, are classified in selling, general, and administrative expenses.

Foreign Currency Translation / Remeasurement

The Company's foreign subsidiaries use the local currency or the U.S. dollar as their functional currency, as appropriate. Assets and liabilities are translated using exchange rates at the balance sheet date, and revenues and expenses are translated at weighted average rates. Adjustments from the translation process are recognized in Shareholders' equity as a component of Accumulated other comprehensive income (loss). The amount of foreign currency gain or loss from remeasurement recognized in the Consolidated Statements of Net Income was a loss of $17.2 million in fiscal year 2021, a gain of $14.9 million in fiscal year 2020, and a loss of $5.2 million in fiscal year 2019.

Stock-Based Compensation

The Company recognizes compensation expense for the cost of awards of equity compensation using a fair value method. Benefits of tax deductions in excess of recognized compensation expense are reported as operating cash flows. See Note 12, *Stock-Based Compensation*, for additional information on stock-based compensation.

Coal Mining Liability

Included in other long-term liabilities is an accrual related to former coal mining operations at Littelfuse GmbH (formerly known as Heinrich Industries, AG) for the amounts of €1.9 million ($2.1 million) and €2.3 million ($2.9 million) at January 1, 2022 and December 26, 2020, respectively. Management, in conjunction with an independent third-party, performs an annual evaluation of the former coal mining operations in order to develop an estimate of the probable future obligations in regard to remediating the dangers (such as a shaft collapse) of abandoned coal mine shafts in the former coal mining operations. Management accrues for costs associated with such remediation efforts based on management's best estimate when such costs are probable and reasonably able to be estimated. The ultimate determination can only be done after respective investigations because the concrete conditions are mostly unknown at this time.

Other Expense (Income), Net

Other expense (income), net generally consists of interest income, royalties, change in fair value of available-for-sale securities, pension non-service costs and settlements and other non-operating expense (income).

Income Taxes

The Company accounts for income taxes using the asset and liability method. Deferred taxes are recognized for the future effects of temporary differences between financial and income tax reporting using enacted tax rates in effect for the years in which the differences are expected to reverse. The Company recognizes deferred taxes for temporary differences, operating loss carryforwards, and tax credit and other tax attribute carryforwards (excluding carryforwards where usage has been determined to be remote). Deferred tax assets are reduced by a valuation allowance if it is more likely than not that some portion, or all, of the deferred tax assets will not be realized. U.S. state and non-U.S. income taxes are provided on the portion of non-U.S. income that is expected to be remitted to the U.S. and be taxable (and non-U.S. income taxes are provided on the portion of non-U.S. income that is expected to be remitted to an upper-tier non-U.S. entity). Deferred tax assets and liabilities are adjusted for the effects of changes in tax laws and rates on the date of enactment.

Deferred U.S. income taxes and non-U.S. taxes are not provided on the excess of the investment value for financial reporting over the tax basis of investments in those non-U.S. subsidiaries for which such excess is considered to be permanently reinvested in those operations. Management regularly evaluates whether non-U.S. earnings are expected to be permanently reinvested. This evaluation requires judgment about the future operating and liquidity needs of the Company and its non-U.S. subsidiaries. Changes in economic and business conditions, tax laws, or the Company's financial situation could result in changes to these judgments and the need to record additional tax liabilities.

The Company recognizes the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities, based on the technical merits of the position. The tax benefits recognized in the financial statements from such a position are measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement.

The 2017 Tax Cuts and Jobs Act (the "Tax Act"), among other things, imposed a one-time tax (the “Toll Charge”) on accumulated earnings of certain non-U.S. subsidiaries and included base broadening provisions commonly referred to as the global intangible low-taxed income provisions ("GILTI").

The Company elected to pay the 2017 Littelfuse Toll Charge over the eight-year period prescribed by the Tax Act. The long-term portion of this Toll Charge which remains payable as of January 1, 2022, totaling $17.8 million, is recorded in Other long-term liabilities, and the anticipated 2022 annual installment payment of $3.0 million is included in *Accrued income taxes*, on the Consolidated Balance Sheet as of January 1, 2022.

In accordance with guidance issued by the FASB staff, the Company has adopted an accounting policy to treat any GILTI inclusions as a period cost if and when incurred. Thus, for the fiscal years ended January 1, 2022, December 26, 2020 and December 28, 2019, deferred taxes were computed without consideration of the possible future impact of the GILTI provisions, and any current year impact was recorded as a part of the current portion of income tax expense.

Fair Value Measurements

Certain assets and liabilities are required to be recorded at fair value on a recurring basis. Fair value is determined based on the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants. The Company records the fair value of its available-for-sale securities and pension plan assets on a recurring basis. Assets measured at fair value on a nonrecurring basis include long-lived assets held and used, long-lived assets held for sale, goodwill and other intangible assets. The fair value of cash and cash equivalents, accounts receivable, short-term debt and accounts payable approximate their carrying values. The three-tier value hierarchy, which prioritizes valuation methodologies based on the reliability of the inputs, is:

Level 1 – Valuations based on quoted prices for identical assets and liabilities in active markets.

Level 2 – Valuations based on observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets and liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data.

Level 3 – Valuations based on unobservable inputs reflecting the Company’s own assumptions, consistent with reasonably available assumptions made by other market participants.

Recently Adopted Accounting Standards

In December 2019, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2019-12, "Income Taxes (Topic 740) - Simplifying the Accounting for Income Taxes" as part of its initiative to reduce complexity in the accounting standards. The guidance is effective for fiscal years beginning after December 15, 2020 with early adoption permitted. The adoption of ASU 2019-12 did not have a material impact on our Consolidated Financial Statements.

Recently Issued Accounting Standards

In October 2021, the FASB issued ASU No. 2021-08, "Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers". The standard requires an entity (acquirer) recognize and measure contract assets and contract liabilities acquired in a business combination in accordance with Topic 606. The guidance is effective for fiscal years beginning after December 15, 2022 with early adoption permitted. The Company does not expect a material impact from the adoption of this guidance on the Company's Consolidated Financial Statements.

In November 2021, the FASB issued ASU No. 2021-10, " Government Assistance (Topic 832): Disclosures by Business Entities about Government Assistance". The standard, requires annual disclosures about transactions with a government that are accounted for by applying a grant or contribution accounting model by analogy: 1) Information about the nature of the transactions and the related accounting policy used to account for the transactions; 2) The line items on the balance sheet and income statement that are affected by the transactions, and the amounts applicable to each financial statement line item; 3) Significant terms and conditions of the transactions, including commitments and contingencies. The guidance is effective for fiscal years beginning after December 15, 2021 with early adoption permitted. The Company does not expect a material impact from the adoption of this guidance on the Company's Consolidated Financial Statements.

2. Acquisitions

The Company accounts for acquisitions using the acquisition method in accordance with ASC 805, "Business Combinations," in which assets acquired and liabilities assumed are recorded at fair value as of the date of acquisition. The operating results of the acquired business are included in the Company's Consolidated Financial Statements from the date of the acquisition.

Carling Technologies

On November 30, 2021, the Company completed the previously announced acquisition of Carling Technologies, Inc. ("Carling"), pursuant to the Stock Purchase Agreement, dated as of October 19, 2021. Founded in 1920, Carling has a leading position in switching and circuit protection technologies with a strong global presence in commercial vehicle, marine and datacom/telecom infrastructure markets. At the time of acquisition, Carling had annualized sales of approximately $170 million. The business is headquartered in Plainville, Connecticut, with offices and facilities located around the world and is reported as part of the commercial vehicle business within our Transportation segment. The purchase price for Carling Technologies was approximately $315 million subject to change for a working capital adjustment.

The acquisition was funded with cash on hand. The total purchase consideration of $313.6 million, net of cash, has been allocated, on a preliminary basis, to assets acquired and liabilities assumed, as of the completion of the acquisition, based on preliminary estimated fair values. The purchase consideration is subject to change for the final working capital adjustments. The purchase price allocation is preliminary because the evaluations necessary to assess the fair values of the net assets acquired are still in process. The primary areas that are not yet finalized relate to the completion of the valuations of certain property, plant and equipment, intangible assets and acquired income tax assets and liabilities. As a result, these allocations are subject to change during the purchase price allocation period as the valuations are finalized.

The following table summarizes the preliminary purchase price allocation of the fair value of assets acquired and liabilities assumed in the Carling acquisition:

(in thousands)	**Purchase Price Allocation**
Total purchase consideration:	
Cash, net of cash acquired	$ 313,583
Allocation of consideration to assets acquired and liabilities assumed:	
Trade receivables, net	25,503
Inventories	57,450
Other current assets	3,454
Property, plant, and equipment	64,301
Intangible assets	125,890
Goodwill	92,366
Other non-current assets	4,104
Current liabilities	(21,723)
Other non-current liabilities	(37,762)
	$ 313,583

All Carling goodwill, other assets and liabilities were recorded in the Transportation segment and are primarily reflected in the Americas, Europe and Asia-Pacific geographic areas. The goodwill resulting from this acquisition consists largely of the Company's expected future product sales and synergies from combining Carling's products and technology with the Company's existing commercial vehicle products portfolio. Goodwill resulting from the Carling acquisition is not expected to be deductible for tax purposes.

Included in the Company's Consolidated Statements of Net Income for the fiscal year ended January 1, 2022 are net sales of $15.3 million, and a loss before income taxes of $1.2 million, since the November 30, 2021 acquisition of Carling.

As required by purchase accounting rules, the Company recorded a $6.4 million step-up of inventory to its fair value as of the acquisition date based on the preliminary valuation. The step-up is being amortized as a non-cash charge to cost of goods sold during the fourth quarter of 2021 and first quarter of 2022, as the acquired inventory is sold, and reflected as other non-segment costs. The Company recognized a non-cash charge of $1.6 million to cost of goods sold during the fiscal year ended January 1, 2022.

For the fiscal year ended January 1, 2022, the Company incurred approximately $4.5 million of legal and professional fees related to the Carling acquisition recognized as *Selling, general, and administrative expenses*. These costs were reflected as other non-segment costs.

Hartland Controls

On January 28, 2021, the Company acquired Hartland Controls ("Hartland"), a manufacturer and leading supplier of electrical components used primarily in heating, ventilation, air conditioning ("HVAC") and other industrial and control systems applications. At the time of acquisition, Hartland had annualized sales of approximately $70 million. The purchase price for Hartland was $111.0 million and the operations of Hartland are included in the Industrial segment.

The total purchase consideration of $108.5 million, net of cash, cash equivalents, and restricted cash has been allocated to assets acquired and liabilities assumed, as of the completion of the acquisition, based on estimated fair values. As of January 1, 2022, the Company had restricted cash of $1.7 million in an escrow account for general indemnification purposes.

The following table summarizes the final purchase price allocation of the fair value of assets acquired and liabilities assumed in the Hartland acquisition:

(in thousands)	**Purchase Price Allocation**
Total purchase consideration:	
Cash, net of cash acquired, and restricted cash	$ 108,516
Allocation of consideration to assets acquired and liabilities assumed:	
Trade receivables, net	12,915
Inventories	35,808
Other current assets	2,224
Property, plant, and equipment	6,296
Intangible assets	39,660
Goodwill	38,502
Other non-current assets	3,782
Current liabilities	(24,861)
Other non-current liabilities	(5,810)
	$ 108,516

All Hartland goodwill, other assets and liabilities were recorded in the Industrial segment and are primarily reflected in the Americas and Asia-Pacific geographic areas. The goodwill resulting from this acquisition consists largely of the Company’s expected future product sales and synergies from combining Hartland’s products and technology with the Company’s existing industrial products portfolio. Goodwill resulting from the Hartland acquisition is not expected to be deductible for tax purposes.

Included in the Company’s Consolidated Statements of Net Income for the fiscal year ended January 1, 2022 are net sales of $100.5 million and a loss before income taxes of $2.8 million since the January 28, 2021 acquisition of Hartland.

The Company recorded a $6.8 million step-up of inventory to its fair value as of the acquisition date based on the valuation. The step-up was fully amortized as a non-cash charge to cost of goods sold during the first and second quarters of 2021, as the acquired inventory was sold, and is reflected as other non-segment costs. For the fiscal year ended January 1, 2022, the Company recognized a charge of $6.8 million for the amortization of this fair value inventory step-up.

For the fiscal year ended January 1, 2022, the Company incurred approximately $0.8 million of legal and professional fees related to the Hartland acquisition recognized as *Selling, general, and administrative expenses*. These costs were reflected as other non-segment costs.

Pro Forma Results

The following table summarizes, on an unaudited pro forma basis, the combined results of operations of the Company, Hartland and Carling as though the acquisition had occurred as of December 29, 2019. The pro forma amounts presented are not necessarily indicative of either the actual consolidated results had the Hartland and Carling acquisitions occurred as of December 29, 2019 or of future consolidated operating results.

	For the Fiscal Year Ended	
(in thousands, except per share amounts)	**January 1, 2022**	**December 26, 2020**
Net sales	$ 2,257,390	$ 1,662,896
Income before income taxes	357,090	141,491
Net income	296,030	115,078
Net income per share — basic	12.03	4.72
Net income per share — diluted	11.87	4.68

Pro forma results presented above primarily reflect the following adjustments:

	For the Fiscal Year Ended	
(in thousands)	**January 1, 2022**	**December 26, 2020**
Amortization[a]	$ (8,770)	$ (12,669)
Depreciation	(64)	253
Transaction costs[b]	5,381	(5,381)
Amortization of inventory step-up[c]	8,398	(13,156)
Income tax (expense) benefit of above items	(1,021)	6,706

(a) The amortization adjustment for the twelve months ended January 1, 2022 and December 26, 2020 primarily reflects incremental amortization resulting from the measurement of intangibles at their fair values.
(b) The transaction cost adjustments reflect the reversal of certain legal and professional fees from the twelve months ended January 1, 2022 and recognition of those fees during the twelve months ended December 26, 2020.
(c) The amortization of inventory step-up adjustment reflects the reversal of the amount recognized during the twelve months ended January 1, 2022 and the recognition of the amortization during the twelve months ended December 26, 2020. The inventory step-up is amortized over four months for both acquisitions.

For the fiscal year ended January 1, 2022 and December 26, 2020, the Company recorded $6.2 million and $0.8 million of acquisition-related expenses associated with completed and contemplated acquisitions within *Selling, general and administrative expenses* in the Consolidated Statements of Net Income.

3. Inventories

The components of inventories at January 1, 2022 and December 26, 2020 are as follows:

(in thousands)	**2021**	**2020**
Raw materials	$ 168,409	$ 85,394
Work in process	117,506	92,783
Finished goods	195,656	114,641
Inventory reserves	(35,900)	(34,816)
Total	$ 445,671	$ 258,002

4. Property, Plant, and Equipment

The components of net property, plant, and equipment at January 1, 2022 and December 26, 2020 are as follows:

(in thousands)	2021	2020
Land	$ 23,470	$ 22,851
Building	151,297	123,497
Equipment	779,559	678,220
Accumulated depreciation and amortization	(516,437)	(480,390)
Total	$ 437,889	$ 344,178

The Company recorded depreciation expense of $55.9 million, $56.1 million, and $52.5 million for the fiscal years ended January 1, 2022, December 26, 2020, and December 28, 2019, respectively.

5. Goodwill and Other Intangible Assets

The amounts for goodwill and changes in the carrying value by segment are as follows:

(in thousands)	Electronics	Transportation	Industrial	Total
Gross goodwill as of December 28, 2019	$ 650,796	$ 131,321	$ 47,266	$ 829,383
Accumulated impairment losses as of December 28, 2019	—	—	(8,794)	(8,794)
Net goodwill as of December 28, 2019	$ 650,796	$ 131,321	$ 38,472	$ 820,589
Changes during 2020:				
Impairments		(33,841)		(33,841)
Foreign currency translation adjustments	25,529	4,451	84	30,064
Gross goodwill as of December 26, 2020	676,325	138,354	47,551	862,230
Accumulated impairment losses as of December 26, 2020	—	(36,423)	(8,995)	(45,418)
Net goodwill as of December 26, 2020	$ 676,325	$ 101,931	$ 38,556	$ 816,812
Changes during 2021:				
Additions **(a)**	—	96,307	38,502	134,809
Foreign currency translation adjustments	(16,080)	(6,106)	179	(22,007)
Gross goodwill as of January 1, 2022	660,245	228,555	86,232	975,032
Accumulated impairment losses as of January 1, 2022	—	(36,177)	(9,065)	(45,242)
Net goodwill as of January 1, 2022	$ 660,245	$ 192,378	$ 77,167	$ 929,790

(a) The additions primarily resulted from the acquisitions of Carling and Hartland.

The Company tests its goodwill annually for impairment on the first day of its fiscal fourth quarter, or more frequently if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value. During the second quarter of 2020, the Company recorded a non-cash charge of $33.8 million to recognize the impairment of goodwill in the automotive sensors reporting unit within the Transportation segment. The goodwill impairment charge was due to reductions in the estimated fair value for the automotive sensors reporting unit based on lower expectations for future revenue, profitability and cash flows as compared to the expectations of the 2019 annual goodwill impairment test. These lower future expectations were driven by projected extended declines in end market demand due to the COVID-19 pandemic. In addition, during the second quarter of 2020, certain customers notified the Company of their decision to delay future programs along with a customer canceling their existing program. The goodwill impairment charge was determined using Level 3 inputs, including discounted cash flow analysis and comparable marketplace fair value data. As of January 1, 2022, the automotive sensors reporting unit had $9.2 million of remaining goodwill.

The components of intangible assets at January 1, 2022 and December 26, 2020 are as follows:

	As of January 1, 2022		
(in thousands)	Gross Carrying Value	Accumulated Amortization	Net Book Value
Land use rights	$ 19,542	$ 1,906	$ 17,636
Patents, licenses and software	164,556	101,307	63,249
Distribution network	43,361	40,591	2,770
Customer relationships, trademarks, and tradenames	487,710	164,239	323,471
Total	$ 715,169	$ 308,043	$ 407,126

	As of December 26, 2020		
(in thousands)	Gross Carrying Value	Accumulated Amortization	Net Book Value
Land use rights	$ 10,280	$ 2,007	$ 8,273
Patents, licenses and software	137,210	92,868	44,342
Distribution network	43,910	38,980	4,930
Customer relationships, trademarks, and tradenames	372,064	137,722	234,342
Total	$ 563,464	$ 271,577	$ 291,887

During the year ended January 1, 2022, the Company recorded additions to other intangible assets of $165.6 million, for acquisitions during 2021, the components of which were as follows:

	2021	
(in thousands, except weighted average useful life)	Weighted Average Useful Life (Years)	Amount
Land use rights	50	$ 9,590
Patents, developed technology	9.8	$ 31,659
Customer relationships, trademarks, and tradenames	13.0	124,301
Total		$ 165,550

For intangible assets with definite lives, the Company recorded amortization expense of $42.7 million, $40.0 million, and $40.0 million in 2021, 2020, and 2019, respectively.

Estimated annual amortization expense related to intangible assets with definite lives at January 1, 2022 is as follows:

(in thousands)	Amount
2022	$ 50,035
2023	45,569
2024	42,151
2025	41,776
2026	33,245
2027 and thereafter	194,350
Total	$ 407,126

6. Accrued Liabilities

The components of accrued liabilities at January 1, 2022 and December 26, 2020 are as follows:

(in thousands)	2021	2020
Employee-related liabilities	$ 92,018	$ 50,689
Operating lease liability	9,018	6,811
Interest	4,402	4,517
Professional services	4,299	3,321
Other non-income taxes	4,280	2,126
Restructuring liability	2,944	4,195
Current benefit liability	1,248	2,751
Deferred revenue	1,105	2,959
Other customer reserves	702	3,858
Other	39,673	29,251
Total	$ 159,689	$ 110,478

Employee-related liabilities consist primarily of payroll, sales commission, bonus, employee benefit accruals and workers' compensation. Bonus accruals include amounts earned pursuant to the Company's primary employee incentive compensation plans. Other accrued liabilities include miscellaneous operating accruals and other client-related liabilities.

7. Lease Commitments

Under ASC 842, a contract contains a lease if there is an identified asset and the Company has the right to control the asset. The Company determines whether a contract contains a lease at contract inception. The Company leases office and production space under various non-cancellable operating leases that expire no later than 2031. Certain real estate leases include one or more options to renew. The exercise of lease renewal options is at the Company's sole discretion. Options to extend the lease are included in the lease term when it is reasonably certain the Company will exercise the option. The Company also has production equipment, office equipment and vehicles under operating leases. The depreciable life of assets and leasehold improvements are limited by the expected lease term, unless there is a transfer of title or purchase option that is reasonably certain of exercise. Certain leases include rental payments adjusted periodically for inflation. The lease agreements do not contain any material residual value guarantee or material restrictive covenants. The Company has elected to use the available practical expedient to account for the lease and non-lease components of its leases as a single component. As the Company elected not to separate lease and non-lease components and instead to account for them as a single lease component, the variable lease cost primarily represents variable payments such as common area maintenance and utilities.

The Company does not have a published credit rating because it has no publicly traded debt; therefore, the Company is generating its incremental borrowing rate ('IBR"), using a synthetic credit rating model that compares its credit quality to other rated companies based on certain financial metrics and ratios. The reference rate will be based on the yield curve of companies with similar credit quality based on the metrics and adjusted for currency in regions where we have significant operations.

All leases with an initial term of 12 months or less that do not include an option to extend or purchase the underlying asset that the Company is reasonably certain to exercise ("short-term leases") are not recorded on the Consolidated Balance Sheets. Short-term lease expenses are recognized on a straight-line basis over the lease term.

The following table presents the classification of ROU assets and lease liabilities as of January 1, 2022 and December 26, 2020:

Leases (in thousands)	**Consolidated Balance Sheet Classification**	**January 1, 2022**	**December 26, 2020**
Assets			
Operating ROU assets	Right of use assets, net	$ 29,616	$ 17,615
Liabilities			
Current operating lease liabilities	Accrued liabilities	$ 9,018	$ 6,811
Non-current operating lease liabilities	Non-current operating lease liabilities	22,305	12,950
Total lease liabilities		$ 31,323	$ 19,761

The following table represents the lease costs for 2021 and 2020:

Leases (in thousands)	**Consolidated Statements of Net Income Classification**	**Fiscal Year Ended January 1, 2022**	**Fiscal Year Ended December 26, 2020**
Short-term lease expenses	Cost of sales, SG&A expenses	$ 345	$ 512
Variable lease expenses	Cost of sales, SG&A expenses	1,165	1,307
Operating lease rent expenses	Cost of sales, SG&A expenses	9,929	8,591
Total operating lease costs	Cost of sales, SG&A expenses	$ 11,439	$ 10,410

The Company leases certain office and warehouse space as well as certain machinery and equipment under non-cancellable operating leases. Rent expense under these leases was $11.4 million, $10.4 million, and $10.1 million in 2021, 2020, and 2019, respectively.

Maturity of Lease Liabilities as of January 1, 2022 (in thousands)	**Operating leases**
2022	$ 10,080
2023	7,840
2024	7,323
2025	3,135
2026	1,322
2027 and thereafter	4,607
Total lease payments	$ 34,307
Present value of lease liabilities	$ 31,323

Operating Lease Term and Discount Rate	**Fiscal Year Ended January 1, 2022**	**Fiscal Year Ended December 26, 2020**
Weighted-average remaining lease term (years)	4.79	3.41
Weighted-average discount rate	4.27 %	5.06 %

Cash Flow Information related to Leases (in thousands)	**Fiscal Year Ended January 1, 2022**
Cash paid for amounts included in the measurement of lease liabilities	
Operating cash flow payments for operating leases	$ (10,150)
Leased assets obtained in exchange for operating lease liabilities	20,217
Other Information (in thousands)	
Net gain from sale and leaseback transaction	(4,058)

8. Restructuring, Impairment and Other Charges

The Company recorded restructuring, impairment and other charges for fiscal years 2021, 2020, and 2019 as follows:

	Fiscal Year Ended January 1, 2022			
(in thousands)	**Electronics**	**Transportation**	**Industrial**	**Total**
Employee terminations	$ 1,124	$ 404	$ 347	$ 1,875
Other restructuring charges	—	283	—	283
Total restructuring charges	1,124	687	347	2,158
Total	$ 1,124	$ 687	$ 347	$ 2,158

	Fiscal Year Ended December 26, 2020			
(in thousands)	**Electronics**	**Transportation**	**Industrial**	**Total**
Employee terminations	$ 2,540	$ 682	$ 2,231	$ 5,453
Other restructuring charges	—	175	10	185
Total restructuring charges	2,540	857	2,241	5,638
Impairment	—	33,841	2,237	36,078
Total	$ 2,540	$ 34,698	$ 4,478	$ 41,716

	Fiscal Year Ended December 28, 2019			
(in thousands)	**Electronics**	**Transportation**	**Industrial**	**Total**
Employee terminations	$ 5,313	$ 4,251	$ 795	$ 10,359
Other restructuring charges	188	1,714	450	2,352
Total restructuring charges	5,501	5,965	1,245	12,711
Impairment	—	322	—	322
Total	$ 5,501	$ 6,287	$ 1,245	$ 13,033

2021

For the year ended January 1, 2022, the Company recorded total restructuring charges of $2.2 million, primarily for employee termination costs. These charges primarily related to the reorganization of certain manufacturing, selling and administrative functions within the Electronics and Transportation segments.

2020

For the year ended December 26, 2020, the Company recorded total restructuring charges of $5.6 million, primarily for employee termination costs. These charges primarily related to the reorganization of certain manufacturing, selling and administrative functions across all segments and the previously announced consolidation of a manufacturing facility within the Industrial segment. The Company also recognized $36.1 million of impairment charges, which included a $33.8 million goodwill impairment charge associated with the automotive sensors reporting unit within the Transportation segment in the second quarter of 2020 and a $2.2 million impairment charge related to the land and building associated with the Company's previously announced consolidation of a manufacturing facility within the Industrial segment in the first quarter of 2020. See Note 5, *Goodwill and Other Intangible Assets* for further discussion regarding the goodwill impairment charge.

2019

For the year ended December 28, 2019, the Company recorded total restructuring charges of $12.7 million for employee termination costs and other restructuring charges. These charges primarily related to the reorganization of operations and selling, general and administrative functions as well as the integration of IXYS within the Electronics segment and the reorganization of operations in the automotive sensors and commercial vehicle products businesses within the Transportation segment.

In April 2019, we announced the closure of a European manufacturing facility in the automotive sensors business within the Transportation segment. The Company recorded $1.7 million of employee termination costs and $1.4 million of other restructuring and impairment charges associated with this plant closure.

The restructuring reserves as of January 1, 2022 and December 26, 2020 are $2.9 million and $4.2 million, respectively. The restructuring reserves are included within accrued liabilities. Payments associated with employee terminations reflected in the above table were substantially completed by January 1, 2022. The Company anticipates that the remaining payments associated with employee terminations will be completed in fiscal 2022.

9. Debt

The carrying amounts of debt at January 1, 2022 and December 26, 2020 are as follows:

(in thousands)	2021	2020
Revolving Credit Facility	$ 100,000	$ 130,000
Euro Senior Notes, Series A due 2023	132,444	142,679
Euro Senior Notes, Series B due 2028	107,540	115,850
U.S. Senior Notes, Series A due 2022	25,000	25,000
U.S. Senior Notes, Series B due 2027	100,000	100,000
U.S. Senior Notes, Series A due 2025	50,000	50,000
U.S. Senior Notes, Series B due 2030	125,000	125,000
Other	—	2,619
Unamortized debt issuance costs	(3,087)	(4,114)
Total debt	636,897	687,034
Less: Current maturities	(25,000)	—
Total long-term debt	$ 611,897	$ 687,034

Interest paid on all Company debt was approximately $17.4 million, $20.1 million, and $21.2 million in fiscal year 2021, 2020, and 2019, respectively.

Revolving Credit Facility

On March 25, 2020, the company borrowed $100.0 million from its existing revolving credit facility to preserve financial flexibility and enhance liquidity, given the increasing levels of uncertainty related to COVID-19. The Company paid $5.0 million of principal payments on the term loan before the Company amended the credit agreement on April 3, 2020 as discussed below.

On April 3, 2020, the Company amended its existing credit agreement to effect certain changes, including, among others: (i) eliminating the $200.0 million unsecured term loan credit facility, the remaining outstanding balance ($140.0 million) of which was repaid in full on April 3, 2020 through the revolving credit facility; (ii) making certain financial and non-financial covenants less restrictive on the Company; (iii) modifying performance-based interest rate margins and undrawn fees; and (iv) extending the maturity date to April 3, 2025. The amended credit agreement also allows the Company to increase the size of the revolving credit facility or enter into one or more tranches of term loans if there is no event of default and the Company is in compliance with certain financial covenants. The Company made payments of $30.0 million on the amended revolving credit facility during the fiscal year ended January 1, 2022. The balance under the facility was $100.0 million as of January 1, 2022.

Outstanding borrowings under the amended credit agreement bear interest, at the Company's option, at either LIBOR, fixed for interest periods of one, two, three or six-month periods, plus 1.25% to 2.00%, or at the bank's Base Rate, as defined, plus 0.25% to 1.00%, based upon the Company's Consolidated Leverage Ratio, as defined. The Company is also required to pay commitment fees on unused portions of the credit agreement ranging from 0.125% to 0.20%, based on the Consolidated Leverage Ratio, as defined in the agreement. The credit agreement includes representations, covenants and events of default that are customary for financing transactions of this nature. The effective interest rate on outstanding borrowings under the credit facility was 1.35% at January 1, 2022.

As of January 1, 2022, the Company had no outstanding in letters of credit and had available $600.0 million of borrowing capacity under the revolving credit facility. At January 1, 2022, the Company was in compliance with all covenants under the credit agreement.

Senior Notes

On December 8, 2016, the Company entered into a Note Purchase Agreement, pursuant to which the Company issued and sold €212 million aggregate principal amount of senior notes in two series. The funding date for the Euro denominated senior notes occurred on December 8, 2016 for €117 million in aggregate amount of 1.14% Senior Notes, Series A, due December 8, 2023 ("Euro Senior Notes, Series A due 2023"), and €95 million in aggregate amount of 1.83% Senior Notes, Series B due December

8, 2028 ("Euro Senior Notes, Series B due 2028") (together, the "Euro Senior Notes"). Interest on the Euro Senior Notes is payable semiannually on June 8 and December 8, commencing June 8, 2017.

On December 8, 2016, the Company entered into a Note Purchase Agreement, pursuant to which the Company issued and sold $125 million aggregate principal amount of senior notes in two series. On February 15, 2017, $25 million in aggregate principal amount of 3.03% Senior Notes, Series A, due February 15, 2022 ("U.S. Senior Notes, Series A due 2022"), and $100 million in aggregate principal amount of 3.74% Senior Notes, Series B, due February 15, 2027 ("U.S. Senior Notes, Series B due 2027") (together, the "U.S. Senior Notes due 2022 and 2027") were funded. Interest on the U.S. Senior Notes due 2022 and 2027 is payable semiannually on February 15 and August 15, commencing August 15, 2017.

On November 15, 2017, the Company entered into a Note Purchase Agreement pursuant to which the Company issued and sold $175 million in aggregate principal amount of senior notes in two series. On January 16, 2018, $50 million aggregate principal amount of 3.48% Senior Notes, Series A, due February 15, 2025 ("U.S. Senior Notes, Series A due 2025") and $125 million in aggregate principal amount of 3.78% Senior Notes, Series B, due February 15, 2030 ("U.S. Senior Notes, Series B due 2030") (together, the "U.S. Senior Notes due 2025 and 2030" and with the Euro Senior Notes and the U.S. Senior Notes 2022 and 2027, the "Senior Notes") were funded. Interest on the U.S. Senior Notes due 2025 and 2030 will be payable on February 15 and August 15, commencing on August 15, 2018.

The Senior Notes have not been registered under the Securities Act, or applicable state securities laws. The Senior Notes are general unsecured senior obligations and rank equal in right of payment with all existing and future unsecured unsubordinated indebtedness of the Company.

The Senior Notes are subject to certain customary covenants, including limitations on the Company's ability, with certain exceptions, to engage in mergers, consolidations, asset sales and transactions with affiliates, to engage in any business that would substantially change the general business of the Company, and to incur liens. In addition, the Company is required to satisfy certain financial covenants and tests relating to, among other matters, interest coverage and leverage. At January 1, 2022, the Company was in compliance with all covenants under the Senior Notes.

The Company may redeem the Senior Notes upon the satisfaction of certain conditions and the payment of a make-whole amount to noteholders, and are required to offer to repurchase the Senior Notes at par following certain events, including a change of control.

Debt Issuance Costs

During fiscal year 2020, the Company paid debt issuance costs of $1.8 million in relation to the amended the Credit Agreement on April 3, 2020 which, along with the remaining balance of debt issuance costs of the previous credit facility, are being amortized over the life of the amended Credit Agreement.

Debt Maturities

Scheduled maturities of the Company's long-term debt for each of the five years succeeding January 1, 2022 and thereafter are summarized as follows:

(in thousands)	**Scheduled Maturities**
2022	$ 25,000
2023	132,444
2024	—
2025	150,000
2026	—
2027 and thereafter	332,540
	$ 639,984

10. Fair Value of Assets and Liabilities

For assets and liabilities measured at fair value on a recurring and nonrecurring basis, a three-level hierarchy of measurements based upon observable and unobservable inputs is used to arrive at fair value. Observable inputs are developed based on market data obtained from independent sources, while unobservable inputs reflect the Company's assumptions about valuation based on the best information available in the circumstances. Depending on the inputs, the Company classifies each fair value measurement as follows:

Level 1—Valuations based on unadjusted quoted prices for identical assets or liabilities in active markets;

Level 2—Valuations based upon quoted prices for similar instruments, prices for identical or similar instruments in markets that are not active, or model-derived valuations, all of whose significant inputs are observable, and

Level 3—Valuations based upon one or more significant unobservable inputs.

Following is a description of the valuation methodologies used for instruments measured at fair value and their classification in the valuation hierarchy.

Cash Equivalents

Cash equivalents primarily consist of money market funds, which are held with an institution with sound credit rating and are highly liquid. The Company classified cash equivalents as Level 1 and are valued at cost, which approximates fair value.

Investments in Equity Securities

Investments in equity securities listed on a national market or exchange are valued at the last sales price and classified within Level 1 of the valuation hierarchy. Such securities are further detailed in Note 1, *Summary of Significant Accounting Policies and Other Information*.

Other Investments

The Company has certain convertible debt and convertible preferred stock investments that are accounted for under the cost method reflected in *Investments* and *Other assets* in the Consolidated Balance Sheets. During the fiscal year ended January 1, 2022, the Company impaired the remaining book value of these investments and recorded an impairment charge of $0.5 million, and during the fiscal year ended December 26, 2020, the Company recorded $0.1 million in *Other expense (income), net* in the Consolidated Statements of Net Income. As o fJanuary 1, 2022 and December 26, 2020, the balances of these investments were zero and $0.5 million, respectively. The fair value of these investments are measured on a nonrecurring basis using Level 3 inputs under the fair value hierarchy. The Company's accounting and finance management determines the valuation policies and procedures for Level 3 fair value measurements and is responsible for the development and determination of unobservable inputs.

Defined Benefit Plan Assets / Non-qualified Supplemental Retirement and Savings Plan Investments

See Note 11, *Benefit Plans*, for description of valuation methodologies and investment balances for defined benefit plan assets and investments related to the Company's Non-Qualified Supplemental Retirement and Savings Plan.

Foreign currency exchange forward contract

There were no changes during 2021 to the Company's valuation techniques used to measure asset and liability fair values on a recurring basis. On October 30, 2019, the Company entered a foreign currency exchange forward contract to mitigate the currency fluctuation risk between the Chinese renminbi and U.S dollar. The foreign currency contract was not designated as a hedge instrument and was marked to market on a monthly basis. The notional value of the forward contracts at December 28, 2019 was $16.0 million and expired on May 5, 2020. On March 23, 2020, the Company unwound the foreign currency exchange forward contract entered on October 30, 2019 and recognized a gain of $0.2 million within *Other expense (income), net* during the fiscal year 2020. The fair value of the foreign currency forward contract was valued using market exchange rates and classified as a Level 2 input under the fair value hierarchy. As of January 1, 2022 and December 26, 2020, the Company held no non-financial assets or liabilities that are required to be measured at fair value on a recurring basis.

The following table presents assets measured at fair value by classification within the fair value hierarchy as of January 1, 2022:

	Fair Value Measurements Using			
(in thousands)	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Cash Equivalents	$ 12,475	$ —	$ —	$ 12,475
Investments in equity securities	26,070	—	—	26,070
Mutual funds	15,021	—	—	15,021
Total:	$ 53,566	$ —	$ —	$ 53,566

The following table presents assets measured at fair value by classification within the fair value hierarchy as of December 26, 2020:

	Fair Value Measurements Using			
(in thousands)	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Cash Equivalents	$ 73,461	$ —	$ —	$ 73,461
Investments in equity securities	19,186	—	—	19,186
Mutual funds	13,249	—	—	13,249
Total:	$ 105,896	$ —	$ —	$ 105,896

In addition to the methods and assumptions used for the financial instruments recorded at fair value as discussed above, the following methods and assumptions are used to estimate the fair value of other financial instruments that are not marked to market on a recurring basis. The Company's other financial instruments include cash and cash equivalents, short-term investments, trade receivables and its long-term debt. Due to their short-term maturity, the carrying amounts of cash and cash equivalents, short-term investments and trade receivables approximate their fair values. The Company's revolving and term loan debt facilities' fair values approximate book value at January 1, 2022 and December 26, 2020, as the rates on these borrowings are variable in nature.

The carrying value and estimated fair values of the Company's Euro Senior Notes, Series A and Series B and USD Senior Notes, Series A and Series B, as of January 1, 2022 and December 26, 2020 were as follows:

	January 1, 2022		December 26, 2020	
(in thousands)	Carrying Value	Estimated Fair Value	Carrying Value	Estimated Fair Value
Euro Senior Notes, Series A due 2023	$ 132,444	$ 134,119	$ 142,679	$ 144,323
Euro Senior Notes, Series B due 2028	107,540	110,837	115,850	123,588
USD Senior Notes, Series A due 2022	25,000	25,055	25,000	25,437
USD Senior Notes, Series B due 2027	100,000	104,828	100,000	109,552
USD Senior Notes, Series A due 2025	50,000	51,720	50,000	53,474
USD Senior Notes, Series B due 2030	125,000	131,837	125,000	138,036

The Company recognized impairment charges of $1.9 million for the land and building and $0.3 million for a certain patent as a result of the Company's announcement to consolidate a manufacturing facility within the Industrial segment during the first quarter of 2020. See Note 8, *Restructuring, Impairment and Other Charges*, for further discussion. The fair value of the land and building was valued using a real estate appraisal and classified as a Level 3 input under the fair value hierarchy.

The fair value as of the measurement date, net book value as of the end of the year and related 2020 goodwill impairment for assets measured at fair value on a nonrecurring basis subsequent to initial recognition during the years ended December 26, 2020 were as follows:

	Fiscal Year Ended December 26, 2020		December 26, 2020
(in thousands)	**Impairment Charge**	**Estimated Fair Value Measurement (Level 3)**	**Carrying Value**
Goodwill	$33,841	$8,953	$ 9,832

See Note 5, *Goodwill and Other Intangible Assets* for further discussion regarding goodwill impairment charges.

11. Benefit Plans

The Company has Company-sponsored and mandatory defined benefit pension plans covering employees in the United Kingdom ("U.K."), Germany, the Philippines, China, Japan, Mexico, Italy and France. The amount of the retirement benefits provided under the plans is generally based on years of service and final average pay.

On April 7, 2020, the Company entered into a definitive agreement to purchase a group annuity contract, under which an insurance company is required to directly pay and administer pension payments to certain of the Company's U.K. pension plan participants, or their designated beneficiaries. Due to the signing of the group annuity contract being a significant change in one of the U.K. pension plans, the liabilities of the plan were remeasured as of April 6, 2020 resulting in an increase of $13.4 million (£10.9 million) to both the net pension liability to bring the pension benefit obligation to the purchase price of the group annuity contract, and unamortized actuarial loss within other comprehensive income (loss) during the second quarter of 2020. Additionally, the Company made a cash contribution of $10.4 million (£8.4 million) under this agreement during the second quarter of 2020. The Company completed the buy-out of this U.K. pension plan during the fourth quarter of 2021 and as a result recorded a non-cash pension settlement charge of $19.9 million (£14.9 million), inclusive of the accelerated recognition of prior service cost of $0.5 million (£0.4 million). The purchase of this group annuity contract reduced the Company's outstanding pension benefit obligation by $47.1 million, representing 35% of the total obligations of the Company's qualified pension plans.

Benefit plan related information is as follows for the years 2021 and 2020:

(in thousands)	**2021**	**2020**
Change in benefit obligation:		
Benefit obligation at beginning of year	$ 148,992	$ 116,921
Service cost	2,785	2,462
Interest cost	1,761	2,173
Net actuarial (gain) loss	(11,016)	25,306
Benefits paid from the plan assets	(3,121)	(2,808)
Benefits paid directly by the Company	(2,692)	(2,302)
(Settlements) and Curtailments	(48,927)	102
Acquisitions	1,797	—
Effect of exchange rate movements	(3,218)	7,462
Plan amendment and other	209	(324)
Benefit obligation at end of year	$ 86,570	$ 148,992
Change in plan assets at fair value:		
Fair value of plan assets at beginning of year	$ 100,478	$ 78,502
Actual (loss) return on plan assets	(2,824)	7,053
Employer contributions	2,150	12,918
Benefits paid from the plan assets	(3,121)	(2,808)
Settlements	(47,111)	—
Effect of exchange rate movements	(1,247)	4,813
Fair value of plan assets at end of year	48,325	100,478
Net amount unfunded status	$ (38,245)	$ (48,514)

Amounts recognized in the Consolidated Balance Sheets as of January 1, 2022 and December 26, 2020 consist of the following:

(in thousands)	2021	2020
Amounts recognized in the Consolidated Balance Sheets consist of:		
Noncurrent assets	$ 40	$ 39
Current benefit liability	(1,248)	(2,751)
Noncurrent benefit liability	(37,037)	(45,802)
Net liability recognized	$ (38,245)	$ (48,514)

The amounts included in accumulated other comprehensive loss in the Consolidated Balance Sheets, excluding tax effects, that have not yet been recognized as components of net periodic benefit costs as of January 1, 2022 and December 26, 2020 were as following:

(in thousands)	2021	2020
Net actuarial loss	$ 9,221	$ 37,285
Prior service cost	3,340	3,937
Total	$ 12,561	$ 41,222

The pre-tax amounts recognized in other comprehensive income (loss) in 2021 were as follows:

(in thousands)	2021
Amortization of:	
Prior service cost	$ 179
Net actuarial loss	1,136
Amount arising during the period:	
Prior service cost	(209)
Net actuarial loss	6,734
Net settlement loss and accelerated prior service costs	19,855
Foreign currency adjustments	966
Total	$ 28,661

In the fourth quarter of 2021, the Company recorded a non-cash pension settlement charge of $19.9 million (£14.9 million), inclusive of the accelerated recognition of prior service cost of $0.5 million (£0.4 million). In addition, the net actuarial loss and change in benefit obligation arising during 2021 as compared to 2020 were also impacted by higher discount rates in 2021 as compared to 2020.

The components of net periodic benefits costs for the fiscal years 2021, 2020, and 2019 are as follows:

(in thousands)	2021	2020	2019
Components of net periodic benefit cost:			
Service cost	$ 2,785	$ 2,462	$ 2,040
Interest cost	1,761	2,173	3,169
Expected return on plan assets	(1,458)	(1,972)	(3,187)
Amortization of prior service and net actuarial loss	1,315	963	243
Net periodic benefit cost	4,403	3,626	2,265
Net settlement loss	19,855	236	260
Total expense for the year	$ 24,258	$ 3,862	$ 2,525

Weighted average assumptions used to determine net periodic benefit cost for the fiscal years 2021, 2020, and 2019 are as follows:

	2021	2020	2019
Discount rate	1.2 %	2.3 %	3.1 %
Expected return on plan assets	1.4 %	3.7 %	4.5 %
Compensation increase rate	4.9 %	4.7 %	4.6 %

The accumulated benefit obligation for the plans was $75.7 million and $137.7 million as of January 1, 2022 and December 26, 2020, respectively.

The following table provides a summary of under-funded or unfunded pension benefit plans with projected benefit obligations in excess of plan assets as of January 1, 2022 and December 26, 2020:

(in thousands)	2021	2020
Projected benefit obligation	$ 86,228	$ 148,992
Fair value of plan assets	47,942	100,439

The following table provides a summary of under-funded or unfunded pension benefit plans with accumulated benefit obligations in excess of plan assets as of January 1, 2022 and December 26, 2020:

(in thousands)	2021	2020
Accumulated benefit obligation	$ 68,643	$ 130,453
Fair value of plan assets	39,060	92,248

Weighted average assumptions used to determine benefit obligations as of January 1, 2022, December 26, 2020 and December 28, 2019 are as follows:

	2021	2020	2019
Discount rate	3.1 %	1.2 %	2.3 %
Compensation increase rate	4.8 %	4.9 %	4.7 %

Expected benefit payments to be paid to participants for the fiscal year ending are as follows:

(in thousands)	Expected Benefit Payments
2022	$ 3,514
2023	3,652
2024	3,561
2025	4,068
2026	4,320
2027-2031 and thereafter	26,449

The Company expects to make approximately $2.6 million of contributions to the plans and pay $1.8 million of benefits directly in 2022.

The Company also sponsors certain post-employment plans in foreign countries and other statutory benefit plans. For the fiscal year ended January 1, 2022, December 26, 2020, and December 28, 2019, the Company recorded $2.1 million, $2.0 million, $1.4 million expense, respectively, in *Cost of Sales* and *Other expense (income), net* within the Consolidated Statements of Net Income. As of January 1, 2022 and December 26, 2020, the Company reported benefit liabilities of $4.1 million and $3.5 million for these plans, of which $1.5 million and $1.2 million was recorded in *Accrued liabilities* and $2.6 million and $2.3 million was recorded in *Other long-term liabilities* on the Consolidated Balance Sheets, respectively. For the fiscal year ended January 1, 2022 and December 26, 2020, the pre-tax amounts recognized in other comprehensive income (loss) for these plans were $0.3 million and $0.1 million, respectively. For the fiscal year ended January 1, 2022 and December 26, 2020, the amount reclassified from accumulated other comprehensive income (loss) were $0.7 million and $0.7 million, respectively.

Defined Benefit Plan Assets

Based upon analysis of the target asset allocation and historical returns by type of investment, the Company has assumed that the expected long-term rate of return will be 1.4% on plan assets. Assets are invested to maximize long-term return taking into consideration timing of settlement of the retirement liabilities and liquidity needs for benefits payments. Pension plan assets were invested as follows, and were not materially different from the target asset allocation:

	Asset Allocation	
	2021	2020
Cash and cash equivalents, and other	15 %	7 %
Equity securities	19 %	9 %
Fixed income securities	66 %	31 %
Bulk annuity contract	— %	53 %
	100 %	100 %

The Company segregated its plan assets by the following major categories and level for determining their fair value as of January 1, 2022 and December 26, 2020. All plan assets that are valued using the net asset value per share ("NAV") practical expedient have not been included within the fair value hierarchy but are separately disclosed.

Cash and cash equivalents – Carrying value approximates fair value. As such, these assets were classified as Level 1. The Company also invests in certain short-term investments which are valued using the amortized cost method. Lastly, the Company has certain pooled pension funds that have short-term investments with third party mutual funds that are valued at unit value per share at measurement date. As such, these assets were classified as Level 2.

Equity – The values of individual equity securities were based on quoted prices in active markets. As such, these assets are classified as Level 1. The Company has certain pooled pension funds which have mutual funds with underlying investments in certain equity securities that are not quoted on active markets; therefore, they were classified as Level 2.

Fixed income – Fixed income securities are typically priced based on a last trade basis and are exchange-traded. Accordingly, the Company classified fixed income securities as Level 1. The Company has certain pooled pension funds which have mutual funds with underlying investments in fixed income securities and funds priced based on a valuation model rather than a last trade basis and are not exchange-traded. As such, they were classified as Level 2. The Company also invests in certain fixed income funds which are valued at NAV.

Insurance Contracts and other – This category includes pooled pension funds which have mutual funds with underlying investments in other assets and liabilities including alternatives priced based on a valuation model and are not exchange-traded. These were classified as Level 2. This category includes also insurance contracts that are valued by the re-insurer with the valuation inputs being not highly observable or traded on an open market. Accordingly, insurance contracts were categorized as Level 3. Lastly, this category includes other assets and liabilities including futures or swaps.

Bulk Annuity Contract – Bulk annuity contract includes a U.K insurance policy issued by an authorized U.K. life insurer. This bulk annuity contract is valued by the re-insurer with the valuation inputs being not highly observable or traded on an open market. Accordingly, this contract was categorized as Level 3. The Company has no bulk annuity contract pension assets as of January 1, 2022.

For any Level 2 and Level 3 plan assets, management reviews significant investments on a periodic basis including investigation of unusual fluctuations in price or returns and obtaining an understanding of the pricing methodology to assess the reliability of third-party pricing estimates.

The valuation methodologies described above may generate a fair value calculation that may not be indicative of net realizable value or future fair values. While the Company believes the valuation methodologies used are appropriate, the use of different methodologies or assumptions in calculating fair value could result in different amounts. The Company invests in assets in which valuation is determined by NAV. The Company believes that the NAV is representative of fair value at the reporting date, as there are no significant restrictions on redemption of these investments or other reasons to indicate that the investment would be redeemed at an amount different than the NAV.

The following table presents the Company's pension plan assets measured at fair value by classification within the fair value hierarchy as of January 1, 2022:

	Fair Value Measurements Using				
(in thousands)	**Level 1**	**Level 2**	**Level 3**	**NAV**	**Total**
Insurance contracts and other	$ —	$ 1,917	$ 343	$ —	$ 2,260
Cash and cash equivalents	384	4,632	—	—	5,016
Equities	2,559	6,604	—	—	9,163
Fixed income	5,999	20,280	—	5,607	31,886
Total pension plan assets	$ 8,942	$ 33,433	$ 343	$ 5,607	$ 48,325

The following table presents the Company's pension plan assets measured at fair value by classification within the fair value hierarchy as of December 26, 2020:

	Fair Value Measurements Using				
(in thousands)	**Level 1**	**Level 2**	**Level 3**	**NAV**	**Total**
Insurance contracts and other	$ —	$ 1,880	$ 685	$ —	$ 2,565
Cash and cash equivalents	654	3,868	—	—	4,522
Equities	1,719	6,904	—	—	8,623
Fixed income	6,164	19,433	—	6,078	31,675
Bulk annuity contract			53,093		53,093
Total pension plan assets	$ 8,537	$ 32,085	$ 53,778	$ 6,078	$ 100,478

The fair value measurement of plan assets using significant unobservable inputs (Level 3) changed during 2021 due to the following:

(in thousands)	**Level 3**
Balance at December 26, 2020	$ 53,778
Level 3 assets transferred in from Level 1 and 2 assets valued at NAV:	
Settlements	(47,111)
Actual loss on plan assets	(4,943)
Benefits paid from the plan assets	(1,238)
Foreign currency adjustments	(143)
Balance at January 1, 2022	$ 343

Defined Contribution Plan

The Company also maintains a 401(k) savings plan covering substantially all U.S. employees. The Company matches 100% of the employee's annual contributions for the first 4% of the employee's eligible compensation. The Company may provide an additional discretionary match to participants and made discretionary matches of 2% of the employee's eligible compensation for each of the fiscal year ended January 1, 2022, December 26, 2020 and December 28, 2019. Employees are immediately vested in their contributions plus actual earnings thereon, as well as the Company contributions. Company matching contributions amounted to $5.0 million, $4.6 million, and $5.6 million in 2021, 2020, and 2019, respectively.

Non-qualified Supplemental Retirement and Savings Plan

The Company has a non-qualified Supplemental Retirement and Savings Plan which provides additional retirement benefits for certain management employees and named executive officers by allowing participants to defer a portion of their annual compensation. The Company maintains accounts for participants through which participants make investment elections. The investments are subject to the claims of the Company's creditors and the Company is responsible for the payment of all benefits under the plan from its general assets. As of January 1, 2022, there was $15.0 million of marketable securities related to the plan included in *Other assets* and $15.0 million of accrued compensation benefits included in *Other long-term liabilities*. The marketable securities are classified as Level 1 under the fair value hierarchy as they are maintained in mutual funds with readily determinable fair value. The Company made matching contributions to the plan of $0.2 million, $0.5 million, and $0.4 million in 2021, 2020, and 2019, respectively.

12. Stock-Based Compensation

Equity Plans: The Company has equity-based compensation plans authorizing the granting of stock options, restricted shares, restricted share units, and other stock rights to employees and directors. As of January 1, 2022, there were 0.8 million shares available for issuance of future awards under the Company's equity-based compensation plans.

Stock options generally vest over a three-year period and are exercisable over either a seven or ten-year period commencing from the date of the grant. Restricted shares and share units granted by the Company generally vest over three years. Stock options and restricted share units may have accelerated vesting upon meeting certain qualified conditions.

The following table provides a reconciliation of outstanding stock options for the fiscal year ended January 1, 2022.

	Shares Under Option	Weighted Average Price	Weighted Average Remaining Contract Life (Years)	Aggregate Intrinsic Value (000's)
Outstanding December 26, 2020	666,949	$ 148.01		
Granted	57,928	267.66		
Exercised	(151,015)	126.61		
Forfeited	(10,636)	151.93		
Outstanding January 1, 2022	563,226	165.98	4.7	$ 83,749
Exercisable January 1, 2022	240,030	148.66	3.7	39,850

The following table provides a reconciliation of non-vested restricted share and share unit awards ("RSU") for the fiscal year ended January 1, 2022.

	Shares	Weighted Average Grant-Date Fair Value
Nonvested December 26, 2020	172,002	$ 152.25
Granted	63,237	264.69
Vested	(72,904)	162.59
Forfeited	(5,676)	162.85
Nonvested January 1, 2022	156,659	192.44

The total intrinsic value of options exercised during 2021, 2020, and 2019 was $23.8 million, $20.6 million, and $12.5 million, respectively. The total fair value of the vested RSU shares was $18.9 million, $9.5 million, and $15.5 million for 2021, 2020, and 2019, respectively. The total amount of share-based liabilities paid was $1.3 million, $0.5 million and $0.9 million for 2021, 2020, and 2019, respectively.

The Company recognizes compensation cost of all share-based awards as an expense on a straight-line basis over the vesting period of the awards. At January 1, 2022, the unrecognized compensation cost for options and restricted shares was $21.9 million before tax, and will be recognized over a weighted average period of 1.8 years. Compensation cost included as a component of cost of sales, research and development and selling, general, and administrative expenses for all equity compensation plans discussed above was $21.4 million, $19.1 million, and $19.9 million for 2021, 2020, and 2019, respectively. The total related income tax benefit recognized in the Consolidated Statements of Net Income was $3.3 million, $3.1 million and $3.3 million for 2021, 2020, and 2019, respectively.

The Company uses the Black-Scholes option valuation model to determine the fair value of stock option awards granted. The weighted average fair value of and related assumptions for options granted are as follows:

	2021	2020	2019
Weighted average fair value of options granted	$74.04	$38.09	$47.63
Assumptions:			
Risk-free interest rate	0.66%	0.30%	2.33%
Expected dividend yield	0.72%	1.27%	0.86%
Expected stock price volatility	35.0%	33.0%	27.0%
Expected life of options (years)	4.4	4.7	4.4

Expected volatilities are based on the historical volatility of the Company’s stock price. The expected life of options is based on historical data for options granted by the Company. The risk-free rates are based on yields available at the time of grant on U.S. Treasury bonds with maturities consistent with the expected life assumption. Historical nonvested forfeiture information is the basis for the forfeiture rate assumptions.

The fair value of RSU is determined based on the Company's stock price on the grant date reduced by the present value of expected dividends through the vesting period.

Preferred Stock: The Board of Directors may authorize the issuance of preferred stock from time to time in one or more series with such designations, preferences, qualifications, limitations, restrictions, and optional or other special rights as the Board may fix by resolution.

Share Repurchase Program

On April 26, 2019, the Company's Board of Directors authorized a program to repurchase up to 1,000,000 shares of the Company's common stock for the period May 1, 2019 to April 30, 2020 ("2019 program"). On April 29, 2020, the Company announced that the Board of Directors authorized a new program to repurchase up to 1,000,000 shares of the Company's common stock for the period May 1, 2020 to April 30, 2021 (the "2020 program") to replace its previous expired 2019 program. On April 28, 2021, the Company announced that the Board of Directors authorized a new three-year program to repurchase up to $300 million in the aggregate of shares of the Company’s common stock for the period May 1, 2021 to April 30, 2024 to replace its previous 2020 program. There are $300 million in the aggregate of shares available for purchase under the new program as of January 1, 2022.

During the fiscal year 2021, the Company did not repurchase any shares of its common stock. During the fiscal year 2020 and 2019, the Company repurchased 175,110 and 579,916 shares of its common stock totaling $22.9 million and $95.0 million, respectively.

13. Other Comprehensive Income (Loss)

Changes in other comprehensive income (loss) by component for fiscal years 2021, 2020, and 2019 were as follows:

	Fiscal Year Ended								
	January 1, 2022			December 26, 2020			December 28, 2019		
(in thousands)	Pre-tax	Tax	Net of tax	Pre-tax	Tax	Net of tax	Pre-tax	Tax	Net of tax
Defined benefit pension plan and other adjustments	$ 27,481	$ (5,268)	$ 22,213	$ (19,513)	$ 3,418	$ (16,095)	$ (9,149)	$ 1,062	$ (8,087)
Foreign currency translation adjustments (1)	(6,967)	2,448	(4,519)	34,707	(2,946)	31,761	(1,476)	664	(812)
Total change in other comprehensive income (loss)	$ 20,514	$ (2,820)	$ 17,694	$ 15,194	$ 472	$ 15,666	$ (10,625)	$ 1,726	$ (8,899)

(1) The tax shown above within the *foreign currency translation adjustments* is the U.S. tax associated with the foreign currency translation adjustments of earnings of non-U.S. subsidiaries which have been previously taxed in the U.S. and are not permanently reinvested.

Accumulated Other Comprehensive Income (Loss) ("AOCI"): The following table sets forth the changes in the components of AOCI by component for fiscal years 2021, 2020, and 2019:

(in thousands)	**Pension and postretirement liability and reclassification adjustments**	**Foreign currency translation adjustments**	**Accumulated other comprehensive income (loss)**
Balance at December 29, 2018	$ (9,959)	$ (87,965)	$ (97,924)
2019 activity	(8,087)	(812)	(8,899)
Balance at December 28, 2019	(18,046)	(88,777)	(106,823)
2020 activity	(16,095)	31,761	15,666
Balance at December 26, 2020	(34,141)	(57,016)	(91,157)
2021 activity	22,213	(4,519)	17,694
Balance at January 1, 2022	(11,928)	(61,535)	(73,463)

Due to the signing of the group annuity contract being a significant change in the U.K. pension plan, the liabilities of the plan were remeasured as of April 6, 2020 resulting in an increase of $13.4 million to unamortized actuarial loss within other comprehensive income (loss). In the fourth quarter of 2021, the Company recorded a non-cash pension settlement charge of $19.9 million (£14.9 million), inclusive of the accelerated recognition of prior service cost of $0.5 million (£0.4 million). See Note 11, *Benefits Plans* for further discussion.

Amounts reclassified from accumulated other comprehensive income (loss) to earnings for fiscal years 2021, 2020, and 2019 were as follows:

	Fiscal Year Ended		
(in thousands)	**January 1, 2022**	**December 26, 2020**	**December 28, 2019**
Pension and postemployment and other plans:			
Amortization of prior service, net actuarial loss, and other	$ 2,006	$ 1,694	$ 372
Net settlement loss and accelerated prior service costs	19,855	236	260
Total	$ 21,861	$ 1,930	$ 632

The Company recognizes the amortization of prior service costs and net settlement loss in *other expense (income), net* within the Consolidated Statements of Net Income.

14. Income Taxes

The 2017 Tax Cuts and Jobs Act (the "Tax Act"), among other things, imposed a one-time tax (the "Toll Charge") on accumulated earnings of certain non-U.S. subsidiaries and included base broadening provisions commonly referred to as the global intangible low-taxed income provisions ("GILTI").

The Company elected to pay the 2017 Littelfuse Toll Charge over the eight-year period prescribed by the Tax Act. The long-term portion of this Toll Charge which remains payable as of January 1, 2022, totaling $17.8 million, is recorded in Other long-term liabilities, and the anticipated 2022 annual installment payment of $3.0 million is included in *Accrued income taxes*, on the Consolidated Balance Sheet as of January 1, 2022.

In accordance with guidance issued by the FASB staff, the Company has adopted an accounting policy to treat any GILTI inclusions as a period cost if and when incurred. Thus, for the fiscal years ended January 1, 2022, December 26, 2020 and December 28, 2019, deferred taxes were computed without consideration of the possible future impact of the GILTI provisions, and any current year impact was recorded as a part of the current portion of income tax expense.

Domestic and foreign income (loss) before income taxes is as follows:

(in thousands)	**2021**	**2020**	**2019**
Domestic	$ 13,746	$ (16,732)	$ (11,970)
Foreign	327,279	177,985	177,854
Income before income taxes	$ 341,025	$ 161,253	$ 165,884

Federal, state and foreign income tax expense (benefit) consists of the following:

(in thousands)	**2021**	**2020**	**2019**
Current:			
Federal	$ 4,832	$ 437	$ (3,495)
State	1,401	203	834
Foreign	59,006	33,841	30,610
Subtotal	65,239	34,481	27,949
Deferred:			
Federal and State	(9,658)	(5,354)	1,839
Foreign	1,638	2,140	(2,986)
Subtotal	(8,020)	(3,214)	(1,147)
Provision for income taxes	$ 57,219	$ 31,267	$ 26,802

The current federal tax benefit for 2019 includes a benefit of $3.3 million from the recognition of previously unrecognized tax benefits (and the reversal of the related accrued interest) due to a lapse in the statute of limitations.

A reconciliation between income taxes computed on income before income taxes at the federal statutory rate and the provision for income taxes is provided below:

(in thousands)	2021	2020	2019
Tax expense at statutory rate of 21%	$ 71,615	$ 33,863	$ 34,836
Non-U.S. income tax rate differential	(31,414)	(19,730)	(22,457)
Non-U.S. losses and expenses with no tax benefit	7,820	2,774	6,570
Tax on unremitted earnings	7,585	3,955	2,136
Certain changes in unrecognized tax benefits and related accrued interest	4,263	2,160	(1,468)
Net impact associated with the GILTI tax provisions	(238)	3,731	6,469
State and local taxes, net of federal tax benefit	(172)	(584)	1,080
Tax impact of non-deductible goodwill impairment charge	—	5,642	—
Other, net	(2,240)	(544)	(364)
Provision for income taxes	$ 57,219	$ 31,267	$ 26,802

Deferred income taxes are provided for the tax effects of temporary differences between the financial reporting bases and the tax bases of the company's assets and liabilities. Significant components of the company's deferred tax assets and liabilities at January 1, 2022 and December 26, 2020, are as follows:

(in thousands)	2021	2020
Deferred tax assets:		
Accrued expenses and reserves	$ 36,168	$ 31,123
Domestic and non-U.S. net operating loss carryforwards	27,818	24,763
Domestic and non-U.S. interest expense carryforwards	16,089	10,352
Excess of tax basis over the book basis for intangible assets and goodwill	5,636	—
Capitalized expenses	4,878	4,178
U.S. research and other general business tax credit carryforwards	1,104	3,724
U.S. foreign tax credit carryforwards	980	772
Other	183	117
Gross deferred tax assets	92,856	75,029
Less: Valuation allowance	(34,869)	(13,131)
Total deferred tax assets	57,987	61,898
Deferred tax liabilities:		
Excess of book basis over the tax basis for intangible assets and goodwill	98,046	76,472
Tax on unremitted earnings	15,467	14,223
Unrealized foreign currency exchange gains	73	5,719
Excess of book basis over the tax basis for property, plant, and equipment	12,563	4,394
Total deferred tax liabilities	126,149	100,808
Net deferred tax liabilities	$ 68,162	$ 38,910

The deferred tax asset valuation allowance is mainly related to certain U.S. and non-U.S. net operating loss and non-U.S. interest expense carryforwards which are not expected to be realized. The remaining U.S. and non-U.S. net operating loss and interest expense carryforwards either have no expiration date or are expected to be utilized prior to expiration. No deferred tax asset nor valuation allowance has been recorded for certain U.S. and non-U.S. net operating loss carryforwards for which the possibility of usage has been determined to be remote.

The Company paid income taxes of $58.2 million, $35.2 million, and $47.6 million in 2021, 2020, and 2019, respectively, and received income tax refunds of $2.6 million, $7.6 million, and $7.1 million in 2021, 2020, and 2019, respectively.

Deferred income taxes are not provided on the excess of the investment value for financial reporting over the tax basis of investments in those non-U.S. subsidiaries for which such excess is considered to be permanently reinvested in those operations. The Company believes the determination of the amount of such deferred income taxes is impractical as it would depend upon income tax laws and circumstances at the time of the hypothetical distributions or dispositions. As of January 1, 2022, unremitted earnings of the Company’s non-U.S. subsidiaries were approximately $884 million. A distribution of such earnings will generally not be subject to U.S. federal income tax. The Company recognized deferred tax liabilities of $15.5 million ($15.3 million for non-U.S. taxes net of related U.S. foreign tax credits, and $0.2 million for U.S. state taxes) as of January 1, 2022 and $14.2 million ($13.9 million for non-U.S. taxes net of related U.S. foreign tax credits, and $0.3 million for U.S. state taxes) as of December 26, 2020, related to taxes on certain non-U.S. earnings which are not considered to be permanently reinvested.

The Company has two subsidiaries in China which benefit from lower tax rates due to “tax holidays” which apply for three-year periods. The tax holiday for one of the subsidiaries expires at the end of 2022, and for the other subsidiary the tax holiday will expire at the end of 2023. Together, the tax holidays contributed $7.8 million in tax benefits, or $0.31 per diluted share, during 2021. Future year tax benefits will depend upon the Company’s ability to obtain extensions, after the three-year periods expire. There can be no assurance that future extensions will be granted.

A reconciliation of the beginning and ending amount of unrecognized tax benefits as of January 1, 2022, December 26, 2020, and December 28, 2019 is as follows:

(in thousands)	**Unrecognized Tax Benefits**
Balance at December 28, 2019	$ 16,721
Additions for tax positions taken in the current year	700
Decreases due to a lapse in the statute of limitations	(103)
Other	119
Balance at December 26, 2020	17,437
Additions for tax positions related to pre-acquisition periods of acquired subsidiaries	3,260
Additions for tax positions taken in the current year	1,587
Additions for tax positions taken in the prior year	1,100
Other	61
Balance at January 1, 2022	23,445

The January 1, 2022 total in the table above represents the net amount of tax benefits that, if recognized, would favorably affect the effective tax rate in future periods. Of this amount, only an insignificant amount may be recognized in 2022 based upon the possible lapse in the statute of limitations. None of the positions included in unrecognized tax benefits are related to tax positions for which the ultimate deductibility is highly certain, but for which there is uncertainty about the timing of such deductibility.

The company recognizes accrued interest and penalties associated with uncertain tax positions as part of income tax expense. The company recognized such interest expense of $1.6 million, $1.6 million (net of a $0.6 million decrease due to a lapse in the statute of limitations), and $1.3 million (net of a $0.6 million decrease due to a lapse in the statute of limitations) in 2021, 2020, and 2019, respectively. Accrued interest for such matters included in *Other long-term liabilities* within the Consolidated Balance Sheets was $10.4 million and $8.8 million as of January 1, 2022 and December 26, 2020, respectively.

The U.S. federal statute of limitations remains open for the Company for the 2017 tax year (with respect to the Toll Charge) and later years. Non-U.S. and U.S. state statutes of limitations generally range from three to seven years, although certain jurisdictions do not have a statute expiration. Tax examinations occur from time to time, including examinations currently in process in Korea, the Netherlands, the Philippines, and certain U.S. states. The company does not expect to recognize a significant amount of additional tax expense as a result of concluding these examinations. During 2021, the Company received a notice of assessment for approximately $3 million from the Canadian tax authorities. The Company has objected to and appealed the assessment, and does not expect to recognize a significant amount of additional tax expense upon conclusion of such appeal.

15. Earnings Per Share

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

(in thousands, except per share amounts)	2021	2020	2019
Numerator:			
Net income as reported	$ 283,806	$ 129,986	$ 139,082
Denominator:			
Weighted average shares outstanding			
Basic	24,603	24,371	24,576
Effect of dilutive securities	329	221	242
Diluted	24,932	24,592	24,818
Earnings Per Share:			
Basic earnings per share	$ 11.54	$ 5.33	$ 5.66
Diluted earnings per share	$ 11.38	$ 5.29	$ 5.60

Potential shares of common stock attributable to stock options and restricted shares excluded from the earnings per share calculation because their effect would be anti-dilutive were 20,139, 222,526, and 129,658 shares in 2021, 2020, and 2019, respectively.

During the fiscal year 2021, the Company did not repurchase any shares of its common stock. During the fiscal year 2020 and 2019, the Company repurchased 175,110, and 579,916 shares of its common stock totaling $22.9 million and $95.0 million, respectively. See Note 12 *Stock-Based Compensation* for further discussion.

16. Segment Information

The Company and its subsidiaries design, manufacture and sell component, modules and subassemblies to empower the long-term structural themes of sustainability, connectivity and safety. The Company reports its operations by the following segments: Electronics, Transportation, and Industrial. An operating segment is defined as a component of an enterprise that engages in business activities from which it may earn revenues and incur expenses, and about which separate financial information is regularly evaluated by the Chief Operating Decision Maker (“CODM”) in deciding how to allocate resources. The CODM is the Company’s President and Chief Executive Officer (“CEO”). The CODM allocates resources to and assesses the performance of each operating segment using information about its revenue and operating income (loss) before interest and taxes, but does not evaluate the operating segments using discrete balance sheet information.

Sales, marketing, and research and development expenses are charged directly into each operating segment. Purchasing, logistics, customer service, finance, information technology, and human resources are shared functions that are allocated back to the three operating segments. The Company does not report inter-segment revenue because the operating segments do not record it. Certain expenses, determined by the CODM to be strategic in nature and not directly related to segments current results, are not allocated but identified as “Other”. Additionally, the Company does not allocate interest and other income, interest expense, or taxes to operating segments. These costs are not allocated to the segments, as management excludes such costs when assessing the performance of the segments. Although the CODM uses operating income (loss) to evaluate the segments, operating costs included in one segment may benefit other segments. Except as discussed above, the accounting policies for segment reporting are the same as for the Company as a whole.

- *Electronics Segment*: Consists of one of the broadest product offerings in the industry, including fuses and fuse accessories, positive temperature coefficient (“PTC”) resettable fuses, polymer electrostatic discharge (“ESD”) suppressors, varistors, reed switch based magnetic sensing, gas discharge tubes; semiconductor products such as discrete transient voltage suppressor (“TVS”) diodes, TVS diode arrays, protection and switching thyristors, silicon and silicon carbide metal-oxide-semiconductor field effect transistors (“MOSFETs”) and diodes; and insulated gate bipolar transistors (“IGBT”) technologies. The segment covers a broad range of end markets, including industrial motor drives and power conversion, automotive electronics, electric vehicle and related infrastructure, power supplies, data centers and telecommunications, medical devices, alternative energy and energy storage, building and home automation, appliances, and mobile electronics.

- *Transportation Segment:* Formerly known as Automotive segment. The term "Transportation" represents a more comprehensive description of the Company's broad range of products, and the applications and end markets it serves. Consists of a wide range of circuit protection, power control and sensing technologies for global original equipment manufacturers ("OEMs"), Tier-one suppliers and parts and aftermarket distributors in passenger vehicle, heavy duty truck, off-road vehicles, material handling, agricultural, construction and other commercial vehicle end markets. Passenger vehicle products are used in internal combustion engine, hybrid and electric vehicles including blade fuses, battery cable protectors, resettable fuses, high-current fuses, high-voltage fuses, and sensor products designed to monitor the occupant's safety and environment as well as the vehicle's powertrain. Commercial vehicle products include fuses, switches, circuit breakers, relays, and power distribution modules and units used in applications serving a number of end markets, including heavy-duty truck, construction, agriculture, material handling and marine.

- *Industrial Segment:* Consists of industrial circuit protection (industrial fuse), industrial controls (protection relay, contactors, transformers) and temperature sensors for use in various applications such as renewable energy and energy storage systems, electric vehicle infrastructure, HVAC systems, industrial safety, non-residential construction, MRO, mining and industrial automation.

The Company has provided this segment information for all comparable prior periods. Segment information is summarized as follows:

(in thousands)	**2021**	**2020**	**2019**
Net sales			
Electronics	$ 1,300,744	$ 937,762	$ 961,080
Transportation	528,058	395,764	428,533
Industrial	251,126	112,169	114,260
Total net sales	$ 2,079,928	$ 1,445,695	$ 1,503,873
Depreciation and amortization			
Electronics	$ 61,512	$ 62,702	$ 60,345
Transportation	29,015	28,995	27,922
Industrial	8,108	4,481	4,236
Other	—	—	—
Total depreciation and amortization	$ 98,635	$ 96,178	$ 92,503
Operating income (loss)			
Electronics	$ 309,633	$ 152,695	$ 145,594
Transportation	65,979	41,655	46,719
Industrial	22,621	11,996	22,407
Other[(a)]	(12,591)	(43,974)	(21,929)
Total operating income	385,642	162,372	192,791
Interest expense	18,527	21,077	22,266
Foreign exchange loss (gain)	17,158	(14,875)	5,224
Other expense (income), net	8,932	(5,083)	(583)
Income before income taxes	$ 341,025	$ 161,253	$ 165,884

(a) Included in "Other" Operating income (loss) for 2021 was $8.4 million of purchase accounting inventory step-up charges, $7.0 million of legal and professional fees and other integration expenses related to Carling, Hartland and other contemplated acquisitions, and $2.2 million of restructuring, impairment and other charges, primarily related to employee termination costs. See Note 8, *Restructuring, Impairment and Other Charges*, for further discussion. In addition, there was a gain of $5.0 million recorded for the sale of buildings within the Electronics segment.

Included in "Other" Operating income (loss) for 2020 is $2.3 million of acquisition-related and integration charges related to the IXYS acquisition and other contemplated acquisitions. In addition, there were $41.7 million of restructuring, impairment and other charges, primarily related to the goodwill impairment charge of $33.8 million recorded in the second quarter associated with the automotive sensors reporting unit within the Transportation segment, employee termination costs of $5.5 million, $2.2 million of impairment charges recorded in the first quarter associated with the announced consolidation of a manufacturing facility within the Industrial segment and other restructuring charges of $0.2 million.

Included in "Other" Operating income (loss) for 2019 is $8.9 million of acquisition-related and integration charges related to the IXYS acquisition and other contemplated acquisitions. In addition, there were $13.0 million of restructuring charges primarily related to employee termination costs.

The Company's net sales, long-lived assets and additions to long-lived assets by country for the fiscal years ended 2021, 2020, and 2019 are as follows:

(in thousands)	**2021**	**2020**	**2019**
Net sales			
U.S.	$ 639,381	$ 392,544	$ 440,461
China	620,211	438,000	416,385
Other countries[(a)]	820,336	615,151	647,027
Total net sales	$ 2,079,928	$ 1,445,695	$ 1,503,873
Long-lived assets			
U.S.	$ 57,923	$ 46,132	$ 58,081
China	122,867	85,876	88,306
Mexico	107,283	70,125	73,096
Germany	39,055	37,976	36,025
Philippines	74,918	66,994	51,738
Other countries	35,843	37,075	37,371
Total long-lived assets	$ 437,889	$ 344,178	$ 344,617
Additions to long-lived assets			
U.S.	$ 7,690	$ 4,170	$ 5,864
China	26,396	10,074	10,400
Mexico	28,707	9,977	13,827
Germany	8,519	5,600	4,017
Philippines	19,342	19,612	22,944
Other countries	5,654	1,775	9,314
Total additions to long-lived assets	$ 96,308	$ 51,208	$ 66,366

(a) Each country included in other countries are less than 10% of net sales.

For the year ended January 1, 2022, approximately 69% of the Company's net sales were to customers outside the U.S. (exports and foreign operations), including approximately 30% to China. For the year ended December 26, 2020, approximately 73% of the Company's net sales were to customers outside the U.S. (exports and foreign operations), including approximately 30% to China. For the year ended December 28, 2019, approximately 71% of the Company's net sales were to customers outside the U.S. (exports and foreign operations), including approximately 28% to China. Sales to Arrow Electronics, Inc., which were included in the Electronics, Transportation, and Industrial segments, were 10.7%, 10.4%, and 10.7% of consolidated net sales in 2021, 2020, and 2019 respectively. No other single customer accounted for more than 10% of net sales during the last three years.

17. Selected Quarterly Financial Data (Unaudited)

The quarterly periods for 2021 are for the 14-weeks ended January 1, 2022, 13-weeks ended September 25, 2021, June 26, 2021, and March 27, 2021, respectively. The quarterly periods for 2020 are for the 13-weeks ended December 26, 2020, September 26, 2020, June 27, 2020, and March 28, 2020, respectively.

(in thousands, except per share data)

	2021				2020			
	4Q[(a)]	3Q[(b)]	2Q[(c)]	1Q[(d)]	4Q[(e)]	3Q[(f)]	2Q[(g)]	1Q[(h)]
Net sales	$ 553,065	$ 539,581	$ 523,488	$ 463,794	$ 400,696	$ 391,566	$ 307,337	$ 346,096
Gross profit	199,492	214,572	197,396	160,466	138,083	138,831	99,902	124,356
Operating income (loss)	92,797	120,107	96,257	76,481	65,014	64,558	(11,950)	44,750
Net income (loss)	51,944	92,054	82,095	57,713	58,977	55,356	(8,991)	24,644
Net income (loss) per share								
Basic	$ 2.11	$ 3.74	$ 3.34	$ 2.35	$ 2.41	$ 2.27	$ (0.37)	$ 1.01
Diluted	$ 2.08	$ 3.69	$ 3.30	$ 2.32	$ 2.39	$ 2.25	$ (0.37)	$ 1.00

(a) In the fourth quarter of 2021, the Company recorded non-cash pension settlement charge of 19.9 million, $4.1 million gain related to a sale of building, $3.6 million in acquisition-related and integration costs, $1.6 million for purchase accounting inventory adjustments associated with the acquisition of Carling, $0.7 million charge for an asset retirement obligation related to the disposal of a business in 2019, $0.2 million in restructuring, impairment and other charges, and $0.2 million increase in coal mining reserves.

(b) In the third quarter of 2021, the Company recorded $2.0 million in acquisition-related and integration costs, $0.8 million in restructuring, impairment and other charges and $0.1 million charge for an asset retirement obligation related to the disposal of a business in 2019.

(c) In the second quarter of 2021, the Company recorded $3.3 million for purchase accounting inventory adjustments associated with the acquisition of Hartland, and $1.0 million loss recorded during the second quarter of 2021 for a total year-to-date gain of $0.9 million from the sale of a building within the Electronics segment, $0.8 million in employee termination costs and other restructuring charges, $0.5 million in acquisition-related and integration costs, and $0.5 million of impairment charges on certain other investments.

(d) In the first quarter of 2021, the Company recorded the Company recorded $3.5 million for purchase accounting inventory adjustments associated with the acquisition of Hartland, $1.9 million gain related to a sale of building, $0.8 million in acquisition-related and integration costs, and $0.4 million in restructuring, impairment and other charges.

(e) In the fourth quarter of 2020, the Company recorded $0.7 million in acquisition-related and integration costs and $0.8 million in restructuring, impairment and other costs.

(f) In the third quarter of 2020, the Company recorded $1.3 million in restructuring, impairment and other charges, $0.3 million in acquisition-related and integration costs, and $0.1 million of impairment charges on certain other investments.

(g) In the second quarter of 2020, the Company recorded a goodwill impairment charge of $33.8 million associated with the automotive sensors reporting unit within the Transportation segment, $1.8 million in employee termination costs and other restructuring charges, $1.8 million increase to coal mining reserve, $0.2 million charge for an asset retirement obligation related to the disposal of a business in 2019, and $0.1 million in acquisition-related and integration costs.

(h) In the first quarter of 2020, the Company recorded $4.0 million in restructuring, impairment and other charges and $1.2 million in acquisition-related and integration costs.

18. Related Party Transactions

As a result of the Company's acquisition of IXYS, the Company has equity ownerships in various investments that are accounted for under the equity method. The following is a description of the investments and related party transactions.

Powersem GmbH: The Company owns 45% of the outstanding equity of Powersem GmbH ("Powersem"), a module manufacturer based in Germany.

EB-Tech Co., Ltd.: The Company owns approximately 19% of the outstanding equity of EB-Tech Co., Ltd. ("EB Tech"), a company with expertise in radiation technology based in South Korea.

Automated Technology (Phil), Inc.: The Company owns approximately 24% of the outstanding common shares of Automated Technology (Phil), Inc. ("ATEC"), a supplier located in the Philippines that provides assembly and test services. One member of the Company's Board of Directors serves on the Board of Directors of ATEC.

	Fiscal Year Ended					
	January 1, 2022			December 26, 2020		
(in millions)	Powersem	EB Tech	ATEC	Powersem	EB Tech	ATEC
Sales to related party	$ 0.2	$ —	$ —	$ 1.5	$ —	$ —
Purchase of material/services from related party	3.0	0.4	12.6	2.7	—	8.7
Accounts receivable balance	—	—	—	0.1	—	—
Accounts payable balance	$ —	$ —	$ 1.8	$ 0.1	$ —	$ 0.2

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE.

None.

ITEM 9A. CONTROLS AND PROCEDURES.

Evaluation of Disclosure Controls and Procedures

The Company maintains disclosure controls and procedures that are designed to ensure that information required to be disclosed in its reports filed under the Securities Exchange Act of 1934, as amended, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to management, including the Company's Chief Executive Officer and Chief Financial Officer, as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, the Company recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and the Company is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

As required by SEC Rule 15d-15(b), the Company carried out an evaluation, under the supervision and with the participation of its management, including the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of its disclosure controls and procedures pursuant to SEC Rule 13a-15 as of the end of the period covered by this report. Based on the foregoing, the Company's Chief Executive Officer and Chief Financial Officer concluded that the Company's disclosure controls and procedures were effective as of January 1, 2022.

Management's Report on Internal Control over Financial Reporting

Section 404 of the Sarbanes-Oxley Act of 2002 requires management to include in this Annual Report on Form 10-K a report on management's assessment of the effectiveness of the Company's internal control over financial reporting, as well as an attestation report from the Company's independent registered public accounting firm on the effectiveness of the Company's internal control over financial reporting. Management is responsible for establishing and maintaining adequate internal control over financial reporting as such term is defined in Exchange Act Rule 13a-15(f) and 15d-15(f). The Company's internal control system was designed to provide reasonable assurance to its management and the Board of Directors regarding the preparation and fair presentation of published financial statements.

All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined effective can provide only reasonable assurance with respect to financial statement preparation and presentation. A material weakness is a deficiency, or a combination of deficiencies, in the internal control over financial reporting such that there is a reasonable possibility that a material misstatement of the annual or interim financial statement will not be prevented or detected on a timely basis.

The Company’s management, including its Principal Executive Officer and Principal Financial Officer, assessed the effectiveness of the Company’s internal control over financial reporting as of January 1, 2022, based upon the updated framework in Internal Control — Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”) in 1992 and updated in May 2013. Based on this assessment, the Company’s management concluded that, as of January 1, 2022, the Company’s internal control over financial reporting was effective.

On November 30, 2021, the Company completed the acquisition of Carling Technologies, as discussed in Note 2 – Acquisitions. Management has excluded Carling’s internal controls over financial reporting from its assessment of the effectiveness of internal controls over financial reporting as of January 1, 2022. Carling’s net sales and total assets (excluding goodwill and intangible assets, which were integrated into the Company’s control environment) represent approximately 1% and 5%, respectively, of the consolidated financial statement amounts as of, and for the fiscal year ended, January 1, 2022.

Changes in Internal Control over Financial Reporting

There has been no change in the Company’s internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the 12 months or fiscal quarter ended January 1, 2022, that has materially affected, or is reasonably likely to materially affect, the Company’s internal control over financial reporting.

ITEM 9B. OTHER INFORMATION.

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS, AND CORPORATE GOVERNANCE.

Except as set forth below, the information required by this item will be contained in the Company's Proxy Statement related to our 2021 Annual Meeting of Stockholders (the "proxy statement") and is incorporated herein by reference.

Information concerning directors and nominees for director is set forth in the section titled "Proposal No. 1 - Election of Directors" in the Company's proxy statement and is incorporated herein by reference.

Information concerning the Company's Audit Committee and Audit Committee financial expert is set forth in the sections titled "Board Committees" and "Director Independence; Financial Experts" in the Company's proxy statement and is incorporated herein by reference.

Information concerning the procedures by which security holders may recommend nominees to the Company's Board of Directors is set forth in the section titled "Director Nominations" in the Company's proxy statement and is incorporated herein by reference.

Information concerning compliance with Section 16 of the Securities Exchange Act of 1934 is set forth in the section titled "Delinquent Section 16(a) Reports" in the Company's proxy statement and is incorporated herein by reference.

Information regarding the Executive Officers of the Company can be found in Part I of this Annual Report on Form 10-K under the caption "Information about our Executive Officers."

Code of Ethics

The company has adopted a Code of Conduct (Code of Ethics) that applies to all of the Company's employees including the Company's Principal Executive Officer, Principal Financial Officer, Principal Accounting Officer and persons performing similar functions. It has posted the text of the Code of Conduct on its website at https://investor.littelfuse.com/corporate-governance/governance-overview and intends to disclose on such website any amendments to, or waivers from the Code of Conduct. The company's website is not incorporated by reference into this Annual Report.

ITEM 11. EXECUTIVE COMPENSATION.

Information concerning compensation of the Company's executive officers and directors for the fiscal year ended January 1, 2022, is set forth in the sections titled "Compensation Discussion and Analysis," "Compensation Tables," "Compensation Committee Report," "CEO Pay Ratio," "Potential Payments Upon Termination or Change in Control" and "Director Compensation" in the Company's proxy statement and is incorporated herein by reference, except the section titled "Compensation Committee Report" is hereby "furnished" and not "filed" with this Annual Report on Form 10-K.

Information concerning compensation committee interlocks is set forth in the section titled "Compensation Committee Interlocks and Insider Participation" in the Company's proxy statement and is incorporated herein by reference.

COMPENSATION PLAN INFORMATION

We have two equity compensation plans that have been approved by our stockholders: the Littelfuse, Inc. Long-Term Incentive Plan that was approved by our stockholders at the April 2017 annual stockholder meeting and the Deferred Compensation Plan for Non-Employee Directors that was approved by our stockholders at the May 2005 annual stockholder meeting.

Pursuant to our acquisition of IXYS Corporation on January 17, 2018, we assumed four equity compensation plans that have not been approved by our stockholders and pursuant to which we may continue to grant equity awards: IXYS Corporation 2009 Equity Incentive Plan, IXYS Corporation 2011 Equity Incentive Plan, IXYS Corporation 2013 Equity Incentive Plan, IXYS Corporation 2016 Equity Incentive Plan (together, the "IXYS Plans"). We also assumed two expired equity compensation plans that have not been approved by our stockholders and pursuant to which we have outstanding equity awards: the Zilog, Inc. 2002 Omnibus Stock Incentive Plan and Zilog, Inc. 2004 Omnibus Stock Incentive Plan (together the "Zilog Plans"). The IXYS Corporation 2009 Equity Incentive Plan expired in June 2019 and equity awards remain outstanding under it.

Information about our equity compensation plans that were either approved or not approved by our stockholders as of January 1, 2022, is as follows:

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants, and rights (1)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in the first column)
Equity compensation plans approved by security holders	650,680 (2)	$131.47	598,766 (4)
Equity compensation plans not approved by security holders	80,115 (3)	$99.14	193,848 (5)
Total	730,795	$127.92	792,614

(1) The weighted average exercise price does not take into account the shares issuable upon the vesting of outstanding restricted stock units, which have no exercise price.

(2) Includes 161,815 shares reserved for issuance upon vesting of outstanding restricted stock units and 488,865 outstanding stock options granted under the Littelfuse, Inc. Long-Term Incentive Plan.

(3) Includes 5,754 shares reserved for issuance upon vesting of outstanding restricted stock units under the IXYS Plans and 74,361 outstanding stock options granted under the IXYS Plans and Zilog Plan. Below is a brief description of the material features of the compensation plans acquired pursuant to the acquisition of IXYS Corporation.

(4) Includes 554,119 shares that remain available for future issuance under the Littelfuse, Inc. Long-Term Incentive Plan and 44,647 shares that remain available for future issuance under the Deferred Compensation Plan for Non-Employee Directors.

(5) Includes 24,926 shares that remain available for future issuance under the IXYS Corporation 2013 Equity Incentive Plan, and 168,922 shares that remain available for future issuance under the IXYS Corporation 2016 Equity Incentive Plan.

IXYS Plans

In connection with the acquisition of IXYS Corporation, we assumed the IXYS Corporation 2009 Equity Incentive Plan, IXYS Corporation 2011 Equity Incentive Plan, IXYS Corporation 2013 Equity Incentive Plan, IXYS Corporation 2016 Equity Incentive Plan and outstanding unvested stock options originally granted by IXYS Corporation under the IXYS Plans that were held by continuing employees. At the time of the acquisition of IXYS Corporation, these awards were converted to Littelfuse stock options, with adjustments made to the exercise price of the stock options and the number of shares subject to stock options as agreed upon in the Acquisition Agreement. These unvested options vest in accordance with their original terms, generally vesting in equal annual installments over a four-year period from the original grant date. The options, once granted, generally expire ten years from the date of grant. Under the IXYS Plans, we may grant to former employees of IXYS Corporation or its subsidiaries restricted stock awards, RSUs, stock options and stock appreciation rights with an exercise price that is no less than the fair market value on the date of grant. Equity awards granted under the IXYS Plans following the acquisition have been on similar terms and consistent with grants made pursuant to the Littelfuse, Inc Long-Term Incentive Plan. The IXYS Corporation 2009 and 2011 Equity Incentive Plans expired in June 2019 and June 2021 respectively, with no additional grants made after the expiration date. As of January 1, 2022, 193,848 shares remained available for issuance under the IXYS Plans.

Zilog Plan

In connection with the acquisition of IXYS Corporation, we assumed the Zilog, Inc. 2004 Omnibus Stock Incentive Plan and outstanding stock options originally granted by IXYS Corporation under the Zilog Plan that were held by continuing employees of Zilog. At the time of the acquisition of IXYS Corporation, these awards were converted to Littelfuse stock options, with adjustments made to the exercise price of the stock options and the number of shares subject to stock options as agreed upon in the Acquisition Agreement. These options vested in accordance with their original terms, generally in equal annual installments over a four-year period from the original grant date. The options generally expire ten years from the date of grant. The Zilog 2004 Omnibus Stock Incentive Plan expired in February 2014 and no additional grants have been made thereunder. Therefore, as of January 1, 2022, no shares remain available for issuance of new awards under the Zilog Plan and 12,486 stock options remain outstanding.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS.

Information concerning the security ownership of certain beneficial owners, the Company's directors and executive officers as of March 1, 2022, is set forth in the section titled "Ownership of Littelfuse, Inc. Common Stock" in the Company's proxy statement and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE.

Information concerning the independence of the Company's directors, certain relationships and related transactions during 2021 and the Company's policies with respect to such transactions is set forth in the sections titled "Director Independence; Financial Experts", "Related Person Transactions Policy", "Related Party Transactions" in the Company's proxy statement and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES.

Information concerning principal accountant fees and services is set forth in the section titled "Audit Related Matters" in the Company's proxy statement and is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES.

(a) Financial Statements and Schedules

All other schedules for which provision is made in the applicable accounting regulations of the Securities and Exchange Commission are not required under the related instructions or are inapplicable and, therefore, have been omitted.

Item 16. FORM 10-K SUMMARY

None.

SCHEDULE II

VALUATION AND QUALIFYING ACCOUNTS AND RESERVES

Description	Balance at Beginning of Year	Charged to Costs and Expenses (a)	Deductions (b)	Other (c)	Balance at End of Year
(in thousands)					
Fiscal year ended January 1, 2022					
Allowance for losses on accounts receivable	$ 1,400	$ 82	$ (362)	$ 790	$ 1,910
Reserves for sales discounts and allowances	$ 43,837	$ 152,153	$ (137,920)	$ (748)	$ 57,322
Fiscal year ended December 26, 2020					
Allowance for losses on accounts receivable	$ 1,310	$ 1,170	$ (329)	$ (751)	$ 1,400
Reserves for sales discounts and allowances	$ 40,733	$ 113,709	$ (112,401)	$ 1,796	$ 43,837
Fiscal year ended December 28, 2019					
Allowance for losses on accounts receivable	$ 1,062	$ 410	$ (172)	$ 10	$ 1,310
Reserves for sales discounts and allowances	$ 34,976	$ 133,434	$ (127,330)	$ (347)	$ 40,733

(a) Includes provision for doubtful accounts, sales returns and sales discounts granted to customers.
(b) Represents uncollectible accounts written off, net of recoveries and credits issued to customers.
(c) Represents business acquisitions and foreign currency translation adjustments.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Littelfuse, Inc.

By: /s/ David W. Heinzmann

David W. Heinzmann,
President and Chief Executive Officer

Date: February 17, 2022

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 on February 16, 2022 and in the capacities indicated.

/s/ Gordon Hunter Gordon Hunter	Chairman of the Board of Directors
/s/ David W. Heinzmann David W. Heinzmann	Director, President and Chief Executive Officer (Principal Executive Officer)
/s/ Kristina A. Cerniglia Kristina A. Cerniglia	Director
/s/ Tzau-Jin Chung Tzau-Jin Chung	Director
/s/ Cary T. Fu Cary T. Fu	Director
/s/ Anthony Grillo Anthony Grillo	Director
/s/ William P. Noglows William P. Noglows	Director
/s/ Maria C. Green Maria C. Green	Director
/s/ Nathan Zommer Nathan Zommer	Director
/s/ Meenal A. Sethna Meenal A. Sethna	Executive Vice President and Chief Financial Officer (Principal Financial Officer)
/s/ Jeffrey G. Gorski Jeffrey G. Gorski	Corporate Controller and Chief Accounting Officer (Principal Accounting Officer)

EXHIBIT INDEX

The following documents listed below that have been previously filed with the SEC (1934 Act File No. 0-20388) are incorporated herein by reference:

		Incorporated by Reference Herein			
Exhibit No.	**Description**	**Form**	**Exhibit**	**Filing Date**	**File No.**
2.1	Agreement and Plan of Merger, dated August 25, 2017, as amended by Amendment No. 1, dated December 4, 2017, by and among IXYS Corporation, Littelfuse, Inc., Iron Merger Co., Inc., and IXYS Merger Co., LLC.	S-4/A	Annex A	12/11/2017	333-22114
2.2	Stock Purchase Agreement, dated October 19, 2021, by and between Littelfuse, Inc., the Shareholders of Carling Technologies, Inc., and Christopher T. Sorenson, as Sellers' Representative	8-K	2.1	10/20/2021	0-20388
2.3*	First Amendment to Stock Purchase Agreement, dated November 29, 2021, by and between Littelfuse, Inc., the Shareholders of Carling Technologies, Inc., and Christopher T. Sorenson				
3.1	Certificate of Incorporation dated November 25, 1991, as amended April 25, 1997.	10-K	3.1	2/27/2017	0-20388
3.2	Certificate of Designations of Series A Preferred Stock.	8-K	4.2	12/1/1995	0-20388
3.3	Bylaws, as amended and restated January 24, 2019.	8-K	3.1	1/25/2019	0-20388
4.1	Description of Securities of Littelfuse, Inc.	10-K	4.1	2/21/2020	0-20388
10.1	Form of Stock Option Award Agreement under the Littelfuse, Inc. Outside Directors' Equity Plan.++	8-K	99.3	5/1/2008	0-20388
10.2	Form of Restricted Stock Unit Award Agreement under the Littelfuse, Inc. Outside Directors' Equity Plan.++	8-K	99.4	5/1/2008	0-20388
10.3	Form of Stock Option Award Agreement under the Littelfuse, Inc. Equity Incentive Compensation Plan .++	8-K	10.2	4/28/2009	0-20388
10.4	Form of Restricted Stock Unit Award Agreement (Outside Director) under the Littelfuse, Inc. Long-Term Incentive Plan.++	S-8	4.4	5/19/2010	0-20388
10.5	Form of Stock Option Award Agreement under the Littelfuse, Inc. Long-Term Incentive Plan.++	S-8	4.6	5/19/2010	0-20388
10.6	Littelfuse, Inc. Annual Incentive Plan, effective January 1, 2014. ++	DEF14A	A	3/17/2014	0-20388
10.7	Form of Stock Option Award Agreement (Executive) under the Littelfuse, Inc. Long-Term Incentive Plan. ++	10-Q	10.3	5/6/2016	0-20388
10.8	Form of Stock Option Award Agreement (Outside Director – 2016 Grant) under the Littelfuse, Inc. Long-Term Incentive Plan. ++	10-Q	10.4	5/6/2016	0-20388
10.9	Form of Restricted Stock Unit Award Agreement (Tier II Management) under the Littelfuse, Inc. Long-Term Incentive Plan. ++	10-Q	10.6	5/6/2016	0-20388
10.10	Form of Restricted Stock Unit Award Agreement (Outside Director – 2016 Grant) under the Littelfuse, Inc. Long-Term Incentive Plan. ++	10-Q	10.7	5/6/2016	0-20388
10.11	Letter Agreement entered into between Littelfuse, Inc. and David W. Heinzmann. Effective January 1, 2017. ++	8-K	10.2	11/16/2016	0-20388
10.12	Littelfuse, Inc. 3.03% Senior Note, Series A, due February 15, 2022, and 3.74% Senior Note, Series B, due February 15, 2027 Note Purchase Agreement.	8-K	10.1	12/9/2016	0-20388
10.13	Littelfuse, Netherland C.V. 1.14% Senior Note, Series A, due December 8, 2023, and 1.83% Senior Note, Series B, due December 8, 2028 Note Purchase Agreement.	8-K	10.2	12/9/2016	0-20388

		Incorporated by Reference Herein			
Exhibit No.	Description	Form	Exhibit	Filing Date	File No.
10.14	Subsidiary Guaranty Agreement, dated December 8, 2016.	8-K	10.4	12/9/2016	0-20388
10.15	Subsidiary Guaranty Agreement, dated as of February 15, 2017.	8-K	10.2	2/15/2017	0-20388
10.16	Restated Littelfuse, Inc. Supplemental Retirement and Savings Plan, effective January 1, 2017. ++	10-K	10.50	2/27/2017	0-20388
10.17	Amended and Restated Littelfuse, Inc. Long-Term Incentive Plan. ++	8-K	10.1	5/1/2017	0-20388
10.18	Form of 2017 Stock Option Award Agreement. ++	8-K	10.3	5/1/2017	0-20388
10.19	Employment offer letter between Littelfuse, Inc. and Jeffrey Gorski, dated June 28, 2017. ++	8-K	10.1	8/14/2017	0-20388
10.20	U.S. Subsidiary Guarantor Supplement, dated as of October 13, 2017, made by Iron Merger Co., Inc. in favor of the note purchasers and the other holders.	8-K	10.5	10/16/2017	0-20388
10.21	U.S. Subsidiary Guarantor Supplement, dated as of October 13, 2017, made by IXYS Merger Co., LLC in favor of the note purchasers and the other holders.	8-K	10.6	10/16/2017	0-20388
10.22	Cross Border Subsidiary Guarantor Supplement, dated as of October 13, 2017, made by Iron Merger Co., Inc. in favor of the note purchasers and the other holders.	8-K	10.7	10/16/2017	0-20388
10.23	Cross Border Subsidiary Guarantor Supplement, dated as of October 13, 2017, made by IXYS Merger Co., LLC in favor of the note purchasers and the other holders.	8-K	10.8	10/16/2017	0-20388
10.24	Note Purchase Agreement, dated November 15, 2017, among Littelfuse, Inc. and note purchasers listed on the signature pages thereto.	8-K	10.1	11/15/2017	0-20388
10.25	Form of 3.78% Senior Note, Series B, due February 15, 2030.	8-K	4.2	11/15/2017	0-20388
10.26	Form of 3.48% Senior Note, Series A, due February 15, 2025,	8-K	4.1	11/15/2017	0-20388
10.27	Subsidiary Guaranty Agreement, dated as of January 16, 2018, made by LFUS LLC, Littelfuse Commercial Vehicle, LLC, Iron Merger Co., Inc., IXYS Merger Co., LLC and SymCom, Inc. in favor of the note purchasers and the other holders.	8-K	10.2	1/18/2018	0-20388
10.28	Littelfuse, Inc. Executive Severance Policy. ++	8-K	10.4	1/18/2018	0-20388
10.29	Form of Indemnity Agreement between Nathan Zommer and IXYS Corporation. ++	10-K	10.3	6/12/2008	000-26124
10.30	IXYS Corporation 2009 Equity Incentive Plan++	S-8	4.4	1/19/2018	333-221147
10.31	IXYS Corporation 2011 Equity Incentive Plan++	S-8	4.5	1/19/2018	333-221147
10.32	IXYS Corporation 2013 Equity Incentive Plan++	S-8	4.6	1/19/2018	333-221147
10.33	IXYS Corporation 2016 Equity Incentive Plan++	S-8	4.7	1/19/2018	333-221147
10.34	Zilog, Inc. 2004 Omnibus Stock Incentive Plan++	S-8	4.9	1/19/2018	333-221147
10.35	Notice of Stock Option Grant and Agreement for the IXYS Corporation 2009 Equity Incentive Plan++	10-Q	10.4	8/10/2009	000-26124
10.36	Form of Nonqualified Stock Option Agreement for Stock Options pursuant to the Zilog, Inc. 2004 Omnibus Stock Incentive Plan++	10-K	10.28	6/11/2010	000-26124
10.37	Notice of Stock Option Grant and Agreement for IXYS Corporation 2011 Equity Incentive Plan++	10-Q	10.2	8/5/2011	000-26124
10.38	Notice of Stock Option Grant and Agreement for IXYS Corporation 2013 Equity Incentive Plan++	10-Q	10.6	8/9/2013	000-26124
10.39	Notice of Stock Option Grant and Agreement for IXYS Corporation 2016 Equity Incentive Plan++	10-Q	10.1	11/3/2016	000-26124

		Incorporated by Reference Herein			
Exhibit No.	Description	Form	Exhibit	Filing Date	File No.
10.40	U.S. Subsidiary Guarantor Supplement, dated as of March 14, 2018, made by Clare Capital, Inc., Clare Components, Inc., Clare Electronics, Inc., Clare Instruments, Inc., Clare Services, Inc., Clare Technologies, Inc., Directed Energy, Inc., IXYS Buckeye, LLC, IXYS Integrated Circuits Division AV Inc., IXYS Integrated Circuits Divisions Inc., IXYS Long Beach, Inc., IXYS USA, Inc., Microwave Technology, Inc., Pele Technology, Inc., Reaction Technology Incorporation and Zilog, Inc. in favor of the note purchasers and the other holders.	10-Q	10.2	05/02/2018	0-20388
10.41	Cross Border Subsidiary Guarantor Supplement, dated as of March 14, 2018, made by Clare Capital, Inc., Clare Components, Inc., Clare Electronics, Inc., Clare Instruments, Inc., Clare Services, Inc., Clare Technologies, Inc., Directed Energy, Inc., IXYS Buckeye, LLC, IXYS Integrated Circuits Division AV Inc., IXYS Integrated Circuits Divisions Inc., IXYS Long Beach, Inc., IXYS USA, Inc., Microwave Technology, Inc., Pele Technology, Inc., Reaction Technology Incorporation and Zilog, Inc. in favor of the note purchasers and the other holders.	10-Q	10.3	05/02/2018	0-20388
10.42	Note Purchase Agreement Subsidiary Guarantor Supplement, dated as of March 14, 2018, made by Clare Capital, Inc., Clare Components, Inc., Clare Electronics, Inc., Clare Instruments, Inc., Clare Services, Inc., Clare Technologies, Inc., Directed Energy, Inc., IXYS Buckeye, LLC, IXYS Integrated Circuits Division AV Inc., IXYS Integrated Circuits Divisions Inc., IXYS Long Beach, Inc., IXYS USA, Inc., Microwave Technology, Inc., Pele Technology, Inc., Reaction Technology Incorporation and Zilog, Inc. in favor of the note purchasers and the other holders.	10-Q	10.4	05/02/2018	0-20388
10.43	U.S. Subsidiary Guarantor Supplement, dated as of August 22, 2018, made by Reaction Technology Epi, LLC and Reaction Tech RE, LLC in favor of the note purchasers and the other holders.	10-Q	10.3	10/31/2018	0-20388
10.44	Cross Border Subsidiary Guarantor Supplement, dated as of August 22, 2018, made by Reaction Technology Epi, LLC and Reaction Tech RE, LLC in favor of the note purchasers and the other holders.	10-Q	10.4	10/31/2018	0-20388
10.45	Note Purchase Agreement Subsidiary Guarantor Supplement, dated as of August 22, 2018, made by Reaction Technology Epi, LLC and Reaction Tech RE, LLC in favor of the note purchasers and the other holders.	10-Q	10.5	10/31/2018	0-20388
10.46	U.S. Subsidiary Guarantor Supplement, dated as of October 22, 2018, made by Littelfuse International Holding, LLC, Littelfuse Holding, LLC and Monolith Semiconductor, Inc. in favor of the note purchasers and the other holders.	10-K	10.104	02/22/2019	0-20388
10.47	U.S. (November 2017) Subsidiary Guarantor Supplement, dated as of October 22, 2018, made by Littelfuse International Holding, LLC, Littelfuse Holding, LLC and Monolith Semiconductor, Inc. in favor of the note purchasers and the other holders.	10-K	10.105	02/22/2019	0-20388
10.48	Cross Border Assumption Agreement, dated as of October 3, 2018, made by each of New Dutch B.V. and IXYS Dutch B.V. in favor of the note purchasers and the other holders.	10-K	10.106	02/22/2019	0-20388
10.49	Cross Border Subsidiary Guarantor Supplement, dated as of October 22, 2018, made by Littelfuse International Holding, LLC, Littelfuse Holding, LLC and Monolith Semiconductor, Inc. in favor of the note purchasers and the other holders.	10-K	10.107	02/22/2019	0-20388
10.50	Amended and Restated Employment Agreement entered into between Littelfuse Europe GmbH and Alexander Conrad, effective April 1, 2019. ++	10-K	10.77	02/21/2020	0-20388

		Incorporated by Reference Herein			
Exhibit No.	**Description**	**Form**	**Exhibit**	**Filing Date**	**File No.**
10.51	Amended and Restated Credit Agreement, dated as of April 3, 2020, by and among Littelfuse, Inc., certain subsidiaries of the company, as designated borrowers, certain subsidiaries of the company, as guarantors, the lenders party thereto and Bank of America, N.A., as agent, JPMorgan Chase Bank, N.A., as syndication agent, PNC Bank, National Association, as senior documentation agent, BMO Harris Bank, N.A. and Wells Fargo Bank, National Association, as co-documentation agents, BofA Securities, Inc. as sole bookrunner and joint lead arranger, and JPMorgan Chase Bank, N.A., as joint lead arranger.	8-K	10.1	4/7/2020	0-20388
10.52	Form of Restricted Stock Unit Award Agreement (Tier I) under the Littelfuse, Inc. Long-Term Incentive Plan. ++	8-K	10.1	4/24/2020	0-20388
10.53	Form of Option Award Agreement (Tier I) under the Littelfuse, Inc. Long-Term Incentive Plan. ++	8-K	10.2	4/24/2020	0-20388
10.54	Form of Restricted Stock Unit Award Agreement (Non-Employee Director) under the Littelfuse, Inc. Long-Term Incentive Plan. ++	8-K	10.3	4/24/2020	0-20388
10.55	Form of Option Award Agreement (Non-Employee Director) under the Littelfuse, Inc. Long-Term Incentive Plan. ++	8-K	10.4	4/24/2020	0-20388
10.56	Form of Restricted Stock Unit Award Agreement (Tier II) under the Littelfuse, Inc. Long-Term Incentive Plan. ++	10-Q	10.6	4/29/2020	0-20388
10.57	Form of Restricted Stock Unit Award Agreement (IXYS Tier II) under the IXYS Corporation Equity Incentive Plan. ++	10-Q	10.7	4/29/2020	0-20388
10.58	Form of Retention Stock Option Award Agreement under the Littelfuse, Inc. Long-Term Incentive Plan. ++	10-Q	10.8	7/29/2020	0-20388
10.59	Form of Retention Stock Option Award Agreement under the IXYS Corporation Equity Incentive Plan. ++	10-Q	10.9	7/29/2020	0-20388
10.60	Form of Retention Restricted Stock Unit Award Agreement under the Littelfuse, Inc. Long-Term Incentive Plan. ++	10-Q	10.10	7/29/2020	0-20388
10.61	Form of Retention Restricted Stock Unit Award Agreement under the IXYS Corporation Equity Incentive Plan. ++	10-Q	10.11	7/29/2020	0-20388
10.62	Amended and Restated Littelfuse Deferred Compensation Plan for Non-Employee Directors. ++	10-Q	10.1	10/28/2020	0-20388
10.63	First Amendment to the Littelfuse, Inc. Supplemental Retirement and Savings Plan, effective January 1, 2019.++	10-K	10.68	2/18/2021	0-20388
10.64	Second Amendment to the Littelfuse, Inc. Supplemental Retirement and Savings Plan, effective January 1, 2020.++	10-K	10.69	2/18/2021	0-20388
10.65	Third Amendment to the Littelfuse, Inc. Supplemental Retirement and Savings Plan, effective January 1, 2020.++	10-K	10.70	2/18/2021	0-20388
10.66	Form Tier I Change of Control Agreement, effective January 1, 2021.++	10-K	10.71	2/18/2021	0-20388
10.67	Form Tier II Change of Control Agreement, effective January 1, 2021.++	10-K	10.72	2/18/2021	0-20388
10.68	Hartland Credit Agreement Joinder Agreement	10-Q	10.1	4/28/2021	0-20388
10.69	Subsidiary Guarantor Supplement (Domestic NPA) - Hartland Subsidiaries	10-Q	10.2	4/28/2021	0-20388
10.70	Subsidiary Guarantor Supplement (Cross-Border NPA) - Hartland Subsidiaries	10-Q	10.3	4/28/2021	0-20388
10.71	Subsidiary Guarantor Supplement (Fall 2017 NPA) - Hartland Subsidiaries	10-Q	10.4	4/28/2021	0-20388
10.72	Employment offer letter between Littelfuse, Inc. and Maggie Chu, dated April 28, 2021 ++	10-Q	10.1	7/28/2021	0-20388

		Incorporated by Reference Herein			
Exhibit No.	**Description**	**Form**	**Exhibit**	**Filing Date**	**File No.**
10.73*	Carling Technologies, Inc. Credit Agreement Joinder Agreement.				
10.74*	Subsidiary Guarantor Supplement (Domestic NPA) – Carling Technologies, Inc. Subsidiaries.				
10.75*	Subsidiary Guarantor Supplement (Cross-Border NPA) - Carling Technologies, Inc. Subsidiaries.				
10.76*	Subsidiary Guarantor Supplement (Fall 2017 NPA) - Carling Technologies, Inc. Subsidiaries.				
10.77*	Summary of Non-Employee Director Compensation.++				
21.1*	Subsidiaries.				
23.1*	Consent of Independent Registered Public Accounting Firm.				
31.1*	Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
31.2*	Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
32.1+++	Certification of the Chief Executive Officer and Chief Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
101.INS*	XBRL Instance Document.				
101.SCH*	XBRL Taxonomy Extension Schema Document.				
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document.				
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document.				
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document.				
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document.				
104	The cover page on this Annual Report on Form 10-K for the fiscal year ended January 1, 2022, formatted in Inline XBRL and contained in Exhibit 101.				

* Filed with this Report.
+ Exhibits and schedules omitted pursuant to Item 601(b)(2) of Regulation S-K. Littelfuse agrees to furnish a supplemental copy of an omitted exhibit or schedule to the SEC upon request.
++ Management contract or compensatory plan or arrangement.
+++ Furnished with this Report.

FIRST AMENDMENT TO
STOCK PURCHASE AGREEMENT

This First Amendment to Stock Purchase Agreement (this "Amendment") is made and entered into as of November 29, 2021, by and among Carling Technologies, Inc. a Connecticut corporation (the "Company"), the shareholders of the Company (each a "Seller" and collectively "Sellers"), Christopher T. Sorenson in his capacity as "Sellers' Representative" and Littelfuse, Inc., a Delaware corporation ("Buyer"). Each of the Company, the Sellers, the Sellers' Representative and the Buyer a is sometimes individually referred to herein as a "Party," and collectively, the "Parties."

RECITALS

WHEREAS, the Company, Sellers, Sellers' Representative and Buyer are parties to that certain Stock Purchase Agreement, dated as of October 19, 2021 (the "Agreement");

WHEREAS, the Parties desire to amend the Agreement as set forth herein; and

WHEREAS, Section 11.10 of the Agreement provides that any term of the Agreement may amended, modified or supplemented by an agreement in writing signed by the Parties.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereto, intending to be legally bound, hereby agree as follows:

AGREEMENT

1. **Definitions.** Capitalized terms used but not otherwise defined in this Amendment shall have the meanings ascribed to them in the Agreement.

2. **Amendments**. Pursuant to Section 11.10 of the Agreement, the Parties hereby agree to amend the Agreement as follows:

(a) Section 6.15(i) of the Agreement is hereby deleted and replaced in its entirety with the following:

"(i) PRC Tax Filing. Upon reasonable request of Buyer and in no event no later than twenty (20) days following the execution of this Agreement, the Company shall deliver to Buyer a draft of the proposed submission in compliance with the Public Notice [2015] No. 7 issued by the PRC State Administration of Taxation on February 3, 2015, titled "Public Notice of the State Administration of Taxation Regarding Certain Corporate Income Tax Matters on Indirect Transfer of Properties by Non-Tax Resident Enterprises", as amended, a report of the transactions contemplated by this Agreement to the applicable PRC taxing authorities (the "Public Notice 7 Submission"). The Company shall consider in good faith any reasonable comments provided by Buyer no later than six (6) days following receipt by Buyer of the draft Public Notice 7 Submission. The Company shall submit the Public Notice 7 Submission (incorporating such reasonable comments made by Buyer for which the Company decides to incorporate into the Public Notice 7 Submission after considering any such comments in good faith) to the PRC taxing authorities. The Parties agree that a representative designated by Buyer will be involved in all meetings and other communications between Sellers or the Company on the one side, and the competent PRC taxing Authorities on the other side with respect to filing of the Public Notice 7 Submission and all subsequent tax assessment and relevant proceedings by the PRC taxing Authorities. Subject to Buyer's review and comment rights contained in this Section 6.15(i), as soon as practicable following the date hereof, but in any event no later than thirty (30) days following the date of the First Amendment to this

Agreement, the Company shall file the Public Notice 7 Submission with the applicable PRC Governmental Authorities.

(b) Section 6.19 of the Agreement is hereby deleted and replaced in its entirety with the following:

"6.19 EIA Amendment. Prior to Closing, the Company shall cause CMZ to make all filings and applications with the competent environmental authority to obtain an Approval on Environmental Impact Assessment from the competent environmental authority for the production capacity of at least 5,500,000 pieces of switches and related products annually (the "EIA Amendment"). Any costs incurred by the Company prior to the calculation of the Closing Working Capital for updates or repairs in connection with the EIA Amendment, including but not limited to the HVAC upgrades and other similar costs, shall be included in the Transaction Expenses; provided, however, that the indemnification for any amounts incurred in connection with the EIA Amendment shall be without duplication of amounts accounted for in Transaction Expenses.

(c) **Reference to and Effect on the Agreement**. On or after the date hereof, each reference in the Agreement to "this Agreement," "hereunder," "herein" or words of like import shall mean and be a reference to the Agreement as amended hereby.

3. **No Other Amendments**. Except as set forth herein, the Agreement shall remain in full force and effect in accordance with its terms.

4. **Counterparts**. This Agreement may be executed and delivered, including by facsimile transmission or by electronic transmission in Adobe portable document format (PDF), in counterparts, each of which shall be deemed an original and all of which, when taken together, shall constitute one and the same instrument.

5. **Captions**. The paragraph and subsection headings in this Amendment are inserted for convenience of reference only, and shall not affect the interpretation of this Amendment.

6. **Governing Law**. This Amendment shall be governed by and construed in accordance with the internal laws of the State of Delaware, without reference to its choice of law rules (whether of the State of Delaware or any other jurisdiction) that would cause the application of Laws of any jurisdiction other than those of the State of Delaware.

(*Signature pages follow.*)

IN WITNESS WHEREOF, each of the Parties hereto has caused this Amendment to be duly executed and delivered on its behalf as of the date indicated on the first page hereof.

COMPANY:

CARLING TECHNOLOGIES, INC.,
a Connecticut corporation

By: /s/ Ryan T. Roth
Name: Ryan T. Roth
Title: Vice President, Legal & Human Resources and General Counsel

SELLERS:

/s/ Richard W. Sorenson
Richard W. Sorenson

/s/ Christopher T. Sorenson
Christopher T. Sorenson

/s/ Jennifer S. Buddenhagen
Jennifer S. Buddenhagen

/s/ Richard W. Sorenson, Jr.
Richard W. Sorenson, Jr.

/s/ Christopher T. Sorenson
Christopher T. Sorenson, as Trustee of the EVS Irrevocable Trust, dated December 17, 2020

/s/ Christopher T. Sorenson
Christopher T. Sorenson, as Trustee of the SAS Irrevocable Trust, dated December 17, 2020

/s/ Richard W. Sorenson, Jr.
Richard W. Sorenson, Jr., as Trustee of the Richard W. Sorenson, Jr. 2020 GRAT Dated December 30, 2020

/s/ Jennifer S. Buddenhagen
Jennifer S. Buddenhagen, Trustee of the Jennifer S. Buddenhagen 2020 Qualified Annuity Trust, under Declaration of Trust dated December 30, 2020

SELLERS' REPRESENTATIVE:

/s/ Christopher T. Sorenson
Christopher T. Sorenson

BUYER:

LITTELFUSE, INC.,
a Delaware corporation

By: /s/ Hans Weinburger
Name: Hans Weinburger
Title: Assistant Secretary

JOINDER AGREEMENT

THIS JOINDER AGREEMENT (the "Agreement"), dated as of December 30, 2021, is by and between (i) CARLING TECHNOLOGIES, INC., a Connecticut corporation (the "Subsidiary"), and (ii) BANK OF AMERICA, N.A., in its capacity as Agent under that certain Amended and Restated Credit Agreement (as it may be amended, modified, restated or supplemented from time to time, the "Credit Agreement"), dated as of April 3, 2020, by and among LITTELFUSE, INC., a Delaware corporation (the "Company"), the Designated Borrowers, the Guarantors, the Lenders and Bank of America, N.A., as Agent. All of the defined terms in the Credit Agreement are incorporated herein by reference.

The Loan Parties are required by Section 6.12 of the Credit Agreement to cause the Subsidiary to become a "Guarantor".

Accordingly, the Subsidiary hereby agrees as follows with the Agent, for the benefit of the Lenders:

1. The Subsidiary hereby acknowledges, agrees and confirms that, by its execution of this Agreement, the Subsidiary will be deemed to be a party to the Credit Agreement and a "Guarantor" for all purposes of the Credit Agreement, and shall have all of the obligations of a Guarantor thereunder as if it had executed the Credit Agreement. The Subsidiary hereby ratifies, as of the date hereof, and agrees to be bound by, all of the terms, provisions and conditions applicable to the Guarantors contained in the Credit Agreement. Without limiting the generality of the foregoing terms of this paragraph 1, the Subsidiary hereby jointly and severally together with the other Guarantors, guarantees to each Lender and the Agent, as provided in Article XI of the Credit Agreement, the prompt payment of the Obligations in full when due (whether at stated maturity, as a mandatory prepayment, by acceleration, a mandatory cash collateralization or otherwise) strictly in accordance with the terms thereof.

2. The address of the Subsidiary for purposes of all notices and other communications is 8755 W. Higgins Road, Chicago, Illinois 60631, Attention: Assistant Treasurer (Facsimile No. 847-512-0340).

3. The Subsidiary hereby waives acceptance by the Agent and the Lenders of the guaranty by the Subsidiary under Article XI of the Credit Agreement upon the execution of this Agreement by the Subsidiary.

4. This Agreement may be executed in two or more counterparts, each of which shall constitute an original but all of which when taken together shall constitute one contract.

5. This Agreement shall be governed by and construed and interpreted in accordance with the laws of the State of New York.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the Subsidiary has caused this Agreement to be duly executed by its authorized officers, and the Agent, for the benefit of the Lenders, has caused the same to be accepted by its authorized officer, as of the day and year first above written.

CARLING TECHNOLOGIES, INC.

By: /s/ Hans Weinburger
Name: Hans Weinburger
Title: Secretary

Acknowledged and accepted:

BANK OF AMERICA, N.A.,

as Agent

By: /s/ Melissa Mullis

Name: Melissa Mullis
Title: Vice President

Schedule 1
TO JOINDER AGREEMENT
[Chief Executive Office, Tax Identification Number, Organization Identification Number and Chief Place of Business of Subsidiary]

SUBSIDIARY	CHIEF EXECUTIVE OFFICE / CHIEF PLACE OF BUSINES	ORGANIZATIONAL ID #	US TAXPAYER ID #
Carling Technologies, Inc.	8755 W. Higgins Road Chicago, Illinois 60631		

Subsidiary Guarantor Supplement

THIS SUBSIDIARY GUARANTOR SUPPLEMENT (the *"Subsidiary Guarantor Supplement"*), dated as of December 30, 2021 is made by CARLING TECHNOLOGIES, INC., a Connecticut corporation (the *"Additional Subsidiary Guarantor"*), in favor of the holders from time to time of the Notes issued pursuant to the Note Agreement described below:

Preliminary Statements:

I. Pursuant to the Note Purchase Agreement dated as of December 8, 2016 (as amended, modified, supplemented or restated from time to time, the *"Note Agreement"*), by and among Littelfuse, Inc., a Delaware corporation (together with any successor thereto that becomes a party to the Note Agreement pursuant to Section 10.2, the *"Company"*) and the Persons listed on the signature pages thereto (the *"Purchasers"*), the Company has issued and sold (i) $25,000,000 aggregate principal amount of its 3.03% Senior Notes, Series A, due February 15, 2022 (the *"Series A Notes"*) and (ii) $100,000,000 aggregate principal amount of its 3.74% Senior Notes, Series B, due February 15, 2027 (the "*Series B Notes*" and together with the Series A Notes as amended, restated or otherwise modified from time to time and including any such notes issued in substitution therefor, the *"Notes"* and individually a *"Note"*).

II. The Company is required pursuant to the Note Agreement to cause the Additional Subsidiary Guarantor to deliver this Subsidiary Guarantor Supplement in order to cause the Additional Subsidiary Guarantor to become a Subsidiary Guarantor under the Subsidiary Guaranty Agreement dated as of February 15, 2017 executed by certain Subsidiaries of the Company (together with each entity that from time to time becomes a party thereto by executing a Subsidiary Guarantor Supplement pursuant to Section 14.1 thereof, collectively, the *"Subsidiary Guarantors"*) in favor of each holder from time to time of any of the Notes (as the same may be amended, restated, supplemented or otherwise modified from time to time, the "*Subsidiary Guaranty Agreement"*).

III. The Additional Subsidiary Guarantor has received and will receive substantial direct and indirect benefits from the Company's compliance with the terms and conditions of the Note Agreement and the Notes issued thereunder.

IV. Capitalized terms used and not otherwise defined herein have the definitions set forth in the Note Agreement.

Now therefore, in consideration of the funds advanced to the Company by the Purchasers under the Note Agreement and to enable the Company to comply with the terms of the Note Agreement, the Additional Subsidiary Guarantor hereby covenants, represents and warrants to the holders as follows:

> The Additional Subsidiary Guarantor hereby becomes a Subsidiary Guarantor (as defined in the Subsidiary Guaranty Agreement) for all purposes of the Subsidiary Guaranty Agreement. Without limiting the foregoing, the Additional Subsidiary

Guarantor hereby (a) jointly and severally with the other Subsidiary Guarantors under the Subsidiary Guaranty Agreement (including the other Additional Subsidiary Guarantors party to this Subsidiary Guarantor Supplement), guarantees to the holders from time to time of the Notes the prompt payment in full when due (whether at stated maturity, by acceleration or otherwise) and the full and prompt performance and observance of all Guaranteed Obligations (as defined in Section 1 of the Subsidiary Guaranty Agreement) in the same manner and to the same extent as is provided in the Subsidiary Guaranty Agreement, (b) accepts and agrees to perform and observe all of the covenants set forth therein, (c) waives the rights set forth in Section 3 of the Subsidiary Guaranty Agreement, (d) agrees to perform and observe the covenants contained in Section 8 of the Subsidiary Guaranty Agreement, (e) makes the representations and warranties set forth in Section 9 of the Subsidiary Guaranty Agreement and (f) waives the rights, submits to jurisdiction, and waives service of process as described in Section 14.6 of the Subsidiary Guaranty Agreement.

Notice of acceptance of this Subsidiary Guarantor Supplement and of the Subsidiary Guaranty Agreement, as supplemented hereby, is hereby waived by the Additional Subsidiary Guarantor.

The address for notices and other communications to be delivered to the Additional Subsidiary Guarantor pursuant to Section 13 of the Subsidiary Guaranty Agreement is set forth on the signature page below.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

In Witness Whereof, the Additional Subsidiary Guarantor has caused this Subsidiary Guarantor Supplement to be duly executed and delivered as of the date and year first above written.

CARLING TECHNOLOGIES, INC.

By: /s/ Hans Weinburger
Name: Hans Weinburger
Title: Secretary

Notice Address for the Additional Subsidiary Guarantor:

c/o Littelfuse, Inc.
Attention: Legal Department
8755 W. Higgins Road, Suite 500
Chicago, IL 60631

Subsidiary Guarantor Supplement

THIS SUBSIDIARY GUARANTOR SUPPLEMENT (the *"Subsidiary Guarantor Supplement"*), dated as of December 30, 2021 is made by CARLING TECHNOLOGIES, INC., a Connecticut corporation (the *"Additional Subsidiary Guarantor"*), in favor of the holders from time to time of the Notes issued pursuant to the Note Agreement described below:

Preliminary Statements:

I. Pursuant to the Note Purchase Agreement dated as of December 8, 2016 (as amended, modified, supplemented or restated from time to time, the *"Note Agreement"*), by and among Littelfuse Netherland C.V., a limited partnership (*commanditaire vennootschap*) established under the laws of the Netherlands (together with any successor thereto that becomes a party to the Note Agreement pursuant to Section 10.2, the *"Company")* and Littelfuse, Inc., a Delaware corporation (the *"Parent Guarantor"* and, together with the Company, the *"Obligors"*), and the Persons listed on the signature pages thereto (the *"Purchasers"*), the Obligors have issued and sold (i) €117,000,000 aggregate principal amount of its 1.14% Senior Notes, Series A, due December 8, 2023 (the *"Series A Notes"*) and (ii) €95,000,000 aggregate principal amount of its 1.83% Senior Notes, Series B, due December 8, 2028 (the *"Series B Notes"* and together with the Series A Notes as amended, restated or otherwise modified from time to time and including any such notes issued in substitution therefor, the *"Notes"* and individually a *"Note"*).

II. The Obligors are required pursuant to the Note Agreement to cause the Additional Subsidiary Guarantor to deliver this Subsidiary Guarantor Supplement in order to cause the Additional Subsidiary Guarantor to become a Subsidiary Guarantor under the Subsidiary Guaranty Agreement dated as of December 8, 2016 executed by certain Subsidiaries of the Obligors (together with each entity that from time to time becomes a party thereto by executing a Subsidiary Guarantor Supplement pursuant to Section 15.1 thereof, collectively, the *"Subsidiary Guarantors"*) in favor of each holder from time to time of any of the Notes (as the same may be amended, restated, supplemented or otherwise modified from time to time, the *"Subsidiary Guaranty Agreement"*).

III. The Additional Subsidiary Guarantor has received and will receive substantial direct and indirect benefits from the Obligors' compliance with the terms and conditions of the Note Agreement and the Notes issued thereunder.

IV. Capitalized terms used and not otherwise defined herein have the definitions set forth in the Note Agreement.

Now therefore, in consideration of the funds advanced to the Company by the Purchasers under the Note Agreement and to enable the Obligors to comply with the terms of the Note Agreement, the Additional Subsidiary Guarantor hereby covenants, represents and warrants to the holders as follows:

The Additional Subsidiary Guarantor hereby becomes a Subsidiary Guarantor (as defined in the Subsidiary Guaranty Agreement) for all purposes of the Subsidiary Guaranty Agreement. Without limiting the foregoing, the Additional Subsidiary Guarantor hereby (a) jointly and severally with the other Subsidiary Guarantors under the Subsidiary Guaranty Agreement (including the other Additional Subsidiary Guarantors party to this Subsidiary Guarantor Supplement), guarantees to the holders from time to time of the Notes the prompt payment in full when due (whether at stated maturity, by acceleration or otherwise) and the full and prompt performance and observance of all Guaranteed Obligations (as defined in Section 1 of the Subsidiary Guaranty Agreement) in the same manner and to the same extent as is provided in the Subsidiary Guaranty Agreement, (b) accepts and agrees to perform and observe all of the covenants set forth therein, (c) waives the rights set forth in Section 3 of the Subsidiary Guaranty Agreement, (d) agrees to perform and observe the covenants contained in Section 8 of the Subsidiary Guaranty Agreement, (e) makes the representations and warranties set forth in Section 9 of the Subsidiary Guaranty Agreement and (f) waives the rights, submits to jurisdiction, and waives service of process as described in Section 15.6 of the Subsidiary Guaranty Agreement.

Notice of acceptance of this Subsidiary Guarantor Supplement and of the Subsidiary Guaranty Agreement, as supplemented hereby, is hereby waived by the Additional Subsidiary Guarantor.

The address for notices and other communications to be delivered to the Additional Subsidiary Guarantor pursuant to Section 14 of the Subsidiary Guaranty Agreement is set forth on the signature page below.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

In Witness Whereof, the Additional Subsidiary Guarantor has caused this Subsidiary Guarantor Supplement to be duly executed and delivered as of the date and year first above written.

CARLING TECHNOLOGIES, INC.

By: /s/ Hans Weinburger
Name: Hans Weinburger
Title: Secretary

Notice Address for the Additional Subsidiary Guarantor:

c/o Littelfuse, Inc.
Attention: Legal Department
8755 W. Higgins Road, Suite 500
Chicago, IL 60631

SUBSIDIARY GUARANTOR SUPPLEMENT

THIS SUBSIDIARY GUARANTOR SUPPLEMENT (the *"Subsidiary Guarantor Supplement"*), dated as of December 30, 2021 is made by CARLING TECHNOLOGIES, INC., a Connecticut corporation (the *"Additional Subsidiary Guarantor"*), in favor of the holders from time to time of the Notes issued pursuant to the Note Agreement described below:

PRELIMINARY STATEMENTS:

I. Pursuant to the Note Purchase Agreement dated as of November 15, 2017 (as amended, modified, supplemented or restated from time to time, the *"Note Agreement"*), by and among LITTELFUSE, INC., a Delaware corporation (together with any successor thereto that becomes a party to the Note Agreement pursuant to Section 10.2, the *"Company"*) and the Persons listed on the signature pages thereto (the *"Purchasers"*), the Company has issued and sold (i) $50,000,000 aggregate principal amount of its 3.48% Senior Notes, Series A, due February 15, 2025 (the *"Series A Notes"*) and (ii) $125,000,000 aggregate principal amount of its 3.78% Senior Notes, Series B, due February 15, 2030 (the "*Series B Notes*" and together with the Series A Notes as amended, restated or otherwise modified from time to time and including any such notes issued in substitution therefor, the *"Notes"* and individually a *"Note"*).

II. The Company is required pursuant to the Note Agreement to cause the Additional Subsidiary Guarantor to deliver this Subsidiary Guarantor Supplement in order to cause the Additional Subsidiary Guarantor to become a Subsidiary Guarantor under the Subsidiary Guaranty Agreement dated as of January 16, 2018 executed by certain Subsidiaries of the Company (together with each entity that from time to time becomes a party thereto by executing a Subsidiary Guarantor Supplement pursuant to Section 14.1 thereof, collectively, the *"Subsidiary Guarantors"*) in favor of each holder from time to time of any of the Notes (as the same may be amended, restated, supplemented or otherwise modified from time to time, the *"Subsidiary Guaranty Agreement"*).

III. The Additional Subsidiary Guarantor has received and will receive substantial direct and indirect benefits from the Company's compliance with the terms and conditions of the Note Agreement and the Notes issued thereunder.

IV. Capitalized terms used and not otherwise defined herein have the definitions set forth in the Note Agreement.

Now therefore, in consideration of the funds advanced to the Company by the Purchasers under the Note Agreement and to enable the Company to comply with the terms of the Note Agreement, the Additional Subsidiary Guarantor hereby covenants, represents and warrants to the holders as follows:

The Additional Subsidiary Guarantor hereby becomes a Subsidiary Guarantor (as defined in the Subsidiary Guaranty Agreement) for all purposes of the Subsidiary Guaranty Agreement. Without limiting the foregoing, the Additional Subsidiary Guarantor hereby (a) jointly and severally with the other Subsidiary Guarantors under the Subsidiary Guaranty Agreement (including the other Additional Subsidiary Guarantors party to this Subsidiary Guarantor Supplement), guarantees to the holders from time to time of the Notes the prompt payment in full when due (whether at stated maturity, by acceleration or otherwise) and the full and prompt performance and observance of all Guaranteed Obligations (as defined in Section 1 of the Subsidiary Guaranty Agreement) in the same manner and to the same extent as is provided in the Subsidiary Guaranty Agreement, (b) accepts and agrees to perform and observe all of the covenants set forth therein, (c) waives the rights set forth in Section 3 of the Subsidiary Guaranty Agreement, (d) agrees to perform and observe the covenants contained in Section 8 of the Subsidiary Guaranty Agreement, (e) makes the representations and warranties set forth in Section 9 of the Subsidiary Guaranty Agreement and (f) waives the rights, submits to jurisdiction, and waives service of process as described in Section 14.6 of the Subsidiary Guaranty Agreement.

Notice of acceptance of this Subsidiary Guarantor Supplement and of the Subsidiary Guaranty Agreement, as supplemented hereby, is hereby waived by the Additional Subsidiary Guarantor.

The address for notices and other communications to be delivered to the Additional Subsidiary Guarantor pursuant to Section 13 of the Subsidiary Guaranty Agreement is set forth on the signature page below.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the Additional Subsidiary Guarantor has caused this Subsidiary Guarantor Supplement to be duly executed and delivered as of the date and year first above written.

CARLING TECHNOLOGIES, INC.

By: /s/ Hans Weinburger
Name: Hans Weinburger
Title: Secretary

Notice Address for the Additional Subsidiary Guarantor:

c/o Littelfuse, Inc.
Attention: Legal Department
8755 W. Higgins Road, Suite 500
Chicago, IL 60631

Exhibit 10.77

Littelfuse, Inc.
Summary of Non-Employee Director Compensation

For the 2021 fiscal year, non-employee directors received an annual retainer of $75,000, paid in quarterly installments, plus reimbursement of reasonable expenses relating to attendance at meetings. Our directors are also reimbursed for the costs associated with attending one continuing education program every three years. No fees are paid to directors who are employee directors. Additional annual retainers are paid to our Board leadership, as shown below:

Board Leadership Role	Annual Retainer
Lead Director	$20,000
Board Chairman	$50,000
Audit Committee Chairperson	$20,000
Compensation Committee Chairperson	$15,000
Nominating and Governance Committee Chairperson	$10,000
Technology Committee Chairperson	$10,000

In addition to cash compensation, each non-employee director received an annual equity grant under the Amended and Restated Littelfuse, Inc. Long-Term Incentive Plan (the “Long-Term Plan”) valued at approximately $140,000. The equity grant is comprised of (1) one-third stock options that vest equally on the first three annual anniversaries of the grant date, have an exercise price equal to the fair market value of our common stock on the date of grant, and expire seven years from the grant date, and (2) two-thirds restricted stock units that are granted upon the non-employee director’s election or reelection to the Board at the Company’s annual meeting and that vest equally on the first three annual anniversaries of the grant date.

SUBSIDIARIES

Name	Jurisdiction of Organization
Accel AB	Sweden
Carling Technologies Asia-Pacific Limited	Hong Kong
Carling Technologies GmbH	Germany
Carling Technologies India Private Limited	India
Carling Technologies Limited	United Kingdom
Carling Technologies S.A.S.	France
Carling Technologies, Inc.	Connecticut
Carlingswitch Enterprises Limited	Hong Kong
Carlingswitch Manufacturing (Zhongshan) Co. Ltd.	China
Cole Hersee S de RL de CV	Mexico
CSP-Componentes Semiconductores de Portugal LDA	Portugal
Dongguan Littelfuse Electronics Co., Ltd.	China
H.I. Verwaltungs GmbH	Germany
Hamlin Electronics Europe Ltd.	United Kingdom
Hamlin Electronics GmbH	Germany
Hartland Controls Holding Corp.	Delaware
Hartland Controls L.L.C.	Illinois
Interruptores de Mexico, S.A. de C.V.	Mexico
IXYS Buckeye, LLC	Delaware
IXYS Global Services GmbH	Germany
IXYS Integrated Circuits Division, LLC	Massachusetts
IXYS Intl Limited	Cayman Islands
IXYS Korea Ltd.	Korea
IXYS IP Holding (Cayman) Limited	Cayman Islands
IXYS Long Beach, Inc.	California
IXYS Semiconductor GmbH	Germany
IXYS Investment Holdings GmbH	Germany
IXYS UK Westcode Ltd.	United Kingdom
IXYS Semiconductor-Unterstuetzungseinrichtung GmbH	Germany
IXYS USA, LLC	Delaware
IXYS, LLC	Delaware
LF Consorcio S. de R.L. de C.V.	Mexico
LFUS LLC	Delaware
Littelfuse Asia Holding B.V.	Netherlands
Littelfuse Asia Sales B.V.	Netherlands
Littelfuse Asia Technology B.V.	Netherlands
Littelfuse B.V.	Netherlands
Littelfuse Commercial Vehicle LLC	Delaware
Littelfuse Commercial Vehicle Products, Italy S.r.l.	Italy
Littelfuse Concord Semiconductor, Inc.	Taiwan (China)
Littelfuse da Amazonia, Ltda.	Brazil
Littelfuse Electronics (Kunshan) Co., Ltd.	China
Littelfuse Electronics (Shanghai) Co., Ltd.	China
Littelfuse Electronics Taiwan Co., Ltd.	Taiwan (China)
Littelfuse Europe GmbH	Germany
Littelfuse Far East Pte. Ltd.	Singapore
Littelfuse France S.A.S.	France

Name	Jurisdiction of Organization
Littelfuse GmbH	Germany
Littelfuse HK Limited	Hong Kong
Littelfuse Holding GmbH	Germany
Littelfuse Holding Limited	Ireland
Littelfuse Holding, LLC	Delaware
Littelfuse International (Barbados) Inc.	Barbados
Littelfuse International Holding, LLC	Delaware
Littelfuse Italian Holdings S.r.l.	Italy
Littelfuse Italy S.r.l.	Italy
Littelfuse Japan G.K.	Japan
Littelfuse KK	Japan
Littelfuse LT, UAB	Lithuania
Littelfuse Mexico Distribution S. de R.L. de C.V.	Mexico
Littelfuse Mexico Holding LLC	Delaware
Littelfuse Mexico Services, S. de R.L. de C.V.	Mexico
Littelfuse Netherlands B.V.	Netherlands
Littelfuse Operations India Private Limited	India
Littelfuse Phils, Inc.	Philippines
Littelfuse S. de R.L. de C.V.	Mexico
Littelfuse Semiconductor (Wuxi) Co., Ltd.	China
Littelfuse Singapore (Finance) Pte. Ltd.	Singapore
Littelfuse Spain S.L.U.	Spain
Littelfuse Triad, Inc.	Korea
Monolith Semiconductor Inc.	Delaware
Orocontrol de Zacatecas, S.A. de C.V.	Mexico
Pele Technology, Inc.	Delaware
Productos Electromecanicos BAC, S. de R.L. de C.V.	Mexico
RadioPulse, Inc.	Korea
Reaction Tech RE, LLC	Delaware
Reaction Technology Epi, LLC	Delaware
Reaction Technology Incorporated	California
Shanghai Hartland Controls Co. Ltd.	China
Startco Engineering ULC	Canada
Suzhou Littelfuse OVS Co., Ltd.	China
SymCom, Inc.	South Dakota
Zilog Electronics Philippines, Inc.	Philippines
Zilog, Inc.	Delaware
Zilog Philippines, Inc.	Philippines

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our reports dated February 17, 2022, with respect to the consolidated financial statements and internal control over financial reporting included in the Annual Report of Littelfuse, Inc. and subsidiaries on Form 10-K for the year ended January 1, 2022. We consent to the incorporation by reference of said reports in the Registration Statements of Littelfuse, Inc. on Forms S-4 (File No. 333-221147) and on Forms S-8 (File Nos. 333-226707, 333-221147, 333-217632, 333-03260, 033-95020, 333-209865, 333-166953, 333-134699, 333-134700, and 333-64285).

/s/ GRANT THORNTON LLP

Southfield, Michigan
February 17, 2022

Exhibit 31.1

SECTION 302 CERTIFICATION

I, David W. Heinzmann, certify that:

1. I have reviewed this Annual Report on Form 10-K of Littelfuse Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f))for the registrant and have:
   (a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   (c) evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of the registrant’s board of directors (or persons performing the equivalent functions):
   (a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and
   (b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

Dated: February 17, 2022

/s/ DAVID W HEINZMANN
David W. Heinzmann,
President and Chief Executive Officer

Exhibit 31.2

SECTION 302 CERTIFICATION

I, Meenal A. Sethna, certify that:

1. I have reviewed this Annual Report on Form 10-K of Littelfuse Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f))for the registrant and have:
   (a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   (c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: February 17, 2022

/s/ MEENAL A SETHNA

Meenal A. Sethna

Executive Vice President and Chief Financial Officer

Exhibit 32.1

LITTELFUSE, INC.

Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350, Chapter 63 of title 18, United States Code), each of the undersigned officers of Littelfuse, Inc. (“the Company”) does hereby certify that to his knowledge:

The Annual Report of the Company on Form 10-K for the fiscal year ended January 1, 2022 (“the Report”) fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, and the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ DAVID W. HEINZMANN	/s/ MEENAL A. SETHNA
David W. Heinzmann	Meenal A Sethna
President and Chief Executive Officer	Executive Vice President and Chief Financial Officer
Dated: February 17, 2022	Dated: February 17, 2022