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

FORM 10-K

(Mark One)

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

For the fiscal year ended August 31, 2022

or

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

For the transition period from ________________ to __________________

Commission file number 001-11038

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of incorporation or organization)

41-0857886
(I.R.S. Employer Identification No.)

4201 Woodland Road
P.O. Box 69
Circle Pines, Minnesota
(Address of principal executive offices)

55014
(Zip Code)

(763) 225-6600
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock, par value $0.02 per share	NTIC	Nasdaq Global Market

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

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

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

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

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

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

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

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

Indicate by check mark whether the registrant 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 Act). Yes ☐ No ☒

The aggregate market value of the registrant's common stock, excluding shares beneficially owned by affiliates, computed by reference to the closing sales price at which the common stock was last sold as of February 28, 2022 (the last business day of the registrant's second fiscal quarter) as reported by the Nasdaq Global Market on that date was approximately $121.5 million.

As of November 15, 2022, 9,366,357 shares of common stock of the registrant were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Part III of this Annual Report on Form 10-K incorporates by reference information (to the extent specific sections are referred to herein) from the registrant's Proxy Statement for its 2023 Annual Meeting of Stockholders to be held January 20, 2023.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION

ANNUAL REPORT ON FORM 10-K
FISCAL YEAR ENDED AUGUST 31, 2022

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This annual report on Form 10-K contains certain forward-looking statements that are within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, and are subject to the safe harbor created by those sections. For more information, see "Part I. Item 1. Business – Forward-Looking Statements."

As used in this report, references to "NTIC," the "Company," "we," "our," or "us," unless the context otherwise requires, refer to Northern Technologies International Corporation and its wholly-owned and majority-owned subsidiaries, all of which are consolidated on NTIC's consolidated financial statements.

As used in this report, references to: (1) "NTIC China" refer to NTIC's wholly-owned subsidiary in China, NTIC (Shanghai) Co., Ltd.; (2) "NTI Europe" refer to NTIC's wholly-owned subsidiary in Germany, NTIC Europe GmbH; (3) "Zerust Mexico" refer to NTIC's wholly-owned subsidiary in Mexico, ZERUST-EXCOR MEXICO, S. de R.L. de C.V.; (4) "Zerust India" refer to NTIC's wholly-owned subsidiary in India effective as of September 1, 2021, HNTI Limited (formerly Harita-NTI Limited); (5) "Zerust Brazil" refer to NTIC's majority-owned Brazilian subsidiary, Zerust Prevenção de Corrosão S.A.; (6) "Natur-Tec India" refer to NTIC's majority-owned subsidiary in India, Natur-Tec India Private Limited; (7) "Natur Tec Lanka" refer to NTIC's majority-owned subsidiary in Sri Lanka, Natur Tec Lanka (Pvt) Ltd and (8) "NTI Asean" refer to NTIC's majority-owned holding company subsidiary, NTI Asean LLC, which holds investments in certain entities that operate in the Association of Southeast Asian Nations (ASEAN) region.

NTIC's consolidated financial statements do not include the accounts of any of its joint ventures. Except as otherwise indicated, references in this report to NTIC's joint ventures do not include any of NTIC's wholly-owned or majority-owned subsidiaries.

As used in this report, references to "EXCOR" refer to NTIC's joint venture in Germany, Excor Korrosionsschutz – Technologien und Produkte GmbH.

All trademarks, trade names, or service marks referred to in this report are the property of their respective owners.

PART I

Item 1. BUSINESS

Overview

Northern Technologies International Corporation (NTIC) develops and markets proprietary, environmentally beneficial products and services in over 65 countries either directly or via a network of subsidiaries, joint ventures, independent distributors, and agents. NTIC's primary business is corrosion prevention products and services, marketed mainly under the ZERUST® brand. NTIC has been selling its proprietary ZERUST® products and services to the automotive, electronics, electrical, mechanical, military, and retail consumer markets for almost 50 years and, more recently, has also expanded into the oil and gas industry. Additionally, NTIC markets and sells a portfolio of proprietary bio-based and certified compostable (fully biodegradable) polymer resin compounds and finished products under the Natur-Tec® brand. These products are intended to reduce NTIC's customers' carbon footprint and provide environmentally sound waste disposal options.

NTIC's ZERUST® rust and corrosion inhibiting products include plastic and paper packaging, liquids, coatings, rust removers, cleaners, and diffusers as well as engineered solutions designed specifically for the oil and gas industry. NTIC also offers worldwide, on-site, technical consulting for rust and corrosion prevention issues. NTIC's technical service consultants work directly with the end users of NTIC's ZERUST® rust and corrosion inhibiting products to analyze their specific needs and develop systems to meet their performance requirements. In North America, NTIC sells its ZERUST® corrosion prevention solutions through a network of independent distributors and agents supported by a direct sales force.

Internationally, NTIC sells its ZERUST® corrosion prevention solutions through its wholly-owned subsidiary in China, NTIC (Shanghai) Co., Ltd. (NTIC China), starting September 1, 2021 its wholly-owned subsidiary in India, HNTI Ltd. (Zerust India), its majority-owned joint venture holding company for NTIC's joint venture investments in the Association of Southeast Asian Nations (ASEAN) region, NTI Asean LLC (NTI Asean), certain majority-owned and wholly-owned subsidiaries, and joint venture arrangements in North America, Europe, and Asia. NTIC also sells products directly to its European joint venture partners through its wholly-owned subsidiary in Germany, NTIC Europe GmbH (NTI Europe).

One of NTIC's strategic initiatives is to expand into and penetrate other markets for its ZERUST® corrosion prevention technologies. Consequently, for the past several years, NTIC has focused significant sales and marketing efforts on the oil and gas industry, as the infrastructure that supports that industry is typically constructed using metals that are highly susceptible to corrosion. NTIC believes that its ZERUST® corrosion prevention solutions will minimize maintenance downtime on critical oil and gas industry infrastructure, extend the life of such infrastructure, and reduce the risk of environmental pollution due to leaks caused by corrosion.

NTIC markets and sells its ZERUST® rust and corrosion prevention solutions to customers in the oil and gas industry across several countries either directly, through its subsidiaries, or through its joint venture partners and other strategic partners. The sale of ZERUST® corrosion prevention solutions to customers in the oil and gas industry typically involves long sales cycles, often including multi-year trial periods with each customer and a slow integration process thereafter.

Natur-Tec® bio-based and compostable plastics are manufactured using NTIC's patented and/or proprietary technologies and are intended to replace conventional petroleum-based plastics. The Natur-Tec® biopolymer resin compound portfolio includes formulations that have been optimized for a variety of applications, including blown-film extrusion, extrusion coating, injection molding, and engineered plastics. These resin compounds are certified to be fully biodegradable in a commercial composting environment and are currently being used to produce finished products, including can liners, shopping and grocery bags, lawn and leaf bags, branded apparel packaging bags and accessories, and various foodservice items, such as disposable cutlery, drinking straws, food-handling gloves, and coated paper products. In North America, NTIC markets its Natur-Tec® resin compounds and finished products primarily through a network of regional and national distributors as well as independent agents. NTIC continues to see significant opportunities for finished bioplastic products and, therefore, continues to strengthen and expand its North American distribution network for finished Natur-Tec® bioplastic products.

Internationally, NTIC sells its Natur-Tec® resin compounds and finished products both directly and through its wholly-owned subsidiary in China and majority-owned subsidiaries in India and Sri Lanka, and through distributors and certain joint ventures.

Acquisition of Zerust India

On September 21, 2021, NTIC announced that it acquired the remaining 50% ownership interest in its Indian joint venture, Zerust India, for $6,250,000 in cash, effective as of September 1, 2021. As a result of the acquisition of Zerust India, NTIC's revenues and operating expenses increased and its equity in income from joint ventures decreased during fiscal 2022 as compared to fiscal 2021. See Note 3 to NTIC's consolidated financial statements for a discussion of Zerust India.

NTIC's Subsidiaries and Joint Venture Network

NTIC has ownership interests in 10 operating subsidiaries in North America, South America, Europe, and Asia. The following table sets forth a list of NTIC's operating subsidiaries as of November 14, 2022, the country in which the subsidiary is organized, and NTIC's ownership percentage in each subsidiary:

Subsidiary Name	Country	NTIC Percent (%) Ownership
HNTI Limited	India	100%
Natur Tec Lanka (Pvt) Ltd	Sri Lanka(1)	75%
Natur-Tec India Private Limited	India	75%
NTI Asean LLC	United States	60%
NTIC (Shanghai) Co., Ltd	China	100%
NTIC Europe GmbH	Germany	100%
Zerust Prevenção de Corrosão S.A.	Brazil	85%
Zerust Singapore Pte Ltd	Singapore(2)	60%
Zerust Vietnam Co. Ltd	Vietnam(3)	60%
ZERUST-EXCOR MEXICO, S. de R.L. de C.V.	Mexico	100%

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(1) Natur Tec Lanka (Pvt) Ltd. is 100% owned by Natur-Tec India Private Limited and, therefore, indirectly owned by NTIC.
(2) Zerust Singapore Pte Ltd is 100% owned by NTI Asean LLC and, therefore, indirectly owned by NTIC.
(3) Zerust Vietnam Co. Ltd is 100% owned by Zerust Singapore Pte Ltd and, therefore, indirectly owned by NTIC.

The results of these subsidiaries are fully consolidated in NTIC's consolidated financial statements, except that HNTI Limited only became a wholly owned subsidiary as of September 1, 2021; and therefore, its results of operations are not included in NTIC's consolidated financial statements for fiscal 2021 included in this report as the investment and financial results of this joint venture are consolidated utilizing the equity method of accounting.

NTIC participates in 16 active joint venture arrangements in North America, Europe, and Asia. Each of these joint ventures generally manufactures and markets products in the geographic territory to which it is assigned. While most of NTIC's joint ventures exclusively sell rust and corrosion inhibiting products, some of the joint ventures also sell NTIC's Natur-Tec® resin compounds. NTIC has historically funded its investments in joint ventures with cash generated from operations. The following table sets forth a list of NTIC's operating joint ventures as of November 14, 2022, the country in which the joint venture is organized, and NTIC's ownership percentage in each joint venture:

Joint Venture Name	Country	NTIC Percent (%) Ownership
ACOBAL SAS	France	50%
CHONG WAH-NTIA SDN. BHD.	Malaysia (1)	30%
EXCOR KORROSIONSSCHUTZ – TECHNOLOGIEN ….UND PRODUKTE GMBH	Germany	50%
EXCOR SP. Z.O.O.	Poland	50%
EXCOR-ZERUST S.R.O.	Czech Republic	50%
KOREA ZERUST CO., LTD.	South Korea (1)	30%
PT. CHEMINDO – NTIA	Indonesia (1)	30%
TAIYONIC LTD.	Japan	50%
ZERUST – DNEPR	Ukraine	50%
ZERUST (U.K.) LTD.	United Kingdom	50%
ZERUST A.Ş.	Turkey	50%
ZERUST AB	Sweden	50%
ZERUST CONSUMER PRODUCTS, LLC	United States	50%
ZERUST OY	Finland	50%
ZERUST SPECIALTY TECH CO. LTD.	Thailand (1)	30%
ZERUST-NIC (TAIWAN) CORP.	Taiwan (1)	30%

(1) Indirect ownership interest through NTI Asean.

In connection with the ongoing conflict between Russia and Ukraine, we terminated our Russian joint venture, Mostnic-Zerust, in May 2022, and believe this will not have an adverse effect on our results of operations or financial condition, given the immateriality of this entity.

NTIC receives funds from its joint ventures as fees received for services that NTIC provides to its joint ventures and as dividend distributions. The fees for services provided to joint ventures are determined based on either a flat fee or a percentage of sales depending on local laws and tax regulations. With respect to NTIC's joint venture in Germany (EXCOR), NTIC recognizes an agreed upon quarterly fee for services. NTIC recognizes equity income from each joint venture based on the overall profitability of the joint venture. Such profitability is subject to variability from quarter to quarter, which, in turn, subjects NTIC's earnings to variability from quarter to quarter. The profits of each joint venture are shared by the respective joint venture owners in accordance with their respective ownership percentages. NTIC typically directly or indirectly owns 50% or less of each of its joint venture entities and, thus, does not control the decisions of these entities regarding whether dividends are paid and, if so, what amount is paid in a given year. The payment of a dividend by an entity is determined by a joint vote of the owners and is not at the sole discretion of NTIC.

NTIC accounts for the investments and financial results of its joint ventures in its consolidated financial statements utilizing the equity method of accounting. NTIC considers EXCOR to be individually significant to NTIC's consolidated assets and income as of August 31, 2022 and 2021. Therefore, NTIC provides certain additional information regarding this joint venture in the notes to NTIC's consolidated financial statements and in this section of this report. For more information regarding NTIC's joint ventures and their effect on NTIC's operating results, see NTIC's consolidated financial statements in "*Part II. Item 8. Financial Statements and Supplementary Data*" and "*Part II. Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations*" of this report.

Products

NTIC derives revenues directly and/or indirectly through its subsidiaries and joint ventures from two reportable business segments based on products sold, customer base, and distribution center: ZERUST® corrosion prevention solutions and Natur-Tec® resin compounds and finished products.

ZERUST® Corrosion Prevention Solutions. In fiscal 2022, 77.5% of NTIC's consolidated net sales were derived from developing, manufacturing and marketing ZERUST® rust and corrosion inhibiting products and services. NTIC's consolidated net sales in fiscal 2022 included $57,459,382 in sales of ZERUST® rust and corrosion inhibiting products and services, an increase of 26.1% from such sales in fiscal 2021. Corrosion not only damages the appearance of metal products and components but also negatively impacts their mechanical performance. This applies to the rusting of ferrous metals (iron and steel) and the deterioration by oxidation of nonferrous metals (aluminum, copper, brass, etc.). NTIC's ZERUST® corrosion prevention solutions include plastic and paper packaging, powders, liquids, coatings, rust removers, cleaners, diffusers, and engineered solutions for the oil and gas industry as well as technical corrosion management and consulting services.

Plastic and Paper Packaging. NTIC's ZERUST® packaging products contain proprietary chemical formulations that continuously release an invisible, odorless and non-toxic vapor that forms a passivating layer on any metal surfaces it comes in contact with and thereby inhibits rust and corrosion. The corrosion inhibiting protection is maintained only as long as the metal products to be protected remain enclosed within the ZERUST® packaging. Electron scanning shows that once metal products are removed from the ZERUST® packaging, the ZERUST® protective layer dissipates from the contents' surfaces within two hours, leaving a clean, dry, and corrosion-free metal component. This mechanism of corrosion protection enables NTIC's customers to easily package metal objects for rust-free shipment and/or long-term storage. Furthermore, by eliminating costly greasing and degreasing processes and/or significantly reducing the use of certain coatings to inhibit corrosion, NTIC's ZERUST® corrosion prevention solutions provide customers significant savings as compared to traditional methods of corrosion prevention in terms of labor, material, and capital expenditures for equipment to apply, remove, and dispose of oils and greases, as well as environmental, health and safety benefits provided by not having to handle and work with hazardous chemicals.

NTIC was first in the world to develop the means of infusing volatile corrosion inhibiting chemical compounds (VCIs) into polyethylene and polypropylene resins. Combining ZERUST® chemical compounds with polyethylene and polypropylene resins permitted NTIC to introduce a line of plastic packaging products in the form of low and high-density polyethylene bags and shroud film, including stretch, shrink, skin, and bubble cushioning film, thereby giving customers the ability to ship and store ferrous, nonferrous, and mixed-metal products in a clean, dry, and corrosion-free condition, at an overall savings in total process costs. In addition to plastic packaging, NTIC has also developed VCI compounds to imbue kraft paper, corrugated cardboard, solid fiber, and chipboard packaging materials with corrosion protection properties. NTIC's ZERUST® plastic and paper packaging products come in various thicknesses, strength enhancements, protection types, shapes, and sizes. This product line also includes items such as ZERUST® gun cases, car covers, and tool-drawer liners, which are targeted at retail consumers.

Liquids and Coatings. NTIC's corrosion prevention solutions include a line of metal surface treatment liquids and coatings, which are oil, water, or bio-solvent based, and are marketed under brand names including Axxatec™, Axxanol™, and Z-Maxx™. These liquids and coatings provide powerful protection in aggressively corrosive environments, such as salt air, high humidity, and/or high temperatures. Products are formulated for most metal types and protection levels. For exceptionally harsh environments, customers may choose to use a combination of NTIC's liquids and coatings with ZERUST® plastic and/or paper products to achieve robust corrosion protection during manufacturing, shipping, and warehousing stages.

Rust Removers and Cleaners. NTIC also sells rust removal and cleaning products, under the Axxaclean™ brand name, designed to restore rusty parts to a usable condition without the use of labor-intensive, abrasive cleaners that damage surfaces and commonly fail to remove rust from complex metal surfaces, like the teeth of small gears.

Diffusers. NTIC's corrosion prevention solutions include a line of corrosion inhibiting vapor diffusers, such as ZERUST® ActivPak®, ZERUST® ICT® Vapor Capsules, ZERUST® ICT® Plastabs®, ZERUST® ICT® Cor-Tabs®, ZERUST® ICT® Pipe Strip, and ZERUST® ICT® Tube Strip. These diffusers are designed to protect metals within enclosures, like switch gearboxes and electronics cabinets, or can be used as extra protection when added to ZERUST® packaging products. Diffusers work by permeating the interior air of an enclosure with an invisible and odorless corrosion inhibiting vapor that settles as a protective layer on all metal surfaces that are within the range of a specific "radius of protection" for a period of one or two years depending on the product model. This invisible and dry protective layer revaporizes and dissipates into the air upon removal of a diffuser from an enclosure, leaving all surfaces clean, dry, residue-free, and corrosion-free.

Z-CIS® Technical Services. As an on-going effort to help NTIC's customers improve and control their corrosion management processes, NTIC markets and offers unique corrosion management and consulting services to target customers. This ZERUST® corrosion inhibition system (known as Z-CIS®) leverages NTIC's global network to dispatch highly-trained technical service engineers to customer sites to solve complex corrosion problems. Several major automotive companies and their automotive parts suppliers have used NTIC's Z-CIS® system.

ZERUST® Corrosion Prevention Solutions Designed Specifically for the Oil and Gas Industry. NTIC has developed proprietary engineered corrosion inhibiting solutions specifically to mitigate the types of corrosion that commonly form on the capital assets used in the petroleum and chemical process industries and has targeted the sale of these ZERUST® corrosion solutions to potential customers in the oil and gas industry. NTIC's consolidated net sales in fiscal 2022 included $4,608,232 in sales made to customers in the oil and gas industry, an increase of 21.5% from such sales in fiscal 2021. On September 19, 2022, NTIC announced the signing of an initial contract with BP Exploration (Caspian Sea) Limited p.l.c. to supply chemical corrosion protection services for 12 storage tanks through December 2025, representing the largest contract to date for oil and gas storage tank solutions. While NTIC believes this shows increased acceptance of corrosion solutions for the oil and gas industry, NTIC anticipates that its sales of ZERUST® products and services into the oil and gas industry will continue to remain subject to significant volatility, specifically due to economic factors, such as potential crude oil price changes and global supply/demand churn. NTIC anticipates that its sales of ZERUST® products and services into the oil and gas industry may be subject to additional volatility due to uncertainty caused by certain environmental policies and priorities of the current administration. Demand for ZERUST® oil and gas products around the world depends primarily on market acceptance and the reach of NTIC's distribution network. Because of the typical size of individual orders and overall size of NTIC's net sales derived from sales of oil and gas products, the timing of one or more orders can materially affect NTIC's sales compared to prior fiscal year period sales. Projects in South America, Europe, the Middle East, and South East Asia are still a small but growing, strategically important part of the sales growth picture.

The infrastructure/assets that support the oil and gas industry are predominantly constructed using metals that are highly susceptible to corrosion. The industrial environment at these facilities usually contains compounds, including sulfides and chlorides, which cause aggressive corrosion. This problem affects the service life and safety of pipelines, petroleum storage tanks, spare parts in long-term storage, coastal/offshore assets, and other critical equipment. In addition to the costs associated with the replacement of parts and structures, maintenance and repairs, and product loss, there are significant economic losses associated with critical infrastructure being down for repair and maintenance. Furthermore, there are also considerable health, safety, and environmental risks caused by corrosion that can greatly increase economic losses. While the industry predominantly uses various paints/coatings, engineered alloys, cathodic protection, etc. to mitigate corrosion, there are several situations where such options are not feasible and, in many such cases, NTIC believes that its ZERUST® oil and gas corrosion prevention solutions are more effective at minimizing maintenance downtime on critical oil and gas industry infrastructure, extend the life of such infrastructure, and reduce the risk of environmental pollution due to leaks caused by corrosion.

NTIC's rust and corrosion inhibiting products for the oil and gas industry include ZERUST® Flange Savers®, ZERUST® ReCAST-SSB solutions, and ZERUST® chemicals, including Zerion powders and gels, in addition to many of the standard industrial ZERUST® rust and corrosion inhibiting products previously described.

ZERUST® Flange Savers® are specially designed covers that have been impregnated with a proprietary ZERUST® inhibitor formulation to provide corrosion protection for flanges, valves, and welded joints. Oil and gas pipeline segments are connected by flanges and welded joints of varying sizes, designs, and materials. These connection points often corrode under aggressive industrial environments and harsh operating conditions, thereby causing costly maintenance, operational, and safety problems. ZERUST® Flange Savers® are available in various sizes to accommodate different pipe diameters, pressure ratings, and international standards for pipeline valves and flanges.

ZERUST® ReCAST-SSB solutions protect the Soil Side Bottoms (SSB) of aboveground storage tanks through a variety of unique and highly effective delivery systems designed by the Zerust Oil & Gas team to deliver proprietary Zerion FVS corrosion inhibitor to spaces under tank bottoms that are susceptible to significant corrosion. Tank bottoms are typically made of steel plates, which are in direct contact with a foundation surface that may be concrete, sand/soil, or asphalt/bitumen. It is typically not possible to protect this underside surface with traditional coatings. Cathodic protection (CP) systems can only provide partial protection, but also have significant limitations that cause failures well ahead of the expected service life of a tank. The ZERUST® solutions provide effective protection even to areas that cannot be addressed with CP. These are engineered solutions where each system is tailored to a customer's requirements depending on factors including the tank foundation design, specific environmental conditions, and tank diameter.

ZERUST® Zerion powder-based inhibitor solutions include the following:

- Zerion FVS is a unique inhibitor blend that is used in both the SSB Solutions and in internal pipeline protection. This "best-in-class" product has been successfully deployed at multiple client sites in North and South America, Europe, the Middle East, India as well as other parts of Asia.

- Zerion FAN-5 is a lower cost inhibitor that is very effective at protecting metals upon contact. It can be used to treat large volumes of water that may be used for hydrotesting. In combination with Zerion FVS, it offers a more complete solution for the protection of pipelines.

- AutoFog is a revolutionary product that allows for the quick VCI saturation of large volume spaces without the need for mechanical "fogging" equipment. This rapid self-diffusing capability is designed for sealed void spaces, protection of large/complex assets like heat exchangers, and heater-treaters.

Natur-Tec® Resin Compounds and Finished Products. NTIC manufactures and sells a broad range of bioplastic packaging solutions, including bio-based and certified compostable (fully biodegradable) polymer resin compounds, and finished products under the Natur-Tec® brand. NTIC's consolidated net sales in fiscal 2022 included $16,699,508 in sales of Natur-Tec® resins and finished products, an increase of 52.7% compared to sales in fiscal 2021. Market drivers such as volatile petroleum prices, reduced dependence on foreign oil, reduced carbon footprints, requirements by multinational brands for sustainable packaging solutions that meet Circular Economy and environmentally responsible end-of-life disposal mandates, and concerns about plastic residue in the environment have led to heightened interest in using sustainable, bio-based and renewable plant-biomass resources for the manufacture of plastics and industrial products. Plastics that are fully biodegradable in commercial composting or anaerobic digestor systems allow the safe and effective conversion of these plastics to carbon dioxide, water, and fertilizer at the end of their service life. Increased environmental and sustainability awareness at the corporate and consumer level, improved technical properties and product functionality, as well as recent foreign, state, and local governmental regulations banning the use of conventional plastics or mandating the use of certain biodegradable or compostable products, including regulations in China, India and California, have also fueled this interest in bio-based and biodegradable-compostable plastics. The term "bio-plastics" encompasses a broad category of plastics that are either bio-based, which means derived from renewable resources such as corn or cellulosic/plant material or blends thereof, or are engineered to be fully commercially compostable, or both.

Natur-Tec® resins and finished products sales in North America and finished product sales at NTIC's majority-owned subsidiary in India and at NTIC's subsidiary in China, experienced reduced demand globally as a result of the COVID-19 pandemic. The COVID-19 pandemic had a significant impact on demand from many large users of bioplastics, including college campuses, stadiums, arenas, restaurants, and corporate office complexes. Additionally, demand for apparel packaging solutions was impacted by ongoing COVID- related lockdowns and supply-chain bottlenecks in Asia. In fiscal 2022, NTIC experienced a significant recovery in many of these areas to pre-pandemic levels, but still expects some of these customers will be the last businesses to fully re-open and operate at full pre-pandemic capacities, and accordingly, anticipates that the COVID-19 pandemic will continue to adversely affect sales of Natur-Tec® products into fiscal 2023.

Resin Compounds. Natur-Tec® resin compounds are produced by blending commonly available base resins, such as Ecoflex® from BASF, Ingeo® PLA from NatureWorks LLC, and Luminy® from Total-Corbion with organic and inorganic fillers and proprietary polymer modifiers and compatibilizers using NTIC's proprietary and patented ReX Process. In this process, biodegradable polymers, natural polymers made from renewable, plant-biomass resources, and organic and inorganic materials are reactively blended in the presence of proprietary compatibilizers and polymer modifiers to produce bio-based and/or compostable polymer resin formulations that exhibit unique and stable morphology. Natur-Tec® resin compounds are engineered for high performance, ease of processing, and reduced cost compared to most other bio-plastic materials and can be processed by converters using conventional plastic manufacturing processes and equipment.

Natur-Tec® resin compounds are sold in several grades tailored for a variety of applications, such as blown-film extrusion, profile extrusion, thermoforming, extrusion coating, and injection molding.

Natur-Tec® flexible film resin compounds are fully commercially compostable and meet the requirements of international standards for compostable plastics, such as ASTM (American Society for Testing and Materials) D6400 (U.S.), EN 13432 (European standards for products and services by European Committee for Standardization), and ISO (International Organization for Standardization) 17088, and are certified as 100% compostable by organizations including the BPI (Biodegradable Products Institute) in the United States and TÜV Austria in Europe. Natur-Tec® film resin compounds can be used to produce film for applications, such as bags, including compost bags, lawn and leaf bags, carry-out bags, agricultural film, and consumer and industrial packaging. Natur-Tec® film resin compounds are also used to produce bags and covers for branded apparel packaging and to manufacture specialty foodservice items, such as compostable drinking straws, thermoformed lids and disposable food-handling gloves.

The Natur-Tec® compostable extrusion coating resin compounds are bio-based and biodegradable and are designed to replace conventional plastic materials for extrusion coating applications. Natur-Tec® extrusion coating resin compounds are manufactured using sustainable and renewable resources, per the ASTM D6866 standard, which allows companies and consumers the opportunity to reduce or neutralize their carbon footprint and are designed to meet the requirements of international standards for compostable plastics, such as ASTM D6400. Natur-Tec® extrusion coating resin compounds provide good adhesion to paper, an excellent print surface, and good heat seal strength and the coating material is suitable for food contact applications, including both hot and cold applications. Natur-Tec® extrusion coating resin compounds can be used for coating paper and paperboards for the manufacture of disposable cups, plates, and other foodservice items.

The Natur-Tec® compostable injection molding resin compounds are bio-based and compostable and are designed to replace conventional plastic materials for injection molded plastic applications. Natur-Tec® compostable injection molding resin compounds are manufactured using sustainable and renewable resources, per the ASTM D6866 standard, and are designed to meet the requirements of international standards for compostable plastics, such as ASTM D6400 and EN 13432. Natur-Tec® compostable injection molding resin compounds can be used for injection molded plastic applications, such as cutlery, pens, hangers, containers, and packaging. Natur-Tec® bio-based injection molding resin compounds are made with at least 90% bio-based/renewable resource-based materials, per the ASTM D6866 standard, and are meant to enhance sustainability by replacing petroleum-based plastics. Natur-Tec® bio-based injection molding resin compounds exhibit the same properties as conventional plastic materials and can be used in applications such as automotive components, consumer goods, electronics, medical products, furniture, and packaging.

Finished Products. Natur-Tec® finished products include totally biodegradable and compostable trash bags, agricultural film, and other single-use disposable products, such as food and consumer goods packaging currently marketed under the Natur-Bag® brand. The Natur-Bag® product line offers 15 different compostable trash bag sizes, from 3-gallon to 96-gallon, as well as shopper bags, produce bags and gloves. The bags are available in various SKU configurations, including retail packs that are sold to the consumer either through retail outlets or through online stores and industrial case packs that are sold to commercial and industrial customers primarily through wholesalers and distributors. The Natur-Bag® products are manufactured from the Natur-Tec® flexible film resin compounds and thus are fully biodegradable and compostable. These products are certified fully commercially compostable and carry the BPI Compostable logo in the United States and the TÜV Austria OK Compost logo in Europe. Furthermore, these products were also independently tested and approved for use in organic waste diversion systems by Cedar Grove, one of the largest compost operators in the United States.

Sales, Marketing, and Distribution

ZERUST*® *Corrosion Prevention Solutions. In the United States, NTIC markets its ZERUST® rust and corrosion inhibiting products and services, including its products designed for the oil and gas industry, principally to industrial users in the automotive, electronics, electrical, mechanical, military, retail consumer, and oil and gas markets by a direct sales force and through a network of independent distributors, manufacturer’s sales representatives, and strategic partners. Prior to placing an order, NTIC’s technical service consultants work directly with the end users of NTIC’s ZERUST® products to analyze their specific corrosion prevention needs and develop systems to meet their performance requirements.

Internationally, NTIC has entered into a series of joint ventures with foreign partners (either directly or through a holding company). NTIC receives fees for providing technical support, marketing assistance, and other services to its joint ventures based primarily on the net sales of the individual joint ventures in accordance with the terms of the joint venture arrangements. Such services include consulting, legal, insurance, technical, and marketing services.

In China, NTIC sells its products and services through NTIC China. NTIC has wholly-owned or majority-owned subsidiaries to conduct its business in Brazil, Mexico, Vietnam and Singapore. In addition, effective as of September 1, 2021, NTIC purchased the remaining 50% ownership interest in its Indian joint venture, HNTI Limited, and has continued selling its ZERUST products in India through this wholly-owned subsidiary.

With respect to the sales and marketing of ZERUST® rust and corrosion inhibiting products and services to the oil and gas industry, NTIC uses a combination of direct sales personnel, independent sales agents, and its joint venture network. In addition, in an attempt to penetrate the oil and gas industry within certain markets more quickly, NTIC has entered into various agreements with specific organizations that have existing long-term relationships with key oil and gas industry clients. NTIC also engages in certain direct marketing activities to build its brand within the oil and gas industry, such as traditional advertising and direct mail campaigns and presence and participation at selected key trade shows and technical forums. Additionally, NTIC has worked to adapt its marketing activities in light of the COVID-19 pandemic. NTIC continues to believe the sale of its ZERUST® corrosion prevention solutions to customers in the oil and gas industry will involve long sales cycles, likely including multi-year trial periods with each user and a slow integration process thereafter.

Natur-Tec® Resin Compounds and Finished Products. In the United States, NTIC markets its Natur-Tec® resin compounds and finished products through a network of national and regional distributors and independent manufacturer's sales representatives and two NTIC direct sales employees as of August 31, 2022. Target customers for Natur-Tec® finished products include individual consumers as well as commercial and institutional organizations, such as corporations and government agencies, and educational organizations, such as universities and school districts. NTIC is also targeting key national and regional retailers utilizing independent sales agents. Target customers for Natur-Tec® resin compounds include plastics converters and foodservice ware brands that would purchase Natur-Tec® resin compounds to manufacture and sell their own finished bio-based and compostable end products, such as film, bags, and cutlery. Additionally, NTIC has targeted retailers and customers that may have applications for our products related to the COVID-19 pandemic. In June 2022, the State of California passed a law intended to reduce single-use plastics. Notably, the bill provides that, by 2032, all packaging must be recyclable or compostable. Accordingly, NTIC expects the market in California for bio-plastic packaging solutions to grow substantially in the coming decade.

Internationally, NTIC uses Natur-Tec India, Natur Tec Lanka, NTIC China and a network of international distributors to market its Natur-Tec® resin compounds and finished products. The government of India recently announced a phased ban on the manufacture and sale of single-use plastics beginning in July 2022. The first phase bans earbuds and plastic sticks used in balloons and ice cream. The second phase bans plastic cigarette packets and plastic bags less than 100 microns thick. Notably, compostable plastics are exempt from this ban. Accordingly, NTIC expects the market in India for bio-plastic packaging solutions to continue to grow substantially. Similarly, despite slower than anticipated sales of Natur-Tec® products in China due to ongoing restrictions and shutdowns related to the COVID-19 pandemic, NTIC anticipates that sales will grow in China in fiscal 2023 in connection with China's ban on single-use plastic utensils, bags and certain other single-use plastic items, which took effect in January 2021.

NTIC's Natur-Tec® resin compounds and finished products are produced at facilities in India, China, Malaysia, and the United States. NTIC's Natur-Tec® resin compounds can be shipped to manufacturing facilities around the world, where they then can be converted into finished products, such as film or piece of cutlery. NTIC's Natur-Tec® finished products are manufactured using NTIC's Natur-Tec® resin compounds by select sub-contractors.

Competition

ZERUST® Corrosion Prevention Solutions. While NTIC is unaware of any third parties with which NTIC competes on a worldwide basis with respect to its corrosion prevention solutions, NTIC does compete with several third parties on a regional basis. NTIC evaluates competing rust and corrosion inhibiting products on an ongoing basis. Some of NTIC's competitors are established companies that may have financial resources, marketing capabilities, distribution networks and other resources substantially greater than those of NTIC. As a result, they may be able to adapt more quickly to new or emerging technologies and changes in customer requirements or to devote greater resources to the promotion and sale of their products than NTIC. With respect to its rust and corrosion inhibiting products, NTIC competes on the basis of product innovation, quality, reliability, product support, customer service, reputation, and price. Some of NTIC's competitors may have achieved significant market acceptance of their competing products and brand recognition. NTIC, however, believes it has an advantage over most of its competitors as a result of NTIC's technical innovation and its value-added services. NTIC attempts to provide its customers with the highest level of technical service and applications engineering in addition to ZERUST® rust and corrosion inhibiting products. Nonetheless, the commoditization of certain of NTIC's ZERUST® rust and corrosion inhibiting products has led, and may continue to lead, to lower prices and lower margins on such products. In addition, because certain barriers to entry are low, additional competitors may emerge, which likely would lead to the further commoditization of NTIC's rust and corrosion inhibiting products.

With respect to the sales and marketing of ZERUST® rust and corrosion inhibiting products and services to the oil and gas industry, NTIC uses a combination of direct sales personnel, independent sales agents, and its joint venture network. In addition, in an attempt to penetrate the oil and gas industry within certain markets more quickly, NTIC has entered into various agreements with specific organizations that have existing long-term relationships with key oil and gas industry clients. NTIC also engages in certain direct marketing activities to build its brand within the oil and gas industry, such as traditional advertising and direct mail campaigns and presence and participation at selected key trade shows and technical forums. NTIC continues to believe the sale of its ZERUST® corrosion prevention solutions to customers in the oil and gas industry will involve long sales cycles, likely including multi-year trial periods with each user and a slow integration process thereafter.

Natur-Tec® Resin Compounds and Finished Products. With respect to NTIC's Natur-Tec® resin compounds and finished products, NTIC competes with several established companies that have been producing and selling similar products for a significantly longer time period and have significantly more sales, more extensive and effective distribution networks, and better brand recognition than NTIC. Most of these companies also have substantially more financial and other resources than NTIC. NTIC competes on the basis of performance, brand awareness, distribution network, product availability, product offering, improved shelf life, place of manufacture, and price. Because of price competition, NTIC's margins on its Natur-Tec® resin compounds and finished products are lower than its margins on its ZERUST® corrosion prevention solutions. NTIC also has encountered in the past and could continue to encounter additional supply constraints for the base polymer resins used to manufacture NTIC's Natur-Tec® resin compounds and finished products since there are a limited number of suppliers of such base polymer resins and limited capacity for their production.

Research and Development

NTIC's research and development activities are directed at improving existing products, developing new products, reducing costs, and improving quality assurance through improved testing of NTIC's products. NTIC's internal research and development activities are conducted at its facilities located in Circle Pines, Minnesota; Beachwood, Ohio; and Dresden, Germany under the direction of internationally known scientists and research institutes under exclusive contract with NTIC with respect to the subject of their respective research efforts. EXCOR has established a wholly-owned subsidiary, Excor Korrosionsforschung GmbH, to conduct research into new fields of corrosion inhibiting packaging and the applications engineering of such products in conjunction with NTIC's domestic research and development operations. With respect to NTIC's Natur-Tec® resin compounds and finished products, Ramani Narayan, Ph.D., a current director of NTIC and Distinguished Professor in the Department of Chemical Engineering & Materials Science at Michigan State University, provides his expertise and technical support to NTIC.

NTIC anticipates that it will spend between $4,400,000 and $4,800,000 in fiscal 2023 on research and development activities.

Intellectual Property Rights

NTIC's success depends and will continue to depend in part upon its ability to maintain patent and trademark protection for its products and processes, to preserve its proprietary information and trade secrets, and to operate without infringing the proprietary rights of third parties. NTIC's policy is to attempt to protect its technology by, among other things, filing patent applications and trademark applications and vigorously preserving the trade secrets covering its technology and other intellectual property rights.

In 1980, NTIC developed and patented the first polyolefin (plastic) based industrial corrosion inhibiting packing material in the world. The U.S. patent granted under this patent application became the most important intellectual property right in NTIC's history. This patent expired in 2000. NTIC has since filed for 12 letters of patent in the United States covering various corrosion inhibiting technologies, systems, and applications and now owns several patents in these areas. These patents and patent applications have been extended to the countries of strategic relevance to NTIC, including Australia, Brazil, Canada, China, Europe, Japan, India, Korea, Mexico, Russia, and Taiwan. In addition, EXCOR owns several patents in the area covering various corrosion inhibiting technologies and has also applied for new patents on proprietary new corrosion inhibiting technologies. NTIC is also seeking additional patent protection covering various host materials into which its corrosion inhibiting additives and other protective features can be incorporated, proprietary new process technologies, and chemical formulations outside the area of corrosion protection. NTIC owns several patents outside the area of corrosion protection both in the United States and in countries of strategic relevance to NTIC, including the above-noted countries.

In addition to seeking patent protection, NTIC maintains an extensive portfolio of trademarks in countries where NTIC has a presence directly or through its subsidiaries and joint ventures. NTIC continuously pursues new trademark applications of strategic interest worldwide. NTIC owns the following U.S. registered trademarks: NTI®, NTI & Globe Design®, ZERUST®, EXCOR®, ICT®, Z-CIS®, COR TAB®, PLASTABS®, NATUR-TEC®, NATUR-TEC & Design®, NATUR-BAG® and NATUR-WARE®, ZERION®, AUTOFOG®, FLANGE SAVER®, and ACTIVPAK®. NTIC also has a registered trademark on the use of the Color Yellow with respect to corrosion inhibiting packaging. Furthermore, NTI®, ZERUST®, EXCOR®, the Color Yellow®, and NTI ASEAN®, as well as other marks, have been registered in the European Union, and several new applications are pending.

NTIC requires its employees, consultants, and advisors with access to its confidential information, including trade secrets, to execute confidentiality agreements upon commencement of their employment or consulting relationships with NTIC. These agreements generally provide that all confidential information NTIC develops or makes known to the individual during the course of the individual's employment or consulting relationship with NTIC must be kept confidential by the individual and not disclosed to any third parties. NTIC also requires all of its employees and consultants who perform research and development for NTIC to execute agreements that generally provide that all inventions developed by these individuals during their employment or service arrangement with NTIC will fall under NTIC's proprietary intellectual property rights.

Manufacturing

NTIC's ZERUST® rust and corrosion inhibiting products are manufactured according to NTIC's specifications primarily by selected independent sub-contractors under trade secrecy agreements and/or license agreements. In addition, NTIC manufactures select ZERUST® rust and corrosion inhibiting products, consisting primarily of liquids and powders, at its corporate headquarters location in Circle Pines, Minnesota.

NTIC's Natur-Tec® resin compounds and finished products are produced at facilities in India, China, Malaysia, and the United States. NTIC's Natur-Tec® resin compounds can be shipped to manufacturing facilities around the world, where they then can be converted into finished products, such as film or piece of cutlery. NTIC's Natur-Tec® finished products are manufactured using NTIC's Natur-Tec® resin compounds by select sub-contractors.

NTIC is ISO 9001 certified with respect to the manufacturing of its products. NTIC believes that the process of ISO 9001 certification serves as an excellent total quality management tool, enabling NTIC to ensure consistency in the performance of its products. In addition, because potential customers may prefer or require manufacturers to have achieved ISO certification, such ISO certifications may provide NTIC with certain competitive advantages.

Availability of Raw Materials

NTIC does not typically carry excess quantities of raw materials because of historically widespread availability for such materials from various suppliers. However, with respect to its Natur-Tec® resin compounds and finished products, there are a limited number of suppliers of the base resins used to manufacture the resin compounds and finished products. Additionally, there is growing demand for these base resins, which has caused cost increases and, more recently, supply issues. In the past and during fiscal year 2022, NTIC has experienced some delays in obtaining these base resins due to production slowdowns, which resulted from manufacturing issues, labor shortages and power restrictions in China, freight container shortages, and the war in Ukraine. Due to supply chain disruptions associated with the COVID-19 pandemic and otherwise, NTIC experienced longer lead times for raw materials and experienced raw material cost increases during fiscal 2022 compared to prior fiscal years. These trends improved in the fourth quarter of fiscal 2022, and it is anticipated that these worldwide disruptions and supply issues will continue to improve in fiscal year 2023.

In addition, a few raw materials and purchased parts used in NTIC's rust and corrosion inhibiting products and Natur-Tec® finished products are sourced from suppliers who currently serve as NTIC's sole source of supply for these materials and parts. Although NTIC believes it can obtain these raw materials and parts from other suppliers, an unexpected loss of supply over a short period of time, including as a result of the worldwide disruption in supply issues, may not allow NTIC time to replace these sources in the ordinary course of business.

Backlog

NTIC had an estimated order backlog of $5,856,655 as of August 31, 2022, compared to $4,192,000 as of August 31, 2021, which was generally across all business units. Sales relating to this backlog are expected to be realized during first quarter of fiscal 2023. These are orders that are held by NTIC pending release instructions from the customers to be used for just-in-time production. Customers generally place orders on an "as needed" basis and expect delivery within a relatively short period of time.

Governmental Regulation

The U.S. Food and Drug Administration (FDA) has indicated to NTIC that it has no objection to the use of ZERUST® ICT® packaging products in protecting metal food containers and processing equipment. In addition, the manufacture, sale and use of NTIC's Natur-Tec® resin compounds and finished products are subject to regulation in the United States by the FDA. The FDA's regulations are concerned with substances used in food packaging materials. Thus, food and beverage containers are in compliance with FDA regulations if the components used in the food and beverage containers are approved by the FDA as indirect food additives for their intended uses and comply with the applicable FDA indirect food additive regulations or are generally recognized as safe for their intended uses and are of suitable purity for those intended uses. NTIC believes that its resin compounds are in compliance with all FDA requirements and that NTIC does not require further FDA approval prior to the sale of its products.

Human Capital Management

Headcount and Employee Demographics

As of August 31, 2022, NTIC had a total of 79 full-time employees located in North America, consisting of 18 in sales and marketing, 21 in research and development and lab, 27 in administration, and 13 in production. As of August 31, 2022, NTIC's wholly-owned subsidiary in India, HNTI Limited, had 58 full-time employees, NTIC's wholly owned subsidiary in China had 35 full-time employees, its majority-owned subsidiary in Brazil had 20 full-time employees, its majority-owned subsidiary in India, Natur Tec India, had 9 full-time employees, its wholly owned subsidiary in Mexico had no full-time employees, and its holding company, NTI Asean, had no full-time employees.

As of August 31, 2022, of our global workforce, 41% are females and 27% are racially or ethnically diverse. Of our management team, 40% are female and 23% are racially or ethnically diverse. Of our seven Board members, nearly 30% are female and 20% are racially or ethnically diverse. Of our U.S. workforce, 6% are veterans.

Employee Unions, Collective Bargaining Agreements and Work Councils

There are no unions representing NTIC's employees, and NTIC believes that its relations with its employees are good.

Health, Safety and Environment

Health, safety and environment (HSE) are the cornerstone of NTIC. NTIC is in the business of converting unique, environmentally beneficial materials science into value added products and services for industrial and consumer applications. NTIC believes that it is responsible to its worldwide customers, its people, its communities and its stockholders, and NTIC takes these responsibilities seriously. NTIC is dedicated to investing in the future of the planet and NTIC's people and intends to continue to invest in HSE protection and improvements in a timely manner consistent with available technology.

NTIC is guided by its Policy Statement on HSE, which sets forth NTIC's HSE objectives, including ensuring that all activities across the value chain are conducted in a manner which is consistent with NTIC's quality management standard and HSE programs, ensuring that business activities are conducted to prevent harm and protect health and safety, and developing, manufacturing, distributing and marketing products and services with full regard for HSE aspects. To accomplish these objectives, NTIC intends to, among other things, establish targets within its quality management standard and HSE programs to measure progress and ensure continuous improvement, provide safe and healthy workplaces for its employees, contractors and other service providers, and provide continued training to enable employees to meet their responsibility to contribute to compliance with NTIC's HSE objectives.

Diversity and Inclusion

Diversity and inclusion are embedded in NTIC's values and integrated into its strategies. NTIC's Human Rights Policy was designed to align with the United Nations Global Compact and core elements of the United Nations Universal Declaration of Human Rights. NTIC is committed to providing an environment free of discrimination and harassment, where all individuals are treated with respect and dignity, can contribute fully, and have equal opportunities. NTIC has worked to build a diverse and inclusive workforce and is committed to equal opportunity. NTIC invests in building diverse talent pools and provides training to improve skills where appropriate. NTIC upholds and supports the right to equal treatment without discrimination or harassment.

Education

NTIC offers an educational assistance benefit program to eligible employees. NTIC may reimburse all or part of the registration and tuition costs for full-time employees who continue their education in a work-related field. In addition to educational assistance for formal education, NTIC may arrange training programs that enable employees to progress in their technical, commercial, or financial knowledge of NTIC's business.

Compensation and Benefits

NTIC's compensation program is designed to attract and retain talented employees in the industry by offering competitive compensation and benefits. NTIC has established fair and competitive pay levels that are based on local markets and job descriptions and are not based on gender, age, ethnicity, nationality or other personal characteristics or beliefs. NTIC provides compensation and benefits that are competitive and comply with applicable laws, and NTIC commits to a fair and living wage.

Values and Ethics

In connection with NTIC's core values, NTIC acts in accordance with its Code of Ethics. NTIC's Code of Ethics requires its employees, officers and directors to be honest, trustworthy, conscientious and dedicated to the highest standards of ethical business practices. Each employee, officer and director must know and abide by applicable laws.

Additional Information

Additional information about our human capital and people, including our HSE Policy, Human Rights Policy, Code of Ethics, is included on the Commitment to Environmental, Social and Governance (ESG) page of the Investor Relations portion of our corporate website. Information contained or referenced on our website is not incorporated by reference and does not form a part of this Annual Report on Form 10-K.

Available Information

NTIC is a Delaware corporation that was originally organized as a Minnesota corporation in 1970. NTIC's principal executive office is located at 4201 Woodland Road, Circle Pines, Minnesota 55014, and its telephone number is (763) 225-6600. NTIC's website is located at www.ntic.com. References to NTIC's website addressed in this report are provided as a convenience and as an inactive textual reference only. The information on NTIC's website or any other website is not incorporated by reference into, and is not considered a part of, this report.

NTIC makes available, free of charge and through its Internet web site, its annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and any amendments to any such reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after NTIC electronically files such material with, or furnishes it to, the Securities and Exchange Commission (SEC). Reports filed with the SEC may be viewed at www.sec.gov.

Forward-Looking Statements

This report on Form 10-K contains not only historical information, but also forward-looking statements that are within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements are subject to the safe harbor created by those sections. In addition, NTIC or others on NTIC's behalf may make forward-looking statements from time to time in oral presentations, including telephone conferences and/or web casts open to the public, in press releases or reports, on NTIC's Internet web site, or otherwise. All statements other than statements of historical facts included in this report or expressed by NTIC orally from time to time that address activities, events, or developments that NTIC expects, believes, or anticipates will or may occur in the future are forward-looking statements, including, in particular, the statements about NTIC's plans, objectives, strategies, and prospects regarding, among other things, NTIC's financial condition, results of operations and business, the anticipated effect of COVID-19 and its acquisition of Zerust India on NTIC's business, operating results and financial condition, and the outcome of contingencies, such as legal proceedings. NTIC has identified some of these forward-looking statements in this report with words like "believe," "can," "may," "could," "would," "might," "forecast," "possible," "potential," "project," "will," "should," "expect," "intend," "plan," "predict," "anticipate," "estimate," "approximate," "outlook," or "continue" or the negative of these words or other words and terms of similar meaning. The use of future dates is also an indication of a forward-looking statement. Forward-looking statements may be contained in the notes to NTIC's consolidated financial statements and elsewhere in this report, including under "*Part II. Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations*."

Forward-looking statements are based on current expectations about future events affecting NTIC and are subject to uncertainties and factors that affect all businesses operating in a global market as well as matters specific to NTIC. These uncertainties and factors are difficult to predict, and many of them are beyond NTIC's control. Some of the uncertainties and factors known to us that could cause NTIC's actual results to differ materially from what NTIC has anticipated in its forward-looking statements are described under "*Part I. Item 1A. Risk Factors*." All forward-looking statements included in this report are expressly qualified in their entirety by the foregoing cautionary statements. NTIC wishes to caution readers not to place undue reliance on any forward-looking statement that speaks only as of the date made and to recognize that forward-looking statements are predictions of future results, which may not occur as anticipated. Actual results could differ materially from those anticipated in the forward-looking statements and from historical results due to the uncertainties and factors described above and others that NTIC may consider immaterial or does not anticipate at this time. Although NTIC believes that the expectations reflected in its forward-looking statements are reasonable, NTIC does not know whether its expectations will prove correct. NTIC's expectations reflected in its forward-looking statements can be affected by inaccurate assumptions NTIC might make or by known or unknown uncertainties and factors, including those described above. The risks and uncertainties described above are not exclusive, and further information concerning NTIC and its business, including factors that potentially could materially affect its financial results or condition, may emerge from time to time. NTIC assumes no obligation to update, amend, or clarify forward-looking statements to reflect actual results or changes in factors or assumptions affecting such forward-looking statements. NTIC advises you, however, to consult any further disclosures NTIC makes on related subjects in its annual reports on Form 10-K, quarterly reports on Form 10-Q, and current reports on Form 8-K that NTIC files with or furnishes to the SEC.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

The two individuals named below have been designated by NTIC's Board of Directors as "executive officers" of NTIC. Their ages and the offices held, as of November 14, 2022, are as follows:

Name	Age	Position with NTIC
G. Patrick Lynch	55	President and Chief Executive Officer
Matthew C. Wolsfeld	48	Chief Financial Officer and Corporate Secretary

G. Patrick Lynch, an employee of NTIC since 1995, has been President since July 2005 and Chief Executive Officer since January 2006 and was appointed a director of NTIC in February 2004. From July 2005 to January 2006, Mr. Lynch served as Chief Operating Officer of NTIC. Mr. Lynch served as President of North American Operations of NTIC from May 2004 to July 2005. Prior to May 2004, Mr. Lynch held various positions with NTIC, including Vice President of Strategic Planning, Corporate Secretary and Project Manager. Mr. Lynch is also an officer and director of Inter Alia Holding Company, a holding company that is a significant stockholder of NTIC. Prior to joining NTIC, Mr. Lynch held positions in sales management for Fuji Electric Co., Ltd. in Tokyo, Japan and programming project management for BMW AG in Munich, Germany. Mr. Lynch received an M.B.A. degree from the University of Michigan Ross School of Business in Ann Arbor, Michigan.

Matthew C. Wolsfeld, an employee of NTIC since February 2001, has been NTIC's Chief Financial Officer since November 2001 and Corporate Secretary since November 2004. Mr. Wolsfeld was Controller of NTIC from May 2001 through November 2001. Prior to joining NTIC, Mr. Wolsfeld held an auditing position with PricewaterhouseCoopers LLP in Minneapolis, Minnesota from 1997 to 2001. Mr. Wolsfeld received a B.A. degree in Accounting from the University of Notre Dame and received his M.B.A. degree at the University of Minnesota, Carlson School of Business. Mr. Wolsfeld is a Certified Public Accountant.

Other corporate officers of NTIC, their ages, and offices held, as of November 14, 2022, are as follows:

Name	Age	Position with NTIC
Vineet R. Dalal	53	Vice President and Director – Global Market Development – Natur-Tec®
Gautam Ramdas	49	Vice President and Director – Global Market Development – Oil & Gas
Brian Haglund	38	Vice President of Operations – North America

Vineet R. Dalal, an employee of NTIC since 2004, has served as Vice President and Director – Global Market Development – Natur-Tec® since November 2005. Prior to joining NTIC, Mr. Dalal was a Principal in the Worldwide Product Development Practice of PRTM, a management consultancy to technology-based companies (now part of PricewaterhouseCoopers Management Consulting). In this position, Mr. Dalal consulted to several Fortune 500 companies, in the areas of product strategy, Product Lifecycle Management (PLM) and technology management. Prior to that, Mr. Dalal held positions in program management and design engineering at National Semiconductor Corporation in Santa Clara, California. Mr. Dalal received an M.B.A. degree from the University of Michigan Ross School of Business in Ann Arbor, Michigan. He also holds an M.S. degree in Electrical and Computer Engineering from Oregon State University, and a B.Eng. degree in Electronics Engineering from Karnatak University, India.

Gautam Ramdas, an employee of NTIC since 2005, has served as Vice President and Director – Global Market Development – Oil & Gas since 2005. Prior to joining NTIC, Mr. Ramdas was a Manager in the Strategic Change group of IBM Business Consulting Services. In this position, Mr. Ramdas led consulting engagements at several Fortune 500 companies, in the areas of service strategy, global supplier relationship management and supply chain streamlining. Mr. Ramdas held positions in the E-Commerce and Supply Chain strategy groups at PricewaterhouseCoopers Management Consulting, again providing consulting services for Fortune 500 clients. Prior to management consulting, Mr. Ramdas worked as a program manager and design engineer with Kinhill Engineers in Australia. He has also been involved in the start-up stage of successful small businesses in the United States and in India. Mr. Ramdas received an M.B.A. from the University of Michigan Ross School of Business in Ann Arbor, Michigan. He also holds a bachelor’s degree in Mechanical Engineering from the College of Engineering, Guindy (Chennai), India.

Brian Haglund, an employee of NTIC since 2018, is currently serving as Vice President of Operations – North America. Prior to joining NTIC, Mr. Haglund held various leadership roles within Textron, a Fortune 500 industrial conglomerate. During his tenure with Textron, Mr. Haglund led various global operations and manufacturing facilities across the US, in China, and in Germany focusing on aerospace and industrial manufacturing. Mr. Haglund received an M.B.A. degree with a concentration in Finance from The Miller College of Business through Ball State University. He also holds a B.A. degree in Supply Chain Management from Eli Broad College of Business through Michigan State University.

Item 1A. RISK FACTORS

The following are the most material factors known to NTIC that could materially adversely affect its business, operating results, or financial condition.

Risk Factors Summary

This summary is not complete and should be read in conjunction with the risk factors set forth below.

Risks Related to NTIC's Business and Industry

- Any weakness in the global economy, and in particular in the United States, Europe, India and China, and in the automotive industry, may negatively impact NTIC's business, operating results, and financial condition.
- The COVID-19 pandemic has adversely impacted and will likely continue to adversely impact NTIC's business, operating results and financial condition.
- NTIC's business may be negatively impacted by inflation.
- Supply chain disruptions could interrupt product manufacturing, increase product costs and result in lost sales, which may have a material adverse effect on NTIC's business, operating results and financial condition.
- Disruptions to the distribution channels for NTIC's products may negatively impact NTIC's business, operating results, and financial condition.
- NTIC's dependence on key suppliers puts NTIC at risk of interruptions in the availability of its products, which could reduce its net sales and adversely affect its operating results and harm its reputation.
- Increases in prices for raw materials and components used in NTIC's products could adversely affect NTIC's operating results.
- NTIC relies on others for its production and any interruptions of these arrangements could disrupt NTIC's ability to fill its customers' orders.
- Changes to trade regulation, quotas, duties, or tariffs, caused by the changing U.S. and geopolitical environments or otherwise, may negatively impact NTIC's business, operating results, and financial condition.
- Global credit and financial markets in the past have experienced disruptions, including diminished liquidity and credit availability and rapid fluctuations in market valuations, which, if they happen again, could negatively impact NTIC's business, operating results, and financial condition.
- NTIC has limited staffing, faces challenges caused by its aging workforce and given its limited resources, it may not effectively manage its growth.
- The evolution of the automotive industry towards electric vehicles could adversely affect our business.

Risks Related to NTIC's Joint Ventures

- NTIC's liquidity and financial position rely on the receipt of fees for services provided to its joint ventures and dividend distributions from its joint ventures. No assurance can be provided that NTIC will continue to receive such fees and dividend distributions in amounts NTIC historically has received or anticipates receiving.
- Since a significant portion of NTIC's earnings results from its equity income from joint ventures which varies quarter to quarter, NTIC's earnings are subject to quarterly fluctuations.

Risks Related to NTIC's International Operations and the Foreign Markets in which NTIC Operates

- NTIC's international business, which is conducted primarily through its subsidiaries and joint ventures, requires management attention and financial resources and exposes NTIC to difficulties and risks presented by international economic, political, legal, accounting, and business factors.
- If sales of NTIC's products and services by its joint venture in Germany were to decline significantly or if NTIC's relationships with this joint venture were to deteriorate significantly, NTIC's operating results likely would be adversely affected.
- NTIC's acquisition of the remaining 50% ownership interest of HNTI and any future similar acquisitions involve risk.
- The ongoing conflict between Russia and Ukraine may adversely affect our business and results of operations.
- NTIC China's operations may be adversely affected by China's evolving economic, political, and social conditions and intellectual property rights are difficult to enforce in China, which could harm NTIC's business, results of operations, or financial condition.
- Uncertainties with respect to the Chinese legal system may adversely affect the operations of NTIC China.
- Failure to comply with the U.S. Foreign Corrupt Practices Act could subject NTIC to penalties and legal expenses.
- Fluctuations in foreign currency exchange rates could result in declines in NTIC's earnings and changes in NTIC's foreign currency translation adjustments.
- Economic uncertainty in developing markets could adversely affect NTIC's revenue and earnings.

Risks Related to NTIC's Products

- NTIC faces intense competition in almost all of its product lines, including from competitors that have substantially greater resources than NTIC does. No assurance can be provided that NTIC will be able to compete effectively, which would harm its business and operating results.
- NTIC's ZERUST® rust and corrosion inhibiting products and services generate a significant portion of NTIC's net sales and the net sales of NTIC's joint ventures. Accordingly, if sales of these products and services were to decline, NTIC's operating results would be adversely affected.
- If NTIC is unable to continue to enhance its existing products and develop and market new products that respond to customer needs and achieve market acceptance, NTIC may experience a decrease in demand for its products, and its business could suffer.
- No assurance can be provided that NTIC's investments in additional research and development and marketing efforts and resources into the application of its corrosion prevention solutions into the oil and gas industry and the continued launch of its Natur-Tec® resin compounds and finished products will be successful.
- NTIC's strategy of expanding its corrosion prevention solutions into the oil and gas industry and continuing the expansion of its Natur-Tec® bioplastics resin compounds and finished products is risky and may not prove to be successful, which could harm NTIC's operating results and financial condition.
- NTIC's dependence on manufacturing and logistical services provided by contractors could give rise to product defect or warranty liability.
- The commercial success of NTIC's Natur-Tec® resin compounds and finished products depends on the widespread market acceptance of products manufactured with bio-based and biodegradable resins.
- NTIC relies on its joint ventures, distributors, manufacturer's sales representatives, and other agents to market and sell its products.
- NTIC may be subject to product liability claims or other claims arising out of the activities of its joint ventures, which could adversely affect NTIC and its business, and the sale of ZERUST® rust and corrosion inhibiting products into the oil and gas industry is risky in light of the hazards typically associated with such operations and the significant amount of potential liability involved.
- The sale of ZERUST® rust and corrosion inhibiting products into the oil and gas industry is somewhat seasonal and dependent upon oil prices.
- The expansion of NTIC's corrosion prevention solutions into the oil and gas industry and the continued launch of NTIC's Natur-Tec® resin compounds and finished products may require additional capital in the future, which may not be available or may be available only on unfavorable terms.

Risks Related to Governmental Regulation, Laws, and Compliance

- NTIC's business, properties, and products are subject to governmental regulation and taxes, compliance with which may require NTIC to incur expenses or modify its products or operations, and which may expose NTIC to penalties for non-compliance. Governmental regulation also may adversely affect the demand for some of NTIC's products and its operating results.
- Fluctuations in NTIC's effective tax rate could have a significant impact on NTIC's financial position, results of operations, or cash flows.
- Certain of NTIC's operations are subject to regulation by the U.S. Food and Drug Administration.
- NTIC's reliance upon patents, trademark laws, trade secrets, and contractual provisions to protect its proprietary rights may not be sufficient to protect its intellectual property.
- NTIC's compliance with generally accepted accounting principles any changes in such principles might adversely affect NTIC's operating results and financial condition.

Risks Related to NTIC's Common Stock

- The trading volume of NTIC's common stock is typically very low, leaving NTIC's common stock open to risk of high volatility and the price and trading volume has been, and may continue to be, volatile.
- A large percentage of NTIC's outstanding common stock is held by insiders, and, as a result, the trading market for NTIC's common stock is not as liquid as the stock of other public companies.

Risks Related to NTIC's Business and Industry

Any weakness in the global economy, and in particular in the United States, Europe, India and China, and in the automotive industry, may negatively impact NTIC's business, operating results, and financial condition.

The U.S. and world economies may suffer from uncertainty, volatility, disruption, and other adverse conditions, such as the impact of the COVID-19 pandemic and persistent inflation resulting therefrom, and those conditions have adversely impacted and may continue to adversely impact the business community and the financial markets. Adverse economic and financial market conditions may negatively affect NTIC's customers and its markets, thereby negatively impacting its business and operating results. For example, weak market conditions could extend the length of NTIC's sales cycle and cause potential customers to delay, defer, or decline to make purchases of NTIC's products and services due to uncertainties surrounding the future performance of their businesses, limitations on their capital expenditures due to internal budget constraints, the inability to obtain financing in the capital markets, and the adverse effects of the economy on their business and financial condition. As a result, if economic and financial market conditions weaken or deteriorate, then NTIC's business, financial condition, and operating results, including its ability to grow and expand its business and operations, could be materially and adversely affected.

NTIC's operating results are especially dependent upon the economic health of the economies in the United States, Europe, India and China. Since a significant portion of NTIC's ZERUST® rust and corrosion inhibiting products and services are sold to customers in the automotive industry, adverse economic conditions affecting the automotive industry, in particular, may result in an adverse effect on NTIC's net sales and its other operating results. Accordingly, any weakness in the global economy, particularly the United States, Europe, India and China, and in the automotive industry, including decreased production resulting from the ongoing microchip shortage, have negatively impacted and may continue to negatively impact NTIC's business, operating results, and financial condition.

The COVID-19 pandemic has adversely impacted and will likely continue to adversely impact NTIC's business, operating results and financial condition.

COVID-19 has resulted in the curtailment of business activities from time to time, including more recently in China, and has caused weakened economic conditions, both in the United States and abroad. Business closures and slowdowns adversely impacted and may continue to adversely impact NTIC directly and caused some of NTIC's customers and suppliers to operate at a fraction of their capacities or wholly lock down, which disrupted and may continue to disrupt NTIC's sales and production, especially in China. These and other factors, such as other COVID-19 variants that may arise, contributed to NTIC experiencing decreased global demand for its products and services during certain markets during fiscal 2022 and more widespread during fiscal 2021 and increased supply chain and shipping costs and disruptions, which will likely continue to some degree during fiscal 2023. This decreased demand may have a material adverse effect on NTIC's business, operating results and financial condition in fiscal 2023. Due to the international reach of COVID-19, NTIC anticipates that its international subsidiaries and joint ventures will continue to be adversely impacted by the causes listed above, as well as other local issues that may arise, which will likely continue to have a material adverse effect on NTIC's international subsidiaries and joint venture operations and equity in income from joint ventures. It is currently not possible to predict the precise potential impact, as well as the extent of any impact, of the COVID-19 pandemic on NTIC's business, and on the global economy as a whole. It is also currently not possible to predict how long the pandemic will last or the time that it will take for economic activity to return to prior levels or supply chain disruptions to cease. A prolonged situation could have a significant adverse effect on economies and financial markets globally, potentially deepening the current worldwide economic downturn, which could have a significant adverse effect on NTIC's business, operating results and financial condition. Any of these events could materially adversely affect NTIC's business, operating results and financial condition. In addition, the COVID-19 pandemic has already adversely affected and could in the future adversely affect NTIC's stock price.

NTIC's business may continue to be negatively impacted by inflation.

Increases in inflation may have a negative impact on NTIC's business. Current and future inflationary effects may be driven by, among other things, the COVID-19 pandemic, supply chain disruptions, governmental stimulus or fiscal policies and the Russia/Ukraine war. While the persistent inflation experienced in fiscal 2021 and fiscal 2022 has somewhat stabilized recently, increases in inflation have impacted the cost of raw materials, the overall demand for NTIC's products, labor, and the margins NTIC and its joint ventures are able to realize on the sale of products, all of which have had and could continue to have a negative impact on NTIC's business, financial position, results of operations and cash flows. Sustained levels of high inflation caused the U.S. Federal Reserve and other central banks to increase interest rates, which could increase the cost of capital available to NTIC and depress economic growth, which could also negatively impact our business.

Supply chain disruptions could interrupt product manufacturing, increase product costs and result in lost sales, which may have a material adverse effect on NTIC's business, operating results and financial condition.

During fiscal 2021 and fiscal 2022, supply chain disruptions, resulting from factors such as the COVID-19 pandemic, labor supply shortages and shipping container shortages, impacted, and may continue to impact, NTIC and its third-party manufacturers. These disruptions have resulted in longer lead times and increased product costs and shipping expenses. While NTIC has taken steps to minimize the impact of these increased costs by working closely with its suppliers and customers, there can be no assurances that unforeseen events impacting the supply chain will not have a material adverse effect on NTIC in the future. Additionally, the impacts supply chain disruptions have on NTIC's third-party manufacturers are not within NTIC's control. While we have seen recent improvements, it is not currently possible to predict how long it will take for these supply chain disruptions to cease. Prolonged supply chain disruptions impacting NTIC and its third-party manufacturers could interrupt product manufacturing, increase product costs and result in lost sales, which may have a material adverse effect on NTIC's business, operating results and financial condition.

Disruptions to the distribution channels for NTIC's products may negatively impact NTIC's business, operating results, and financial condition.

During fiscal 2021 and fiscal 2022, supply chain disruptions began to emerge because of the COVID-19 pandemic, shipping container shortages, and the changes in global demand. These conditions and ocean freight capacity issues continued to persist worldwide during fiscal 2022 as there was much greater demand for shipping and reduced capacity and equipment, which resulted in significantly longer shipping times and significant price increases per shipping container. While many of these effects have improved, it is possible that NTIC may continue to experience adverse effects during fiscal 2023. Shipping companies have taken measures such as charging priority booking fees to allocate space as they have fewer ships and workers operating. While we have seen recent stabilizations of container costs and, in some markets, a recent decrease in costs, there is no indication that these shipping delays and increased shipping container rates will return to historical levels in the near-term, and these delays and elevated costs could have a material adverse effect on NTIC's consolidated results of operations. Furthermore, transportation delays, increases on shipping containers, more extensive travel restrictions, closures or disruptions of businesses and facilities or social, economic, political or labor instability in the affected areas may impact the operations of NTIC's suppliers, which could in turn adversely affect NTIC, and its revenues and operating costs. Any of these disruptions may negatively impact NTIC's business, operating results, and financial condition.

NTIC's dependence on key suppliers puts NTIC at risk of interruptions in the availability of its products, which could reduce its net sales and adversely affect its operating results and harm its reputation.

NTIC relies on suppliers for certain raw materials and components used in its products. For reasons of quality assurance, cost effectiveness, or availability, NTIC procures certain raw materials and components from sole or limited source suppliers. Among the limited source suppliers NTIC does business with are the manufacturers of plastic resins used in Natur-Tec® products. NTIC generally acquires these and other raw materials and components through purchase orders placed in the ordinary course of business, and as a result, NTIC does not have a significant inventory of these materials and components and does not have any guaranteed or contractual supply arrangements with many of these suppliers for these materials and components. NTIC's dependence on third-party suppliers involves several risks, including limited control over pricing, availability, quality, and delivery schedules, as well as manufacturing yields and costs. Suppliers of such raw materials and components may decide, or be required, for reasons beyond NTIC's control, to cease supplying such raw materials and components to NTIC or to raise their prices.

Shortages of raw materials, quality control problems, production capacity constraints, or delays by suppliers could negatively affect NTIC's ability to meet its production obligations and result in increased prices for affected parts. For example, the rapid growth in demand for bioplastics products globally has increased the demand and the price for plastic resins, and limited suppliers of such plastic resins may experience shortages caused by demand outpacing their production capabilities, which could result in NTIC's inability to produce its Natur-Tec® products promptly or in the volumes demanded. Additionally, the impact of the COVID-19 pandemic has caused supply shortages, which also could result in NTIC's inability to produce its Natur-Tec® products. These and other shortages, constraints, or delays may result in delays in shipments of products or components, which could adversely affect NTIC's net sales and other operating results and its reputation. From time to time, materials and components used in NTIC's products are subject to allocation because of shortages of these materials and components.

Increases in prices for raw materials and components used in NTIC's products could adversely affect NTIC's operating results.

NTIC uses certain raw materials and components in its products, including in particular plastic resins, which are subject to price increases. In light of increased global demand for bioplastics, production slowdowns due to manufacturing issues, labor shortages and power restrictions in China, freight container shortages, the war in Ukraine, and the lingering effects of the COVID-19 pandemic, the prices of certain plastic resins increased in fiscal 2021 and fiscal 2022 and have remained higher than pre-pandemic prices, which could adversely affect gross margins on NTIC's Natur-Tec® products. If these shortages persist, the cost and/or production of NTIC's products could be adversely affected. Additionally, the war between Russia and Ukraine and the resulting sanctions by U.S. and European governments have resulted in and may continue to result in commodity price fluctuations, which have decreased our margins and the margins of our joint ventures and resulted in decreased joint venture profitability, which will likely continue during fiscal 2023. Finally, changes to international trade agreements could result in additional tariffs, duties, or other charges on raw materials or components we import into the U.S.

NTIC relies on others for its production and any interruptions of these arrangements could disrupt NTIC's ability to fill its customers' orders.

NTIC utilizes contract manufacturers for a significant portion of its production requirements. The majority of NTIC's manufacturing is conducted in the United States by contract manufacturers that also perform services for numerous other companies. NTIC does not have a guaranteed level of production capacity with any of its contract manufacturers. Qualifying new contract manufacturers is time consuming and might result in unforeseen manufacturing and operations problems. The loss of NTIC's relationships with its contract manufacturers or their inability to conduct their manufacturing and assembly services for NTIC as anticipated in terms of capacity, cost, quality, and timeliness could adversely affect NTIC's ability to fill customer orders in accordance with required delivery, quality, and performance requirements, thus adversely affecting NTIC's net sales and other operating results.

Changes to trade regulation, quotas, duties, or tariffs, caused by the changing U.S. and geopolitical environments or otherwise, may negatively impact NTIC's business, operating results, and financial condition.

There is significant uncertainty about the future relationship between the United States and other countries with respect to trade policies, taxes, government regulations, and tariffs. The Trump administration had signaled support for implementing and, in some instances, proposed or took action with respect to major changes to certain trade policies in an effort to encourage U.S. production. Such changes included the imposition of additional tariffs on imported products in an effort to address trade imbalances, specifically with China, the withdrawal of the U.S. from the Trans-Pacific Partnership, and the renegotiation of the North American Free Trade Agreement. In response to such actions, certain countries imposed retaliatory actions against the U.S. NTIC and its subsidiaries and joint ventures engage in sales outside of the United States and is, therefore, negatively impacted by such actions. Any changes or potential changes in trade policies in the United States, including changes made by the Biden administration, and the potential corresponding actions by other countries in which NTIC does business could adversely and materially affect NTIC's business, results of operations, and financial condition.

Global credit and financial markets in the past have experienced disruptions, including diminished liquidity and credit availability and rapid fluctuations in market valuations, which, if they happen again, could negatively impact NTIC's business, operating results, and financial condition.

Any tightening of the credit and financial markets could negatively impact the ability of companies to borrow money from their existing lenders, obtain credit from other sources, or raise financing to fund their operations. This could negatively impact the ability of NTIC's customers and the customers of NTIC's joint ventures to purchase NTIC's products, suppliers' ability to provide NTIC and its joint ventures with materials and components, and the ability of NTIC and its joint ventures, distributors, and sales representatives to finance operations, if needed, on commercially reasonable terms, or at all. Any or all of these events could negatively impact NTIC's business, operating results, and financial condition. Although NTIC maintains allowances for doubtful accounts for estimated losses resulting from the inability of its customers, distributors, and joint ventures to make required payments, and such losses historically have been within NTIC's expectations and the provisions established, NTIC cannot guarantee that it will continue to experience the same loss rates that it has in the past, especially if there are weaknesses in the worldwide economy. A significant change in the liquidity or financial condition of NTIC's customers, distributors, or joint ventures could cause unfavorable trends in NTIC's receivable collections and additional allowances may be required, which could adversely affect NTIC's operating results. In addition, weaknesses in the worldwide economy, including the imposition of higher tariffs and withdrawal from the Trans-Pacific Partnership, may adversely impact the ability of suppliers to provide NTIC with materials and components, which could adversely affect NTIC's business and operating results. NTIC is unable to predict the prospects for a global economic recovery, but the longer the duration of such adverse and uncertain economic conditions, the greater the risks NTIC faces in operating its business.

NTIC has limited staffing and will continue to be dependent upon key employees.

NTIC's success is dependent upon the efforts of a small management team and group of employees. NTIC's future success will depend in large part on its ability to retain its key employees and identify, attract, and retain other highly qualified managerial, technical, research and development, sales and marketing, and customer service personnel when needed. Competition for these individuals may be intense, especially in the markets in which NTIC operates. NTIC may not succeed in identifying, attracting, and retaining these personnel. Inadequate performance by any of NTIC's limited staff could have a negative impact on the performance of the company. In addition, none of NTIC's employees have any contractual obligation to maintain his or her employment with NTIC. The loss or interruption of services of any of NTIC's key personnel, including in particular its technical personnel, the inability to identify, attract, or retain qualified personnel in the future, delays in hiring qualified personnel, or any employee slowdowns, strikes, or similar actions could make it difficult for NTIC to manage its business and meet key objectives, which could harm NTIC's business, operating results, and financial condition.

Although we have not experienced any material labor shortage to date, we have recently observed an overall tightening and increasingly competitive labor market. A sustained labor shortage or increased turnover rates within our employee base could lead to increased costs, such as increased overtime to meet demand and increased wage rates to attract and retain employees, and could negatively affect our ability to efficiently operate our manufacturing and distribution facilities and overall business. If we are unable to hire and retain employees capable of performing at a high-level, or if mitigation measures we may take to respond to a decrease in labor availability, such as overtime and third-party outsourcing, have unintended negative effects, our business could be adversely affected. An overall labor shortage, lack of skilled labor, increased turnover or labor inflation could have a material adverse impact on NTIC's operations, results of operations, liquidity or cash flows.

NTIC faces challenges caused by its aging workforce, and NTIC may not be able to recruit, train and retain adequate replacements for its qualified and skilled employees.

Many of our employees are approaching retirement age. As these experienced employees retire, we may have difficulty recruiting new employees with comparable qualifications and experience, and we may be unable to transfer our employees' institutional knowledge successfully to new qualified employees. Any such failures would be exacerbated at times of peak demand. Our failure to recruit and train new employees and to ensure they obtain the adequate qualifications and experience could result in reduced revenues, loss of customer goodwill and a material negative impact on our results of operations.

Given NTIC's limited resources, it may not effectively manage its growth.

NTIC's strategy to grow its business, including in particular its ZERUST® rust and corrosion inhibiting products for the oil and gas industry and its Natur-Tec® bio-plastic resin compounds and finished products, requires significant management time and operational and financial resources. There is no assurance that NTIC has the necessary operational and financial resources to manage its growth. This is especially true as it expands facilities and manufactures its products on a larger commercial scale. In addition, rapid growth in NTIC's headcount and operations may place a significant strain on its management, administrative, operational, and financial infrastructure. Failure to adequately manage its growth could have a material and adverse effect on NTIC's business, operating results, and financial condition. For example, NTIC's soil side bottom solutions for tanks require implementation teams comprised of both internal NTIC personnel and outside consulting firms. NTIC's failure to expand these implementation teams to service additional customers may limit NTIC's ability to grow this business. In addition, NTIC may not be successful in its strategy to grow its business.

The evolution of the automotive industry towards electric vehicles could adversely affect our business.

The global automotive industry is experiencing a period of significant technological change, including the development and use of electric vehicles, which do not contain as many components that require our ZERUST products and solutions. During fiscal 2022, the automobile sector represented approximately 48% of our ZERUST industrial net sales in North America and 58% of net sales of our joint ventures. Increased demand for electric vehicles which do not contain as many components requiring our ZERUST products and solutions will adversely affect our net sales and other operating results and business.

Risks Related to NTIC's Joint Ventures

NTIC's liquidity and financial position rely on the receipt of fees for services provided to its joint ventures and dividend distributions from its joint ventures. No assurance can be provided that NTIC will continue to receive such fees and dividend distributions in amounts NTIC historically has received or anticipates receiving.

NTIC conducts business, either directly or indirectly, through several joint venture arrangements that operate in North America, Europe, and Asia. Each of these joint ventures manufactures, markets, and sells finished products in the geographic territory that it is assigned. NTIC's receipt of funds as a result of sales by its joint ventures is dependent upon NTIC's receipt of fees for services that NTIC provides to its joint ventures based primarily on the net sales of the individual joint ventures and NTIC's receipt of dividend distributions from its joint ventures based on the profitability of its joint ventures. NTIC's liquidity and financial position in part rely on NTIC's receipt of fees for services that NTIC provides to its joint ventures and dividend distributions from its joint ventures. During fiscal 2022, NTIC recognized $5,085,823 in fees and $5,723,176 in dividend distributions from its joint ventures. Because NTIC owns 50% or less of each of its joint venture entities, NTIC does not control the decisions of these entities regarding whether to pay dividends and, if paid, how much they should be in any given year. Thus, NTIC cannot guarantee that any of its joint ventures will pay dividends in any given year. The failure of NTIC's joint ventures to declare dividends or the failure of NTIC to receive fees for services provided to joint ventures in amounts typically expected by NTIC could adversely affect NTIC's liquidity and financial position.

Since a significant portion of NTIC's earnings results from NTIC's equity income from joint ventures, and since NTIC's equity income from joint ventures varies from quarter to quarter, NTIC's earnings are subject to quarterly fluctuations.

A significant portion of NTIC's earnings results from NTIC's equity income from its joint ventures. NTIC's equity in income from joint ventures consists of NTIC's share of equity in income from its joint ventures based on the overall profitability of the joint ventures. Such profitability varies from quarter to quarter. Since NTIC's management typically receives quarterly joint venture financial information after the completion of each fiscal quarter, it is impossible for NTIC's management to cut costs and expenses to make up for any unanticipated shortfall in NTIC's equity income from joint ventures. Accordingly, the variability in NTIC's equity income from joint ventures, in turn, subjects NTIC's earnings to quarterly fluctuations.

Risks Related to NTIC's International Business and the Foreign Markets in which NTIC Operates

NTIC's international business, which is conducted primarily through its subsidiaries and joint ventures, requires management attention and financial resources and exposes NTIC to difficulties and risks presented by international economic, political, legal, accounting, and business factors.

NTIC sells products and services directly, through its wholly-owned and majority-owned subsidiaries, and indirectly, via a network of joint ventures, independent distributors, manufacturer's sales representatives, and agents in over 65 countries, including countries in North America, South America, Europe, Asia, and the Middle East. One of NTIC's strategic objectives is the continued expansion of its international operations. The expansion of NTIC's existing international operations and entry into additional international markets requires management attention and financial resources.

The sale and shipping of products and services across international borders subjects NTIC to extensive and complicated U.S. and foreign governmental trade regulations. Compliance with such regulations is costly and exposes NTIC to penalties for non-compliance. Other laws and regulations that can significantly impact NTIC include various anti-bribery laws, including the U.S. Foreign Corrupt Practices Act, laws restricting business with suspected terrorists, and anti-boycott laws. Any failure to comply with applicable legal and regulatory obligations could impact NTIC in a variety of ways that include, but are not limited to, significant criminal, civil, and administrative penalties, including imprisonment of individuals, fines and penalties, denial of export privileges, seizure of shipments, and restrictions on certain business activities. Also, the failure to comply with applicable legal and regulatory obligations could result in the disruption of NTIC's shipping and sales activities.

Several factors, including implications of withdrawal by the U.S. from, or revision to, international trade agreements, foreign policy changes between the U.S. and other countries, weakened international economic conditions, or the impact of sovereign debt defaults by certain European countries, could adversely affect our international net sales. Additionally, the expansion of our existing international operations and entry into additional international markets require significant management attention and financial resources. In many of the countries in which NTIC sells its products directly or indirectly through NTIC China, Zerust Brazil, Natur-Tec India, Natur-Tec Lanka, Zerust Mexico, Zerust Singapore, Zerust Vietnam and NTI Asean, its joint ventures, distributors, representatives, and agents are, to some degree, subject to political, economic, and/or social instability. NTIC's international operations expose NTIC and its joint venture partners, distributors, representatives, and agents to risks inherent in operating in foreign jurisdictions. These risks include:

- difficulties in managing and staffing international operations and the required infrastructure costs, including legal, tax, accounting, and information technology;
- the imposition of additional U.S. and foreign governmental controls or regulations, new trade restrictions, and restrictions on the activities of foreign agents, representatives, and distributors, the imposition of costly and lengthy export licensing requirements and changes in duties and tariffs, license obligations, and other non-tariff barriers to trade;
- the imposition of U.S. and/or international sanctions against a country, company, person, or entity with whom NTIC does business that would restrict or prohibit continued business with the sanctioned country, company, person, or entity;
- pricing pressure that NTIC or its joint ventures, distributors, representatives, and agents may experience internationally;
- laws and business practices favoring local companies;
- adverse currency exchange rate fluctuations;
- longer payment cycles and difficulties enforcing agreements and collecting receivables through certain foreign legal systems;
- national and international conflicts, including foreign policy changes or terrorist acts;
- difficulties in enforcing or defending intellectual property rights;
- multiple, changing, and often inconsistent enforcement of laws and regulations; and
- the potential payment of U.S. income taxes on certain earnings of joint ventures upon repatriation.

Furthermore, in June 2016, the United Kingdom held a referendum in which voters approved an exit from the European Union, commonly referred to as "Brexit." The United Kingdom officially terminated its membership of the European Union on January 31, 2020 and remained in a transition phase until December 31, 2020. Although the United Kingdom and the European Union struck a bilateral trade and cooperation deal governing the future relationship between the United Kingdom and the European Union, which became effective on May 1, 2021, political and economic uncertainties remain, and it is possible that there will be increased regulatory complexities, which could affect NTIC's ability to sell its products in certain European Union countries and subject NTIC to heightened risks in that region. Any of these effects of Brexit, and other similar referenda that NTIC cannot anticipate, could adversely affect its business, operations, and financial results.

Out of NTIC's joint ventures, NTIC's joint venture in Germany is the most significant in terms of assets and income to NTIC. If sales of NTIC's products and services by this joint venture were to decline significantly or if NTIC's relationships with this joint venture were to deteriorate significantly, NTIC's operating results likely would be adversely affected.

NTIC considers its joint venture in Germany (EXCOR) to be individually significant to NTIC's consolidated assets and income and, therefore, provides certain additional information regarding EXCOR in the notes to NTIC's consolidated financial statements and in certain sections of this report. Of the total equity in income from joint ventures of $4,725,918 during fiscal 2022, NTIC had equity in income from joint ventures of $3,236,989 attributable to EXCOR. Of the total fee income for services provided to joint ventures of $5,767,682 during fiscal 2022, fees of $834,725 were attributable to EXCOR. Accordingly, if sales of NTIC's products and services by this joint venture were to decline significantly or if NTIC's relationships with this joint venture were to deteriorate significantly such that the joint venture terminated or was not motivated to sell NTIC's products and services, NTIC's operating results likely would be adversely affected. While this is also true with respect to the other joint venture entities of which additional information is provided in NTIC's consolidated financial statements and in certain other sections of this report, the significance is not as great as with EXCOR.

NTIC's acquisition of the remaining 50% ownership interest of HNTI and any future similar acquisitions involve risk.

Effective as of September 1, 2021, NTIC acquired the remaining 50% ownership interest in its Indian joint venture, HNTI. It is possible that as part of its succession planning efforts with respect to its joint venture partners that NTIC may complete similar acquisitions in the future. Similar future acquisitions will depend, in part, on the availability of similar opportunities or other suitable acquisition candidates at acceptable prices, terms, and conditions and the availability of capital and personnel resources to complete such acquisitions and run and integrate the acquired business effectively. These acquisitions involve risk and may harm NTIC's business, reputation, financial condition, and operating results. For instance, the benefits of the HNTI acquisition or any future acquisition may take more time than expected to develop or integrate into NTIC's operations, and NTIC cannot guarantee that either the HNTI or any future acquisitions will, in fact, produce any long-term benefits. Acquisitions, such as the HNTI acquisition, involve a number of risks, the occurrence of which could adversely affect NTIC's business, reputation, financial condition, and operating results, including:

- diversion of management's attention to manage and integrate the acquired business;
- disruption to existing operations and plans;
- inability to effectively manage the expanded operations;
- difficulties or delays, which may be exacerbated by the impact of COVID-19, in integrating and assimilating information and financial systems, internal controls, operations, manufacturing processes and products of an acquired business or in realizing projected efficiencies, growth prospects, cost savings, and other synergies;
- potential loss of key employees, customers or suppliers of the acquired businesses or adverse effects on existing business relationships with employees, customers or suppliers;
- write-off of significant amounts of goodwill, other intangible assets, and/or long-lived assets as a result of deterioration in the performance of an acquired business, adverse market conditions, changes in the competitive landscape, changes in laws or regulations that restrict activities of an acquired business, or as a result of a variety of other circumstances;
- violation of confidentiality, intellectual property, and non-compete obligations or agreements by employees of an acquired business or lack of or inadequate formal intellectual property protection mechanisms in place at an acquired business;
- adverse impact on overall profitability if NTIC's expanded operations do not achieve the growth prospects, net sales, net earnings, cost and/or revenue synergies, or other financial results projected in NTIC's valuation models, delays in the realization thereof or costs or charges incurred to achieve any revenue or cost synergies;
- reallocation of amounts of capital from other operating initiatives and/or an increase in leverage and debt service requirements to pay acquisition purchase prices, which could in turn restrict NTIC's ability to access additional capital when needed or limit its ability to pursue other important elements of its business strategy;
- inaccurate assessment of additional post-acquisition, undisclosed, contingent or other liabilities or problems, unanticipated costs associated with an acquisition; and
- impacts as a result of purchase accounting adjustments, incorrect estimates made in the accounting for acquisitions, incurrence of non-recurring charges, or other potential financial accounting or reporting impacts.

In addition, effective internal controls are necessary for NTIC to provide reliable and accurate financial reports and to effectively prevent fraud. The integration of acquired businesses may result in NTIC's systems and controls becoming increasingly complex and more difficult to manage. NTIC devotes significant resources and time to comply with the internal control over financial reporting requirements of the Sarbanes-Oxley Act of 2002. However, it cannot be certain that these measures will ensure that NTIC designs, implements, and maintains adequate control over its financial processes and reporting in the future, particularly in the context of acquisitions of other businesses. Any difficulties in the assimilation of acquired businesses into NTIC's internal control framework could harm its operating results or cause NTIC to fail to meet its financial reporting obligations. Also, acquisitions require the consent of PNC Bank, National Association under NTIC's loan agreement with PNC Bank. NTIC cannot predict whether such approvals would be forthcoming or the terms on which PNC Bank would approve such acquisitions. These risks, among others, could be heightened if NTIC completes a large acquisition or multiple transactions within a relatively short period of time.

The ongoing conflict between Russia and Ukraine may adversely affect our business and results of operations.

Given the nature of our business and our global operations, political, economic, and other conditions in foreign countries and regions, including geopolitical risks such as the current conflict between Russia and Ukraine, may adversely affect our business and results of operations. We have limited operations in Russia and Ukraine, which have been adversely affected by the ongoing conflict between Russia and Ukraine, though these losses are not expected to have a material impact on our operating results. We terminated our joint venture in Russia in May 2022, which we believe will not have an adverse effect on our results of operations or financial condition given the immateriality of the joint venture. The broader consequences of this conflict, which may include additional international sanctions, embargoes, regional instability, and geopolitical shifts; increased tensions between the United States and countries in which we operate; and the extent of the conflict's effect on our business and results of operations as well as the global economy, cannot be predicted.

To the extent the current conflict between Russia and Ukraine adversely affects our business, it may also have the effect of heightening many other risks disclosed herein, any of which could materially and adversely affect our business and results of operations. Such risks include, but are not limited to, adverse effects on macroeconomic conditions, including inflation, demand for our products and potential recessionary economic conditions; increased cyber security threats; adverse changes in trade policies, taxes, government regulations, and tariffs; our ability to maintain or increase our prices in response to rising shipping costs; our ability to implement and execute our business strategy, particularly with regard to our joint ventures; disruptions in global supply chains; our exposure to foreign currency fluctuations; and constraints, volatility, or disruption in the capital markets.

The operations of NTIC China may be adversely affected by China's evolving economic, political, and social conditions.

The results of operations and future prospects of NTIC China may be adversely affected by, among other things, changes in China's political, economic, and social conditions, changes in the relationship between China and its western trade partners, changes in policies of the Chinese government, changes in laws and regulations or in the interpretation of existing laws and regulations, changes in foreign exchange regulations, measures that may be introduced to control inflation, such as interest rate increases, and changes in the rates or methods of taxation. In addition, changes in demand could result from increased competition with local Chinese manufacturers who have cost advantages or who may be preferred suppliers for Chinese end users. Also, Chinese commercial laws, regulations, and interpretations applicable to non-Chinese owned market participants, such as NTIC China, are continually changing. These laws, regulations, and interpretations could impose restrictions on NTIC's and NTIC China's ownership or operations or NTIC's interests in China and could adversely affect NTIC's business, results of operations, and financial condition.

Local regulations in China related to the electric power shortage that began in 2021 may adversely affect NTIC China's operations or the operations of our suppliers with facilities in China. For example, these regulations could result in partial or complete factory shutdowns due to a lack of continuous supply of electrical power. Additionally, the price of electric power may be increased, and peak-demand periods during which prices are higher may be extended by local governments. Certain of our resin suppliers with facilities in China were adversely impacted by these regulations, which contributed to constrained supply. Although NTIC China's operations have not been significantly impacted by regulations related to electric power shortages to date, such regulations may in the future decrease or shut down production or increase product costs, which could adversely affect NTIC's business, results of operations, and financial condition.

Intellectual property rights are difficult to enforce in China, which could harm NTIC's business, results of operations, or financial condition.

Chinese commercial law is relatively undeveloped compared to commercial law in many of NTIC's other major markets, and limited protection of intellectual property is available in China as a practical matter. Although NTIC takes precautions in the operation of NTIC China to protect NTIC's intellectual property, any local manufacturer of products that NTIC undertakes in China could subject NTIC to an increased risk that unauthorized parties will be able to copy or otherwise obtain or use NTIC's intellectual property, which could harm NTIC's business. NTIC may also have limited legal recourse in the event it encounters patent or trademark infringers, which could adversely affect NTIC's business, results of operations, and financial condition.

Uncertainties with respect to the Chinese legal system may adversely affect the operations of NTIC China.

NTIC China is subject to laws and regulations applicable to foreign investment in China. There are uncertainties regarding the interpretation and enforcement of laws, rules, and policies in China. The Chinese legal system is based on written statutes, and prior court decisions have limited precedential value. Because many laws and regulations are relatively new, and the Chinese legal system is still evolving, the interpretations of many laws, regulations, and rules are not always uniform. Moreover, the relative inexperience of China's judiciary in many cases creates additional uncertainty as to the outcome of any litigation, and the interpretation of statutes and regulations may be subject to government policies reflecting domestic political agendas. Finally, enforcement of existing laws or contracts based on existing law may be uncertain and sporadic. For the preceding reasons, it may be difficult for NTIC or NTIC China to obtain timely or equitable enforcement of laws ostensibly designed to protect companies like NTIC or NTIC China, which could adversely affect NTIC's business, results of operations, and financial condition.

Failure to comply with the U.S. Foreign Corrupt Practices Act could subject NTIC to, among other things, penalties and legal expenses that could harm its reputation and have a material adverse effect on its business, results of operations, and financial condition.

NTIC is subject to the U.S. Foreign Corrupt Practices Act, or the FCPA, which generally prohibits covered entities and their intermediaries from engaging in bribery or making other prohibited payments to foreign officials for the purpose of obtaining or retaining business or other benefits. In addition, the FCPA imposes accounting standards and requirements on U.S. publicly-traded corporations and their foreign affiliates, which are intended to prevent the diversion of corporate funds to the payment of bribes and other improper payments and to prevent the establishment of "off books" slush funds from which such improper payments can be made. NTIC also is subject to similar anticorruption legislation implemented in Europe under the Organization for Economic Co-operation and Development's Convention on Combating Bribery of Foreign Public Officials in International Business Transactions. NTIC and its joint ventures, distributors, independent representatives, and agents operate in a number of jurisdictions that pose a high risk of potential violations of the FCPA and other anticorruption laws, based on measurements such as Transparency International's Corruption Perception Index, and NTIC utilizes a number of joint ventures, distributors, independent representatives, and agents for whose actions NTIC could be held liable under the FCPA. NTIC informs its personnel, joint ventures, distributors, independent representatives, and agents of the requirements of the FCPA and other anticorruption laws, including, but not limited to, their reporting requirements. NTIC also has developed and will continue to develop and implement systems for formalizing its contracting processes, performing due diligence on agents, and improving its recordkeeping and auditing practices regarding these regulations. However, there is no guarantee that NTIC's employees, joint ventures, distributors, independent representatives, or other agents have not or will not engage in conduct undetected by NTIC's processes and for which NTIC might be held responsible under the FCPA or other anticorruption laws.

If NTIC's employees, joint ventures, distributors, third-party sales representatives, or other agents are found to have engaged in such practices, NTIC could suffer severe penalties, including criminal and civil penalties, disgorgement, and other remedial measures, including further changes or enhancements to its procedures, policies, and controls and potential personnel changes and disciplinary actions.

Certain private and foreign companies, including some of NTIC's competitors, are not subject to prohibitions as strict as those under the FCPA or, even if subjected to strict prohibitions, such prohibitions may be laxly enforced in practice. If NTIC's competitors engage in corruption, extortion, bribery, pay-offs, theft, or other fraudulent practices, they may receive preferential treatment from personnel of some companies or from government officials, giving NTIC's competitors an advantage in securing business and putting NTIC at a disadvantage.

Fluctuations in foreign currency exchange rates could result in declines in NTIC's earnings and changes in NTIC's foreign currency translation adjustments.

Because the functional currency of NTIC's foreign operations is the applicable local currency, NTIC is exposed to foreign currency exchange rate risk arising from transactions in the normal course of business. NTIC's principal exchange rate exposure is with the Euro, the Japanese Yen, the Indian Rupee, the Chinese Renminbi, the South Korean Won, and the English Pound against the U.S. dollar. NTIC's fees for services provided to its joint ventures and dividend distributions from these foreign entities are paid in foreign currencies; thus, fluctuations in foreign currency exchange rates could result in declines in NTIC's earnings. Any changes in foreign currency exchange rates would be reflected as a foreign currency translation adjustment and would not change NTIC's equity in income from joint ventures reflected in its consolidated statements of operations. NTIC does not hedge against its foreign currency exchange rate risk.

Economic uncertainty in developing markets could adversely affect NTIC's revenue and earnings.

NTIC conducts business, or is contemplating expansion, in developing markets with economies that tend to be more volatile than those in the United States and Western Europe. The risk of doing business in developing markets such as China, Brazil, India, Russia, the United Arab Emirates, Mexico, and other economically volatile areas could adversely affect NTIC's operations and earnings. Such risks include the financial instability among customers in these regions, political instability, fraud or corruption, and other non-economic factors, such as the impact of the COVID-19 pandemic and irregular trade flows that need to be managed successfully with the help of the local governments. In addition, commercial laws in some developing countries can be vague, inconsistently administered, and retroactively applied. If NTIC is deemed not to be in compliance with applicable laws in developing countries where NTIC conducts business, its prospects and business in those countries could be harmed, which could then have a material adverse impact on NTIC's operating results and financial position. NTIC's failure to successfully manage economic, political, and other risks relating to doing business in developing countries and economically and politically volatile areas could adversely affect its business.

Risks Related to NTIC's Products

NTIC faces intense competition in almost all of its product lines, including from competitors that have substantially greater resources than NTIC does. No assurance can be provided that NTIC will be able to compete effectively, which would harm its business and operating results.

NTIC's products are sold in intensely competitive markets throughout the world. This intense competition could result in pricing pressures, lower sales, reduced margins, and lower market share. With respect to its rust and corrosion inhibiting products, NTIC competes on the basis of product innovation, quality, reliability, product support, customer service, reputation, and price. With respect to its Natur-Tec® resin compounds and finished products, NTIC competes on the basis of performance, brand awareness, distribution network, product availability, product offering, shelf life, place of manufacture, and price. NTIC often competes with numerous manufacturers, many of which have substantially greater financial, marketing, and other resources than NTIC. As a result, they may be able to adapt more quickly than NTIC to new or emerging technologies, industry trends, and changes in customer requirements or to devote greater resources to the promotion and sale of their products than NTIC. In addition, competition could increase if new companies enter the markets in which NTIC competes, especially when the barriers to entry are low, which may be true with respect to NTIC's rust and corrosion prevention business, or if existing competitors expand their product lines or intensify efforts within existing product lines. NTIC's current products, products under development, and its ability to develop new and improved products may be insufficient to enable NTIC to compete effectively with its competitors. No assurance can be provided that NTIC will be able to compete effectively, which would harm its business and operating results. In particular, NTIC has experienced more intense competition with respect to many of its traditional ZERUST® rust and corrosion inhibiting products and services, which has led to decreased pricing and smaller margins for NTIC. In fiscal 2021 and fiscal 2022, NTIC has experienced lower margins on its contracts with Chinese automotive customers as a result of the COVID-19 pandemic and an increase in the production of electric vehicles, which have fewer parts that require corrosion inhibiting packaging. NTIC anticipates that such intense competition likely will continue and that new competitors may emerge, including plastic extrusion companies, which would continue to adversely affect NTIC's operating results.

NTIC's ZERUST® rust and corrosion inhibiting products and services generate a significant portion of NTIC's net sales and the net sales of NTIC's joint ventures. Accordingly, if sales of these products and services were to decline, NTIC's operating results would be adversely affected.

NTIC's ZERUST® rust and corrosion inhibiting products and services generate a significant portion of NTIC's net sales and the net sales of NTIC's joint ventures. During fiscal 2022, 77.5% of NTIC's consolidated net sales were derived from sales of ZERUST® rust and corrosion inhibiting products and services. While the net sales of NTIC's joint ventures are not included in NTIC's net sales on NTIC's consolidated financial statements, NTIC's receipt of fees for services that NTIC provides to its joint ventures and NTIC's receipt of dividend distributions from its joint ventures are based primarily on the revenues and profitability of the joint ventures. Accordingly, if sales of these products and services were to decline due to increased competition, the introduction of a new disruptive technology, or otherwise, NTIC's operating results would be adversely affected.

If NTIC is unable to continue to enhance its existing products and develop and market new products that respond to customer needs and achieve market acceptance, NTIC may experience a decrease in demand for its products, and its business could suffer.

One of NTIC's strategies is to enhance its existing products and develop and market new products that respond to customer needs. NTIC may not be able to compete effectively with its competitors unless NTIC can keep up with existing or new products or alternative technologies in the markets in which it competes. Product development requires significant research and development, financial, and other resources. Although in the past NTIC has implemented lean manufacturing and other productivity improvement initiatives to provide investment funding for new products, no assurance can be provided that NTIC will be able to continue to do so in the future. Product improvements and new product introductions also require significant planning, design, development, and testing at the technological, product, and manufacturing process levels, and NTIC may not be able to timely develop product improvements or new products. NTIC's competitors' new products may beat NTIC's products to market, may be more effective or less expensive than NTIC's products, or may render NTIC's products obsolete. Any new products that NTIC may develop may not receive market acceptance or otherwise generate any meaningful net sales or profits for NTIC relative to its expectations, based on, among other things, existing and anticipated investments in manufacturing capacity and commitments to fund advertising, marketing, promotional programs, and research and development.

NTIC has invested and intends to continue to invest additional research and development and marketing efforts and resources into the application of its corrosion prevention solutions into the oil and gas industry and the continued launch of its Natur-Tec® resin compounds and finished products. No assurance can be provided, however, that NTIC's investments in these new markets and products will be successful and result in additional revenue to NTIC.

In an effort to increase net sales, NTIC has expanded the marketing of its corrosion prevention solutions into the oil and gas industry and its Natur-Tec® resin compounds and finished products. NTIC expects to continue to invest additional research and development and marketing efforts and resources into these strategic initiatives. No assurance can be provided, however, that such strategic initiatives will be successful or that NTIC will be successful in obtaining additional revenue as a result of them. The introduction of new products into new markets takes significant resources, and there can be no assurance that NTIC is dedicating a sufficient amount of resources to ensure the success of these strategic initiatives. The sale of NTIC's ZERUST® rust and corrosion inhibiting products and services into the oil and gas industry, in particular, typically involves a long sales cycle, often including a one- to multi-year trial period with each customer and a slow integration process thereafter. This long sales cycle may cause NTIC's management, stockholders, and investors to lose faith in the business opportunities for NTIC's ZERUST® rust and corrosion inhibiting products and services in the oil and gas industry. Additionally, projects NTIC completes for oil and gas industry customers typically involve short turnaround times, and failure to meet these expectations could damage NTIC's ability to successfully promote its corrosion prevention solutions into the oil and gas industry.

NTIC's strategy of expanding its corrosion prevention solutions into the oil and gas industry and continuing the expansion of its Natur-Tec® bioplastics resin compounds and finished products is risky and may not prove to be successful, which could harm NTIC's operating results and financial condition.

NTIC's strategy of expanding its corrosion prevention solutions into the oil and gas industry and continuing the expansion of its Natur-Tec® bioplastics resin compounds and finished products, either directly or indirectly through joint ventures and independent distributors and agents, is risky and subject to all of the risks inherent in the establishment of a new business enterprise, including:

- the absence of a significant operating history;
- the lack of commercialized products;
- the lack of market acceptance of new products;
- expected substantial and continual losses for such businesses for the foreseeable future;
- the lack of manufacturing experience and limited marketing experience;
- an expected reliance on third parties for the manufacture and commercialization of some of the products;
- a competitive environment characterized by numerous, well-established and well-capitalized competitors;
- insufficient capital and other resources; and
- reliance on key personnel and the need to hire and train local support in a timely manner in order to support customer needs; and
- NTIC's dependence on manufacturing and logistical services provided by contractors could give rise to product defect or warranty liability.

NTIC uses third-party manufacturers to produce the majority of its products. In addition, NTIC relies upon certain contractors for logistical services. Although NTIC's arrangements with its contract manufacturers and contractors may contain provisions for warranty expense reimbursement, NTIC may remain responsible to its customers for warranty service in the event of product defects and could experience an unanticipated product defect or warranty liability. In addition, product defects could harm NTIC's reputation amongst its customers.

The commercial success of NTIC's Natur-Tec® resin compounds and finished products depends on the widespread market acceptance of products manufactured with bio-based and biodegradable resins.

Although there is a developed market for petroleum-based plastics, the market for "bioplastics" which are plastics produced with bio-based resins, which are derived from renewable resources such as corn or cellulosic/plant material or blends thereof, or plastics that are engineered to be fully biodegradable or both, is still developing. The commercial success of NTIC's Natur-Tec® resin compounds and finished products depends on the widespread market acceptance of products manufactured with bio-based and biodegradable resins, which may result, in part, from government action at the federal, state or local level. For example, in June 2022, the State of California passed a law intended to reduce single-use plastics. Internationally, the government of India recently announced a phased ban on the manufacture and sale of single-use plastics beginning in July 2022. Similarly, in January 2021, China implemented a ban on single-use plastic utensils, bags and certain other single-use plastic items. Despite these efforts and other measures taken at the federal, state and local levels, including policies related to the collection of organics, it is currently difficult to assess or predict with any assurance the potential size, timing, and viability of market opportunities for NTIC's Natur-Tec® resin compounds and finished products. The traditional plastics market sector is well-established with entrenched competitors with whom NTIC competes. Pricing for traditional plastics has been highly volatile in recent years, which drives, to some extent, the commercial and other support for bioplastics. While NTIC expects to be able to command a premium price for its Natur-Tec® resin compounds and finished products, a widening gap in the pricing for bioplastics versus petroleum-based plastics may reduce the size of the addressable market for NTIC's Natur-Tec® resin compounds and finished products. In addition, the growth of the market will create some pressure on price for applications today considered commodities, including in particular NTIC's current Natur-Tec® finished products.

NTIC relies on its joint ventures, distributors, manufacturer's sales representatives, and other agents to market and sell its products.

In addition to its direct sales force, NTIC relies on its joint ventures, distributors, manufacturer's sales representatives, and other agents to market and sell its products in the United States and internationally. NTIC's joint ventures, distributors, manufacturer's sales representatives, and other agents might terminate their relationship with NTIC or devote insufficient sales efforts to NTIC's products. NTIC does not control its joint ventures, distributors, manufacturer's sales representatives, and other agents, and they may not be successful in implementing NTIC's marketing plans. NTIC's failure to maintain its existing relationships with these entities, or its failure to recruit and retain additional skilled joint venture partners, distributors, manufacturer's sales representatives, and other agents, could have an adverse effect on NTIC's operations. It is anticipated that several of NTIC's joint venture partners will retire during the next several years, which will require a transition on the part of the joint venture as well as NTIC and could harm NTIC's relationship with the joint venture and NTIC's business.

NTIC may be subject to product liability claims or other claims arising out of the activities of its joint ventures, which could adversely affect NTIC and its business.

While NTIC is not aware of any specific potential risk beyond its initial investment in, and any undistributed earnings of, each of its joint ventures, there can be no assurance that NTIC will not be subject to lawsuits based on product liability claims or other claims arising out of the activities of its joint ventures. To mitigate the ramifications of such an occurrence, NTIC maintains liability insurance specifically applicable to its ownership positions in its joint venture arrangements in excess of any insurance the joint ventures may maintain. No assurance can be provided, however, that such insurance will be available or adequate in the event of a claim.

The sale of ZERUST® rust and corrosion inhibiting products into the oil and gas industry is risky in light of the hazards typically associated with such operations and the significant amount of potential liability involved, which could adversely affect NTIC's business if ZERUST® rust and corrosion inhibiting products are involved, even if the cause of such events was not related to NTIC's products.

Because NTIC sells its ZERUST® rust and corrosion inhibiting products into the oil and gas industry, NTIC is subject to some of the risks and hazards typically associated with such operations, including hazards such as fire, explosion, blowouts, cratering, unplanned gas releases, and spills, each of which could be claimed to be attributed to the failure of NTIC's products to perform as anticipated. If such events occur and NTIC's products are involved, NTIC's business and operating results may suffer, even if the cause of such events was not related to NTIC's products.

The sale of ZERUST® rust and corrosion inhibiting products into the oil and gas industry is dependent on certain macroeconomic factors, including seasonality of installations, fluctuations of crude oil prices, global events and regulatory guidelines.

Seasonality of Installations: In the past, NTIC has experienced some seasonality with respect to the sale of its ZERUST® rust and corrosion inhibiting products into the oil and gas industry, with sales during parts of the second and third fiscal quarters being adversely affected by winter in the United States.

Fluctuations of Crude Oil Prices: The sale of NTIC's ZERUST® rust and corrosion inhibiting products into the oil and gas industry, particularly in the United States, has historically been hampered by low/unstable global crude oil prices. Although the price of crude oil neared an all-time high in fiscal 2022, low global crude oil prices have been and may in the future be caused OPEC decisions and other macroeconomic factors affecting supply and demand. NTIC believes low global crude oil prices constrain capital improvement budgets of its existing and prospective customers and may result in personnel turnover at its oil and gas customers or prospects. The ongoing conflict between Russia and Ukraine has escalated tensions between Russia and other countries, some of which have imposed sanctions and taken other economic actions that have contributed to, and are expected to continue to contribute to, rising global crude oil prices, which prices had already risen substantially due to inflationary pressures. Additional international sanctions against Russia may be imposed, which could further increase these costs. NTIC believes the ongoing conflict between Russia and Ukraine and the continued impact of high rates of inflation may create uncertainty among its existing and prospective customers, which may cause them to halt oil and gas projects or elect to decrease capital improvement budgets, either of which could harm NTIC's ability to sell its products into the oil and gas industry.

Global Events: The sale of Zerust Oil & Gas solutions to Oil & Gas sector clients is impacted by events like the COVID pandemic and geopolitical tensions in key oil producing regions like the Middle East. These affect the ability of the teams to have face-to-face meetings, travel for site surveys and implementations, etc., with the added effect of potential supply chain delays/impacts that could delay or postpone sales.

Regulatory Guidelines: The Oil & Gas sector is very conservative and, in addition to long-term trials on-site, client decision makers typically default to guidelines from the American Petroleum Institute (API), Association of Materials Protection and Performance (AMPP), Pipeline Hazardous Materials Safety Administration (PHMSA), European Committee for the Study of Corrosion (CEOCOR), etc. Getting a new technology/solution approach included in these guidelines typically takes years of committee lobbying, client support, field trials and lab validation. The Zerust solutions have been included in several technical reports/committees from these groups though getting full validation is likely to take a few more years.

The expansion of NTIC's corrosion prevention solutions into the oil and gas industry and the continued launch of NTIC's Natur-Tec® resin compounds and finished products may require additional capital in the future, which may not be available or may be available only on unfavorable terms. In addition, any equity financings may be dilutive to NTIC's stockholders.

The expansion of NTIC's corrosion prevention solutions into the oil and gas industry and the continued expansion of NTIC's Natur-Tec® resin compounds and finished products will continue to require resources during fiscal 2023 and beyond. To the extent that NTIC's existing capital, including amounts available under its revolving line of credit, is insufficient to meet these requirements, NTIC may raise additional capital through financings or additional borrowings. Any equity or debt financing, if available at all, may be on terms that are not favorable to NTIC, and any equity financings could result in dilution to NTIC's stockholders.

Risks Related to Governmental Regulation, Laws, and Compliance

NTIC's business, properties, and products are subject to governmental regulation and taxes, compliance with which may require NTIC to incur expenses or modify its products or operations, and which may expose NTIC to penalties for non-compliance. Governmental regulation also may adversely affect the demand for some of NTIC's products and its operating results.

NTIC's business, properties, and products are subject to a wide variety of international, federal, state, and local laws, rules, taxes, and regulations relating to the protection of the environment, natural resources, and worker health and safety and the use, management, storage, and disposal of hazardous substances, wastes, and other regulated materials. These laws, rules, and regulations may affect the way NTIC conducts its operations, and the failure to comply with these regulations could lead to fines and other penalties. These laws, rules, and regulations may be subject to change by the Biden administration, which has stalled construction of the Keystone XL Pipeline and may in the future take action to further restrict such activities. Additionally, new environmental laws, rules, and regulations, such as certain provisions of the Inflation Reduction Act of 2022, which includes measures to reduce emissions, may be enacted, which may adversely affect NTIC's business. Further, because NTIC owns and operates real property, various environmental laws also may impose liability on NTIC for the costs of cleaning up and responding to hazardous substances that may have been released on NTIC's property, including releases unknown to NTIC. These environmental laws and regulations also could require NTIC to pay for environmental remediation and response costs at third-party locations where NTIC disposed of or recycled hazardous substances. NTIC's future costs of complying with the various environmental requirements, as they now exist or may be altered in the future, could adversely affect NTIC's financial condition and operating results. NTIC is also subject to other international, federal, and state laws, rules, and regulations, the future non-compliance with which may harm NTIC's business or may adversely affect the demand for some of its products. Changes in laws and regulations, including changes in accounting standards and taxation changes, including tax rate changes, new tax laws, including the changes to U.S. federal tax laws included in the Inflation Reduction Act of 2022, such as a 1% excise tax on stock repurchases, and revised tax law interpretations, also may adversely affect NTIC's operating results.

Fluctuations in NTIC's effective tax rate could have a significant impact on NTIC's financial position, results of operations, or cash flows.

The mix of pre-tax income or loss among the tax jurisdictions in which NTIC operates, which have varying tax rates, could impact NTIC's effective tax rate. NTIC is subject to income taxes as well as non-income based taxes in both the United States and various foreign jurisdictions. Judgment is required in determining the worldwide provision for income taxes, other tax liabilities, interest, and penalties. Future events could change management's assessment. NTIC operates within multiple taxing jurisdictions and is subject to tax audits in these jurisdictions. These audits can involve complex issues, which may require an extended period of time to resolve. NTIC also has made assumptions about the realization of deferred tax assets. Changes in these assumptions or jurisdictional regulations could result in a valuation allowance for these assets. Final determination of tax audits or tax disputes may be different from what is currently reflected by NTIC's income tax provisions and accruals.

Certain of NTIC's operations are subject to regulation by the U.S. Food and Drug Administration.

The manufacture, sale, and use of NTIC's Natur-Tec® bio-plastic resin compounds are subject to regulation by the U.S. FDA. The FDA's regulations are concerned with substances used indirectly in food packaging materials, not with specific finished food packaging products. Thus, food and beverage containers are in compliance with FDA regulations if the components used in the food and beverage containers: (i) are approved by the FDA as indirect food additives for their intended uses and comply with the applicable FDA indirect food additive regulations; or (ii) are generally recognized as safe for their intended uses and are of suitable purity for those intended uses. NTIC believes that its Natur-Tec® resin compounds comply with all FDA requirements. However, failure to comply with FDA regulations could subject NTIC to administrative, civil, or criminal penalties.

NTIC's compliance with accounting principles generally accepted in the United States of America and any changes in such principles might adversely affect NTIC's operating results and financial condition. Any requirement to consolidate NTIC's joint ventures could adversely affect NTIC's operating results and financial condition.

If there were a change in accounting rules and NTIC were required to fully consolidate its joint ventures or if NTIC's joint ventures otherwise would be required to be consolidated with NTIC, NTIC and the individual joint venture would incur significant additional costs. In addition, other accounting pronouncements issued in the future could have a material cost associated with NTIC's implementation of such new accounting pronouncements.

Risks Related to NTIC's Intellectual Property

NTIC's reliance upon patents, trademark laws, trade secrets, and contractual provisions to protect its proprietary rights may not be sufficient to protect its intellectual property from others who may sell similar products.

NTIC holds patents relating to various aspects of its products and believes that proprietary technical know-how is critical to many of its products. Proprietary rights relating to NTIC's products are protected from unauthorized use by third parties only to the extent that they are covered by valid and enforceable patents or are maintained in confidence as trade secrets. NTIC cannot be certain that it will be issued any patents from any pending or future patent applications owned by or licensed to NTIC or that the claims allowed under any issued patents will be sufficiently broad to protect its technology. In the absence of patent protection, NTIC may be vulnerable to competitors who attempt to copy NTIC's products or gain access to its trade secrets and know-how. NTIC's competitors may initiate litigation to challenge the validity of NTIC's patents, or they may use their resources to design comparable products that do not infringe NTIC's patents. NTIC may incur substantial costs if its competitors initiate litigation to challenge the validity of its patents or if it initiates any proceedings to protect its proprietary rights, and if the outcome of any such litigation is unfavorable to NTIC, its business and operating results could be materially adversely affected.

In addition, NTIC relies substantially on trade secrets and proprietary know-how that it seeks to protect, in part, by confidentiality agreements with its employees and consultants. These agreements may be breached, and NTIC may not have adequate remedies for any such breach. Even if these confidentiality agreements are not breached, NTIC's trade secrets may otherwise become known or be independently developed by competitors.

Risks Related to NTIC's Common Stock

The trading volume of NTIC's common stock is typically very low, leaving NTIC's common stock open to risk of high volatility.

The number of shares of NTIC's common stock being traded daily is often very low, and on some trading days, there is no trading volume at all. During fiscal 2022, the daily trading volume ranged from 0 shares to 40,600 shares. Any NTIC stockholder wishing to sell his, her, or its stock may cause a significant fluctuation in the trading price of NTIC's common stock. In addition, low trading volume of a stock increases the possibility that, despite rules against such activity, the price of the stock may be manipulated by persons acting in their own self-interest. NTIC may not have adequate market makers and market making activity to prevent manipulation in its common stock.

The price and trading volume of NTIC's common stock has been, and may continue to be, volatile.

The market price and trading volume of NTIC's common stock price historically has fluctuated over a wide range. During fiscal 2022, the sale price of NTIC's common stock ranged from a low of $9.05 per share to a high of $18.00 per share, and the daily trading volume ranged from 0 shares to 40,600 shares. It is likely that the price and trading volume of NTIC's common stock will continue to fluctuate in the future. The securities of small capitalization companies, including NTIC, from time-to-time experience significant price and volume fluctuations, often unrelated to the operating performance of these companies. Securities class action litigation is sometimes brought against a company following periods of volatility in the market price of its securities or for other reasons. NTIC may become the target of similar litigation, especially if NTIC fails to meet its annual projected financial guidance or lowers its annual projected financial guidance. Securities litigation, whether with or without merit, could result in substantial costs and divert management's attention and resources, which could harm NTIC's business, operating results, and financial condition as well as the market price of its common stock.

A large percentage of NTIC's outstanding common stock is held by insiders, and, as a result, the trading market for NTIC's common stock is not as liquid as the stock of other public companies.

As of November 14, 2022, NTIC had 9,366,357 shares of common stock outstanding, 22.4% of which were beneficially owned by directors, executive officers, principal stockholders, and their respective affiliates. The stock of companies with a substantial amount of stock held by insiders is usually not as liquid as the stock of other public companies where insider ownership is not as concentrated. Thus, the trading market for shares of NTIC's common stock may not be as liquid as the stock of other public companies.

If securities or industry analysts do not publish research or reports about NTIC's business, or if they adversely change their recommendations regarding NTIC's common stock, the market price for NTIC's common stock and trading volume could decline.

The trading market for NTIC's common stock has been influenced by research or reports that industry or securities analysts publish about NTIC or its business. If one or more analysts who cover NTIC downgrade NTIC's common stock, the market price for NTIC's common stock would likely decline. If one or more cease coverage of NTIC or fail to regularly publish reports on NTIC, NTIC could lose visibility in the financial markets, which, in turn, could cause the market price or trading volume for NTIC's common stock to decline.

One of NTIC's principal stockholders beneficially owns a significant percentage of NTIC's outstanding common stock and is affiliated with NTIC's President and Chief Executive Officer and, thus, may be able to influence matters requiring stockholder approval, including the election of directors, and could discourage or otherwise impede a transaction in which a third-party wishes to purchase NTIC's outstanding shares at a premium.

As of November 14, 2022, Inter Alia Holding Company, or Inter Alia, beneficially owned approximately 12.8% of NTIC's outstanding common stock. Inter Alia is an entity partially owned by G. Patrick Lynch, NTIC's President and Chief Executive Officer and director, as well as two other members of the Lynch family. Mr. Lynch shares voting and dispositive power of shares of NTIC's common stock held by Inter Alia with the other owners. As a result of his share ownership through Inter Alia and his position as President and Chief Executive Officer and director of NTIC, Mr. Lynch may be able to influence the affairs and actions of NTIC, including matters requiring stockholder approval, such as the election of directors and approval of significant corporate transactions. The interests of Mr. Lynch and Inter Alia may differ from the interests of NTIC's other stockholders. This concentration of ownership may have the effect of delaying, preventing, or deterring a change in control of NTIC, could deprive NTIC's stockholders of an opportunity to receive a premium for their common stock as part of a sale or merger of NTIC, and may negatively affect the market price of NTIC's common stock. Transactions that could be affected by this concentration of ownership include proxy contests, tender offers, mergers, or other purchases of common stock that could give stockholders the opportunity to realize a premium over the then-prevailing market price for shares of NTIC's common stock.

General Risk Factors

Climate change, or legal, regulatory, or market measures to address climate change, may negatively affect our business and operations.

Climate change resulting from increased concentrations of carbon dioxide and other greenhouse gases in the atmosphere may have an adverse impact on global temperatures, weather patterns and the frequency and severity of extreme weather and natural disasters, such as hurricanes, tornadoes, earthquakes, wildfires or flooding. Climate change may also cause water shortages, changes in rainfall and storm patterns, changes in sea levels and other negative weather and climate patterns. Such weather conditions could pose physical risks to our facilities and disrupt operation of our supply chain and may impact operational costs.

The increasing global focus on climate change and the need for corporate change also may lead to new regional, federal, and/or global legal and regulatory requirements to reduce or mitigate the effects of greenhouse gases. Inconsistency of regulations in the countries in which we operate may affect the costs of compliance with such legal or regulatory requirements. Additionally, in the event that such regulation is enacted and is more aggressive than the sustainability measures that we are currently undertaking to monitor our emissions and improve our energy efficiently, we may be subject to curtailment or reduced access to resources or experience significant increases in our costs of operation and delivery. As a result, climate change could negatively affect our business and operations.

In addition, public company stockholders are increasingly sensitive to the climate change impacts and mitigation efforts of companies, are increasingly seeking enhanced disclosure on the risks, challenges, governance implications, and financial impacts of climate change faced by companies and are demanding that companies take a proactive approach to addressing perceived environmental risks, including risks associated with climate change, relating to their operations. In an effort to increase climate change disclosure, the SEC proposed climate disclosure rules that would require new climate-related disclosure in SEC filings, as described below. Adverse publicity or climate-related litigation that may result from such enhanced disclosure or stockholder perception could have a negative impact on our business.

New climate disclosure rules, if adopted by the SEC, may increase our costs and litigation risks, which would materially and adversely affect our future results of operations and financial condition.

During fiscal 2022, the SEC proposed new climate disclosure rules, which if adopted, would require new climate-related disclosure in SEC filings, including certain climate-related metrics and greenhouse gas emissions data, information about climate-related targets and goals, transition plans, if any, and extensive attestation requirements. In addition to requiring filers to quantify and disclose direct emissions data, the new rules also would require disclosure of climate impact arising from the operations and uses by the filer's business partners and contractors and end-users of the filer's products and/or services. We are currently assessing the impact of the new rules, if adopted as proposed, but at this time, we cannot predict the costs of implementation or any potential adverse impacts resulting from the new rules if adopted. However, we may incur increased costs relating to the assessment and disclosure of climate-related risks and increased litigation risks related to disclosures made pursuant to the new rules, either of which could materially and adversely affect our future results of operations and financial condition.

Severe weather could have a material adverse effect on our business.

NTIC's business has been and could in the future be materially and adversely affected by severe weather. NTIC's customers, including in particular NTIC's oil and gas customers, may have operations located in parts of the southern United States or other places and may be adversely affected by hurricanes and tropical storms, resulting in reduced demand for NTIC's products and services or increased operating costs. Furthermore, NTIC's customers and raw material suppliers' operations have been and could in the future be adversely affected by such hurricanes and other extreme or seasonal weather conditions. For example, during fiscal year 2021, extreme weather caused supply chain disruptions and caused delays in receiving base resins. Adverse weather can also directly impede NTIC's operations. Repercussions of severe weather conditions may include:

- curtailment of services or reduced demand for products;
- weather-related damage to facilities and equipment, resulting in suspension of operations;
- inability to deliver equipment, personnel and products to job sites in accordance with contract schedules or increased transportation or other operating costs; and
- loss of productivity.

These constraints could delay NTIC's operations and materially increase NTIC's operating and capital costs.

NTIC may grow its business through additional joint ventures, subsidiaries, alliances, and acquisitions, which could be risky and harm its business.

One of NTIC's growth strategies may be to expand its business by entering into additional joint ventures and alliances and acquiring businesses, technologies, and products that complement or augment NTIC's existing products. The benefits of a joint venture, alliance, or acquisition may take more time than expected to develop, and NTIC cannot guarantee that any future joint ventures, alliances, or acquisitions will in fact produce the intended benefits. In addition, joint ventures, alliances, and acquisitions involve a number of risks, including:

- diversion of management's attention;
- difficulties in assimilating the operations and products of a new joint venture or acquired business or in realizing projected efficiencies, cost savings, and revenue synergies;

- potential loss of key employees or customers of the new joint venture or acquired business or adverse effects on existing business relationships with suppliers and customers;
- adverse impact on overall profitability if the new joint venture or acquired business does not achieve the financial results projected in NTIC's valuation models;
- reallocation of amounts of capital from other operating initiatives and/or an increase in NTIC's leverage and debt service requirements to pay the joint venture capital contribution or the acquisition purchase price, which could in turn restrict NTIC's ability to access additional capital when needed or to pursue other important elements of NTIC's business strategy;
- inaccurate assessment of undisclosed, contingent, or other liabilities or problems and unanticipated costs associated with the new joint venture or acquisition; and
- incorrect estimates made in the accounting for acquisitions, occurrence of non-recurring charges, and write-off of significant amounts of goodwill that could adversely affect NTIC's operating results.

NTIC's ability to grow through joint ventures, alliances, and acquisitions will depend, in part, on the availability of suitable opportunities at an acceptable cost, NTIC's ability to compete effectively for these opportunities, and the availability of capital to complete such transactions.

NTIC relies on its management information systems for inventory management, distribution, and other functions. If these information systems fail to adequately perform these functions or if NTIC experiences an interruption in their operation, NTIC's business and operating results could be adversely affected.

The efficient operation of NTIC's business is dependent on its management information systems. NTIC relies on its management information systems to effectively manage accounting and financial functions; manage order entry, order fulfillment, and inventory replenishment processes; and to maintain its research and development data. The failure of management information systems to perform as anticipated could disrupt NTIC's business and product development and could result in decreased sales, causing NTIC's business and operating results to suffer. In addition, NTIC's management information systems are vulnerable to damage or interruption from natural or man-made disasters, including terrorist attacks, attacks by computer viruses or hackers, power loss to computer systems, Internet outages, and telecommunications or data network failure. Any such interruption could adversely affect NTIC's business and operating results.

NTIC's business could be negatively impacted by cyber security threats.

In the ordinary course of NTIC's business, NTIC uses its management information systems to store and access proprietary business information. NTIC faces various cyber security threats, including cyber security attacks to its information technology infrastructure and attempts by others to gain access to its proprietary or sensitive information. The procedures and controls NTIC uses to monitor these threats and mitigate its exposure may not be sufficient to prevent cyber security incidents. The result of these incidents could include disrupted operations, lost opportunities, misstated financial data, liability for stolen assets or information, increased costs arising from the implementation of additional security protective measures, litigation, and reputational damage. Any remedial costs or other liabilities related to cyber security incidents may not be fully insured or indemnified by other means. Additionally, on February 9, 2022, the SEC proposed new rules related to cyber security risk management, which may increase NTIC's regulatory burden and cost of compliance related to cyber security threats.

NTIC's quarterly results are typically unpredictable and subject to variation.

NTIC's quarterly operating results vary from quarter to quarter for a variety of reasons. For example, NTIC's quarterly sales to joint ventures can be affected by individual orders to joint ventures. Because of the typical size of individual orders to joint ventures and the overall size of NTIC's net sales to joint ventures, the timing of one or more orders can materially affect NTIC's quarterly sales to joint ventures and the comparisons to prior year quarters. In addition, because of the typical size of individual orders and the overall size of NTIC's net sales derived from sales of Natur-Tec® products, the timing of one or more orders can materially affect NTIC's quarterly sales of Natur-Tec® products and the comparisons to prior year quarters. Furthermore, since ZERUST® products for the oil and gas industry typically carry higher margins than other traditional ZERUST® products, the amount of sales of ZERUST® products for the oil and gas industry typically affects NTIC's overall margins. Such variability in operating results makes the prediction of NTIC's net sales, earnings, and other operating results for each quarter difficult and increases the risk of unanticipated variations in quarterly operating results. NTIC's quarterly results have been and, in the future, may be below the expectations of public market analysts and investors.

NTIC's business is subject to a number of other miscellaneous risks that may adversely affect NTIC's operating results, financial condition, or business.

NTIC's business is subject to a number of other miscellaneous risks that may adversely affect NTIC's operating results, and financial condition, such as natural or man-made disasters, an unexpected business loss of supply due to a force majeure event or global pandemics that may result in shortages of raw materials, higher commodity costs, an increase in insurance premiums, and other adverse effects on NTIC's business; the continued threat of terrorist acts and war that may result in heightened security and higher costs for import and export shipments of components or finished goods; and the ability of NTIC's management to adapt to unplanned events.

Item 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

Item 2. PROPERTIES

NTIC's principal executive offices, production facilities, and domestic research and development operations are located at 4201 Woodland Road, Circle Pines, Minnesota 55014. NTIC owns this real estate and building. NTIC also owns real estate and a building in Beachwood, Ohio, which it uses for office, manufacturing, laboratory, and warehouse space.

Internationally, NTIC's subsidiaries in Brazil, India, Mexico, and China all lease office, warehouse, and laboratory space. In July 2021, NTIC China entered into a purchase agreement to acquire an approximately 21,000 square feet industrial building and the right to use certain real estate in the Qingpu District of Shanghai, China, which has been used as China's new corporate headquarters since February 2022. In addition, as a result of the HNTI acquisition, NTIC also leases office, warehouse, and laboratory space in Chennai, India.

Additionally, NTIC has contract warehousing agreements in California and Indiana to hold and release stock products to customers. NTIC's management considers its current properties suitable and adequate for its current and foreseeable needs.

Item 3. LEGAL PROCEEDINGS

For information regarding NTIC's legal proceedings, see Note 17 to NTIC's consolidated financial statements.

Item 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

Market Information

NTIC's common stock is listed for trading on the Nasdaq Global Market under the symbol "NTIC."

Dividends

During fiscal 2022, NTIC's Board of Directors declared cash dividends on the following dates in the following amounts to holders of record of the Company's common stock as of the following record dates:

Declaration Date	Amount	Record Date	Payable Date
October 20, 2021	$ 0.07	November 3, 2021	November 17, 2021
January 21, 2022	$ 0.07	February 2, 2022	February 16, 2022
April 22, 2022	$ 0.07	May 4, 2022	May 18, 2022
July 20, 2022	$ 0.07	August 3, 2022	August 17, 2022

On October 20, 2022, NTIC's Board of Directors declared a cash dividend of $0.07 per share of NTIC's common stock, payable on November 16, 2022 to stockholders of record on November 3, 2022. The declaration of future dividends is not guaranteed and will be determined by NTIC's Board of Directors in light of conditions then existing, including NTIC's earnings, financial condition, cash requirements, restrictions in financing agreements, business conditions, and other factors, including without limitation the effect of COVID-19 on its business, operating results, and financial condition.

Number of Record Holders

As of August 31, 2022, there were 158 record holders of NTIC's common stock. This does not include shares held in "street name" or beneficially owned.

Recent Sales of Unregistered Equity Securities

NTIC did not sell any shares of its common stock or any other equity securities of NTIC that were not registered under the Securities Act of 1933, as amended, during the fourth quarter of fiscal 2022.

Issuer Purchases of Equity Securities

NTIC did not purchase any shares of its common stock or other equity securities of NTIC during the fourth quarter of fiscal 2022. As of August 31, 2022, up to $2,640,548 in shares of NTIC common stock remained available for repurchase under NTIC's stock repurchase program.

Item 6. [RESERVED]

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

This Management's Discussion and Analysis provides material historical and prospective disclosures intended to enable investors and other users to assess NTIC's financial condition and results of operations. Statements that are not historical are forward-looking and involve risks and uncertainties discussed under the heading "*Part I. Item 1. Business—Forward-Looking Statements*" and under the heading "*Part I. Item 1A. Risk Factors*." The following discussion of the results of the operations and financial condition of NTIC should be read in conjunction with NTIC's consolidated financial statements and the related notes thereto included under "*Part II. Item 8. Financial Statements and Supplementary Data*."

This Management's Discussion and Analysis is organized in the following major sections:

- **Business Overview**. This section provides a brief overview description of NTIC's business, focusing in particular on developments during the most recent fiscal year.
- **NTIC's Subsidiaries and Joint Venture Network**. This section provides a brief overview of NTIC's subsidiaries and its joint venture network, the joint ventures which are considered individually significant to NTIC's consolidated assets and income, and how NTIC's joint ventures are accounted for by NTIC.
- **Impact of the COVID-19 Pandemic**. This section provides a brief summary of the impacts to date and potential future impacts of the COVID-19 pandemic.
- **Worldwide Supply Chain Disruptions**. This section provides a brief summary of the impacts to date and potential future impacts of worldwide supply chain disruptions.
- **Financial Overview**. This section provides a brief summary of NTIC's financial results and financial condition for fiscal 2022 compared to 2021.
- **Sales and Expense Components**. This section provides a brief description of the significant line items in NTIC's consolidated statements of operations.
- **Results of Operations**. This section provides an analysis of the significant line items in NTIC's consolidated statements of operations.
- **Liquidity and Capital Resources**. This section provides an analysis of NTIC's liquidity and cash flows and a discussion of NTIC's financial condition and financial commitments.
- **Inflation and Seasonality**. This section describes the effects of inflation and seasonality, if any, on NTIC's business and operating results.
- **Market Risk**. This section describes material market risks to which NTIC is subject.
- **Related Party Transactions**. This section describes any material related party transactions to which NTIC is a party.
- **Critical Accounting Policies and Estimates**. This section discusses NTIC's critical accounting policies and estimates, which require NTIC to exercise subjective or complex judgments in their application. NTIC's significant accounting policies, including its critical accounting estimates, are summarized in Note 1 to NTIC's consolidated financial statements.
- **Recent Accounting Pronouncements**. This section references Note 2 to NTIC's consolidated financial statements, which summarizes the effect of recently issued accounting pronouncements on NTIC's results of operations and financial condition.

Business Overview

NTIC develops and markets proprietary, environmentally beneficial products and services in over 65 countries either directly or via a network of subsidiaries, joint ventures, independent distributors, and agents. NTIC's primary business is corrosion prevention products and services, marketed mainly under the ZERUST® brand. NTIC has been selling its proprietary ZERUST® products and services to the automotive, electronics, electrical, mechanical, military, and retail consumer markets for almost 50 years and, more recently, has also expanded into the oil and gas industry. Additionally, NTIC markets and sells a portfolio of proprietary bio-based and certified compostable (fully biodegradable) polymer resin compounds and finished products under the Natur-Tec® brand. These products are intended to reduce NTIC's customers' carbon footprint and provide environmentally sound waste disposal options.

NTIC's ZERUST® rust and corrosion inhibiting products include plastic and paper packaging, liquids, coatings, rust removers, cleaners, and diffusers as well as engineered solutions designed specifically for the oil and gas industry. NTIC also offers worldwide, on-site, technical consulting for rust and corrosion prevention issues. NTIC's technical service consultants work directly with the end users of NTIC's ZERUST® rust and corrosion inhibiting products to analyze their specific needs and develop systems to meet their performance requirements. In North America, NTIC sells its ZERUST® corrosion prevention solutions through a network of independent distributors and agents supported by a direct sales force.

Internationally, NTIC sells its ZERUST® corrosion prevention solutions through its wholly-owned subsidiary in China, NTIC (Shanghai) Co., Ltd. (NTIC China), starting September 1, 2021 its wholly-owned subsidiary in India, HNTI Ltd., its majority-owned joint venture holding company for NTIC's joint venture investments in the Association of Southeast Asian Nations (ASEAN) region, NTI Asean LLC (NTI Asean), certain majority-owned and wholly-owned subsidiaries, and joint venture arrangements in North America, Europe, and Asia. NTIC also sells products directly to its European joint venture partners through its wholly-owned subsidiary in Germany, NTIC Europe GmbH (NTI Europe).

One of NTIC's strategic initiatives is to expand into and penetrate other markets for its ZERUST® corrosion prevention technologies. Consequently, for the past several years, NTIC has focused significant sales and marketing efforts on the oil and gas industry, as the infrastructure that supports that industry is typically constructed using metals that are highly susceptible to corrosion. NTIC believes that its ZERUST® corrosion prevention solutions will minimize maintenance downtime on critical oil and gas industry infrastructure, extend the life of such infrastructure, and reduce the risk of environmental pollution due to leaks caused by corrosion. NTIC markets and sells its ZERUST® rust and corrosion prevention solutions to customers in the oil and gas industry in a continuously increasing number of countries either directly, through its subsidiaries, or through its joint venture partners and other strategic partners. The sale of ZERUST® corrosion prevention solutions to customers in the oil and gas industry typically involves long sales cycles, often including multi-year trial periods with each customer and a slow integration process thereafter.

Natur-Tec® bio-based and compostable plastics are manufactured using NTIC's patented and/or proprietary technologies and are intended to replace conventional petroleum-based plastics. The Natur-Tec® biopolymer resin compound portfolio includes formulations that have been optimized for a variety of applications, including blown-film extrusion, extrusion coating, injection molding, and engineered plastics. These resin compounds are certified to be fully biodegradable in a composting environment and are currently being used to produce finished products, including can liners, shopping and grocery bags, lawn and leaf bags, branded apparel packaging bags and accessories, and various foodservice items, such as disposable cutlery, drinking straws, food-handling gloves, and coated paper products. In North America, NTIC markets its Natur-Tec® resin compounds and finished products primarily through a network of regional and national distributors as well as independent agents. NTIC continues to see significant opportunities for finished bioplastic products and, therefore, continues to strengthen and expand its North American distribution network for finished Natur-Tec® bioplastic products.

Internationally, NTIC sells its Natur-Tec® resin compounds and finished products both directly and through its wholly-owned subsidiary in China and majority-owned subsidiaries in India and Sri Lanka, and through distributors and certain joint ventures.

NTIC's Subsidiaries and Joint Venture Network

NTIC has ownership interests in 10 operating subsidiaries in North America, South America, Europe, and Asia, which are listed in "*Part I. Item 1. Business*" of this annual report on Form 10-K. The results of these subsidiaries are fully consolidated in NTIC's consolidated financial statements, including HNTI Limited, which was consolidated commencing September 1, 2021. On September 21, 2021, NTIC announced that it acquired the remaining 50% ownership interest in its Indian joint venture, HNTI Limited, for $6.25 million in cash, effective as of September 1, 2021. As a result of the acquisition of Zerust India, NTIC's revenues and operating expenses increased and its equity in income from joint ventures decreased during fiscal 2022 as compared to fiscal 2021. See Note 3 to NTIC's consolidated financial statements for a discussion of Zerust India.

NTIC participates in 16 active joint venture arrangements in North America, Europe, and Asia. NTIC has historically funded its investments in joint ventures with cash generated from operations. NTIC's receives funds from its joint ventures as fees for services that NTIC provides to its joint ventures and as dividend distributions. The fees for services provided to joint ventures are determined based on either a flat fee or a percentage of sales depending on local laws and tax regulations. With respect to NTIC's joint venture in Germany (EXCOR), NTIC recognizes an agreed upon quarterly fee for services. NTIC recognizes equity income from each joint venture based on the overall profitability of the joint venture. Such profitability is subject to variability from quarter to quarter, which, in turn, subjects NTIC's earnings to variability from quarter to quarter. The profits of each joint venture are shared by the respective joint venture owners in accordance with their respective ownership percentages. NTIC typically directly or indirectly owns 50% or less of each of its joint venture entities and, thus, does not control the decisions of these entities regarding whether to pay dividends and, if paid, what amount is paid in a given year. The payment of a dividend by an entity is determined by a joint vote of the owners and is not at the sole discretion of NTIC.

NTIC accounts for the investments and financial results of its joint ventures in its consolidated financial statements utilizing the equity method of accounting. NTIC considers EXCOR to be individually significant to NTIC's consolidated assets and income as of August 31, 2022 and 2021. Therefore, NTIC provides certain additional information regarding this entity in the notes to NTIC's consolidated financial statements and in this section of this report. Additional information related to NTIC's joint ventures is available in "*Part I. Item 1. Business*" of this annual report on Form 10-K.

Impact of the COVID-19 Pandemic

The COVID-19 pandemic has negatively impacted the global economy, disrupted global supply chains and shipping, created significant volatility and disruption in financial markets and resulted in weakened economic conditions. While as part of efforts to contain the spread of COVID-19, federal, state, local and foreign governments imposed various restrictions on the conduct of business and travel during 2020 and 2021, most of these restrictions have been lifted, except in China where many remain in place. Because of these restrictions, NTIC continued to experience softened demand for its products in China during fiscal 2022.

Worldwide Supply Chain Disruptions

Worldwide supply chain disruptions, which were initially brought about by the impact of the COVID-19 pandemic, have persisted despite the recovery in the global economy and financial markets. These issues continued during fiscal 2022 and, although these issues have shown some improvement, are expected to continue to some degree in fiscal 2023. NTIC has experienced longer lead times for raw materials, has been forced to find new suppliers of certain raw materials, and has experienced raw material cost increases compared to prior fiscal years. Additionally, NTIC has experienced significantly longer shipping times and significant price increases per shipping container compared to prior fiscal years due to ocean freight capacity issues resulting from increased demand for shipping and reduced capacity and equipment. These and other issues resulting from worldwide supply chain disruptions have recently improved but are expected to continue to some degree in fiscal 2023 and could continue to have a material adverse effect on NTIC's business, operating results and financial condition. The precise financial impact and duration, however, cannot be reasonably estimated at this time.

Financial Overview

NTIC's management, including its chief executive officer, who is NTIC's chief operating decision maker, reports and manages NTIC's operations in two reportable business segments based on products sold, customer base, and distribution center: ZERUST® products and services and Natur-Tec® products.

Highlights of NTIC's financial results for fiscal 2022 include the following, with increases or decreases in each case as compared to fiscal 2021:

- NTIC's consolidated net sales increased 31.3% during fiscal 2022 compared to fiscal 2021. NTIC's consolidated net sales for fiscal 2022 were positively affected by incremental sales as a result of the Zerust India acquisition and increased demand.

- During fiscal 2022, 77.5% of NTIC's consolidated net sales were derived from sales of ZERUST® products and services, which increased 26.1% to $57,459,382 during fiscal 2022 compared to $45,554,434 during fiscal 2021. This increase was due to incremental sales as a result of the Zerust India acquisition, increased sales to new and existing customers due to increased global demand compared to the prior fiscal year and targeted price increases on certain of our products. NTIC's consolidated net sales during fiscal 2022 included $4,608,232 of sales made to customers in the oil and gas industry compared to $3,793,466 during fiscal 2021.

- Net sales of Natur-Tec® products increased 52.7% during fiscal 2022 compared to fiscal 2021 primarily due to an increase in finished product sales in North America and at NTIC's majority-owned subsidiary in India, Natur-Tec India Private Limited.

- Cost of goods sold as a percentage of net sales increased to 68.9% during fiscal 2022 compared to 65.4% during fiscal 2021 primarily as a result of a price increases on raw materials used in NTIC's products, as well as increased labor and shipping costs that were not fully transferred on to the customers.

- NTIC's equity in income from joint ventures decreased 36.7% to $4,725,918 during fiscal 2022 compared to $7,465,214 during fiscal 2021. This decrease was primarily due to the fact that Zerust India is now a consolidated subsidiary within NTIC's financial statements and an increase in operating expenses and a decrease in gross margins at the joint ventures.

- Net sales at the joint ventures decreased 14% to $104,077,748 during fiscal 2022 compared to $120,954,550 during fiscal 2021. These decreases were primarily a result of decreased demand during fiscal 2022 and the Zerust India acquisition since $9,967,464 in Zerust India sales were included in NTIC's net sales in the current fiscal year period.

- NTIC's total operating expenses increased 15.1% to $28,414,117 during fiscal 2022 compared to $24,679,626 during fiscal 2021. This increase was primarily due to $2,375,167 in incremental expenses due to the Zerust India acquisition during fiscal 2022 and increased personnel, travel, and research and development expenses.

- Since NTIC acquired the remaining 50% ownership interest of Zerust India effective September 1, 2021, NTIC recognized a gain of $3,951,550 during fiscal 2022, which is included in "Remeasurement gain on acquisition of equity method investee" on NTIC's consolidated statements of operations.

- NTIC incurred net income attributable to NTIC of $6,324,700, or $0.66 per diluted common share, for fiscal 2022, compared to net income attributable to NTIC of $6,281,238, or $0.64 per diluted common share, for fiscal 2021. Of the increase for fiscal 2022, $3,951,550 was due to the gain from the Zerust India acquisition.

Sales and Expense Components

The following is a description of the primary components of net sales and expenses:

Net Sales, Excluding Joint Ventures. NTIC derives net sales from the sale of its ZERUST® products and services and its Natur-Tec® products. NTIC sells its ZERUST® products and services and its Natur-Tec® products either directly, through its subsidiaries, or via a network of joint ventures, independent distributors, and agents. Net sales, excluding joint ventures represents net sales by NTIC either directly to end users or to distributors worldwide, but not sales to NTIC's joint ventures and not sales by NTIC's joint ventures. NTIC recognizes revenue from the sale of its products primarily upon shipment of the products.

Net Sales, To Joint Ventures. Net sales, to joint ventures represents net sales by NTIC to NTIC's joint ventures, but not sales by NTIC either directly to end users or to distributors or sales by NTIC's joint ventures. NTIC's revenue recognition policy for sales to its joint ventures is the same as NTIC's policy for sales to unaffiliated customers. NTIC recognizes revenue from the sale of its products to joint ventures primarily upon shipment of the products.

Cost of Goods Sold. Most of NTIC's products are manufactured by third parties, and its cost of goods sold for those products consists primarily of the price invoiced by its third-party vendors. For the portion of products that NTIC manufactures, NTIC's cost of goods sold for those products consists primarily of direct labor, allocated manufacturing overhead, raw materials, and components. NTIC's margins on its Natur-Tec® resin compounds and finished products are generally smaller than its margins on its ZERUST® products and services, and NTIC's margins on its ZERUST® products and services sold into the oil and gas industry are generally greater than its margins on its traditional ZERUST® products and services.

Equity in Income from Joint Ventures. NTIC's equity in income from joint ventures consists of NTIC's share of equity in income from each joint venture based on the overall profitability of the joint ventures. Such profitability is subject to variability from quarter to quarter, which, in turn, subjects NTIC's earnings to variability from quarter to quarter. Traditionally, a portion of the equity income recorded in a given fiscal year is paid to the owners of the joint venture entity during the following fiscal year through a dividend. The payment of a dividend by a joint venture entity is determined by a vote of the joint venture owners and is not at the sole discretion of NTIC. NTIC typically owns only 50% or less of its joint venture entities and, thus, does not control the decisions of these entities regarding whether to pay dividends and, if paid, how much they should be in a given year.

Fees for Services Provided to Joint Ventures. NTIC provides certain services to its joint ventures, including consulting, legal, travel, insurance, technical, and marketing services based on licensing or other agreements with its joint ventures. NTIC receives fees for these services it provides to its joint ventures based primarily on the net sales by NTIC's joint ventures, the latter of which are not included in NTIC's net sales reflected on NTIC's consolidated statements of operations. The fees for services received by NTIC from its joint ventures are generally determined based on either a flat fee or a percentage of net sales by NTIC's joint ventures depending on local laws and tax regulations. With respect to EXCOR, NTIC receives an agreed upon fixed quarterly fee for such services. Under NTIC's agreements with its joint ventures in which the fees for services are described, amounts are earned when product is shipped from joint venture facilities, at which point a sale is deemed to have occurred and results in obligation of the joint venture to pay the royalty and recognition of the fee by NTIC.

Selling Expenses. Selling expenses consist primarily of sales commissions and support costs for NTIC's direct sale and distribution system and marketing costs.

General and Administrative Expenses. General and administrative expenses consist primarily of salaries and benefits and other costs for NTIC's executives, accounting, stock-based compensation, finance, legal, information technology, and human resources functions.

Research and Development Expenses. Research and development expenses include costs associated with the design, development, market analysis, lab testing, and field trials and enhancements of NTIC's products and services. NTIC expenses all costs related to product research and development as incurred. Research and development expenses reflect the net amount after being reduced by reimbursements related to certain research and development contracts. With respect to such research and development contracts, NTIC accrues proceeds received under the contracts and offsets research and development expenses incurred in equal installments over the timelines associated with completion of the contracts' specific objectives and milestones.

Remeasurement Gain on Acquisition of Equity Method Investee. Remeasurement gain on acquisition of equity method investee consists of the gain resulting from the acquisition of the remaining 50% ownership interest of Zerust India.

Interest Income. Interest income consists of interest earned on investments, which typically consist of investment-grade, interest-bearing securities and money market accounts.

Interest Expense. Interest expense results primarily from interest associated with any borrowings under NTIC's line of credit with PNC Bank.

Income Tax Expense. Income tax expense includes federal income taxes, foreign withholding taxes, income tax of consolidated entities in foreign jurisdictions, state income tax, and changes to NTIC's deferred tax valuation allowance. NTIC utilizes the asset and liability method of accounting for income taxes, which requires an asset and liability approach to financial accounting and reporting for income taxes. Deferred income tax assets and liabilities are computed annually for differences between the financial statement and tax basis of assets and liabilities that will result in taxable or deductible amounts in the future, based on enacted tax laws and rates applicable to the periods in which the differences are expected to affect taxable income. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized. NTIC records a tax valuation allowance when it is more likely than not that some portion or all of its deferred tax assets will not be realized. NTIC makes this determination based on all available evidence, including historical data and projections of future results. Income tax expense is the tax payable or refundable for the period plus or minus the change during the period in deferred tax assets and liabilities.

Results of Operations

Fiscal Year 2022 Compared to Fiscal Year 2021

The following table sets forth NTIC's results of operations for fiscal 2022 and fiscal 2021.

	Fiscal 2022	% of Net Sales	Fiscal 2021	% of Net Sales	$ Change	% Change
Net sales, excluding joint ventures	$ 71,190,801	96.0%	$ 53,470,623	94.6%	$ 17,720,178	33.1%
Net sales, to joint ventures	2,968,089	4.0%	3,023,196	5.4%	(55,107)	(1.8)%
Cost of goods sold	51,090,298	68.9%	36,920,814	65.4%	14,169,484	38.4%
Equity in income from joint ventures	4,725,918	6.4%	7,465,214	13.2%	(2,739,296)	(36.7)%
Fees for services provided to joint ventures	5,767,682	7.8%	5,964,260	10.6%	(196,578)	(3.3)%
Selling expenses	13,038,180	17.6%	12,016,974	21.3%	1,021,206	8.5%
General and administrative expenses	10,600,603	14.3%	8,262,173	14.6%	2,338,430	28.3%
Research and development expenses	4,775,334	6.4%	4,400,479	7.8%	374,855	8.5%

Net Sales. NTIC's consolidated net sales increased 31.3% to $74,158,890 during fiscal 2022 compared to $56,493,819 during fiscal 2021. NTIC's consolidated net sales to unaffiliated customers excluding NTIC's joint ventures increased 33.1% to $71,190,801 during fiscal 2022 compared to $53,470,623 during fiscal 2021. This increase was primarily a result of $9,967,464 in incremental sales as a result of the Zerust India acquisition during fiscal 2022 and increased demand across all market segments. Net sales to joint ventures decreased 1.8% to $2,968,089 during fiscal 2022 compared to $3,023,196 during fiscal 2021.

The following table sets forth NTIC's net sales by product segment for fiscal 2022 and fiscal 2021:

	Fiscal 2022	Fiscal 2021	$ Change	% Change
Total ZERUST® sales	$ 57,459,382	$ 45,554,434	$ 11,904,948	26.1%
Total Natur-Tec® sales	16,699,508	10,939,385	5,760,123	52.7%
Total net sales	$ 74,158,890	$ 56,493,819	$ 17,665,071	31.3%

During fiscal 2022, 77.5% of NTIC's consolidated net sales were derived from sales of ZERUST® products and services, which increased 26.1% to $57,459,382 compared to $45,554,434 during fiscal 2021.

The following table sets forth NTIC's net sales of ZERUST® products for fiscal 2022 and fiscal 2021:

	Fiscal 2022	Fiscal 2021	$ Change	% Change
ZERUST® industrial net sales	$ 49,883,060	$ 38,737,771	$ 11,145,289	28.8%
ZERUST® joint venture net sales	2,968,090	3,023,197	(55,107)	(1.8%)
ZERUST® oil & gas net sales	4,608,232	3,793,466	814,766	21.5%
Total ZERUST® net sales	57,459,382	$ 45,554,434	$ 11,904,948	26.1%

The increase in NTIC's consolidated net sales derived from sales of ZERUST® products and services was primarily a result of $9,967,464 in incremental sales as a result of the Zerust India acquisition, increased sales to new and existing customers due to increased global demand and targeted price increases on certain products, partially offset by decreased demand in the automotive industry and a decrease in joint venture net sales, including in particular in Europe which has been subject to geopolitical uncertainty. Overall, demand for ZERUST® products and services depends heavily on the overall health of the market segments to which NTIC sells its products, including the automotive, oil and gas, agriculture, and mining markets in particular. Beginning in fiscal 2021 and continuing in fiscal 2022, the automotive industry experienced a microchip shortage that has decreased the production of vehicles. This decreased production has decreased demand for ZERUST® products and services within the automotive industry. The microchip shortage and the corresponding decrease in the production of vehicles is anticipated to continue into fiscal 2023.

ZERUST® oil and gas net sales increased 21.5% during fiscal 2022 compared to fiscal 2021 primarily as a result of new opportunities with new customers, partially offset by reduced demand as a result of the COVID-19 pandemic. NTIC anticipates that its sales of ZERUST® products and services into the oil and gas industry will continue to remain subject to significant volatility from quarter to quarter as sales are recognized, specifically due to the volatility of oil prices. Demand for oil and gas products around the world depends primarily on market acceptance and the reach of NTIC's distribution network. Because of the typical size of individual orders and overall size of NTIC's net sales derived from sales of oil and gas products, the timing of one or more orders can materially affect NTIC's quarterly sales compared to prior fiscal year quarters.

During fiscal 2022, 22.5% of NTIC's consolidated net sales were derived from sales of Natur-Tec® products, compared to 19.4% during fiscal 2021. Sales of Natur-Tec® products increased 52.7% to $16,699,508 during fiscal 2022 compared to $10,939,385 during fiscal 2021 as a result of increased global demand. The COVID pandemic has adversely impacted demand for Natur-Tec® products from across the apparel industry, as well as many large users of bioplastics, including college campuses, stadiums, arenas, restaurants, and corporate office complexes. NTIC has experienced a recovery in many of these areas to pre-pandemic levels, but still expects some of these customers will be the last businesses to fully re-open and operate at full pre-pandemic capacities, and accordingly, anticipates that the COVID-19 pandemic will continue to adversely affect sales of Natur-Tec® products into fiscal 2023.

Cost of Goods Sold. Cost of goods sold increased 38.4% in fiscal 2022 compared to fiscal 2021 primarily as a result of the increase in net sales, as described above, and price increases on raw materials used in NTIC's products, as well as increased labor and shipping costs. Cost of goods sold as a percentage of net sales increased to 68.9% during fiscal 2022 compared to 65.4% during fiscal 2021 primarily due to price increases on raw materials used in NTIC's products, as well as increased labor and shipping costs. Although NTIC has taken certain actions to address inflationary pressures and pass on as much of the related cost increases to its customers as possible, it expects some of these inflationary pressures to persist into fiscal 2023. Some improvements from these actions as well as some improvements in gross margin were realized during the second half of fiscal 2022.

Equity in Income from Joint Ventures. NTIC's equity in income from joint ventures decreased 36.7% to $4,725,918 during fiscal 2022 compared to $7,465,214 during fiscal 2021. This decrease was primarily due to the fact that Zerust India is now a consolidated subsidiary within NTIC's financial statements and an increase in operating expenses and a decrease in gross margins at the joint ventures. NTIC's equity in income from joint ventures fluctuates based on net sales and profitability of the joint ventures during the respective periods. Of the total equity in income from joint ventures, NTIC had equity in income from joint ventures of $3,236,989 attributable to EXCOR during fiscal 2022 compared to $4,400,403 attributable to EXCOR during fiscal 2021. NTIC had equity in income of all other joint ventures of $1,488,929 during fiscal 2022 compared to $3,064,811 during fiscal 2021.

Fees for Services Provided to Joint Ventures. NTIC recognized fee income for services provided to joint ventures of $5,767,682 during fiscal 2022 compared to $5,964,260 during fiscal 2021, representing a decrease of 3.3%, or $196,578. Fee income for services provided to joint ventures is traditionally a function of the sales made by NTIC's joint ventures; however, at various joint ventures, the fee income for services is a fixed amount that does not fluctuate with the increases in sales which was experienced by certain joint ventures during fiscal 2022. Additionally, during fiscal 2022, NTI Asean recovered $681,859 in previously written-off fees related to the termination of its joint venture in China in fiscal 2015, which partially offset decreased fees for services provided to joint ventures during fiscal 2022. Total net sales of NTIC's joint ventures decreased $16,876,802 to $104,077,748 during fiscal 2022 compared to $120,954,550 during fiscal 2021, representing a decrease of 14.0%. This decrease was primarily a result of decreased demand during fiscal 2022 due in part to geopolitical uncertainty and the Zerust India acquisition since its sales were included in NTIC's net sales in fiscal 2022 but not fiscal 2021. Net sales of NTIC's joint ventures are not included in NTIC's product sales and are not included in NTIC's consolidated financial statements. Of the total fee income for services provided to joint ventures, fees of $834,725 were attributable to EXCOR during fiscal 2022 compared to $920,902 attributable to EXCOR during fiscal 2021.

Selling Expenses. NTIC's selling expenses increased 8.5% in fiscal 2022 compared to fiscal 2021 due primarily to incremental expenses due to the Zerust India acquisition, as well as an increase in travel and personnel expenses compared to the expenses incurred during fiscal 2021. Selling expenses as a percentage of net sales decreased to 17.6% for fiscal 2022 compared to 21.3% in fiscal 2021 primarily due to the increase in net sales, partially offset by the increased selling expenses, as previously described.

General and Administrative Expenses. NTIC's general and administrative expenses increased 28.3% in fiscal 2022 compared to fiscal 2021 primarily due to incremental expenses due to the Zerust India acquisition and transaction expenses incurred to complete the acquisition, as well as increased travel and personnel expenses compared to the expenses incurred during fiscal 2021. As a percentage of net sales, general and administrative expenses decreased to 14.3% for fiscal 2022 from 14.6% for fiscal 2021 primarily due to the increase in net sales, partially offset by the increase in general and administrative expenses.

Research and Development Expenses. NTIC's research and development expenses increased 8.5% in fiscal 2022 compared to fiscal 2021 primarily due to increased personnel and development efforts.

Interest Income. NTIC's interest income decreased to $49,241 in fiscal 2022 compared to $151,875 in fiscal 2021 due primarily to changes to the invested cash balances.

Interest Expense. NTIC's interest expense increased to $89,096 in fiscal 2022 compared to $16,086 in fiscal 2021 due primarily to increased outstanding borrowings under the line of credit during fiscal 2022 and increased interest rates during fiscal 2022 compared to fiscal 2021.

Remeasurement Gain on Acquisition of Equity Method Investee. Authoritative guidance on accounting for business combinations requires that an acquirer re-measure its previously held equity interest in the acquisition at its acquisition date fair value and recognize the resulting gain or loss in earnings. As such, since NTIC acquired the remaining 50% ownership interest of Zerust India effective September 1, 2021, NTIC recognized a gain of $3,951,550 during fiscal 2022. This gain is included in "Remeasurement gain on acquisition of equity method investee" on NTIC's consolidated statements of operations.

Income Before Income Tax Expense. NTIC had income before income tax expense of $9,059,770 for fiscal 2022 compared to income before income tax expense of $8,458,642 for fiscal 2021.

Income Tax Expense. Income tax expense was $1,873,836 during fiscal 2022 compared to $1,461,905 during fiscal 2021 for an effective tax rate of 20.7% and 17.3%, respectively.

NTIC considers the earnings of certain foreign joint ventures to be indefinitely invested outside the United States on the basis of estimates that NTIC's future domestic cash generation will be sufficient to meet future domestic cash needs. As a result, U.S. income and foreign withholding taxes have not been recognized on the cumulative undistributed earnings of $21,256,923 and $24,702,778 as of August 31, 2022 and August 31, 2021, respectively. To the extent undistributed earnings of NTIC's joint ventures are distributed in the future, they are not expected to result in any material additional income tax liability after the application of foreign tax credits.

Net Income Attributable to NTIC. Net income attributable to NTIC was $6,324,700, or $0.66 per diluted common share, for fiscal 2022 compared to net income attributable to NTIC of $6,281,238, or $0.64 per diluted common share, for fiscal 2021, an increase of $43,462 or $0.02 per diluted share. This increase was primarily due an increase in gross margin and the remeasurement gain related to the acquisition of Zerust India of $3,951,550 included in "Remeasurement gain on acquisition of equity method investee" on NTIC's consolidated statements of operations, partially offset by increases in operating expenses and cost of goods sold and decreases in joint venture income contribution.

NTIC anticipates that its earnings will continue to be adversely affected by both the COVID-19 pandemic and worldwide supply disruptions, among other factors. Additionally, NTIC anticipates that its quarterly net income will continue to remain subject to significant volatility primarily due to the financial performance of its subsidiaries and joint ventures, sales of its ZERUST® products and services into the oil and gas industry, and sales of its Natur-Tec® bioplastics products, which sales fluctuate more on a quarterly basis than the traditional ZERUST® business.

Other Comprehensive Income – Foreign Currency Translations Adjustment. The changes in the foreign currency translations adjustment were due to the fluctuation of the U.S. dollar compared to the Euro and other foreign currencies during fiscal 2022 compared to fiscal 2021.

Liquidity and Capital Resources

Sources of Cash and Working Capital. NTIC's working capital, defined as current assets less current liabilities, was $23,169,480 as of August 31, 2022, including $5,333,890 in cash and cash equivalents and $5,590 in available for sale securities, compared to $25,230,893 as of August 31, 2021, including $7,680,641 in cash and cash equivalents and $4,634 in available for sale securities.

NTIC has a revolving line of credit with PNC Bank of $7,000,000, which was increased from $5,000,000 effective as of May 20, 2022 to allow for financial flexibility, and was scheduled to decrease back to $5,000,000 effective as of August 16, 2022. Subsequently, to maintain future financial flexibility, on August 8, 2022, NTIC and PNC Bank entered into an Amended and Restated Revolving Line of Credit Note and agreed to keep the line of credit at $7,000,000 until its maturity date, January 7, 2023. As of August 31, 2022, $5,900,000 was outstanding under the revolving line of credit, compared to no borrowings outstanding as of August 31, 2021. Such outstanding borrowings were used primarily to fund NTIC's acquisition of the remaining ownership interest of Zerust India. Outstanding advances under the line of credit bear interest at the daily Bloomberg Short-Term Bank Yield Index (BSBY) rate plus 250 basis points (2.50%). The line of credit is scheduled to mature on January 7, 2023. The line of credit is governed under an Amended and Restated Loan Agreement dated August 31, 2021. The loan agreement contains standard covenants, including affirmative financial covenants, such as the maintenance of a minimum fixed charge coverage ratio, and negative covenants, which, among other things, limit the incurrence of additional indebtedness, loans and equity investments, disposition of assets, mergers and consolidations and other matters customarily restricted in such agreements. Under the loan agreement, NTIC is subject to a minimum fixed charge coverage ratio of 1.10:1.00. As of August 31, 2022, NTIC was in compliance with all debt covenants under the Amended and Restated Loan Agreement. As of August 31, 2022, NTIC did not have any letters of credit outstanding with respect to the letter of credit sub-facility available under the revolving line of credit with PNC Bank.

NTIC believes that a combination of its existing cash and cash equivalents, available for sale securities, forecasted cash flows from future operations, anticipated distributions of earnings, anticipated fees to NTIC for services provided to its joint ventures, and funds available through existing or anticipated financing arrangements will be adequate to fund its existing operations, investments in new or existing joint ventures or subsidiaries, capital expenditures, debt repayments, cash dividends, and any stock repurchases for at least the next 12 months. In fiscal 2023, NTIC expects to continue to invest directly and through its use of working capital in Zerust India, NTIC China, Zerust Mexico, NTI Europe, its joint ventures, research and development, marketing efforts, resources for the application of its corrosion prevention technology in the oil and gas industry, and its Natur-Tec® bio-plastics business, although the amounts of these various investments are not known at this time.

NTIC also expects to use some of its capital resources to continue to transition some of its joint ventures as needed or appropriate, which may include additional acquisitions by NTIC of the remaining ownership interests of joint ventures not owned by NTIC or dissolutions or liquidations of one or more of its joint ventures. NTIC terminated its joint venture in Russia in May 2022. The termination of NTIC's joint venture in Russia did not have a material adverse effect on NTIC's results of operations or financial condition or its joint venture operations given the immateriality of the operations of this joint venture.

NTIC traditionally has used the cash generated from its operations, distributions of earnings from joint ventures and fees for services provided to its joint ventures to fund NTIC's new technology investments and capital contributions to new and existing subsidiaries and joint ventures. NTIC's joint ventures traditionally have operated with little or no debt and have been self-financed with minimal initial capital investment and minimal additional capital investment from their respective owners. Therefore, NTIC believes there is limited exposure by NTIC's joint ventures that could materially impact their respective operations and/or liquidity.

In order to take advantage of new product and market opportunities to expand its business and increase its revenues and assist with joint venture transitions, NTIC may decide to finance such opportunities by additional borrowings under its revolving line of credit or raising additional financing through the issuance of debt or equity securities. There is no assurance that any financing transaction will be available on terms acceptable to NTIC or at all or that any financing transaction will not be dilutive to NTIC's current stockholders.

Uses of Cash and Cash Flow. Net cash provided by operating activities during fiscal 2022 was $1,146,078, which resulted principally from NTIC's net income, dividends received from joint ventures, depreciation and amortization expense, stock-based compensation and increases in accounts payable, partially offset by the remeasurement gain on acquisition of equity method investee, deferred income tax and equity in income from joint ventures and an increase in accounts receivable and inventory. Net cash provided by operating activities during fiscal 2021 was $2,892,940, which resulted principally from NTIC's net income, dividends received from joint ventures, stock-based compensation, depreciation, amortization and increases in accounts payable and accrued liabilities, partially offset by NTIC's equity in income from joint ventures and an increase in accounts receivable and prepaid expenses and other.

NTIC's cash flows from operations are impacted by significant changes in certain components of NTIC's working capital, including inventory turnover and changes in receivables and payables. NTIC considers internal and external factors when assessing the use of its available working capital, specifically when determining inventory levels and credit terms of customers. Key internal factors include existing inventory levels, stock reorder points, customer forecasts and customer requested payment terms. Key external factors include the availability of primary raw materials and sub-contractor production lead times. NTIC's typical contractual terms for trade receivables, excluding joint ventures, are traditionally 30 days and 90 days for trade receivables from its joint ventures. Before extending unsecured credit to customers, excluding NTIC's joint ventures, NTIC reviews customers' credit histories and will establish an allowance for uncollectible accounts based upon factors surrounding the credit risk of specific customers and other information. Accounts receivable over 30 days are considered past due for most customers. NTIC does not accrue interest on past due accounts receivable. If accounts receivables in excess of the provided allowance are determined uncollectible, they are charged to selling expense in the period that the determination is made. Accounts receivable are deemed uncollectible based on NTIC exhausting reasonable efforts to collect. NTIC's typical contractual terms for receivables for services provided to its joint ventures are 90 days. NTIC records receivables for services provided to its joint ventures on an accrual basis, unless circumstances exist that make the collection of the balance uncertain, in which case the fee income will be recorded on a cash basis until there is consistency in payments. This determination is handled on a case-by-case basis.

NTIC experienced an increase in trade receivables and inventory as of August 31, 2022 compared to August 31, 2021. Trade receivables, excluding joint ventures, as of August 31, 2022 increased $2,091,353 compared to August 31, 2021, primarily related to an increase in sales.

Outstanding trade receivables, excluding joint ventures balances, as of August 31, 2022 decreased by an average of 3 days to an average of 72 days from balances outstanding from these customers as of August 31, 2021.

Outstanding trade receivables from joint ventures as of August 31, 2022 increased $73,053 compared to August 31, 2021 primarily due to the timing of payments. Outstanding balances from trade receivables from joint ventures increased by an average of 10 days as of August 31, 2022 to an average of 85 days from an average of 75 days from balances outstanding from these customers compared to August 31, 2021. The average days outstanding of trade receivables from joint ventures as of August 31, 2022 were primarily due to the receivables balances at South Korea and Thailand.

Outstanding receivables for services provided to joint ventures as of August 31, 2022 increased $259,990 compared to August 31, 2021, and the average days to pay increased an average of 20 days to an average of 112 days compared to August 31, 2021.

Net cash used in investing activities during fiscal 2022 was $7,108,174, which was primarily the result of the purchase of the remaining 50% ownership interest in Zerust India, purchases of property and equipment, investment in joint venture and investments in patents. Net cash used in investing activities during fiscal 2021 was $103,316, which was primarily the result of the purchase of available for sale securities, purchases of property and equipment and investments in patents, partially offset by proceeds from the sale of available for sale securities.

Net cash provided by financing activities for fiscal 2022 was $3,188,377, which resulted from borrowings under the line of credit and proceeds from the exercise of stock options and NTIC's employee stock purchase plan, partially offset by dividends paid on NTIC common stock and dividends received by non-controlling interest. Net cash used in financing activities for fiscal 2021 was $1,522,209, which resulted from dividends paid on NTIC common stock and dividends paid to a non-controlling interest, partially offset by proceeds from NTIC's employee stock purchase plan and proceeds from stock option exercises.

Share Repurchase Plan. On January 15, 2015, NTIC's Board of Directors authorized the repurchase of up to $3,000,000 in shares of NTIC common stock through open market purchases or unsolicited or solicited privately negotiated transactions. This program has no expiration date but may be terminated by NTIC's Board of Directors at any time. No repurchases occurred during fiscal 2022 or fiscal 2021. As of August 31, 2022, up to $2,640,548 in shares of NTIC common stock remained available for repurchase under NTIC's stock repurchase program.

Cash Dividends. During fiscal 2022, NTIC's Board of Directors declared cash dividends on the following dates in the following amounts to holders of record of NTIC common stock as of the following record dates:

Declaration Date	Amount		Record Date	Payable Date
October 20, 2021	$	0.07	November 3, 2021	November 17, 2021
January 21, 2022	$	0.07	February 2, 2022	February 16, 2022
April 22, 2022	$	0.07	May 4, 2022	May 18, 2022
July 20, 2022	$	0.07	August 3, 2022	August 17, 2022

On April 23, 2020, NTIC announced the temporary suspension of its quarterly cash dividend pending clarity on the financial impact of COVID-19 on NTIC. On January 15, 2021, NTIC announced the reinstatement of its quarterly cash dividend. During fiscal 2021, NTIC's Board of Directors declared cash dividends on the following dates in the following amounts to holders of record of NTIC common stock as of the following record dates:

Declaration Date	Amount		Record Date	Payable Date
January 15, 2021	$	0.065	February 3, 2021	February 17, 2021
April 23, 2021	$	0.065	May 5, 2021	May 19, 2021
July 21, 2021	$	0.065	August 4, 2021	August 18, 2021

The declaration of future dividends is not guaranteed and will be determined by NTIC's Board of Directors in light of conditions then existing, including NTIC's earnings, financial condition, cash requirements, restrictions in financing agreements, business conditions, and other factors, including without limitation the effect of COVID-19 on NTIC's business, operating results and financial condition.

Capital Expenditures and Commitments. NTIC spent $1,496,674 on capital expenditures during fiscal 2022, which related primarily to the purchase of new equipment and facility improvements. NTIC expects to spend an aggregate of approximately $1,200,000 to $1,500,000 on capital expenditures during fiscal 2023, which it expects will relate primarily to the purchase of new equipment and facility improvements.

Inflation and Seasonality

Although inflation in the United States and abroad historically has had little effect on NTIC, inflationary pressures adversely affected NTIC's gross margins during fiscal 2022 and are expected to persist into fiscal 2023.

NTIC believes there is some seasonality in its business. NTIC's net sales in the second fiscal quarter were adversely affected by the long Chinese New Year, the North American holiday season, and overall less corrosion taking place at lower winter temperatures worldwide.

Market Risk

NTIC is exposed to some market risk stemming from changes in foreign currency exchange rates, commodity prices and interest rates.

Because the functional currency of NTIC's foreign operations and investments in its foreign joint ventures is the applicable local currency, NTIC is exposed to foreign currency exchange rate risk arising from transactions in the normal course of business. NTIC's principal exchange rate exposure is with the Euro, the Japanese Yen, the Indian Rupee, the Chinese Renminbi, the South Korean Won, and the English Pound against the U.S. Dollar. NTIC's fees for services provided to joint ventures and dividend distributions from these foreign entities are paid in foreign currencies and, thus, fluctuations in foreign currency exchange rates could result in declines in NTIC's reported net income. Since NTIC's investments in its joint ventures are accounted for using the equity method, any changes in foreign currency exchange rates would be reflected as a foreign currency translation adjustment and would not change NTIC's equity in income from joint ventures reflected in its consolidated statements of operations. NTIC does not hedge against its foreign currency exchange rate risk.

Some raw materials used in NTIC's products are exposed to commodity price changes. The primary commodity price exposures are with a variety of plastic resins.

Any outstanding advances under NTIC's revolving line of credit with PNC Bank bear interest at an annual rate based on daily BSBY plus 2.50%. As of August 31, 2022, NTIC had borrowings of $5,900,000 under the line of credit that existed as of that date.

Related Party Transactions

Since NTIC's joint ventures are considered related parties, NTIC recorded sales to its joint ventures as a separate line item on the face of NTIC's consolidated statements of operations and recorded fees for services provided to its joint ventures as separate line items on the face of NTIC's consolidated statements of operations. NTIC also records trade receivables from joint ventures, receivables for fees for services provided to joint ventures, and NTIC's investments in joint ventures as separate line items on its consolidated balance sheets.

NTIC established its joint venture network approximately 30 years ago as a method to increase its worldwide distribution network for ZERUST® rust and corrosion inhibiting products and services. NTIC participates, either directly or indirectly, in 16 active joint venture arrangements in North America, Europe, and Asia. Each of these joint ventures generally manufactures and markets finished products in the geographic territory to which it is assigned. NTIC's joint venture partners are knowledgeable in the applicable environmental, labor, tax, and other requisite regulations and laws of the respective foreign countries in which they operate, as well as the local customs and business practices. NTIC's revenue recognition policy for sales to its joint ventures is the same as its policy for sales to unaffiliated customers.

The fees for services provided to joint ventures are determined based on either a flat fee or a percentage of sales depending on local laws and tax regulations. With respect to NTIC's joint venture in Germany, EXCOR, NTIC recognizes an agreed upon quarterly fee for such services. NTIC records revenue related to fees for services provided to joint ventures when earned, amounts are determinable, and collectability is reasonably assured. Under NTIC's agreements with its joint ventures, fee amounts are earned when product is shipped from joint venture facilities. NTIC reviews the financial situation of each joint venture to assist in the likelihood of collections on amounts earned. From time to time, NTIC elects to account for such fees on a cash basis for certain joint ventures when uncertainty exists surrounding the collections of such fees. There are no fees being accounted for in this manner at present. The expenses incurred in support of its joint ventures are direct expenses that NTIC incurs related to its joint ventures and include such items as employee compensation and benefit expenses, travel expense, insurance, consulting expense, legal expense, and lab supplies and testing expense.

See Note 15 to NTIC's consolidated financial statements for other related party transaction disclosures.

Critical Accounting Policies and Estimates

The preparation of NTIC's consolidated financial statements requires management to make estimates and judgments that affect the reported amount of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. The Securities and Exchange Commission has defined a company's most critical accounting policies as those that are most important to the portrayal of its financial condition and results of operations and those 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. Based on this definition, NTIC has identified the following critical accounting policies. Although NTIC believes that its estimates and assumptions are reasonable, they are based upon information available when they are made. Actual results may differ significantly from these estimates under different assumptions or conditions.

Principles of Consolidation

NTIC evaluates its voting and variable interests in entities on a qualitative and quantitative basis. NTIC consolidates entities in which it concludes it has the power to direct the activities that most significantly impact an entity's economic success and has the obligation to absorb losses or the right to receive benefits that could be significant to the entity. All such relationships are evaluated on an ongoing basis. The consolidated financial statements included in this report include the accounts of Northern Technologies International Corporation, its wholly-owned subsidiaries, Northern Technologies Holding Company, LLC, NTIC (Shanghai) Co., Ltd., NTIC Europe GmbH and ZERUST-EXCOR MEXICO, S. de R.L. de C.V., NTIC's majority-owned subsidiary in Brazil, Zerust Prevenção de Corrosão S.A., NTIC's majority-owned holding company, NTI Asean LLC, and NTIC's majority-owned subsidiary in India, Natur-Tec India Private Limited, Natur-Tec Lanka, Zerust Singapore Pte Ltd (Zerust Singapore) and Zerust Vietnam Co. Ltd (Zerust Vietnam). NTIC's consolidated financial statements do not include the accounts of any of its joint ventures. Effective as of September 1, 2021, HNTI Limited has been consolidated in NTIC's consolidated financial statements.

Business Combinations

When applicable, NTIC accounts for the acquisition of a business in accordance with the accounting standards codification guidance for business combinations, whereby the total consideration transferred is allocated to the assets acquired and liabilities assumed, including amounts attributable to non-controlling interests, when applicable, based on their respective estimated fair values as of the date of acquisition. Goodwill represents the excess of consideration transferred over the estimated fair value of the net assets acquired in a business combination.

Assigning estimated fair values to the net assets acquired requires the use of significant estimates, judgments, inputs, and assumptions regarding the fair value of intangible assets that are separately identifiable from goodwill, inventory, and property, plant, and equipment. While the ultimate responsibility for determining estimated fair values of the acquired net assets resides with management, for material acquisitions, NTIC may retain the services of certified valuation specialists to assist with assigning estimated fair values to certain acquired assets and assumed liabilities, including intangible assets that are separately identifiable from goodwill, inventory, and property, plant, and equipment. Estimated fair values of acquired intangible assets that are separately identifiable from goodwill, inventory, and property, plant, and equipment are generally based on available historical information, future expectations, available market data, and assumptions determined to be reasonable but are inherently uncertain with respect to future events, including economic conditions, competition, technological obsolescence, the useful life of the acquired assets, and other factors. These significant estimates, judgments, inputs, and assumptions include, when applicable, the selection of an appropriate valuation method depending on the nature of the respective asset, such as the income approach, the market or sales comparison approach, or the cost approach; estimating future cash flows based on projected revenues and/or margins that NTIC expects to generate subsequent to the acquisition; applying an appropriate discount rate to estimate the present value of those projected cash flows NTIC expects to generate; selecting an appropriate terminal growth rate and/or royalty rate or estimating a customer attrition or technological obsolescence factor where necessary and appropriate given the nature of the respective asset; assigning an appropriate contributory asset charge where needed; determining an appropriate useful life and the related depreciation or amortization method for the respective asset; and assessing the accuracy and completeness of other historical financial metrics of the acquiree used as standalone inputs or as the basis for determining estimated projected inputs such as margins, customer attrition, and costs to hold and sell product.

In determining the estimated fair value of intangible assets that are separately identifiable from goodwill, NTIC typically utilizes the income approach, which discounts the projected future cash flows using a discount rate that appropriately reflects the risks associated with the projected cash flows. Generally, NTIC estimates the fair value of acquired customer relationships using the relief from royalty method under the income approach, which is based on the hypothetical royalty stream that would be received if NTIC were to license the acquired trade name. For most other acquired intangible assets, NTIC estimates fair value using the excess earnings method under the income approach, which is typically applied when cash flows are not directly generated by the asset, but rather, by an operating group that includes the particular asset. In certain instances, particularly in relation to developed technology or patents, NTIC may utilize the cost approach depending on the nature of the respective intangible asset and the recency of the development or procurement of such technology. The useful lives and amortization methods for the acquired intangible assets that are separately identifiable from goodwill are generally determined based on the period of expected cash flows used to measure the fair value of the acquired intangible assets and the nature of the use of the respective acquired intangible asset, adjusted as appropriate for entity-specific factors including legal, regulatory, contractual, competitive, economic, and/or other factors such as customer attrition rates and product or order lifecycles that may limit the useful life of the respective acquired intangible asset. In determining the estimated fair value of acquired inventory, NTIC typically utilizes the cost approach for raw materials and the sales comparison approach for work in process, finished goods, and service parts. In determining the estimated fair value of acquired property, plant, and equipment, NTIC typically utilizes the sales comparison approach or the cost approach depending on the nature of the respective asset and the recency of the construction or procurement of such asset.

NTIC may refine the estimated fair values of assets acquired and liabilities assumed, if necessary, over a period not to exceed one year from the date of acquisition by taking into consideration new information that, if known as of the date of acquisition, would have affected the estimated fair values ascribed to the assets acquired and liabilities assumed. The judgments made in determining the estimated fair value assigned to assets acquired and liabilities assumed, as well as the estimated useful life and depreciation or amortization method of each asset, can materially impact the net earnings of the periods subsequent to an acquisition through depreciation and amortization, and in certain instances through impairment charges, if the asset becomes impaired in the future. During the measurement period, any purchase price allocation changes that impact the carrying value of goodwill will affect any measurement of goodwill impairment taken during the measurement period, if applicable. If necessary, purchase price allocation revisions that occur outside of the measurement period are recorded within cost of sales, selling expenses or general and administrative expenses within NTIC's consolidated statements of operations depending on the nature of the adjustment.

Investments in Joint Ventures and Recoverability of Investments in Joint Ventures

NTIC's investments in its joint ventures are accounted for using the equity method. NTIC assesses its joint ventures for impairment on an annual basis as of August 31 of each year as part of its fiscal year end analysis. In addition to the annual review for impairment, NTIC reviews the operating results of each joint venture on a quarterly basis in comparison to its historical operating results and its accrual for fees for services provided to joint ventures. If the operating results of a joint venture do not meet NTIC's financial performance expectations, an additional evaluation is performed on the joint venture. In addition to the annual assessments for impairment, non-periodic assessments for impairment may occur if cash remittances are less than accrued balances, a joint venture's management requests capital, or other events occur suggesting anything other than temporary decline in value. If an investment were determined to be impaired, then a reserve would be created to reflect the impairment on the financial results of NTIC. NTIC's evaluation of its investments in joint ventures requires NTIC to make assumptions about future cash flows of its joint ventures. These assumptions require significant judgment, and actual results may differ from assumed or estimated amounts.

Investments at Carrying Value

If NTIC is no longer able to exercise significant influence over operating and financial policy of a joint venture previously accounted for under the equity method, it maintains the investment at the carrying value as of the date that significant influence no longer exists and discontinues accruing the proportionate earnings or losses of the investment.

Investments are considered to be impaired when a decline in fair value is judged to be other-than-temporary. Fair value is calculated based on publicly available market information or other estimates determined by management. NTIC employs a systematic methodology on a quarterly basis that considers available quantitative and qualitative evidence in evaluating potential impairment of its investments. If the cost of an investment exceeds its fair value, NTIC evaluates, among other factors, general market conditions, credit quality of debt instrument issuers, the duration and extent to which the fair value is less than cost, and for equity securities, its intent and ability to hold, or plans to sell, the investment. NTIC also considers specific adverse conditions related to the financial health of and business outlook for the investee, including industry and sector performance, changes in technology, and operational and financing cash flow factors. Once a decline in fair value is determined to be other-than-temporary, an impairment charge is recorded to other income (expense), and a new cost basis in the investment is established.

Revenue Recognition

Revenue is measured based on consideration specified in the contract with a customer, adjusted for any applicable estimates of variable consideration and other factors affecting the transaction price, including noncash consideration, consideration paid or payable to customers, and significant financing components. While most of NTIC's revenue is contracted with customers through one-time purchase orders and short-term contracts, NTIC does have long-term arrangements with certain customers. Revenue from all customers is recognized when a performance obligation is satisfied by transferring control of a distinct good or service to a customer. The transaction price for NTIC's products is the invoiced amount. Revenue is recognized when transfer of control occurs as defined by the terms in the customer agreement, generally upon shipment of product.

With respect to recording revenue related to fees earned for services provided to NTIC's joint ventures, amounts are earned when product is shipped from joint venture facilities, at which point a sale is deemed to have occurred and results in obligation for the joint venture to pay the royalty and recognition of the fee by NTIC. The support and services NTIC provides its joint ventures include consulting, travel, insurance, technical and marketing services to existing joint ventures, legal fees incurred in the establishment of new joint ventures, registration and promotion and legal defense of worldwide trademarks, and legal fees incurred in connection with the filing of patent applications based on licensing or other agreements with its joint ventures. NTIC receives fees for the services it provides to its joint ventures based primarily on the net sales by NTIC's joint ventures. The fees for support services received by NTIC from its joint ventures are generally determined based on either a flat fee or a percentage of net sales by NTIC's joint ventures depending on local laws and tax regulations. Under NTIC's agreements with its joint ventures, amounts are earned when product is shipped from joint venture facilities. NTIC reviews the financial situation of each of its joint ventures to assist in the likelihood of collections on amounts earned. NTIC elects to account for these fees on a cash basis for certain joint ventures when uncertainty exists surrounding the collections of such fees.

Accounts Receivable

Trade receivables arise from sales of NTIC's products and services to NTIC's joint ventures and to unaffiliated customers. Trade receivables from joint ventures arise from sales NTIC makes to its joint ventures of products and the essential additives required to make ZERUST® industrial corrosion inhibiting products functional. Receivables for services to NTIC's joint ventures are contractually based primarily on a percentage of the sales of the joint ventures and are intended to compensate NTIC for services NTIC provides to its joint ventures, including consulting, legal, travel, insurance, technical, and marketing services.

Payment terms for NTIC's unaffiliated customers are determined based on credit risk and vary by customer. NTIC typically offers standard payment terms of net 30 days to unaffiliated customers. Payment terms for NTIC's joint ventures also are determined based on credit risk; however, additional consideration is given to the individual joint venture due to the transportation time associated with ocean delivery of most products and certain other factors. NTIC typically offers payment terms to joint ventures of net 90 days. NTIC does not accrue interest on past due accounts receivable. NTIC reviews the credit histories of its customers, including its joint ventures, before extending unsecured credit. NTIC values accounts and notes receivable net of an allowance for doubtful accounts. Each quarter, NTIC prepares an analysis of its ability to collect outstanding receivables that provides a basis for an allowance estimate for doubtful accounts. In doing so, NTIC evaluates the age of its receivables, past collection history, current financial conditions of key customers and its joint ventures, and economic conditions. Based on this evaluation, NTIC establishes a reserve for specific accounts and notes receivable that it believes are uncollectible, as well as an estimate of uncollectible receivables not specifically known. Deterioration in the financial condition of any key customer or joint venture or a significant slowdown in the economy could have a material negative impact on NTIC's ability to collect a portion or all of the accounts and notes receivable. NTIC believes that an analysis of historical trends and its current knowledge of potential collection problems provide NTIC with sufficient information to establish a reasonable estimate for an allowance for doubtful accounts. However, since NTIC cannot predict with certainty future changes in the financial stability of its customers or joint ventures, NTIC's actual future losses from uncollectible accounts may differ from its estimates. In the event NTIC determined that a smaller or larger uncollectible accounts reserve is appropriate, NTIC would record a credit or charge to selling expense in the period that it made such a determination.

Goodwill Impairment

Goodwill represents the excess purchase price over the fair value of tangible net assets acquired in acquisitions after amounts have been allocated to intangible assets. Goodwill is tested for impairment annually (at August 31), or more frequently when events or changes in circumstances indicate that the asset might be impaired. Examples of such events or circumstances include, but are not limited to, a significant adverse change in legal or business climate, an adverse regulatory action or unanticipated competition.

Recoverability of Long-Lived Assets

NTIC reviews its long-lived assets whenever events or changes in circumstances indicate the carrying amount of the assets may not be recoverable and determines potential impairment by comparing the carrying value of the assets with expected net cash flows expected to be provided by operating activities of the business or related products. If the sum of the expected undiscounted future net cash flows were less than the carrying value, NTIC would determine whether an impairment loss should be recognized. An impairment loss would be measured by comparing the amount by which the carrying value exceeds the fair value of the asset.

Foreign Currency Translation (Accumulated Other Comprehensive Loss)

The functional currency of each international joint venture and subsidiary is the applicable local currency. The translation of the applicable foreign currencies into U.S. dollars is performed for balance sheet accounts using exchange rates in effect at the balance sheet date and for revenue and expense accounts using an average monthly exchange rate. Translation gains or losses are reported as an element of accumulated other comprehensive income (loss).

NTIC (excluding NTIC China, Zerust Brazil, Natur-Tec India, Natur-Tec Lanka, NTI Asean, Zerust Singapore, Zerust Vietnam, Zerust Mexico, Zerust India, NTI Europe, and NTIC's joint ventures) conducts all foreign transactions based on the U.S. dollar. Since NTIC's investments in its joint ventures are accounted for using the equity method, any changes in foreign currency exchange rates would be reflected as a foreign currency translation adjustment and would not change the equity in income from joint ventures reflected in NTIC's consolidated statements of operations.

Stock-Based Compensation

NTIC recognizes compensation cost relating to share-based payment transactions, including grants of employee stock options and transactions under NTIC's employee stock purchase plan, in its consolidated financial statements. That cost is measured based on the fair value of the equity or liability instruments issued. NTIC measures the cost of employee services received in exchange for stock options or other stock-based awards based on the grant-date fair value of the award and recognizes the cost over the period the employee is required to provide services for the award.

Inventory Valuation

NTIC's inventories consist primarily of production materials and finished goods. NTIC purchases production materials and finished goods based on forecasted demand and records inventory at the lower of cost or net realizable value. Cost is determined by the first-in, first-out (FIFO) method. Management regularly assesses inventory valuation based on current and forecasted usage, demand and pricing, shelf life, customer inventory-related contractual obligations, and other considerations. If actual results differ from management estimates with respect to the actual or projected selling of inventories at amounts less than their carrying amounts, NTIC would adjust its inventory balances accordingly.

Income Taxes

NTIC utilizes the asset and liability method of accounting for income taxes, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the consolidated financial statements. Deferred income tax assets and liabilities are determined based on the differences between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in operations in the period that includes the enactment date.

NTIC records net deferred tax assets to the extent NTIC believes these assets will more likely than not be realized. In making such a determination, NTIC considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations, including the prior three-year history. In the event NTIC determines that it would be able to realize its deferred income tax assets in the future in excess of their net recorded amount, NTIC makes an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

Recent Accounting Pronouncements

See Note 2 to NTIC's consolidated financial statements for a discussion of recent accounting pronouncements.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

NTIC is exposed to some market risk stemming from changes in foreign currency exchange rates, commodity prices and interest rates.

Because the functional currency of NTIC's foreign operations and investments in its foreign joint ventures is the applicable local currency, NTIC is exposed to foreign currency exchange rate risk arising from transactions in the normal course of business. NTIC's principal exchange rate exposure is with the Euro, the Japanese Yen, the Indian Rupee, the Chinese Renminbi, the South Korean Won, and the English Pound against the U.S. Dollar. NTIC's fees for services provided to joint ventures and dividend distributions from these foreign entities are paid in foreign currencies, and, thus, fluctuations in foreign currency exchange rates could result in declines in NTIC's reported net income. Since NTIC's investments in its joint ventures are accounted for using the equity method, any changes in foreign currency exchange rates would be reflected as a foreign currency translation adjustment and would not change NTIC's equity in income from joint ventures reflected in its consolidated statements of operations. NTIC does not hedge against its foreign currency exchange rate risk.

Some raw materials used in NTIC's products are exposed to commodity price changes. The primary commodity price exposures are with a variety of plastic resins.

Any outstanding advances under NTIC's revolving line of credit with PNC Bank bear interest at an annual rate based on daily BSBY plus 2.50%. As of August 31, 2022, NTIC had borrowings of $5,900,000 under the line of credit that existed as of that date.

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

The following items are included herein:

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the shareholders and the board of directors of Northern Technologies International Corporation and Subsidiaries:

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Northern Technologies International Corporation and Subsidiaries (the "Company") as of August 31, 2022 and 2021, the related consolidated statements of operations, comprehensive income, equity, and cash flows, for each of the two years in the period ended August 31, 2022, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of August 31, 2022 and 2021, and the results of its operations and its cash flows for each of the two years in the period ended August 31, 2022, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("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 consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated 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 consolidated 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 consolidated 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 critical audit matters 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 separate opinions on the critical audit matter or on the accounts or disclosures to which it relates.

Accounting for the Attainment of Control of Harita-NTI Limited Joint Venture

Critical Audit Matter Description

As described in Note 3 to the consolidated financial statements, the Company completed the accounting for the acquisition of the remaining 50% ownership interest in Harita-NTI Limited (Harita) during the year ended August 31, 2022. The acquisition was accounted for as a business combination. The Company measured the fair value of the previously held equity interest in Harita and recorded a gain. The Company then measured the assets acquired and liabilities assumed at fair value, which resulted in the recognition of a customer relationship intangible asset and goodwill.

The valuation of the fair value of the previously held equity interest and customer relationship intangible asset is complex and judgmental due to the use of subjective assumptions in the valuation models used by management when determining the estimated fair values of the asset and the previously held equity interest. The determination of the fair values of the intangible asset and the previously held equity interest requires management to make significant estimates and assumptions related to forecasts of future revenues, expenses, discount rates, risk-free rates, weighted-average cost of capital, equity risk premium, control premiums and royalty rates.

Auditing management’s valuation of the acquired intangible asset and the previously held equity interest is complex due to the judgments required to evaluate management’s previously noted estimates and assumptions.

How We Addressed the Matter in Our Audit

The primary procedures we performed to address this critical audit matter included:

- Obtained an understanding of the design and implementation of internal controls relating to the evaluation of the assumptions used to estimate the fair value of the customer relationship intangible asset acquired and previously held equity interest.
- Substantively tested, with the assistance of firm personnel with experience in the application of fair value and valuation methodologies, the appropriateness of the judgments and assumptions used in management’s estimation process for determining the fair value of the customer relationship intangible asset acquired and the previously held equity interest, including:
    - Tested the mathematical accuracy of the calculations performed along with assessing the completeness of the information used in the calculations.
    - Evaluated the appropriateness of the valuation methodologies used, as well as the key assumptions and inputs used, including cash flow projections, discount rate, risk-free rate, weighted-average cost of capital, equity risk premium, control premiums and royalty rates.
    - Performed sensitivity analyses to evaluate the changes in the fair value of the intangible assets that would result from changes in the assumptions.
    - Compared significant assumptions used by management to current industry and competitor data, historical results, third-party market data and evidence obtained in other areas of the audit.

/s/ Baker Tilly US, LLP

We have served as the Company's auditor since 2004.

Minneapolis, Minnesota
November 15, 2022

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS - AUGUST 31, 2022 AND 2021

	August 31, 2022	August 31, 2021
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 5,333,890	$ 7,680,641
Available for sale securities	5,590	4,634
Receivables:		
Trade excluding joint ventures, less allowance for doubtful accounts of $439,000 as of August 31, 2022 and $382,000 as of August 31, 2021	14,136,930	11,128,805
Trade, joint ventures	697,861	624,808
Fees for services provided to joint ventures	1,765,117	1,505,127
Income taxes	-	386,574
Inventories	16,341,729	11,114,207
Prepaid expenses	1,953,764	1,302,293
Total current assets	40,234,881	33,747,089
PROPERTY AND EQUIPMENT, NET	12,170,493	11,821,458
OTHER ASSETS:		
Investments in joint ventures	21,814,754	27,623,768
Deferred income taxes	-	92,554
Patents and trademarks, net	710,011	709,572
Goodwill	4,782,376	—
Intangible asset, net	5,923,867	—
Operating lease right of use assets	557,571	376,438
Total other assets	33,788,579	28,802,332
Total assets	$ 86,193,953	$ 74,370,879
LIABILITIES AND EQUITY		
CURRENT LIABILITIES:		
Accounts payable	$ 7,796,494	$ 4,290,972
Line of credit	5,900,000	—
Income taxes payable	30,742	178,923
Accrued liabilities:		
Payroll and related benefits	2,297,543	2,879,468
Other	667,292	894,497
Current portion of operating lease	373,330	272,336
Total current liabilities	17,065,401	8,516,196
LONG-TERM LIABILITIES:		
Deferred income tax, net	1,700,015	—
Operating lease, less current portion	184,241	104,102
Total long-term liabilities	1,884,256	104,102
COMMITMENTS AND CONTINGENCIES (Note 17)		
EQUITY:		
Preferred stock, no par value; authorized 10,000 shares; none issued and outstanding	—	—
Common stock, $0.02 par value per share; authorized 15,000,000 shares as of August 31, 2022 and August 31, 2021; issued and outstanding 9,232,483 and 9,184,811, respectively	184,650	183,696
Additional paid-in capital	19,939,131	18,736,268
Retained earnings	50,716,613	46,973,092
Accumulated other comprehensive loss	(7,245,132)	(3,525,030)
Stockholders' equity	63,595,262	62,368,026
Non-controlling interests	3,649,034	3,382,555
Total equity	67,244,296	65,750,581
Total liabilities and equity	$ 86,193,953	$ 74,370,879

See notes to consolidated financial statements.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
YEARS ENDED AUGUST 31, 2022 AND 2021

	2022	2021
NET SALES:		
Net sales, excluding joint ventures	$ 71,190,801	$ 53,470,623
Net sales, to joint ventures	2,968,089	3,023,196
Total net sales	74,158,890	56,493,819
Cost of goods sold	51,090,298	36,920,814
Gross profit	23,068,592	19,573,005
JOINT VENTURE OPERATIONS:		
Equity in income from joint ventures	4,725,918	7,465,214
Fees for services provided to joint ventures	5,767,682	5,964,260
To Total joint venture operations	10,493,600	13,429,474
OPERATING EXPENSES:		
Selling expenses	13,038,180	12,016,974
General and administrative expenses	10,600,603	8,262,173
Research and development expenses	4,775,334	4,400,479
Total operating expenses	28,414,117	24,679,626
OPERATING INCOME	5,148,075	8,322,853
REMEASUREMENT GAIN ON ACQUISITION OF EQUITY METHOD INVESTEE	3,951,550	—
INTEREST INCOME	49,241	151,875
INTEREST EXPENSE	(89,096)	(16,086)
INCOME BEFORE INCOME TAX EXPENSE	9,059,770	8,458,642
INCOME TAX EXPENSE	1,873,836	1,461,905
NET INCOME	7,185,934	6,996,737
NET INCOME ATTRIBUTABLE TO NON-CONTROLLING INTERESTS	861,234	715,499
NET INCOME ATTRIBUTABLE TO NTIC	$ 6,324,700	$ 6,281,238
NET INCOME ATTRIBUTABLE TO NTIC PER COMMON SHARE:		
Basic	$ 0.69	$ 0.69
Diluted	$ 0.66	$ 0.64
WEIGHTED AVERAGE COMMON SHARES ASSUMED OUTSTANDING:		
Basic	9,216,216	9,116,472
Diluted	9,635,028	9,874,139
CASH DIVIDENDS DECLARED PER COMMON SHARE	$ 0.28	$ 0.195

See notes to consolidated financial statements.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION
AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
YEARS ENDED AUGUST 31, 2022 AND 2021

	2022	2021
NET INCOME	$ 7,185,934	$ 6,996,737
OTHER COMPREHENSIVE INCOME – FOREIGN CURRENCY TRANSLATION ADJUSTMENT	(3,912,128)	(92,562)
COMPREHENSIVE INCOME	3,273,806	6,904,175
LESS: COMPREHENSIVE INCOME ATTRIBUTABLE TO NON-CONTROLLING INTERESTS	(669,208)	(737,529)
COMPREHENSIVE INCOME ATTRIBUTABLE TO NTIC	$ 2,604,598	$ 6,166,646

See notes to consolidated financial statements.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF EQUITY
YEARS ENDED AUGUST 31, 2022 AND 2021

	STOCKHOLDERS' EQUITY						
	Common Stock		Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Non-Controlling Interests	Total Equity
	Shares	Amount					
BALANCE AT AUGUST 31, 2020	9,099,990	$ 182,000	$17,415,043	$42,472,810	$ (3,410,438)	$ 3,045,026	$59,704,441
Stock options exercised	74,950	1,499	582,915	—	—	—	584,414
Stock issued for employee stock purchase plan	9,871	197	74,136	—	—	—	74,333
Stock option expense	—	—	664,174	—	—	—	664,174
Dividends paid to stockholders	—-	—	—	(1,780,956)	—-	—	(1,780,956)
Dividend received by non-controlling interest	—	—	—	—	—	(400,000)	(400,000)
Net income	—	—	—	6,281,238	—	715,499	6,996,737
Other comprehensive income (loss)	—	—	—	—	(114,592)	22,030	(92,562)
BALANCE AT AUGUST 31, 2021	9,184,811	$ 183,696	$18,736,268	$46,973,092	$ (3,525,030)	$ 3,382,555	$65,750,581
Stock options exercised	42,071	842	197,798	—	—	—	198,640
Stock issued for employee stock purchase plan	5,601	112	73,533	—	—	—	73,645
Stock option expense	—	—	931,532	—	—	—	931,532
Dividends paid to stockholders	—-	—	—	(2,581,179)	—-	—	(2,581,179)
Dividend received by non-controlling interest	—	—	—	—	—	(402,729)	(402,729)
Net income	—	—	—	6,324,700	—	861,234	7,185,934
Other comprehensive loss	—	—	—	—	(3,720,102)	(192,026)	(3,912,128)
BALANCE AT AUGUST 31, 2022	9,232,483	$ 184,650	$19,939,131	$50,716,613	$ (7,245,132)	$ 3,649,034	$67,244,296

See notes to consolidated financial statements.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION
AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED AUGUST 31, 2022 AND 2021

	2022	2021
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income	$ 7,185,934	$ 6,996,737
Adjustments to reconcile net income to net cash provided by operating activities:		
Stock-based compensation	931,532	664,174
Depreciation expense	938,489	905,299
Amortization expense	629,843	203,088
Remeasurement gain on acquisition of equity method investee	(3,951,550)	—
Change in allowance for doubtful accounts	57,000	262,000
Equity in income from joint ventures	(4,725,918)	(7,465,214)
Dividends received from joint ventures	5,723,176	3,665,365
Deferred income taxes	(81,500)	114,620
Changes in current assets and liabilities:		
Receivables:		
Trade, excluding joint ventures	(2,091,353)	(3,030,655)
Trade, joint ventures	(73,053)	(148,908)
Fees for services provided to joint ventures	(259,550)	(577,841)
Income taxes	284,025	(362,438)
Inventories	(4,818,860)	58,314
Prepaid expenses and other	3,111	(487,771)
Accounts payable	3,010,526	866,597
Income tax payable	(493,091)	(160,231)
Accrued liabilities	(1,122,713)	1,389,804
Net cash provided by operating activities	1,146,078	2,892,940
CASH FLOWS FROM INVESTING ACTIVITIES:		
Acquisition of Zerust India business, net of cash acquired (see Note 3)	(5,062,003)	—
Investment in joint venture	(341,392)	-
Purchase of available for sale securities	-	(800,000)
Proceeds from the sale of available for sale securities	(956)	6,340,088
Purchases of property and equipment	(1,496,674)	(5,532,750)
Investments in patents	(207,149)	(110,654)
Net cash used in investing activities	(7,108,174)	(103,316)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Dividend received by non-controlling interest	(402,729)	(400,000)
Proceeds from line of credit	5,900,000	—
Dividends paid on NTIC common stock	(2,581,179)	(1,780,956)
Proceeds from employee stock purchase plan	73,645	74,333
Proceeds from exercise of stock options	198,640	584,414
Net cash provided by (used in) financing activities	3,188,377	(1,522,209)
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS	426,968	10,194
NET (DECREASE) INCREASE IN CASH AND CASH EQUIVALENTS	(2,346,751)	1,277,609
CASH AND CASH EQUIVALENTS AT BEGINNING OF YEAR	7,680,641	6,403,032
CASH AND CASH EQUIVALENTS AT END OF YEAR	$ 5,333,890	$ 7,680,641

See notes to consolidated financial statements.

1. NATURE OF BUSINESS AND SIGNIFICANT ACCOUNTING POLICIES

Nature of Business – Northern Technologies International Corporation and its Subsidiaries (collectively, the Company) develop and market proprietary environmentally beneficial products and services in over 65 countries either directly or via a network of joint ventures, independent distributors, and agents. The Company's primary business is corrosion prevention marketed mainly under the ZERUST® brand. The Company has been selling its proprietary ZERUST® rust and corrosion prevention products and services to the automotive, electronics, electrical, mechanical, military, and retail consumer markets for almost 50 years and, more recently, has also expanded into the oil and gas industry. The Company also sells a portfolio of proprietary bio-based and certified compostable (fully biodegradable) polymer resin compounds and finished products under the Natur-Tec® brand. These products are intended to reduce the Company's customers' carbon footprint and provide environmentally sound disposal options. The Company's two operating segments are ZERUST and Natur-Tec.

The Company participates, either directly or indirectly, in 16 active joint venture arrangements in North America, Europe, and Asia. Each of these joint ventures generally manufactures and markets products in the geographic territory to which it is assigned. While most of the Company's joint ventures exclusively sell rust and corrosion inhibiting products, some of the joint ventures also sell the Company's Natur-Tec® resin compounds and finished products. The profits of joint ventures are shared by the respective joint venture owners in accordance with their respective ownership percentages. The Company typically owns 50% or less of its joint venture entities and does not control the decisions of these entities, including dividend declaration or amount in any given year.

Impact of COVID-19 Pandemic – As a result of the novel coronavirus (COVID-19) pandemic and related government mandated restrictions on the Company's business as well as the businesses of its joint ventures, customers and suppliers, disruption to the Company's business and the manufacture and sale of its products and services continued to occur during fiscal 2022 and is expected to continue into fiscal 2023. In fiscal 2022, the Company continued to be impacted by shipping issues, including freight container shortages, shipping delays, and increased costs, and supply chain issues, including longer lead times and raw material cost increases.

Principles of Consolidation – NTIC evaluates its voting and variable interests in entities on a qualitative and quantitative basis. NTIC consolidates entities in which it concludes it has the power to direct the activities that most significantly impact an entity's economic success and has the obligation to absorb losses or the right to receive benefits that could be significant to the entity. The consolidated financial statements include the accounts of Northern Technologies International Corporation, its wholly-owned subsidiaries, Northern Technologies Holding Company, LLC, NTIC (Shanghai) Co., Ltd. (NTIC China), ZERUST-EXCOR MEXICO, S. de R.L. de C.V (Zerust Mexico), NTIC Europe GmbH (NTI Europe), NTIC's majority-owned subsidiary in India, Natur-Tec India Private Limited (Natur-Tec India), NTIC's majority-owned subsidiary in Brazil, Zerust Prevenção de Corrosão S.A. (Zerust Brazil), NTIC's majority-owned subsidiary in Sri Lanka, Natur Tec Lanka (Pvt) Ltd (Natur Tec Lanka), and NTIC's majority-owned holding company, NTI Asean LLC (NTI Asean), and its wholly owned subsidiaries Zerust Singapore Pte Ltd (Zerust Singapore) and Zerust Vietnam Co. Ltd (Zerust Vietnam). NTIC's consolidated financial statements do not include the accounts of any of its joint ventures. Effective as of September 1, 2021, HNTI Limited (Zerust India) has been consolidated in the Company's consolidated financial statements since the Company purchased the remaining 50% ownership interest of Zerust India effective as of September 1, 2021.

Non-Controlling Interests – The Company owns 75% of Natur-Tec India, 75% of Natur Tec Lanka, 85% of Zerust Brazil, 60% of NTI Asean, Zerust Singapore Pte Ltd and Zerust Vietnam Co Ltd. The remaining ownership of the consolidated entities are accounted for as non-controlling interests and reported as part of equity in the consolidated financial statements. The Company allocates gains and losses to the non-controlling interest even when such allocation results in a deficit balance, reducing the losses attributed to the controlling interest. Changes in ownership interests are treated as equity transactions if the Company maintains control.

Net Sales – The Company includes net sales to its joint ventures and net sales to unaffiliated customers as separate line items on its consolidated statements of operations. There are no sales originating from the Company's joint ventures included in the amount, as the Company's investments in its joint ventures are accounted for using the equity method.

When determining recognition of revenue arrangements the Company performs the following five steps: (1) identify the contracts with a customer; (2) identify the performance obligations in the contract; (3) determine the transaction price; (4) allocate the transaction price to the performance obligations in the contract; and (5) recognize revenue when or as the entity satisfies a performance obligation. The Company only applies the five-step model to contracts when it is probable that the entity will collect the consideration it is entitled to in exchange for the goods it transfers to, or services it performs for, the customer.

Generally, the Company's performance obligations are satisfied when the customers take possession of the products, which normally occurs at the shipping point or destination depending on the terms of the contracts. The Company's services are generally sold based upon quotes or contracts with customers that include a fixed or determinable price, and sales arrangements do not contain any significant financing component for its customers. The Company does not recognize revenue related to product warranties, nor does the Company incur significant contract costs. Customer arrangements do not generate contract assets or liabilities.

Revenue Recognition – Revenue is measured based on consideration specified in the contract with a customer, adjusted for any applicable estimates of variable consideration and other factors affecting the transaction price, including noncash consideration, consideration paid or payable to customers, and significant financing components. Revenue from all customers is recognized when a performance obligation is satisfied by transferring control of a distinct good or service to a customer.

Individually promised goods and services in a contract are considered a distinct performance obligation and accounted for separately if the customer can benefit from the individual good or service on its own or with other resources that are readily available to the customer and the good or service is separately identifiable from other promises in the arrangement. When an arrangement includes multiple performance obligations, the consideration is allocated between the performance obligations in proportion to their estimated standalone selling price. Costs related to products delivered are recognized in the period incurred, unless criteria for capitalization of costs are met. Costs of revenues consist primarily of direct labor, manufacturing overhead, materials, and components. The Company does not incur significant upfront costs to obtain a contract. If costs to obtain a contract were to become material, the costs would be recorded as an asset and amortized to expense in a manner consistent with the related recognition of revenue.

The Company excludes government assessed and imposed taxes on revenue generating transactions that are invoiced to customers from revenue. The Company includes freight billed to customers in revenue. Shipping and handling costs associated with outbound freight after control over a product has transferred to a customer are accounted for as a fulfillment cost and are included in cost of goods sold.

The timing of revenue recognition, billing, and cash collections results in accounts receivable on the consolidated balance sheet.

Performance Obligations – A performance obligation is a promise in a contract to transfer a distinct good or service to the customer. A contract's transaction price is allocated to each distinct performance obligation in proportion to its standalone selling price and recognized as revenue when, or as, the performance obligation is satisfied. The Company's various performance obligations and the timing or method of revenue recognition are discussed below. The Company's technical
service consultants work directly with the end users of NTIC's ZERUST® rust and corrosion inhibiting products to
analyze their specific needs and develop systems to meet their performance requirements.

The Company sells its products to both distributors and end-users. Each unit of product delivered under a customer order represents a distinct and separate performance obligation, as the customer can benefit from each unit on its own or with other resources that are readily available to the customer, and each unit of product is separately identifiable from other products in the arrangement.

The transaction price for the Company's products is the invoiced amount. The Company does not have variable consideration in the form of refunds, credits, rebates, price concessions, pricing incentives, or other items impacting transaction price. The purchase order pricing in arrangements with customers is deemed to approximate standalone selling price; therefore, the Company does not need to allocate proceeds on a relative standalone selling price allocation between performance obligations. The Company applies the practical expedient in paragraph 606-10-50-14 and does not disclose information about remaining performance obligations that have original expected durations of one year or less. There are no material obligations that extend beyond one year.

Revenue is recognized when transfer of control occurs, as defined by the terms in the customer agreement. The Company immediately recognizes incidental items that are immaterial in the context of the contract. The Company has applied the practical expedient in paragraph 606-10-25-16A and does not assess if immaterial items are promised goods or services. The Company has also applied the practical expedient in paragraph 606-10-32-18 regarding the adjustment of the promised amount of consideration for the effects of a significant financing component when the customer pays for that good or service within one year or less, as the Company does not have any significant financing components in its customer arrangements since payment is received at or shortly after the point of sale, generally thirty to ninety days.

The Company estimates returns based on an analysis of historical experience if the right to return products is granted to its customers. The Company does not record a return asset, as non-conforming products are generally not returned. The Company's return policy does not vary by geography. The customer has no rotation or price protection rights, and the Company is not under a warranty obligation.

Sales Commissions – Sales commissions paid to sales representatives are eligible for capitalization, as they are incremental costs that would not have been incurred without entering into a specific sales arrangement and are recoverable through the expected margin on the transaction. The Company has elected to apply the practical expedient provided by ASC 340-40-25-4 and recognize the incremental costs of obtaining contracts as an expense when incurred, as the amortization period of the assets that would have otherwise been recognized is one year or less. The Company records these costs as a selling expense.

Product Warranty – The Company offers warranties on various products and services. These warranties are assurance type warranties that are not sold on a standalone basis; therefore, they are not considered distinct performance obligations. The Company estimates the costs that may be incurred under its warranties and records a liability in the amount of such costs at the time the revenue is recognized for the product sale.

International Revenue – The Company markets its products to numerous countries in North America, Europe, Latin America, Asia, and other parts of the world. See Note 13, Segment and Geographic Information, for information regarding revenue disaggregation by geography.

Trade Receivables – Payment terms for the Company's unaffiliated customers are determined based on credit risk and vary by customer. The Company typically offers standard payment terms to unaffiliated customers of net 30 days. The Company does not accrue interest on past due accounts receivable. The Company reviews the credit histories of its customers before extending unsecured credit. The Company presents accounts and notes receivable net of an allowance for doubtful accounts. Each quarter, the Company prepares an analysis of its ability to collect outstanding receivables that provides a basis for an allowance estimate for doubtful accounts. In doing so, the Company evaluates the age of its receivables, past collection history, current financial conditions of key customers and its joint ventures, and economic conditions. Based on this evaluation, the Company establishes a reserve for specific accounts and notes receivable that it believes are uncollectible, as well as an estimate of uncollectible receivables not specifically known. The Company believes that an analysis of historical trends and its current knowledge of potential collection problems provide the Company with sufficient information to establish a reasonable estimate for an allowance for doubtful accounts. In the event the Company determines that a smaller or larger uncollectible accounts reserve is appropriate, the Company records a credit or charge to selling expense in the period that it made such determination. Accounts receivable have been reduced by an allowance for uncollectible accounts of $439,000 and $382,000 as of August 31, 2022 and August 31, 2021, respectively. Accounts are considered past due based on terms agreed upon between the Company and the customer. Accounts receivable are written-off only after all collection attempts have failed and are based on individual credit evaluation and specific circumstances of the customer.

Trade Receivables from Joint Ventures – Trade receivables from joint ventures arise from sales of products the Company makes to its joint ventures. Payment terms for the Company's joint ventures also are determined based on credit risk; however, additional consideration is given to the individual joint venture due to the transportation time associated with ocean delivery of most products and certain other factors. Generally, accounts receivable from the Company's joint ventures unpaid after 90 days are considered past due. The Company does not accrue interest on past due balances. The Company periodically reviews amounts due from its joint ventures for collectability and, based on past experience and continuous review of the balances due, determined that an allowance for doubtful accounts related to its joint venture receivables was not necessary as of August 31, 2022 or 2021.

Fees for Services Provided to Joint Ventures – The Company provides services to its joint ventures including consulting, legal, travel, insurance, technical, and marketing services based on licensing or other agreements with its joint ventures. The Company receives fees for the services it provides to its joint ventures. The fees for services received by the Company from its joint ventures are generally based on either a flat fee or a percentage of net sales by the Company's joint ventures depending on local laws and tax regulations. Under the Company's agreements with its joint ventures, amounts are earned when product is shipped from joint venture facilities, at which point a sale is deemed to have occurred and results in obligation for the joint venture to pay the royalty and recognition of the fee by the Company. The Company reviews the financial situation of each of its joint ventures to assist in the likelihood of collections on amounts earned. The Company accounts for these fees on a cash basis if uncertainty exists surrounding the collection of such fees.

Cash and Cash Equivalents – The Company includes as cash and cash equivalents highly liquid, short-term investments with maturity of three months or less when purchased, which are readily convertible into known amounts of cash. The Company maintains its cash in high quality financial institutions. The balances, at times, may exceed federally insured limits.

Available for Sale Securities – Available for sale securities are recorded at fair value. Unrealized holding gains and losses on available for sale securities are not significant.

Inventories – Inventories are recorded at the lower of cost (first-in, first-out basis) or net realizable value.

Property and Depreciation – Property and equipment are stated at cost. Depreciation is computed using the straight-line method based on the estimated service lives of the various assets as follows:

Buildings and improvements	5-30 years
Machinery and equipment	3-10 years

Patents and Trademarks – Patents and trademarks, including acquisition costs, are stated at cost, less accumulated amortization. Amortization is computed using the straight-line method over the estimated useful lives of the respective assets. Upon retirement, the cost of assets disposed and the related accumulated amortization are removed from the accounts, and any resulting gain or loss is credited or charged to operations.

Investments in Joint Ventures – Investments in the Company's joint ventures are accounted for using the equity method. Under the equity method, investments are initially recorded at cost and are adjusted for dividends, distributed and undistributed earnings and losses, changes in foreign currency exchange rates, and additional investments. In the event the Company's share of a joint venture's cumulative losses exceeds the Company's investment balance, the balance is reported at zero value until proportionate income exceeds the losses. The Company assesses its joint ventures for impairment on an annual basis as of August 31 of each year as part of its fiscal year end analysis. In addition to the annual review for impairment, the Company reviews the operating results of each joint venture on a quarterly basis in comparison to its historical operating results and its accrual of fees for services provided to joint ventures. If the operating results of a joint venture do not meet financial performance expectations, an additional evaluation is performed on the joint venture. The Company's evaluation of its investments in joint ventures requires the Company to make assumptions about future cash flows of its joint ventures. These assumptions require significant judgment, and actual results may differ from assumed or estimated amounts. All investments in joint ventures had positive equity as of August 31, 2022 and 2021. The Company considers any of its joint ventures to be significant and discloses entity specific financial information if the joint venture's income or assets make up more than 20% of the Company's total assets or income.

The Company classifies distributions received from its joint ventures based on the nature of the distributions, generally, in operating activities on the consolidated statements of cash flows.

If the Company is no longer able to exercise significant influence over operating and financial policy of a joint venture previously accounted for under the equity method, it maintains the investment at the carrying value as of the date that significant influence no longer exists and discontinues accruing the proportionate earnings or losses of the investment.

Investments are considered to be impaired when a decline in fair value is judged to be other-than-temporary. Fair value is calculated based on publicly available market information or other estimates determined by management. The Company employs a systematic methodology on a quarterly basis that considers available quantitative and qualitative evidence in evaluating potential impairment of our investments. If the cost of an investment exceeds its fair value, the Company evaluates, among other factors, general market conditions, credit quality, the duration and extent to which the fair value is less than cost, and for equity securities, the Company's intent and ability to hold, or plans to sell, the investment. The Company also considers specific adverse conditions related to the financial health of and business outlook for the investee, including industry and sector performance, changes in technology, and operational and financing cash flow factors. Once a decline in fair value is determined to be other-than-temporary, an impairment charge is recorded to other income (expense), and a new cost basis in the investment is established.

Recoverability of Long-Lived Assets – The Company reviews its long-lived assets whenever events or changes in circumstances indicate the carrying amount of the assets may not be recoverable. The Company determines potential impairment by comparing the carrying value of the assets with expected net cash flows expected to be provided by operating activities of the business or related products. If the sum of the expected undiscounted future net cash flows is less than the carrying value, the Company evaluates whether an impairment loss should be recognized. An impairment loss is measured by comparing the amount by which the carrying value exceeds the fair value of the asset. When evaluating assets for impairment, the Company groups long-lived assets with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities.

Acquisitions of Businesses - Business combinations are accounted for under the acquisition method. Identifiable assets acquired and liabilities and contingent liabilities assumed in a business combination are measured initially at their fair values at the acquisition date. Determining the fair value of assets acquired and liabilities and contingent liabilities assumed requires management's judgment and often involves the use of significant estimates and assumptions, including assumptions with respect to future cash inflows and outflows, probabilities of success, discount rates, and asset lives, among other items. The excess of the fair value of the consideration transferred over the fair value of the Company's share of the identifiable net assets acquired is recorded as goodwill. Acquisition-related expenses are recognized separately from the business combination and are recognized as general and administrative expense as incurred. The Company evaluates the materiality of required disclosures related to our business combinations using quantitative and qualitative measures.

Goodwill and Other Intangible Assets- Goodwill represents the excess purchase price over the fair value of tangible net assets acquired in acquisitions after amounts have been allocated to intangible assets. Goodwill is tested for impairment annually (at August 31), or more frequently when events or changes in circumstances indicate that the asset might be impaired. Examples of such events or circumstances include, but are not limited to, a significant adverse change in legal or business climate, an adverse regulatory action or unanticipated competition.

The Company assesses qualitative factors to determine whether the existence of events or circumstances would indicate that it is more likely than not that the fair value of the reporting unit is less than its carrying amount. If after assessing the totality of events or circumstances, the Company were to determine that it is more likely than not that the fair value of the reporting unit is less than its carrying amount, then the Company would perform a quantitative test that compares the fair value to its carrying value to determine the amount of any impairment. The Company has determined there was no goodwill impairment as of August 31, 2022.

Income Taxes – The Company utilizes the asset and liability method of accounting for income taxes, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the consolidated financial statements. Deferred income tax assets and liabilities are determined based on the differences between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in operations in the period that includes the enactment date.

The Company records net deferred tax assets to the extent the Company believes these assets will more likely than not be realized. In making such a determination, the Company considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations. In the event the Company determines that it would be able to realize its deferred assets in the future in excess of their net recorded amount, the Company makes an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

The Company records uncertain tax positions on the basis of a two-step process whereby the Company determines whether it is more likely than not that the tax positions will be sustained based on the technical merits of the position and those tax positions that meet the more-likely-than-not recognition threshold. The Company recognizes the largest amount of tax benefit that is greater than 50 percent likely to be realized upon ultimate settlement with the related tax authority.

Foreign Currency Translation (Accumulated Other Comprehensive Income (Loss)) – The functional currency of NTIC China, Zerust Brazil, Natur-Tec India, Natur Tec Lanka, Zerust Mexico, Zerust India, Zerust Singapore, Zerust Vietnam, NTI Europe, and each unconsolidated international joint venture is the applicable local currency. The translation of the applicable foreign currencies into U.S. dollars is performed for balance sheet accounts using exchange rates in effect at the balance sheet date and for revenue and expense accounts using an average monthly exchange rate. Translation gains or losses are reported as an element of other comprehensive income (loss).

The Company (excluding NTIC China, Zerust Brazil, Natur-Tec India, Natur Tec Lanka, Zerust India, Zerust Singapore, Zerust Vietnam, NTI Asean, Zerust Mexico, NTI Europe, and NTIC's joint ventures) conducts all foreign transactions based on the U.S. dollar. Since investments in joint ventures are accounted for using the equity method, any changes in foreign currency exchange rates are reflected as a foreign currency translation adjustment and do not change the equity in income from joint ventures reflected in the Company's consolidated statements of operations.

Fair Value of Financial Instruments – The carrying value of cash and cash equivalents, available for sale securities, short-term accounts and notes receivable, notes payable, trade accounts payables, and other accrued expenses approximate fair value because of the short maturity of those instruments.

Shipping and Handling – The Company records all amounts billed to customers in a sales transaction related to shipping and handling as sales. The Company records costs related to shipping and handling in cost of goods sold.

Research and Development – The Company expenses all costs related to product research and development as incurred.

Common Stock – The Company issues authorized but unissued shares of common stock upon the exercise of stock options.

Stock-Based Compensation – The Company recognizes compensation cost relating to share-based payment transactions, including grants of employee stock options and transactions under the Company's employee stock purchase plan, in its consolidated financial statements. That cost is measured based on the fair value of the equity or liability instruments issued. The Company measures the cost of employee services received in exchange for stock options and other stock-based awards based on the grant-date fair value of the award and recognizes the cost over the period the employee is required to provide services for the award (generally the vesting term).

Subsequent Events – The Company has evaluated events occurring after the date of the consolidated financial statements for events requiring disclosure in the consolidated financial statements.

Use of Estimates – The preparation of the consolidated financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

2. ACCOUNTING PRONOUNCEMENTS

Recently Issued Accounting Pronouncements

In June 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-13, *Measurement of Credit Losses on Financial Instruments*, which revises guidance for the accounting for credit losses on financial instruments within its scope, and in November 2018, issued ASU No. 2018-19 and in April 2019, issued ASU No. 2019-04 and in May 2019, issued ASU No. 2019-05, and in November 2019, issued ASU No. 2019-11, which amended the standard. The new standard introduces an approach, based on expected losses, to estimate credit losses on certain types of financial instruments and modifies the impairment model for available-for-sale debt securities. The new approach to estimating credit losses (referred to as the current expected credit losses model) applies to most financial assets measured at amortized cost and certain other instruments, including trade and other receivables, loans, held-to-maturity debt securities, net investments in leases and off-balance-sheet credit exposures. This ASU is effective for fiscal years beginning after December 15, 2022, including interim periods within those fiscal years, with early adoption permitted. Entities are required to apply the standard's provisions as a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is adopted. The Company is still evaluating the impact of this ASU.

Although there are several other new accounting pronouncements issued or proposed by the FASB, which the Company has adopted or will adopt, as applicable, the Company does not believe any of these accounting pronouncements has had or will have a material impact on the Company's consolidated financial position or operating results.

3. BUSINESS COMBINATION

On September 21, 2021, the Company announced that it acquired the remaining 50% ownership interest in its Indian joint venture, HNTI Limited (Zerust India), for $6,250,000 in cash, effective as of September 1, 2021, the date the Company obtained control. Prior to September 1, 2021, the Company owned 50% of the outstanding capital stock of Zerust India. The Company had historically accounted for this investment under the equity method of accounting. This purchase was funded with cash on hand and borrowings under the Company's revolving line of credit. The Company undertook the acquisition to enhance its Zerust business in India.

The purchase price of $6,250,000 was funded with cash on hand and borrowings under the Company's revolving line of credit, which was increased in connection with the transaction to $5,000,000.

Because the Company increased its ownership interest in Zerust India to 100%, the acquisition of Zerust India has been accounted for in accordance with Accounting Standards Codification (ASC) 805, Business Combinations, by using the acquisition method of accounting. Effective September 1, 2021, Zerust India became a consolidated subsidiary within the Company's financial statements.

The following table summarizes the purchase price allocation that includes the fair values of the separately identifiable assets acquired and liabilities assumed as of September 1, 2021:

Cash and cash equivalents	$	1,187,997
Trade account receivable		1,954,769
Inventories		886,650
Prepaid expenses and other		396,545
Property, plant and equipment		219,077
Operating lease, right of use asset		355,000
Customer relationships		6,347,000
Goodwill		4,782,376
Current liabilities		(1,370,314)
Deferred tax liability		(1,904,100)
Operating lease liability		(355,000)
Net assets acquired	$	12,500,000
Less:		
Fair value of previously held equity method investment		(1,637,362)
Cumulative foreign currency translation		(661,088)
Gain recognized on acquisition		(3,951,550)
		(6,250,000)
Cash paid for acquisition	$	6,250,000

The excess of the fair value of purchase consideration over the fair value of net tangible and identifiable intangible assets acquired was recorded as goodwill. The fair values assigned to tangible and identifiable intangible assets acquired and liabilities assumed are based on management's estimates and assumptions. The fair values of assets acquired and liabilities assumed may be subject to change as additional information is received.

The fair value of the intangible asset associated with customer relationships was estimated using a discounted cash flow method with the application of the multi-period excess earnings method. Under this method, an intangible asset's fair value is equal to the present value of the incremental after-tax cash flows attributable to only the subject intangible asset after deducting contributory asset charges.

The rate used to discount the estimated future net cash flows to their present values for the intangible assets was based upon a weighted average cost of capital calculation. The discount rate was determined after consideration of market rates of return on debt and equity capital, the weighted average return on invested capital and the risk associated with achieving forecasted sales related to the assets acquired from Zerust India. The weighted average discount rate used to determine the fair value of the customer relationships was 15.3%.

The amortization period for the intangible assets is 15 years. The intangible assets are being amortized on a straight-line basis, which is consistent with the pattern that the economic benefits of the intangible assets are expected to be utilized based upon estimated cash flows generated from such asset. Goodwill associated with the acquisition was primarily attributable to the expansion opportunity of the Company's Zerust business in India.

Authoritative guidance on accounting for business combinations requires that an acquirer re-measure its previously held equity interest in the acquisition at its acquisition date fair value and recognize the resulting gain or loss in earnings. As such, since the Company acquired the remaining 50% ownership interest of Zerust India effective September 1, 2021, the Company recognized a gain of $3,951,550 during the year ended August 31, 2022. This gain is included in "Remeasurement gain on acquisition of equity method investee" on the Company's consolidated statements of operations for the year ended August 31, 2022.

The Company has included the financial results of Zerust India in the consolidated financial statements from September 1, 2021. Net revenue and net income related to Zerust India since the date of acquisition totaled $9,961,464 and $659,794, respectively. The transaction costs associated with the acquisition were approximately $115,000 and are recorded in general and administrative expense as incurred during the year ended August 31, 2022.

Unaudited consolidated pro forma information assuming the acquisition had occurred on September 1, 2020 for the year ended August 31, 2021 would have an increase in net sales of $9,074,240 and an increase in the net income of $1,529,615. The unaudited consolidated pro forma combined financial information does not purport to be indicative of the results which would have been obtained had the acquisition been completed as of the beginning of the earliest period presented or of results that may be obtained in the future. In addition, they do not include any benefits that may result from the acquisition due to synergies that may be derived from the elimination of any duplicative costs.

4. INVENTORIES

Inventories consisted of the following:

	August 31, 2022	August 31, 2021
Production materials	$ 6,496,656	$ 4,453,688
Finished goods	9,845,073	6,660,519
	$ 16,341,729	$ 11,114,207

5. PROPERTY AND EQUIPMENT, NET

Property and equipment, net consisted of the following:

	August 31, 2022	August 31, 2021
Land	$ 310,365	$ 310,365
Buildings and improvements	14,778,759	13,149,258
Machinery and equipment	5,643,320	5,453,679
	20,732,444	18,913,302
Less accumulated depreciation	(8,561,951)	(7,091,844)
	$ 12,170,493	$ 11,821,458

6. PATENTS AND TRADEMARKS, NET

Patents and trademarks, net consisted of the following:

	August 31, 2022	August 31, 2021
Patents and trademarks	$ 3,225,655	$ 3,018,507
Less accumulated amortization	(2,515,644)	(2,308,935)
	$ 710,011	$ 709,572

Patent and trademark costs are amortized over seven years. Costs incurred related to patents and trademarks are capitalized until filed and approved, at which time the amounts capitalized to date are amortized, and any further costs, including maintenance costs, are expensed as incurred. Amortization expense was $206,710 and $203,088 for the years ended August 31, 2022 and 2021, respectively. Amortization expense is estimated to average $178,000 in each of the next four fiscal years.

7. INVESTMENTS IN JOINT VENTURES

The consolidated financial statements of the Company's foreign joint ventures are initially prepared using the accounting principles accepted in the respective joint ventures' countries of domicile. Amounts related to foreign joint ventures reported in the below tables and the accompanying consolidated financial statements have subsequently been adjusted to conform with U.S. GAAP in all material respects. All material profits on sales recorded that remain on the consolidated balance sheet from the Company to its joint ventures and from joint ventures to other joint ventures have been eliminated for financial reporting purposes.

The Company considers the Company's joint venture in Germany, Excor Korrosionsschutz – Technologien und Produkte GmbH (EXCOR) to be individually significant to the Company's consolidated assets and income as of August 31, 2022 and 2021. Zerust India became a wholly owned subsidiary of the Company effective as of September 1, 2021. Financial information from the audited and unaudited financial statements of EXCOR as well as all the Company's other joint ventures, are summarized as follows:

	As of August 31, 2022		
	Total	EXCOR	OTHER
Current assets	$ 52,428,831	$ 26,047,914	$ 26,380,917
Total assets	55,854,457	27,932,532	27,921,925
Current liabilities	10,981,833	2,943,895	8,037,938
Noncurrent liabilities	1,138,980	-	1,138,980
Joint ventures' equity	43,733,644	24,988,637	18,745,007
Northern Technologies International Corporation's share of joint ventures' equity	21,814,754	12,494,320	9,320,434
Northern Technologies International Corporation's share of joint ventures' undistributed earnings	21,256,923	12,463,415	8,793,508

	Fiscal Year Ended August 31, 2022		
	Total	EXCOR	OTHER
Net sales	$ 104,077,748	$ 42,853,162	$ 61,224,586
Gross profit	41,030,647	20,312,400	20,718,247
Net income	9,302,237	6,487,855	2,814,382
Northern Technologies International Corporation's share of equity in income of joint ventures	4,725,918	3,236,989	1,488,929
Northern Technologies International Corporation's dividends received from joint ventures	5,723,176	4,255,200	1,467,976

	As of August 31, 2021		
	Total	EXCOR	OTHER(1)
Current assets	$ 69,394,796	$ 33,886,655	$ 35,508,141
Total assets	73,814,402	36,211,520	37,602,882
Current liabilities	16,366,398	5,386,377	10,980,021
Noncurrent liabilities	1,455,524	-	1,455,524
Joint ventures' equity	55,992,480	30,825,144	25,167,336
Northern Technologies International Corporation's share of joint ventures' equity	27,623,768	15,412,574	12,211,194
Northern Technologies International Corporation's share of joint ventures' undistributed earnings	24,702,778	14,697,490	10,005,288

	Fiscal Year Ended August 31, 2021		
	Total	EXCOR	OTHER(1)
Net sales	$ 120,954,550	$ 46,522,688	$ 74,431,862
Gross profit	53,371,610	25,389,981	27,981,629
Net income	14,921,531	8,798,995	6,122,536
Northern Technologies International Corporation's share of equity in income of joint ventures	7,465,214	4,400,403	3,064,811
Northern Technologies International Corporation's dividends received from joint ventures	3,665,365	1,809,900	1,855,465

(1) Includes Zerust India since Zerust India was not a consolidated subsidiary of the Company as of August 31, 2021. See Note 3 entitled "Business Combination."

8. INTANGIBLE ASSET, NET

Intangible asset, net consisted of the following:

	August 31, 2022	August 31, 2021
Customer relationships	$ 6,347,000	$ —
Less accumulated amortization	(423,133)	—
Net Carrying Amount	$ 5,923,867	$ —

The customer relationships were established as a part of purchase accounting related to our Zerust India acquisition. See Note 3 entitled "Business Combination." The Company amortizes the intangible asset related to the customer relationships using the straight-line method over the estimated useful lives of the asset, which is 15 years. Total amortization expense was $423,133 for the year ended August 31, 2022. Amortization expense is estimated to be $423,000 in each of the next five fiscal years.

9. CORPORATE DEBT

The Company has a revolving line of credit with PNC Bank, National Association (PNC Bank) of $7,000,000 as of August 31, 2022. The line of credit has a maturity date of January 7, 2023 and bears interest at an annual rate equal to the daily Bloomberg Short-Term Bank Yield (BSBY) Index plus 250 basis points (2.50%). The line of credit is governed under an Amended and Restated Loan Agreement dated August 31, 2021.

On January 4, 2022, the Company issued an Amended and Restated Revolving Line of Credit Note, which extended the maturity date to January 7, 2023 and revised the rate at which amounts outstanding under the line of credit bear interest to equal a per annum rate equal to the daily BSBY Index plus 250 basis points (2.50%). The other material terms of the line of credit were not affected by these amendments or other immaterial amendments that have been executed since the execution of the Amended and Restated Loan Agreement dated August 31, 2021.

On May 20, 2022, to maintain financial flexibility, the Company issued an Amended and Restated Revolving Line of Credit Note to PNC Bank, which increased the Company's line of credit from $5,000,000 to $7,000,000 until August 16, 2022, at which time the line of credit was scheduled to go decrease back to $5,000,000 until its expiration date on January 7, 2023. Subsequently, to maintain future financial flexibility, on August 8, 2022, NTIC and PNC Bank entered into an Amended and Restated Revolving Line of Credit Note and agreed to keep the line of credit at $7,000,000 until its maturity date.

Borrowings of $5,900,000 were outstanding under the line of credit as of August 31, 2022 and no amounts were outstanding as of August 31, 2021. Such outstanding borrowings were used primarily to fund the Company's acquisition of the remaining ownership interest of Zerust India. The average interest rate during the twelve months ended August 31, 2022 was 3.07%.

The obligations of the Company under the loan agreement are secured by a lien on all of the Company's personal property, excepting certain liens consented to in writing by PNC. The loan agreement contains covenants, including affirmative financial covenants, such as the maintenance of a minimum fixed charge coverage ratio of 1.10:1.00, and negative covenants, which, among other things, limit the incurrence of additional indebtedness, loans and equity investments, disposition of assets, mergers and consolidations and other matters customarily restricted in such agreements. As of August 31, 2022, the Company was in compliance with all debt covenants.

As of August 31, 2022 and August 31, 2021, the Company did not have any letters of credit outstanding with respect to the letter of credit sub-facility available under the revolving line of credit with PNC Bank. As of August 31, 2022 and August 31, 2021, the Company had $72,418 and $104,363, respectively, of letters of credit with JP Morgan Chase Bank that are performance based and set to expire between 2022 and 2023.

10. STOCKHOLDERS' EQUITY

During fiscal 2022, NTIC's Board of Directors declared cash dividends on the following dates in the following amounts to holders of record of NTIC common stock as of the following record dates:

Declaration Date	Amount		Record Date	Payable Date
October 20, 2021	$	0.07	November 3, 2021	November 17, 2021
January 21, 2022	$	0.07	February 2, 2022	February 16, 2022
April 22, 2022	$	0.07	May 4, 2022	May 18, 2022
July 20, 2022	$	0.07	August 3, 2022	August 17, 2022

On April 23, 2020, NTIC announced the temporary suspension of its quarterly cash dividend pending clarity on the financial impact of COVID-19 on NTIC. On January 15, 2021, NTIC announced the reinstatement of its quarterly cash dividend. During fiscal 2021, NTIC's Board of Directors declared cash dividends on the following dates in the following amounts to holders of record of NTIC common stock as of the following record dates:

Declaration Date	Amount		Record Date	Payable Date
January 15, 2021	$	0.065	February 3, 2021	February 17, 2021
April 23, 2021	$	0.065	May 5, 2021	May 19, 2021
July 21, 2021	$	0.065	August 4, 2021	August 18, 2021

During fiscal 2022 and fiscal 2021, the Company repurchased no shares of its common stock.

During fiscal 2022, the Company granted stock options under the Northern Technologies International Corporation 2019 Stock Incentive Plan (as amended, the 2019 Plan) to purchase an aggregate of 174,840 shares of its common stock to various employees and directors. The weighted average per share exercise price of the stock options is $16.97. The exercise price of the stock options is equal to the fair market value of the Company's common stock on the date of grant. During fiscal 2022, stock options to purchase an aggregate of 51,218 shares of common stock were exercised at a weighted average exercise price of $6.60 per share, resulting in the net issuance of 42,071 shares of common stock since some of the options were exercised on a net cashless exercise basis.

During fiscal 2021, the Company granted stock options under the 2019 Plan to purchase an aggregate of 419,874 shares of its common stock to various employees and directors. The weighted average per share exercise price of the stock options is $8.24. The exercise price of the stock options is equal to the fair market value of the Company's common stock on the date of grant. During fiscal 2021, stock options to purchase an aggregate of 77,645 shares of common stock were exercised at a weighted average exercise price of $8.18 per share, resulting in the net issuance of 74,950 shares of common stock since some of the options were exercised on a net cashless exercise basis.

The Company issued 2,635 and 4,646 shares of common stock on September 1, 2021 and 2020, respectively, under the Northern Technologies International Corporation Employee Stock Purchase Plan (ESPP). The Company issued 2,966 and 5,225 shares of common stock on March 1, 2022 and 2021, respectively, under the ESPP. The ESPP is compensatory for financial reporting purposes. As of August 31, 2022, 69,221 shares of common stock remained available for sale under the ESPP.

11. NET INCOME PER COMMON SHARE

Basic net income per common share is computed by dividing net income by the weighted average number of common shares outstanding. Diluted net income per share assumes the exercise of stock options using the treasury stock method, if dilutive.

The following is a reconciliation of the net income per share computation for fiscal 2022 and fiscal 2021:

Numerator:		August 31, 2022		August 31, 2021
Net income attributable to NTIC	$	6,324,700	$	6,281,238
Denominator:				
Basic-weighted shares outstanding		9,216,216		9,116,472
Weighted shares assumed upon exercise of stock options		418,812		757,667
Diluted – weighted shares outstanding		9,635,028		9,874,139
Basic net income per share:	$	0.69	$	0.69
Diluted net income per share:	$	0.66	$	0.64

The dilutive impact summarized above relates to the periods when the average market price of the Company's common stock exceeded the exercise price of the potentially dilutive option securities granted. Net income per common share was based on the weighted average number of common shares outstanding during the periods when computing the basic net income per share. When dilutive, stock options are included as equivalents using the treasury stock market method when computing the diluted net income per share. Excluded from the computation of diluted net income per share as of August 31, 2022 were options outstanding to purchase 600,094 shares of common stock. Excluded from the computation of diluted net income per share as of August 31, 2021 were options outstanding to purchase 136,221 shares of common stock.

12. STOCK-BASED COMPENSATION

The Company has three stock-based compensation plans under which stock options or other stock-based awards have been granted: the Northern Technologies International Corporation Amended and Restated 2019 Stock Incentive Plan, the Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan (the 2007 Plan) and the Northern Technologies International Corporation Employee Stock Purchase Plan. The 2019 Plan replaced the 2007 Plan with respect to future grants; and, therefore, no further awards may be made under the 2007 Plan. The Compensation Committee of the Board of Directors and the Board of Directors administer these plans.

The 2019 Plan provides for the grant of incentive stock options, non-statutory stock options, stock appreciation rights, restricted stock, stock unit awards, performance awards, and stock bonuses to eligible recipients to enable the Company and its subsidiaries to attract and retain qualified individuals through opportunities for equity participation in the Company and to reward those individuals who contribute to the achievement of the Company's economic objectives. On January 15, 2021, the Company's stockholders approved certain amendments to the 2019 Plan, including an increase in the number of shares of common stock available for issuance under the plan by an additional 800,000 shares. Subject to adjustment as provided in the 2019 Plan, up to a maximum of 1,600,000 shares of the Company's common stock are issuable under the 2019 Plan. Options granted generally have a term of ten years and become exercisable over a one- or three- year period beginning on the one-year anniversary of the date of grant. Options are granted at per share exercise prices equal to the market value of the Company's common stock on the date of grant. The Company issues new shares upon the exercise of options. As of August 31, 2022, options to purchase an aggregate of 867,721 shares of the Company's common stock were outstanding under the 2019 Plan and 704,516 shares of the Company's common stock remain available for grant under the 2019 Plan. As of August 31, 2022, options to purchase an aggregate of 649,243 shares of the Company's common stock were outstanding under the 2007 Plan.

The Company granted options to purchase an aggregate of 174,840 and 419,874 shares of its common stock during fiscal 2022 and 2021, respectively. The fair value of option grants is determined at the date of grant using the Black-Scholes option pricing model with the assumptions listed below. The Company recognized compensation expense of $931,532 during fiscal 2022 and compensation expense of $664,174 during fiscal 2021 related to the options that vested during such time period. As of August 31, 2022, the total compensation cost for non-vested options not yet recognized in the Company's consolidated statements of operations was $1,009,719. Stock-based compensation expense of $671,526 is expected during fiscal 2023 and $338,193 is expected to be recognized during fiscal 2024, based on outstanding options as of August 31, 2022. Future option grants will impact the compensation expense recognized. Stock-based compensation expense is included in general and administrative expense on the consolidated statements of operations.

The fair value of each option grant is estimated on the grant date using the Black-Scholes option pricing model with the following assumptions and results for the grants:

	Fiscal Year 2022	Fiscal Year 2021
Dividend yield	2.46%	1.65%
Expected volatility	45.2%	45.4%
Expected life of option (years)	10	10
Weighted average risk-free interest rate	3.30%	0.77%

Stock option activity during the periods indicated was as follows:

	Number of Shares (#)	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding at August 31, 2020	1,127,968	$ 9.63	
Options granted	419,874	8.24	
Options exercised	(77,645)	8.18	
Options terminated	(43,546)	9.63	
Outstanding at August 31, 2021	1,426,651	$ 9.30	
Options granted	174,840	16.97	
Options exercised	(51,218)	6.60	
Options terminated	(5,546)	18.23	
Outstanding at August 31, 2022	1,544,727	$ 10.23	$ 4,151,365
Exercisable at August 31, 2022	1,156,211	$ 9.58	$ 3,394,957

The weighted average per share fair value of options granted during fiscal 2022 and fiscal 2021 was $16.97 and $8.24, respectively. The weighted average remaining contractual life of the options outstanding as of August 31, 2022 and 2021 was 5.76 years and 6.20 years, respectively.

13. SEGMENT AND GEOGRAPHIC INFORMATION

Segment Information

The Company's chief operating decision maker is its Chief Executive Officer. The Company's business is organized into two reportable segments: ZERUST® and Natur-Tec®. The Company has been selling its proprietary ZERUST® rust and corrosion inhibiting products and services to the automotive, electronics, electrical, mechanical, military, and retail consumer markets for almost 50 years and, more recently, has also expanded into the oil and gas industry. The Company also sells a portfolio of proprietary bio-based and compostable (fully biodegradable) polymer resins and finished products under the Natur-Tec® brand.

The following tables present the Company's business segment information:

	Fiscal 2022	Fiscal 2021
ZERUST® net sales	$ 57,459,382	$ 45,554,434
Natur-Tec® net sales	16,699,508	10,939,385
Total net sales	$ 74,158,890	$ 56,493,819

The following table sets forth the Company's cost of goods sold by segment:

	Fiscal 2022	Fiscal 2021
Direct cost of goods sold		
ZERUST®	$ 34,673,146	$ 26,028,555
Natur-Tec®	12,859,343	7,717,429
Indirect cost of goods sold	3,557,809	3,174,830
Total net cost of goods sold	$ 51,090,298	$ 36,920,814

The Company utilizes product net sales and direct and indirect cost of goods sold for each product in reviewing the financial performance of a product type. Further allocation of Company expenses or assets, aside from amounts presented in the tables above, is not utilized in evaluating product performance, nor does such allocation occur for internal financial reporting.

Sales to the Company's joint ventures are included in the foregoing geographic and segment information, however, sales by the Company's joint ventures to other parties are not included. The foregoing geographic and segment information represents only sales and cost of goods sold recognized directly by the Company.

All joint venture operations, including equity in income, fees for services, and related dividends, are related to ZERUST® products and services.

Geographic Information

Net sales by geographic location for fiscal 2022 and fiscal 2021 were as follows:

	Fiscal Year Ended August 31,	
	2022	2021
Inside the U.S.A. to unaffiliated customers	$ 25,301,067	$ 22,039,456
Outside the U.S.A. to:		
Joint ventures in which the Company is a shareholder directly and indirectly	2,968,089	3,023,196
Unaffiliated customers	45,889,734	31,431,167
	$ 74,158,890	$ 56,493,819

Net sales by geographic location are based on the location of the customer.

Fees for services provided to joint ventures by geographic location as a percentage of total fees for services provided to joint ventures during fiscal 2022 and fiscal 2021, respectively, were as follows:

	Fiscal 2022	% of Total Fees for Services Provided to Joint Ventures	Fiscal 2021	% of Total Fees for Services Provided to Joint Ventures
Germany	$ 834,725	14.5%	$ 920,902	15.4%
Poland	730,523	12.7%	798,570	13.4%
Japan	669,371	11.6%	826,403	13.9%
France	448,579	7.8%	435,032	7.3%
Sweden	447,441	7.8%	528,755	8.9%
Thailand	344,649	6.0%	399,563	6.7%
United Kingdom	342,488	5.9%	316,786	5.3%
Finland	340,783	5.9%	298,663	5.0%
Czech Republic	300,257	5.2%	377,395	6.3%
South Korea	270,309	4.7%	317,042	5.3%
Indonesia	156,476	2.7%	122,513	2.1%
India	-	-	392,074	6.6%
Other *	882,081	15.2%	230,562	3.8%
	$ 5,767,682	100.0%	$ 5,964,260	100.0%

* NTI Asean recovered $681,859 in previously written-off fees for services related to the termination of its joint venture in China in fiscal 2015.
Sales to the Company's joint ventures are included in the foregoing segment and geographic information; however, sales by the Company's joint ventures to other parties are not included. The foregoing segment and geographic information represents only sales recognized directly by the Company and sold in that geographic territory.

See Note 7 for additional details on geographical information regarding equity in income from joint ventures.

The geographical distribution of total property and equipment and net sales is as follows:

	At August 31, 2022	At August 31, 2021
China	$ 5,826,898	$ 5,110,071
Other	565,022	453,199
United States	5,778,573	6,258,188
Total property and equipment	$ 12,170,493	$ 11,821,458

	Fiscal Year Ended August 31, 2022	Fiscal Year Ended August 31, 2021
China	$ 15,754,051	$ 17,343,623
Brazil	5,160,572	4,122,781
India	18,555,603	5,482,989
Other	9,387,597	7,504,970
United States	25,301,067	22,039,456
Total net sales	$ 74,158,890	$ 56,493,819

Long-lived assets consist of property and equipment. These assets are periodically reviewed to assure the net realizable value from the estimated future production based on forecasted sales exceeds the carrying value of the assets.

Sales to the Company’s joint ventures are included in the foregoing segment and geographic information; however, sales by the Company’s joint ventures to other parties are not included. The foregoing segment and geographic information represents only sales recognized directly by the Company and sold in that geographic territory.

All joint venture operations, including equity in income, fees for services and related dividends, are primarily related to ZERUST® products and services.

14. RETIREMENT PLAN

The Company has a 401(k) employee savings plan. Employees who meet certain age and service requirements may elect to contribute up to 15% of their salaries. The Company typically contributes the lesser of 50% of the participant’s contributions or 3.5% of the employee’s salary. The Company recognized expense for the savings plan of $272,257 and $237,499 for fiscal 2022 and fiscal 2021, respectively.

15. RELATED PARTY TRANSACTIONS

During both fiscal 2022 and fiscal 2021, the Company made consulting payments of $144,000 to Bioplastic Polymers LLC, an entity owned by Ramani Narayan, Ph.D., a director of the Company.

16. INCOME TAXES

The provision for income taxes for the fiscal years ended August 31, 2022 and 2021 was approximately as follows:

	Fiscal Year Ended August 31, 2022	Fiscal Year Ended August 31, 2021
Current:		
Federal	$ —	$ —
State	98,000	39,000
Foreign	1,894,000	1,307,000
	1,992,000	1,346,000
Deferred:		
Federal	—	—
State	—	—
Foreign	(118,164)	115,905
	(118,164)	115,905
	$ 1,873,836	$ 1,461,905

Reconciliations of the expected federal income tax at the statutory rate of 21.0% with the provisions for income taxes for the fiscal years ended August 31, 2022 and 2021 were approximately as follows:

	Fiscal Year Ended August 31, 2022	Fiscal Year Ended August 31, 2021
Tax computed at statutory rates	$ 1,780,000	$ 1,794,000
State income tax, net of federal benefit	34,000	37,000
Tax effect on equity in income of international joint ventures	(988,000)	(1,560,000)
Tax effect of foreign operations	1,004,000	839,000
Deemed repatriation	10,000	—
Expired foreign tax credit	—	897,000
Research and development credit	(244,000)	(277,000)
Valuation allowance	133,000	(492,000)
Stock based compensation	67,000	75,000
Non-controlling interest	(72,000)	(83,000)
Other	149,836	231,905
	$ 1,873,836	$ 1,461,905

The Company has not provided U.S. income taxes or foreign withholding taxes with respect to its portion of the cumulative undistributed earnings of certain foreign subsidiaries and joint ventures that are essentially permanent in duration. As a result of the 2017 tax law changes, U.S. federal income taxes on dividends received from the Company’s foreign subsidiaries and joint ventures after December 31, 2017 have been generally eliminated. However, the Company continues to be subject to foreign withholding taxes upon repatriation of any undistributed earnings that are not essentially permanent in duration. The Company recorded a tax expense of approximately $8,000 and $113,000 during fiscal 2022 and fiscal 2021, respectively, representing changes in the deferred tax liability for foreign withholding taxes to be paid with respect to the portion of the cumulative undistributed earnings of foreign subsidiaries and joint ventures that the Company determined were not essentially permanent in duration.

The Company measures deferred tax assets and liabilities using enacted tax rates that will apply in the years in which the temporary differences are expected to be recovered or paid. The tax effect of the temporary differences and tax carryforwards comprising the net deferred taxes shown on the consolidated balance sheets as of August 31, 2022 and 2021 was approximately as follows:

	August 31,	
	2022	2021
Accrued compensation	$ 329,100	$ 539,300
Inventory costs	93,900	55,100
Other accrued expenses	84,800	103,100
Lease liability	98,300	84,300
Goodwill and other intangible assets	398,600	453,000
Stock-based compensation	547,200	466,300
Property and equipment	9,100	—
Foreign tax credit carryforward	4,892,100	4,893,300
Other credit and loss carryforward	5,455,500	5,243,100
Other	23,000	—
Total deferred tax assets	11,931,600	11,837,500
Valuation allowance	(11,592,900)	(11,447,500)
Total deferred tax assets after valuation allowance	338,700	390,000
Property and equipment	—	(7,300)
Right-of-use asset	(98,300)	(84,300)
Intangible assets	(1,777,200)	—
Unremitted foreign earnings	(163,200)	(154,900)
Other	—	(50,900)
Total deferred tax liabilities	(2,038,700)	(297,400)
Net deferred tax assets	$ (1,700,000)	$ 92,600

As of August 31, 2022, the Company has foreign tax credit carryforwards of $4,892,100. This amount will begin to expire if not utilized prior to August 31, 2023. In addition, the Company had federal and state tax credit carryforwards of $3,796,500 as of August 31, 2022, which will begin to expire in fiscal 2023. These federal and state tax credit carryforwards consist primarily of federal and Minnesota research and development credit carryforwards. The Company also has a deferred tax asset of $1,170,100 for federal net operating loss carryforwards and $329,800 for state net operating loss carryforwards as of August 31, 2022. The federal net operating loss carryforward has an indefinite carryforward period. The state net operating loss carryforward will begin to expire to the extent it is not utilized prior to August 31, 2023. The Company has a deferred tax asset of $159,000 for foreign net operating loss carryforwards, which has an indefinite carryforward period.

The Company records a tax valuation allowance to reduce deferred tax assets to the amount expected to be realized when it is more likely than not that some portion or all of its deferred tax assets will not be realized.

The Company determined based on all available evidence, including historical data and projections of future results, that it is more likely than not that its domestic deferred tax assets will not be realized due to the absence of objectively verifiable sources of taxable income. On the basis of this evaluation, the Company has recorded a valuation allowance of $11,592,900 and $11,447,500 as of August 31, 2022 and 2021, respectively, to recognize only the portion of the deferred tax assets that is more likely than not to be realized. The net deferred tax asset as of August 31, 2022 and 2021 relates entirely to non-US deferred tax assets which are expected to be realized by offset of deferred tax liability for withholding tax on cumulative undistributed earnings in foreign subsidiaries and joint ventures that the Company determined were not essentially permanent. The change in the valuation allowance totaled an increase of $145,400 and a decrease of $114,000 for the years ended August 31, 2022 and 2021, respectively.

The following is a tabular reconciliation of the total amounts of approximated unrecognized tax benefits:

	Fiscal Year Ended August 31,	
	2022	2021
Gross unrecognized tax benefits – beginning balance	$ 297,600	$ 278,200
Gross increases – prior period tax positions	3,400	4,400
Gross increases – current period tax positions	18,000	15,000
Gross unrecognized tax benefits – ending balance	$ 319,000	$ 297,600

The entire amount of unrecognized tax benefits would affect the effective tax rate if recognized. It is not expected that the amount of unrecognized tax benefits will change significantly in the next 12 months.

The Company recognizes interest related to unrecognized tax benefits and penalties as income tax expense. Accrued interest and penalties are included within the related tax liability line in the consolidated balance sheet. There was no liability for the payment of interest and penalties as of both August 31, 2022 and August 31, 2021.

On August 16, 2022, the Inflation Reduction Act ("IRA") was signed into law in the United States. Among other provisions, the IRA includes a 15% corporate minimum tax rate applied to certain large corporations and a 1% excise tax on corporate stock repurchases made after December 31, 2022. We do not expect the IRA to have a material impact on our consolidated financial statements.

The Company is subject to taxation in the United States and various states and foreign jurisdictions. With few exceptions, as of August 31, 2022, the Company is no longer subject to federal, state, local, or foreign examinations by tax authorities for years prior to August 31, 2019.

17. COMMITMENTS AND CONTINGENCIES

Operating Leases

The Company currently has operating leases for various buildings, equipment and vehicles. These leases are under non-cancelable operating lease agreements with expiration dates between September 30, 2022 and July 31, 2024. The Company has the option to extend certain leases to five or ten-year term(s) and has the right of first refusal on any sale.

The Company records lease liabilities within current liabilities or long-term liabilities based upon the length of time associated with the lease payments. The Company records its long-term operating leases as right-of-use assets. Upon initial adoption, using the modified retrospective transition approach, no leases with terms less than 12 months have been capitalized to the consolidated balance sheet consistent with ASC 842. Instead, these leases are recognized in the consolidated statement of operations on a straight-line expense throughout the lives of the leases. None of the Company's leases contain common area maintenance or security agreements.

The Company has made certain assumptions and judgments when applying ASC 842, the most significant of which is that the Company elected the package of practical expedients available for transition that allow the Company to not reassess whether expired or existing contracts contain leases under the new definition of a lease, lease classification for expired or existing leases and whether previously capitalized initial direct costs would qualify for capitalization under ASC 842. Additionally, the Company did not elect to use hindsight when considering judgments and estimates such as assessments of lessee options to extend or terminate a lease or purchase the underlying asset. The Company has no contingent rent agreements.

Present Value of Leases

	August 31, 2022	August 31, 2021
Right-of-use assets, net	$ 557,571	$ 376,438
Current portion of lease liability	373,330	272,336
Lease liability, less current portion	184,241	104,102
Total lease liability	$ 557,571	$ 376,438

As of August 31, 2022, the weighted-average remaining lease term was 1.57 years. The Company's lease agreements do not provide a readily determinable implicit rate nor is it available to the Company from its lessors. Instead, as of August 31, 2022, the Company estimates the weighted-average discount rate for its operating leases to be 5.45% to present value based on the incremental borrowing rate.

Future minimum payments as of August 31, 2022 under these long-term operating leases are as follows (in thousands):

Fiscal 2023	$ 373,330
Fiscal 2024	209,802
Total future minimum lease payments	583,132
Less amount representing interest	(25,561)
Present value of obligations under operating leases	557,571
Less current portion	(373,330)
Long-term operating lease obligations	$ 184,241

Rent expense under these leases was approximately $272,336 and $386,345 as of August 31, 2022 and 2021, respectively.

Annual Bonus Plan

On August 26, 2022, the Compensation Committee of the Board of Directors of the Company approved the material terms of an annual bonus plan for the Company's executive officers as well as certain officers and employees for the fiscal year ending August 31, 2023. For fiscal 2023, as in past years, the total amount available under the bonus plan for all plan participants, including executive officers, is dependent upon the Company's earnings before interest, taxes, and other income (EBITOI), as adjusted to take into account amounts to be paid under the bonus plan and certain other adjustments (Adjusted EBITOI). Each plan participant's percentage of the overall bonus pool is based upon the number of plan participants, the individual's annual base salary, and the individual's position and level of responsibility within the Company. In the case of each of the Company's executive officer participants, 75% of the amount of their individual bonus payout will be determined based upon the Company's actual EBITOI for fiscal 2023 compared to a pre-established target EBITOI for fiscal 2023, and 25% of the payout will be determined based upon such executive officer's achievement of certain pre-established individual performance objectives. The payment of bonuses under the plan is discretionary, and bonuses may be paid to executive officer participants in both cash and shares of the Company's common stock, the exact amount and percentages of which are determined by the Company's Board of Directors, upon recommendation of the Compensation Committee, after the completion of the Company's consolidated financial statements for fiscal 2023.

On August 26, 2021, the Compensation Committee of the Board of Directors of the Company approved the material terms of an annual bonus plan for the Company's executive officers as well as certain officers and employees for the fiscal year ending August 31, 2022. $1,733,336 was recognized for bonuses for the fiscal year ended August 31, 2022, $533,336 of the bonus is comprised of stock options granted to management on September 1, 2021 that will be expensed over three years and $1,200,000 will be paid out in cash and profit sharing subsequent to year end. This is compared to $2,366,668 recognized for bonuses for the fiscal year ended August 31, 2021, $266,667 of the bonus comprised of stock options granted to management on September 1, 2020 and $2,100,000 was paid out in cash and profit sharing subsequent to year end.

Concentrations

Two joint ventures (consisting of the Company's joint ventures in South Korea and Thailand) accounted for 46.6% of the Company's trade joint venture receivables as of August 31, 2022, and two joint ventures (consisting of the Company's joint ventures in the Thailand and Indonesia) accounted for 37.4% of the Company's trade joint venture receivables as of August 31, 2021.

Legal Matters

From time to time, the Company is subject to various other claims and legal actions in the ordinary course of its business. The Company records a liability in its consolidated financial statements for costs related to claims, including future legal costs, settlements and judgments, where the Company has assessed that a loss is probable and an amount could be reasonably estimated. If the reasonable estimate of a probable loss is a range, the Company records the most probable estimate of the loss or the minimum amount when no amount within the range is a better estimate than any other amount. The Company discloses a contingent liability even if the liability is not probable or the amount is not estimable, or both, if there is a reasonable possibility that material loss may have been incurred. In the opinion of management, as of August 31, 2022, the amount of liability, if any, with respect to these matters, individually or in the aggregate, will not materially affect the Company's consolidated results of operations, financial position, or cash flows.

18. SUPPLEMENTAL CASH FLOW INFORMATION

Supplemental disclosures of cash flow information consist of:

	Fiscal Year Ended August 31,	
	2022	2021
Cash paid for income tax	$ 1,218,467	$ 895,646
Cash paid for interest	89,096	16,086

19. FAIR VALUE MEASUREMENTS

The Company follows the authoritative guidance on fair value measurements and disclosures with respect to assets and liabilities that are measured at fair value on both a recurring and non-recurring basis. Under this guidance, fair value is defined as the exit price, or the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants as of the measurement date. The authoritative guidance also establishes a hierarchy for inputs used in measuring fair value that maximizes the use of observable inputs and minimizes the use of unobservable inputs by requiring that the most observable inputs be used when available. Observable inputs are inputs market participants would use in valuing the asset or liability, developed based on market data obtained from sources independent of the Company. Unobservable inputs are inputs that reflect the Company's assumptions about the factors market participants would use in valuing the asset or liability developed based upon the best information available in the circumstances. The categorization of financial assets and financial liabilities within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

The hierarchy is broken down into three levels defined as follows:

Level 1 - Inputs are quoted prices in active markets for identical assets or liabilities.
Level 2 - Inputs include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, and inputs (other than quoted prices) that are observable for the asset or liability, either directly or indirectly.
Level 3 - Inputs are unobservable for the asset or liability.

See the section below titled Valuation Techniques for further discussion of how the Company determines fair value for investments.

Assets and Liabilities That Are Measured at Fair Value on a Recurring Basis

Assets and liabilities that are measured at fair value on a recurring basis primarily relate to marketable equity securities. These items are marked-to-market at each reporting period, and the Company estimates that market value approximates costs.

The following tables provide information by level for assets and liabilities that are measured at fair value on a recurring basis:

		Fair Value Measurements Using Inputs Considered as		
	Fair value as of August 31, 2022	**Level 1**	**Level 2**	**Level 3**
Available for sale securities	$ 5,590	$ 5,590	$ —	$ —

		Fair Value Measurements Using Inputs Considered as		
	Fair value as of August 31, 2021	**Level 1**	**Level 2**	**Level 3**
Available for sale securities	$ 4,634	$ 4,634	$ —	$ —

Valuation Techniques

Financial assets that are classified as Level 1 securities include cash equivalents and available for sale securities. These are valued using quoted market prices in an active market.

The Company reviews the fair value hierarchy classification on a quarterly basis. Changes in the ability to observe valuation inputs may result in a reclassification of levels for certain securities within the fair value hierarchy. The Company's policy is to recognize transfers into and out of levels within the fair value hierarchy at the end of the fiscal quarter in which the actual event or change in circumstances that caused the transfer occurs. There were no transfers between Level 1, Level 2, or Level 3 during the fiscal years ended August 31, 2022 or August 31, 2021. When a determination is made to classify an asset or liability within Level 3, the determination is based upon the significance of the unobservable inputs to the overall fair value measurement.

20. SUBSEQUENT EVENTS

On October 20, 2022, NTIC's Board of Directors declared a cash dividend of $0.07 per share of NTIC's common stock, payable on November 16, 2022 to stockholders of record on November 3, 2022. Although NTIC's Board of Directors intends to declare regular quarterly cash dividends going forward, the payment of any future dividends will be determined by NTIC's Board of Directors in light of conditions then existing, including NTIC's earnings, financial condition, cash requirements, restrictions in financing agreements, business conditions, and other factors, including without limitation the effect of COVID-19 on its business, operating results, and financial condition.

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

NTIC maintains disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended) that are designed to provide reasonable assurance that information required to be disclosed by NTIC in the reports it files or submits under the Securities Exchange Act of 1934, as amended, is recorded, processed, summarized, and reported within the time periods specified in the Securities and Exchange Commission's rules and forms and that such information is accumulated and communicated to NTIC's management, including NTIC's principal executive officer and principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. NTIC's management evaluated, with the participation of its Chief Executive Officer and its Chief Financial Officer, the effectiveness of the design and operation of NTIC's disclosure controls and procedures as of the end of the period covered in this report. Based on that evaluation, NTIC's Chief Executive Officer and Chief Financial Officer concluded that NTIC's disclosure controls and procedures were effective as of the end of such period to provide reasonable assurance that information required to be disclosed in the reports that NTIC files or submits under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to NTIC's management, including NTIC's Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Management's Report on Internal Control over Financial Reporting

NTIC's management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f) for Northern Technologies International Corporation and its subsidiaries. This system is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles.

The Company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. 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 (iii) 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, and even when determined to be effective, can only provide reasonable assurance with respect to financial statement preparation and presentation. In addition, projection of any evaluation of the effectiveness of internal control over financial reporting to future periods is 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.

Management, with the participation of NTIC's President and Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of the Company's internal control over financial reporting as of August 31, 2022. In making this evaluation, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control – Integrated Framework (2013). Based on this assessment, management concluded that the Company's internal control over financial reporting was effective as of August 31, 2022.

This report does not include an attestation report of NTIC's independent registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by NTIC's independent registered public accounting firm pursuant to rules of the Securities and Exchange Commission that permit NTIC to provide only management's report in this report.

Changes in Internal Control over Financial Reporting

There was no change in NTIC's internal control over financial reporting that occurred during the quarter ended August 31, 2022 that has materially affected or is reasonably likely to materially affect NTIC's internal control over financial reporting.

Item 9B. OTHER INFORMATION

On May 20, 2022, NTIC and PNC Bank, National Association increased NTIC's line of credit from $5,000,000 to $7,000,000. This increase in the line of credit was subsequently scheduled to terminate on August 16, 2022. To maintain future financial flexibility, on August 8, 2022, NTIC and PNC Bank entered into an Amended and Restated Revolving Line of Credit Note and agreed to keep the line of credit at $7,000,000 until its maturity date, January 7, 2023. Except as described above, the other materials of the Line of Credit, Loan Agreement and Security Agreement with PNC Bank and other related documents were not affected by the foregoing described amendment.

The foregoing description is qualified in its entirety by reference to the amendment to the Amended and Restated Revolving Line of Credit Note, which is filed as Exhibit 10.22 to this Annual Report on Form 10-K and incorporated by reference herein.

Item 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Directors

The information in the "Proposal One – Election of Directors" section of NTIC's definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC's next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

Executive Officers

Information concerning NTIC's executive officers and officers is included in this annual report on Form 10-K under Part I under the heading "Executive Officers of the Registrant."

Code of Ethics

NTIC has adopted a code of ethics that applies to its principal executive officer, principal financial officer, principal accounting officer, or controller or persons performing similar functions, as well as other employees and NTIC's directors and meets the requirements of the SEC and the Nasdaq Global Market. A copy of NTIC's Code of Ethics is filed as an exhibit to this report. NTIC intends to satisfy the disclosure requirements of Item 5.05 of Form 8-K regarding amendments to or waivers from any provision of its code of ethics by posting such information on its corporate website at www.ntic.com.

Changes to Nomination Procedures

During the fourth quarter of fiscal 2022, there were no material changes to the procedures by which stockholders may recommend nominees to NTIC's Board of Directors, as described in NTIC's most recent proxy statement. As disclosed in a Current Report on Form 8-K filed by NTIC with the SEC on November 14, 2022, however, NTIC amended its bylaws to revise the advance notice provisions to enhance the procedural mechanics and disclosure requirements relating to business proposals submitted and director nominations made by stockholders for consideration at annual meetings of the stockholders of the Company, including referring specifically to the new universal proxy rule and requiring additional information regarding director nominees.

Audit Committee Matters

The information in the "Corporate Governance—Audit Committee" section of NTIC's definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC's next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

Item 11. EXECUTIVE COMPENSATION

The information in the "Director Compensation" and "Executive Compensation" sections of NTIC's definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC's next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

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

Stock Ownership

The information in the "Stock Ownership—Beneficial Ownership of Significant Stockholders and Management" section of NTIC's definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC's next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

Securities Authorized for Issuance under Equity Compensation Plans

The following table summarizes outstanding options and other awards under NTIC's equity compensation plans as of August 31, 2022. NTIC's equity compensation plans as of August 31, 2022 were the Northern Technologies International Corporation Amended and Restated 2019 Stock Incentive Plan, the Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan, and the Northern Technologies International Corporation Employee Stock Purchase Plan. Except for automatic annual grants of $50,000 in options to purchase shares of NTIC common stock to NTIC's directors in consideration for their services as directors of NTIC and an automatic annual grant of $10,000 in options to purchase shares of NTIC common stock to NTIC's Chairman of the Board in consideration for his services as Chairman, in each case on the first day of each fiscal year, and automatic initial pro rata grants of $50,000 in options to purchase shares of NTIC common stock to NTIC's new directors in consideration for their services as directors of NTIC on the first date of their appointment as directors, options and other awards granted in the future under the Northern Technologies International Corporation Amended and Restated 2019 Stock Incentive Plan are within the discretion of the Board of Directors and the Compensation Committee of the Board of Directors and, therefore, cannot be ascertained at this time. No future grants of options or other stock awards will be made under the Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan.

Plan Category	(a) Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	(b) Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	(c) Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (excluding securities reflected in column (a))
Equity compensation plans approved by security holders	1,544,727(1)(2)	$ 10.23	773,734(3)
Equity compensation plans not approved by security holders	—	—	—
Total	1,544,727(1)(2)	$ 10.23	773,734(3)

(1) Amount includes 649,243 shares of NTIC common stock issuable upon the exercise of stock options outstanding as of August 31, 2022 under the Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan and 895,484 shares of NTIC common stock issuable upon the exercise of stock options outstanding as of August 31, 2022 under the Northern Technologies International Corporation Amended and Restated 2019 Stock Incentive Plan.

(2) Excludes employee stock purchase rights accruing under the Northern Technologies International Corporation Employee Stock Purchase Plan. Under such plan, each eligible employee may purchase up to 2,000 shares of NTIC common stock at semi-annual intervals on February 28th or 29th (as the case may be) and August 31st each year at a purchase price per share equal to 90% of the lower of (i) the closing sales price per share of NTIC common stock on the first day of the offering period or (ii) the closing sales price per share of NTIC common stock on the last day of the offering period.

(3) Amount includes 704,514 shares available as of August 31, 2022 for future issuance under Northern Technologies International Corporation Amended and Restated 2019 Stock Incentive Plan and 69,220 shares available at August 31, 2022 for future issuance under the Northern Technologies International Corporation Employee Stock Purchase Plan.

Item 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information in the “Related Person Relationships and Transactions” and “Corporate Governance—Director Independence” sections of NTIC’s definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC’s next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

Item 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information in the “Proposal Three—Ratification of Selection of Independent Registered Public Accounting Firm—Audit, Audit-Related, Tax and Other Fees” and “Proposal Three—Ratification of Selection of Independent Registered Public Accounting Firm—Audit Committee Pre-Approval Policies and Procedures” sections of NTIC’s definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC’s next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

PART IV

Item 15. EXHIBIT AND FINANCIAL STATEMENT SCHEDULES

Financial Statements

NTIC's consolidated financial statements are included in Item 8 of Part III of this report.

Financial Statement Schedules

All financial statement schedules are omitted because they are inapplicable since NTIC is a smaller reporting company.

Exhibits

The exhibits being filed or furnished with this report are listed below. Each management contract or compensatory plan or arrangement required to be filed as an exhibit to this report is asterisked below.

A copy of any exhibits listed or referred to herein will be furnished at a reasonable cost to any person who is a stockholder upon receipt from any such person of a written request for any such exhibit. Such request should be sent to: Mr. Matthew Wolsfeld, Corporate Secretary, Northern Technologies International Corporation, 4201 Woodland Road, P.O. Box 69, Circle Pines, Minnesota 55014 Attn: Stockholder Information.

Item No.	Item	Method of Filing
3.1	Restated Certificate of Incorporation of Northern Technologies International Corporation	Incorporated by reference to Exhibit 3.1 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended February 28, 2009 (File No. 001-11038)
3.2	Certificate of Amendment to the Restated Certificate of Incorporation of Northern Technologies International Corporation dated January 16, 2018	Incorporated by reference to Exhibit 3.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 16, 2018 (File No. 001-11038)
3.3	Certificate of Validation of the Certificate of Amendment to Restated Certificate of Incorporation of Northern Technologies International Corporation dated January 18, 2019	Incorporated by reference to Exhibit 3.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 25, 2019 (File No. 001-11038)
3.4	Second Amended and Restated Bylaws of Northern Technologies International Corporation	Incorporated by reference to Exhibit 3.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on November 14, 2022 (File No. 001-11038)
4.1	Specimen Stock Certificate Representing Common Stock of Northern Technologies International Corporation	Incorporated by reference to Exhibit 4.1 to NTIC's Registration Statement on Form 10 (File No. 001-19331) (Filed on paper - hyperlink is not required pursuant to Rule 105 of Regulation S-T)

Item No.	Item	Method of Filing
4.2	Description of Common Stock of Northern Technologies International Corporation	Incorporated by reference to Exhibit 4.2 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2020 (File No. 001-11038)
10.1	Northern Technologies International Corporation Amended and Restated 2019 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 15, 2021 (File No. 001-11038)
10.2	Form of Incentive Stock Option Agreement for Northern Technologies International Corporation Amended and Restated 2019 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.2 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 25, 2019 (File No. 001-11038)
10.3	Form of Non-Statutory Stock Option Agreement for Northern Technologies International Corporation Amended and Restated 2019 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.3 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 25, 2019 (File No. 001-11038)
10.4	Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 24, 2011 (File No. 001-11038)
10.5	Form of Incentive Stock Option Agreement for Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.2 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 24, 2011 (File No. 001-11038)
10.6	Form of Non-Statutory Stock Option Agreement for Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.3 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 24, 2011 (File No. 001-11038)
10.7	Form of Restricted Stock Agreement for Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.4 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 24, 2011 (File No. 001-11038)
10.8	Northern Technologies International Corporation Employee Stock Purchase Plan*	Incorporated by reference to Exhibit 10.11 to NTIC's Annual Report on Form 10-KSB for the fiscal year ended August 31, 2006 (File No. 001-11038)

Item No.	Item	Method of Filing
10.9	Material Terms of Northern Technologies International Corporation Annual Bonus Plan*	Incorporated by reference to Exhibit 10.6 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2015 (File No. 001-11038)
10.10	Form of Indemnification Agreement between Northern Technologies International Corporation and its Directors and Officers*	Incorporated by reference to Exhibit 10.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on October 23, 2019 (File No. 001-11038)
10.11	Agreement dated as of May 25, 2009 between Northern Technologies International Corporation and Sunggyu Lee, Ph.D.*	Incorporated by reference to Exhibit 10.2 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended May 31, 2009 (File No. 001-11038)
10.12	Description of Non-Employee Director Compensation Arrangements*	Incorporated by reference to Exhibit 10.9 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2018 (File No. 001-11038)
10.13	Executive Employment Agreement dated as of November 18, 2011 between Northern Technologies International Corporation and G. Patrick Lynch*	Incorporated by reference to Exhibit 10.13 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2011 (File No. 001-11038)
10.14	Confidential Information, Inventions Assignment, Noncompetition and Non-Solicitation Agreement dated as of November 18, 2011 between Northern Technologies International Corporation and G. Patrick Lynch*	Incorporated by reference to Exhibit 10.14 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2011 (File No. 001-11038)
10.15	Executive Employment Agreement dated as of November 18, 2011 between Northern Technologies International Corporation and Matthew C. Wolsfeld*	Incorporated by reference to Exhibit 10.15 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2011 (File No. 001-11038)
10.16	Confidential Information, Inventions Assignment, Noncompetition and Non-Solicitation Agreement dated as of November 18, 2011 between Northern Technologies International Corporation and Matthew C. Wolsfeld*	Incorporated by reference to Exhibit 10.16 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2011 (File No. 001-11038)
10.17	Amended and Restated Loan Agreement dated as of August 31, 2021 by and between Northern Technologies International Corporation and PNC Bank, National Association	Incorporated by reference to Exhibit 10.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on September 22, 2021 (File No. 001-11038)
10.18	Amended and Restated Revolving Line of Credit Note dated as of August 31, 2021 issued by Northern Technologies International Corporation to PNC Bank, National Association	Incorporated by reference to Exhibit 10.2 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on September 22, 2021 (File No. 001-11038)

Item No.	Item	Method of Filing
10.19	Amended and Restated Revolving Line of Credit Note dated as of January 4, 2022 issued by Northern Technologies International Corporation to PNC Bank, National Association	Incorporated by reference to Exhibit 10.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 7, 2022 (File No. 001-11038)
10.20	Amended and Restated Revolving Line of Credit Note dated as of March 1, 2022 issued by Northern Technologies International Corporation to PNC Bank, National Association	Incorporated by reference to Exhibit 10.1 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended February 28, 2022 (File No. 001-11038)
10.21	Amended and Restated Revolving Line of Credit Note dated as of May 20, 2022 issued by Northern Technologies International Corporation to PNC Bank, National Association	Incorporated by reference to Exhibit 10.2 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended May 31, 2022 (File No. 001-11038)
10.22	Amended and Restated Revolving Line of Credit Note dated as of August 8, 2022 issued by Northern Technologies International Corporation to PNC Bank, National Association	Filed herewith
10.23	Consulting Agreement dated January 11, 2017 by and among Northern Technologies International Corporation, BioPlastic Polymers LLC, and Ramani Narayan, Ph.D.	Incorporated by reference to Exhibit 10.2 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended November 30, 2016 (File No. 001-11038)
10.24	Amendment to Consulting Agreement effective January 11, 2022 by and among Northern Technologies International Corporation, BioPlastic Polymers LLC, and Ramani Narayan, Ph.D.	Filed herewith
10.25	Real Estate Purchase and Sales Contract dated July 7, 2021 between NTIC (Shanghai) Co., Ltd. And Shanghai FASTO Investment Group Limited Company (Official Chinese Version)	Incorporated by reference to Exhibit 10.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on July 8, 2021 (File No. 001-11038)
10.26	Unofficial English Summary of Real Estate Purchase and Sales Contract dated July 7, 2021 between NTIC (Shanghai) Co., Ltd. and Shanghai FASTO Investment Group Limited Company	Incorporated by reference to Exhibit 10.2 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on July 8, 2021 (File No. 001-11038)
14.1	Code of Ethics	Incorporated by reference to Exhibit 14.1 to NTIC's Annual Report on Form 10-KSB for the fiscal year ended August 31, 2004 (File No. 001-11038)
21.1	Subsidiaries of the Registrant	Filed herewith
23.1	Consent of Baker Tilly US, LLP	Filed herewith

Item No.	Item	Method of Filing
31.1	Certification of President and Chief Executive Officer Pursuant to SEC Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	Filed herewith
31.2	Certification of Chief Financial Officer Pursuant to SEC Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	Filed herewith
32.1	Certification of President and Chief Executive Officer Pursuant to Rule 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	Furnished herewith
32.2	Certification of Chief Financial Officer Pursuant to Rule 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	Furnished herewith
101	The following materials from Northern Technologies International Corporation's Annual Report on Form 10-K for the fiscal year ended August 31, 2022, formatted in Inline XBRL (Extensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Operations, (iii) the Consolidated Statements of Comprehensive Income, (iv) the Consolidated Statements of Equity, (v) the Consolidated Statements of Cash Flows, and (vi) Notes to Consolidated Financial Statements	Filed herewith
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)	Contained in Exhibit 101

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* A management contract or compensatory plan or arrangement.

Item 16. FORM 10-K SUMMARY

None.

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.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION

November 15, 2022

By: /s/ G. Patrick Lynch
G. Patrick Lynch
President and Chief Executive Officer

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

Name	Title	Date
/s/ G. Patrick Lynch G. Patrick Lynch	President and Chief Executive Officer and Director (principal executive officer)	November 15, 2022
/s/ Matthew C. Wolsfeld, CPA Matthew C. Wolsfeld, CPA	Chief Financial Officer and Corporate Secretary (principal financial and accounting officer)	November 15, 2022
/s/ Richard J. Nigon Richard J. Nigon	Chairman of the Board	November 15, 2022
/s/ Nancy E. Calderon Nancy E. Calderon	Director	November 15, 2022
/s/ Sarah E. Kemp Sarah E. Kemp	Director	November 15, 2022
/s/ Sunggyu Lee, Ph.D. Sunggyu Lee, Ph.D.	Director	November 15, 2022
/s/ Ramani Narayan, Ph. D. Ramani Narayan, Ph.D.	Director	November 15, 2022
/s/ Konstantin von Falkenhausen Konstantin von Falkenhausen	Director	November 15, 2022

Amended and Restated Revolving Line of Credit Note
(Daily BSBY)

$7,000,000.00 August 8, 2022

FOR VALUE RECEIVED, **NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION** (the "**Borrower**"), with an address at 4201 WOODLAND ROAD, CIRCLE PINES, MINNESOTA 55014-1794, promises to pay to the order of **PNC BANK, NATIONAL ASSOCIATION** (the "**Bank**"), in lawful money of the United States of America in immediately available funds at its offices located at 1900 E 9th St, Cleveland, Ohio 44114, or at such other location as the Bank may designate from time to time, the principal sum of **$7,000,000.00** (the "**Facility**") or such lesser amount as may be advanced to or for the benefit of the Borrower hereunder, together with interest accruing on the outstanding principal balance from the date hereof, all as provided below.

1. Revolving Line of Credit Advances. This Note evidences a revolving line of credit. The Borrower may borrow, repay and reborrow hereunder and the Bank may advance and readvance under this Note from time to time (each an "advance" and together the "advances") until the Expiration Date, subject to the terms and conditions of this Note and the Loan Documents (as defined below). The "**Expiration Date**" means January 07, 2023, or such later date as may be designated by the Bank by written notice from the Bank to the Borrower. The Borrower acknowledges and agrees that in no event will the Bank be under any obligation to extend or renew the Facility or this Note beyond the Expiration Date. In no event shall the aggregate unpaid principal amount of advances under this Note exceed the face amount of this Note.

2. Interest Rate and Payments. Amounts outstanding under this Note will bear interest at a rate per annum which is equal to the sum of (A) the Daily BSBY Rate (as defined below) plus (B) 250 basis points (2.50%). Accrued interest will be due and payable on the same day of each month, beginning with the payment due on August 10, 2022. The outstanding principal balance and any accrued but unpaid interest shall be due and payable on the Expiration Date.

3. Certain Definitions. If the following terms are used in this Note, such terms shall have the meanings set forth below:

"**Alternate Rate**" means the Base Rate.

"**Base Rate**" means the higher of (A) the Prime Rate, and (B) the sum of the Overnight Bank Funding Rate plus 50 basis points (0.50%); provided, however, if the Base Rate as determined above would be less than zero, then such rate shall be deemed to be zero. If and when the Base Rate as determined above changes, the rate of interest with respect to any amounts hereunder to which the Base Rate applies will change automatically without notice to the Borrower, effective on the date of any such change.

"**Bloomberg**" means Bloomberg Index Services Limited (or a successor administrator of BSBY).

"**BSBY**" means the Bloomberg Short-Term Bank Yield Index rate administered by Bloomberg and published by Bloomberg or another commercially available source providing such quotations as may be designated by the Bank from time to time.

"**BSBY Reserve Percentage**" means, for any day, the maximum effective percentage in effect on such day, if any, as prescribed by the Board of Governors of the Federal Reserve System (or any successor) for determining the reserve requirements (including, without limitation, supplemental, marginal and emergency reserve requirements) with respect to BSBY funding.

"Business Day" means any day other than (A) a Saturday or Sunday or (B) a legal holiday on which commercial banks are authorized or required by law to be closed for business in Pittsburgh, Pennsylvania; provided that, when used in connection with an amount that bears interest at a rate based on BSBY or any direct or indirect calculation or determination involving BSBY, the term "Business Day" means any such day that is also a U.S. Government Securities Business Day.

"Daily BSBY Rate" means, for any day, the rate per annum determined by the Bank by dividing (the resulting quotient rounded upwards, at the Bank's discretion, to the nearest 1/100th of 1%) (A) the Published Rate for such day, by (B) a number equal to 1.00 minus the BSBY Reserve Percentage; provided, however, if the Daily BSBY Rate determined as provided above would be less than the Floor, then such rate shall be deemed to be the Floor. The rate of interest will be adjusted automatically as of each Business Day based on changes in the Daily BSBY Rate without notice to the Borrower.

"Default Rate" means the rate per annum equal to the lesser of (A) the sum of 3% plus the interest rate otherwise in effect from time to time under this Note and (B) the Maximum Rate.

"Floor" means a rate of interest per annum equal to fifty basis points (0.50%) or, if the preceding blanks are not completed, then zero.

"Maximum Rate" means the maximum rate of interest allowed by applicable law. "**NYFRB**" means the Federal Reserve Bank of New York.

"Overnight Bank Funding Rate" means, for any day, the rate comprised of both overnight federal funds and overnight Eurocurrency borrowings by U.S.-managed banking offices of depository institutions, as such composite rate shall be determined by the NYFRB, as set forth on its public website from time to time, and as published on the next succeeding Business Day as the overnight bank funding rate by the NYFRB (or by such other recognized electronic source (such as Bloomberg) selected by the Bank for the purpose of displaying such rate); provided, that if such day is not a Business Day, the Overnight Bank Funding Rate for such day shall be such rate on the immediately preceding Business Day; provided, further, that if such rate shall at any time, for any reason, no longer exist, a comparable replacement rate determined by the Bank at such time (which determination shall be conclusive absent manifest error). If the Overnight Bank Funding Rate determined as above would be less than zero, then such rate shall be deemed to be zero. The rate of interest charged shall be adjusted as of each Business Day based on changes in the Overnight Bank Funding Rate without notice to the Borrower.

"Prime Rate" means the rate publicly announced by the Bank from time to time as its prime rate. The Prime Rate is determined from time to time by the Bank as a means of pricing some loans to its borrowers. The Prime Rate is not tied to any external rate of interest or index and does not necessarily reflect the lowest rate of interest actually charged by the Bank to any particular class or category of customers.

"Published Rate" means the 1-month BSBY.

"U.S. Government Securities Business Day" means any day except for (A) a Saturday or Sunday or (B) a day on which the Securities Industry and Financial Markets Association recommends that the fixed income departments of its members be closed for the entire day for purposes of trading in United States government securities.

4. Advance Procedures. If permitted by the Bank, a request for advance may be made by telephone or electronic mail, or delivered in accordance with the Bank's security procedures through any automated platform or electronic service provided by the Bank, with such confirmation or verification (if any) as the Bank may require in its discretion from time to time. A request for advance by any Borrower shall be binding upon Borrower, jointly and severally. The Borrower authorizes the Bank to accept telephonic, email, automated and electronic requests for advances, and the Bank shall be entitled to rely upon the authority of any person providing such instructions. The Borrower hereby indemnifies and holds the Bank harmless from and against any and all damages, losses, liabilities, costs and expenses (including reasonable attorneys' fees and expenses) which may arise or be created by the acceptance of such telephonic, email, automated and electronic requests or by the making of such advances. The Bank will enter on its books and records, which entry when made will be presumed correct, the date and amount of each advance, as well as the date and amount of each payment made by the Borrower.

5. **Interest Calculation; Maximum Rate.** Interest will be calculated based on the actual number of days that principal is outstanding over a year of 360 days. In no event will the rate of interest hereunder exceed the Maximum Rate. Regardless of any other provision of this Note or the other Loan Documents, if for any reason the effective interest rate should exceed the Maximum Rate, the effective interest rate shall be deemed reduced to, and shall be, the Maximum Rate, and (i) the amount which would be excessive interest shall be deemed applied to the reduction of the principal balance of this Note and not to the payment of interest, and (ii) if the loan evidenced by this Note has been or is thereby paid in full, the excess shall be returned to the party paying same, such application to the principal balance of this Note or the refunding of such excess to be a complete settlement and acquittance thereof.

6. **Conforming Changes Relating to BSBY; Benchmark Replacement Provisions.** The Bank shall have the right to make any technical, administrative or operational changes from time to time that the Bank decides may be appropriate to reflect the adoption and implementation of BSBY or any other Benchmark (as defined in the Benchmark Replacement Rider attached to this Note and incorporated herein by this reference) or to permit the use and administration thereof by the Bank in a manner substantially consistent with market practice or in such other manner as the Bank decides is reasonably necessary. Notwithstanding anything to the contrary herein or in any other Loan Document, any amendments implementing such technical, administrative or operational changes will become effective without any further action or consent of the Borrower. The Bank shall provide notice to the Borrower of any such amendment reasonably promptly after such amendment becomes effective.

If the applicable interest rate under this Note is based on a Benchmark and the Bank determines (which determination shall be final and conclusive) that (A) such Benchmark cannot be determined pursuant to its definition other than as a result of a Benchmark Transition Event (as defined in the Benchmark Replacement Rider attached to this Note), or (B) any enactment, promulgation or adoption of or any change in any applicable law, rule or regulation, or any change in the interpretation or administration thereof by a governmental authority, central bank or comparable agency charged with the interpretation or administration thereof, or compliance by the Bank with any guideline, request or directive (whether or not having the force of law) of any such authority, central bank or comparable agency shall make it unlawful or impracticable for the Bank to make or maintain or fund loans based on that Benchmark, then the Bank shall give notice thereof to the Borrower. Thereafter, until the Bank notifies the Borrower that the circumstances giving rise to such determination no longer exist, the interest rate on all amounts outstanding under this Note shall be the Alternate Rate.

The Benchmark Replacement Rider provides a mechanism for determining an alternative rate of interest in the event that a Benchmark Transition Event (as defined in the Benchmark Replacement Rider) has occurred. The Bank does not warrant or accept any responsibility for and shall not have any liability with respect to, the administration, submission or any other matter related to any Benchmark. To the extent that any term or provision of the Benchmark Replacement Rider is or may be inconsistent with any term or provision in the remainder of this Note or any other Loan Document, the terms and provisions of the Benchmark Replacement Rider shall control.

7. **Other Payment Terms.** If any payment under this Note is due on a day of a calendar month for which there is no numerically corresponding day in certain other months (each, a "**Non-Conforming Month**"), then the payment in a Non-Conforming Month shall be due on the last Business Day of such Non-Conforming Month. If any payment under this Note shall become due on a day other than a Business Day, such payment shall be due on the next succeeding Business Day, except that if such day falls in the next succeeding calendar month, such payment shall be due on the next preceding day that is a Business Day. Interest shall be computed to, but excluding, the date payment is due. The Borrower hereby authorizes the Bank to charge the Borrower's deposit account at the Bank for any payment when due under this Note or any other Loan Document. Payments received will be applied to charges, fees and expenses (including attorneys' fees), accrued interest and principal in any order the Bank may choose, in its sole discretion.

8. <u>Late Payments; Default Rate</u>. If the Borrower fails to make any payment of principal, interest or other amount coming due pursuant to the provisions of this Note within 15 calendar days of the date due and payable, the Borrower also shall pay to the Bank a late charge equal to the lesser of 5% of the amount of such payment or $100.00 (the "**Late Charge**"). Such 15-day period shall not be construed in any way to extend the due date of any such payment. Upon maturity, whether by acceleration, demand or otherwise, and at the Bank's option upon the occurrence of any Event of Default (as hereinafter defined) and during the continuance thereof, amounts outstanding under this Note shall bear interest at the Default Rate. The Default Rate shall continue to apply whether or not judgment shall be entered on this Note. Both the Late Charge and the Default Rate are imposed as liquidated damages for the purpose of defraying the Bank's expenses incident to the handling of delinquent payments, but are in addition to, and not in lieu of, the Bank's exercise of any rights and remedies hereunder, under the other Loan Documents or under applicable law, and any fees and expenses of any agents or attorneys which the Bank may employ. In addition, the Default Rate reflects the increased credit risk to the Bank of carrying a loan that is in default. The Borrower agrees that the Late Charge and Default Rate are reasonable forecasts of just compensation for anticipated and actual harm incurred by the Bank, and that the actual harm incurred by the Bank cannot be estimated with certainty and without difficulty.

9. <u>Prepayment</u>. The indebtedness evidenced by this Note may be prepaid in whole or in part at any time without penalty.

10. <u>Increased Costs; Yield Protection</u>. On written demand, together with written evidence of the justification therefor, the Borrower agrees to pay the Bank all direct costs incurred, any losses suffered or payments made by the Bank as a result of any Change in Law (hereinafter defined), imposing any reserve, deposit, allocation of capital or similar requirement (including without limitation, Regulation D of the Board of Governors of the Federal Reserve System) on the Bank, its holding company or any of their respective assets relative to the Facility. "**Change in Law**" means the occurrence, after the date of this Note, of any of the following: (a) the adoption or taking effect of any law, rule, regulation or treaty, (b) any change in any law, rule, regulation or treaty or in the administration, interpretation, implementation or application thereof by any governmental authority or (c) the making or issuance of any request, rule, guideline or directive (whether or not having the force of law) by any governmental authority; provided that notwithstanding anything herein to the contrary, (x) the Dodd-Frank Wall Street Reform and Consumer Protection Act and all requests, rules, guidelines or directives thereunder or issued in connection therewith and (y) all requests, rules, guidelines or directives promulgated by the Bank for International Settlements, the Basel Committee on Banking Supervision (or any successor or similar authority) or the United States or foreign regulatory authorities, in each case pursuant to Basel III, shall in each case be deemed to be a "Change in Law", regardless of the date enacted, adopted or issued.

11. <u>Other Loan Documents</u>. This Note is issued in connection with a letter agreement or loan agreement between the Borrower and the Bank, dated on or before the date hereof, and the other agreements and documents executed and/or delivered in connection therewith or referred to therein, the terms of which are incorporated herein by reference (as amended, modified or renewed from time to time, collectively the "**Loan Documents**"), and is secured by the property (if any) described in the Loan Documents and by any and all mortgages, security agreements, assignments, loan agreements, pledge agreements and other documents or instruments evidencing a security interest or other lien in favor of the Bank and delivered by the Borrower or by any third party with reference to indebtedness of the Borrower, whether such documents were previously or are hereafter executed, and whether given expressly as security for payment of this Note or generally as security for any and all indebtedness of the Borrower to the Bank. Such documents may be executed contemporaneously with the execution of this Note, or they may be executed and delivered at another time. Collateral securing other obligations of the Borrower to the Bank may also secure this Note.

12. <u>Events of Default</u>. The occurrence of any of the following events will be deemed to be an "**Event of Default**" under this Note: (i) the nonpayment of any principal, interest or other indebtedness under this Note when due; (ii) the occurrence of any event of default or any default and the lapse of any notice or cure period, or any Obligor's failure to observe or perform any covenant or other agreement, under or contained in any Loan Document or any other document now or in the future evidencing or securing any debt, liability or obligation of any Obligor to the Bank; (iii) the filing by or against any Obligor of any proceeding in bankruptcy, receivership, insolvency, reorganization, liquidation, conservatorship or similar proceeding (and, in the case of any such proceeding instituted against any Obligor, such proceeding is not dismissed or stayed within 30 days of the commencement thereof, provided that the Bank shall not be obligated to advance additional funds hereunder during such period); (iv) any assignment by any Obligor for the benefit of creditors, or any levy, garnishment, attachment or similar proceeding is instituted against any property of any Obligor held by or deposited with the Bank; (v) a default with respect to any other indebtedness of any Obligor for borrowed money, if the effect of such default is to cause or permit the acceleration of such debt; (vi) the commencement of any foreclosure or forfeiture proceeding, execution or attachment against any collateral securing the obligations of any Obligor to the Bank; (vii) the entry of a final judgment against any Obligor and the failure of such Obligor to discharge the judgment within 10 days of the entry thereof; (viii) any change in any Obligor's business, assets, operations, financial condition or results of operations that has or could reasonably be expected to have any material adverse effect on any Obligor; (ix) any Obligor ceases doing business as a going concern; (x) any representation or warranty made by any Obligor to the Bank in any Loan Document or any other documents now or in the future evidencing or securing the obligations of any Obligor to the Bank, is false, erroneous or misleading in any material respect; (xi) if this Note or any guarantee executed by any Obligor is secured, the failure of any Obligor to provide the Bank with additional collateral if in the Bank's opinion at any time or times, the market value of any of the collateral securing this Note or any guarantee has depreciated below that required pursuant to the Loan Documents or, if no specific value is so required, then in an amount deemed material by the Bank; (xii) the revocation or attempted revocation, in whole or in part, of any guarantee by any Obligor; or (xiii) the death, incarceration, indictment or legal incompetency of any individual Obligor or, if any Obligor is a partnership or limited liability company, the death, incarceration, indictment or legal incompetency of any individual general partner or member. As used herein, the term "**Obligor**" means any Borrower and any guarantor of, or any pledgor, mortgagor or other person or entity providing collateral support for, the Borrower's obligations to the Bank existing on the date of this Note or arising in the future.

Upon the occurrence of an Event of Default: (a) the Bank shall be under no further obligation to make advances hereunder; (b) if an Event of Default specified in clause (iii) or (iv) above shall occur, the outstanding principal balance and accrued interest hereunder together with any additional amounts payable hereunder shall be immediately due and payable without demand or notice of any kind; (c) if any other Event of Default shall occur, the outstanding principal balance and accrued interest hereunder together with any additional amounts payable hereunder, at the Bank's option and without demand or notice of any kind, may be accelerated and become immediately due and payable; (d) at the Bank's option, this Note will bear interest at the Default Rate from the date of the occurrence of the Event of Default; and (e) the Bank may exercise from time to time any of the rights and remedies available under the Loan Documents or under applicable law.

13. <u>Right of Setoff</u>. In addition to all liens upon and rights of setoff against the Borrower's money, securities or other property given to the Bank by law, the Bank shall have, with respect to the Borrower's obligations to the Bank under this Note and to the extent permitted by law, a contractual possessory security interest in and a contractual right of setoff against, and the Borrower hereby grants the Bank a security interest in, and hereby assigns, conveys, delivers, pledges and transfers to the Bank, all of the Borrower's right, title and interest in and to, all of the Borrower's deposits, moneys, securities and other property now or hereafter in the possession of or on deposit with, or in transit to, the Bank or any other direct or indirect subsidiary of The PNC Financial Services Group, Inc., whether held in a general or special account or deposit, whether held jointly with someone else, or whether held for safekeeping or otherwise, excluding, however, all IRA, Keogh, and trust accounts. Every such security interest and right of setoff may be exercised without demand upon or notice to the Borrower. Every such right of setoff shall be deemed to have been exercised immediately upon the occurrence of an Event of Default hereunder without any action of the Bank, although the Bank may enter such setoff on its books and records at a later time.

14. Anti-Money Laundering/International Trade Law Compliance. The Borrower represents, warrants and covenants to the Bank, as of the date hereof, the date of each advance of proceeds under the Facility, the date of any renewal, extension or modification of the Facility, and at all times until the Facility has been terminated and all amounts thereunder have been indefeasibly paid in full, that: (a) no Covered Entity (i) is a Sanctioned Person; (ii) has any of its assets in a Sanctioned Jurisdiction or in the possession, custody or control of a Sanctioned Person; or (iii) does business in or with, or derives any of its operating income from investments in or transactions with, any Sanctioned Jurisdiction or Sanctioned Person; (b) the proceeds of the Facility will not be used to fund any operations in, finance any investments or activities in, or, make any payments to, a Sanctioned Jurisdiction or Sanctioned Person; (c) the funds used to repay the Facility are not derived from any unlawful activity; (d) each Covered Entity is in compliance with, and no Covered Entity engages in any dealings or transactions prohibited by, any laws of the United States, including but not limited to any Anti-Terrorism Laws; and (e) no Collateral is or will become Embargoed Property. The Borrower covenants and agrees that (a) it shall immediately notify the Bank in writing upon the occurrence of a Reportable Compliance Event; and (b) if, at any time, any Collateral becomes Embargoed Property, in addition to all other rights and remedies available to the Bank, upon request by the Bank, the Borrower shall provide substitute Collateral acceptable to the Bank that is not Embargoed Property.

As used herein: "**Anti-Terrorism Laws**" means any laws relating to terrorism, trade sanctions programs and embargoes, import/export licensing, money laundering, or bribery, all as amended, supplemented or replaced from time to time; "**Collateral**" means any collateral securing any debt, liabilities or other obligations of any Obligor to the Bank; "**Compliance Authority**" means each and all of the (a) U.S. Treasury Department/Office of Foreign Assets Control, (b) U.S. Treasury Department/Financial Crimes Enforcement Network, (c) U.S. State Department/Directorate of Defense Trade Controls, (d) U.S. Commerce Department/Bureau of Industry and Security, (e) U.S. Internal Revenue Service, (f) U.S. Justice Department, and (g) U.S. Securities and Exchange Commission; "**Covered Entity**" means the Borrower, its affiliates and subsidiaries, all guarantors, pledgors of collateral, all owners of the foregoing, and all brokers or other agents of the Borrower acting in any capacity in connection with the Facility; "**Embargoed Property**" means any property (a) in which a Sanctioned Person holds an interest; (b) beneficially owned, directly or indirectly, by a Sanctioned Person; (c) that is due to or from a Sanctioned Person; (d) that is located in a Sanctioned Jurisdiction; or (e) that would otherwise cause any actual or possible violation by the Bank of any applicable Anti-Terrorism Law if the Bank were to obtain an encumbrance on, lien on, pledge of or security interest in such property or provide services in consideration of such property; "**Reportable Compliance Event**" means (1) any Covered Entity becomes a Sanctioned Person, or is indicted, arraigned, investigated or custodially detained, or receives an inquiry from regulatory or law enforcement officials, in connection with any Anti-Terrorism Law or any predicate crime to any Anti-Terrorism Law, or self-discovers facts or circumstances implicating any aspect of its operations with the actual or possible violation of any Anti- Terrorism Law; (2) any Covered Entity engages in a transaction that has caused or may cause the Bank to be in violation of any Anti-Terrorism Laws, including a Covered Entity's use of any proceeds of the Facility to fund any operations in, finance any investments or activities in, or, make any payments to, directly or indirectly, a Sanctioned Jurisdiction or Sanctioned Person; or (3) any Collateral becomes Embargoed Property; "**Sanctioned Jurisdiction**" means a country subject to a sanctions program maintained by any Compliance Authority; and "**Sanctioned Person**" means any individual person, group, regime, entity or thing listed or otherwise recognized as a specially designated, prohibited, sanctioned or debarred person or entity, or subject to any limitations or prohibitions (including but not limited to the blocking of property or rejection of transactions), under any order or directive of any Compliance Authority or otherwise subject to, or specially designated under, any sanctions program maintained by any Compliance Authority.

15. Indemnity. The Borrower agrees to indemnify each of the Bank, each legal entity, if any, who controls, is controlled by or is under common control with the Bank, and each of their respective directors, officers and employees (the "**Indemnified Parties**"), and to defend and hold each Indemnified Party harmless from and against any and all claims, damages, losses, liabilities and expenses (including all fees and charges of internal or external counsel with whom any Indemnified Party may consult and all expenses of litigation and preparation therefor) (each, a "**Claim**") which any Indemnified Party may incur or which may be asserted against any Indemnified Party by any person, entity or governmental authority (including any person or entity claiming derivatively on behalf of the Borrower), in connection with or arising out of or relating to the matters referred to in this Note or in the other Loan Documents or the use of any advance hereunder, whether (a) arising from or incurred in connection with any breach of a representation, warranty or covenant by the Borrower, or (b) arising out of or resulting from any suit, action, claim, proceeding or governmental investigation, pending or threatened, whether based on statute, regulation or order, or tort, or contract or otherwise, before any court or governmental authority; provided, however, that the foregoing indemnity agreement shall not apply to any Claim that is determined by a court of competent jurisdiction in a final, non-appealable judgment to have been solely attributable to an Indemnified Party's gross negligence or willful misconduct. The indemnity agreement contained in this paragraph shall survive the termination of this Note, payment of any advance hereunder and the assignment of any rights hereunder. The Borrower may participate at its expense in the defense of any such action or claim.

16. Miscellaneous. All notices, demands, requests, consents, approvals and other communications required or permitted hereunder ("**Notices**") must be in writing (except as may be agreed otherwise above with respect to borrowing requests or as otherwise provided in this Note). Notices may be given in any manner to which the parties may agree. Without limiting the foregoing, first-class mail, postage prepaid, facsimile transmission and commercial courier service are hereby agreed to as acceptable methods for giving Notices. In addition, the parties agree that Notices may be sent electronically to any electronic address provided by a party from time to time or through an automated platform that the Bank provides to the Borrower. Notices may be sent to a party's address as set forth above or to such other address as any party may give to the other for such purpose in accordance with this paragraph. Notices will be effective upon receipt. For purposes hereof, "receipt" means: (i) for notices sent by U.S. mail, the third business day after the date such notice was sent; (ii) for notices delivered by hand or sent by overnight courier service, the date delivered; (iii) for notices sent by facsimile or electronic communication, the date when sent; and (iv) for notices sent by any other method, the date received. No delay or omission on the Bank's part to exercise any right or power arising hereunder will impair any such right or power or be considered a waiver of any such right or power, nor will the Bank's action or inaction impair any such right or power. The Bank's rights and remedies hereunder are cumulative and not exclusive of any other rights or remedies which the Bank may have under other agreements, at law or in equity. Except as otherwise set forth in this Note, no modification, amendment or waiver of, or consent to any departure by the Borrower from, any provision of this Note will be effective unless made in a writing signed by the Bank, and then such waiver or consent shall be effective only in the specific instance and for the purpose for which given. Notwithstanding the foregoing, the Bank may modify this Note for the purposes of completing missing content or correcting erroneous content, without the need for a written amendment, provided that the Bank shall send a copy of any such modification to the Borrower (which notice may be given by electronic mail). The Borrower agrees to pay on demand, to the extent permitted by law, all costs and expenses incurred by the Bank in the enforcement of its rights in this Note and in any security therefor, including without limitation reasonable fees and expenses of the Bank's counsel. If any provision of this Note is found to be invalid, illegal or unenforceable in any respect by a court, all the other provisions of this Note will remain in full force and effect. The Borrower and all other makers and indorsers of this Note hereby forever waive presentment, protest, notice of dishonor, notice of non-payment, notice of intent to accelerate and notice of acceleration, and any other notice of any kind. The Borrower also waives all defenses based on suretyship or impairment of collateral. If this Note is executed by more than one Borrower, the obligations of such persons or entities hereunder will be joint and several. This Note shall bind the Borrower and its heirs, executors, administrators, successors and assigns, and the benefits hereof shall inure to the benefit of the Bank and its successors and assigns; provided, however, that the Borrower may not assign this Note in whole or in part without the Bank's written consent and the Bank at any time may assign this Note in whole or in part.

17. Governing Law and Venue. This Note has been delivered to and accepted by the Bank and will be deemed to be made in the State where the Bank's office indicated above is located (the "**State**"). **THIS NOTE WILL BE INTERPRETED AND THE RIGHTS AND LIABILITIES OF THE BANK AND THE BORROWER DETERMINED IN ACCORDANCE WITH THE LAWS OF THE STATE, EXCLUDING ITS CONFLICT OF LAWS RULES, INCLUDING WITHOUT LIMITATION THE ELECTRONIC TRANSACTIONS ACT (OR EQUIVALENT) IN EFFECT IN THE STATE (OR, TO THE EXTENT CONTROLLING, THE LAWS OF THE UNITED STATES OF AMERICA, INCLUDING WITHOUT LIMITATION THE ELECTRONIC SIGNATURES IN GLOBAL AND NATIONAL COMMERCE ACT)**. The Borrower hereby irrevocably consents to the exclusive jurisdiction of any state or federal court in the county or judicial district where the Bank's office indicated above is located; provided that nothing contained in this Note will prevent the Bank from bringing any action, enforcing any award or judgment or exercising any rights against the Borrower individually, against any security or against any property of the Borrower within any other county, state or other foreign or domestic jurisdiction. The Borrower acknowledges and agrees that the venue provided above is the most convenient forum for both the Bank and the Borrower. The Borrower waives any objection to venue and any objection based on a more convenient forum in any action instituted under this Note.

18. **Commercial Purpose.** The Borrower represents that the indebtedness evidenced by this Note is being incurred by the Borrower solely for the purpose of acquiring or carrying on a business, professional or commercial activity, and not for personal, family or household purposes.

19. **USA PATRIOT Act Notice.** To help the government fight the funding of terrorism and money laundering activities, Federal law requires all financial institutions to obtain, verify and record information that identifies each Borrower that opens an account. What this means: when the Borrower opens an account, the Bank will ask for the business name, business address, taxpayer identifying number and other information that will allow the Bank to identify the Borrower, such as organizational documents. For some businesses and organizations, the Bank may also need to ask for identifying information and documentation relating to certain individuals associated with the business or organization.

20. **Representation by Counsel.** The Borrower hereby represents that it has been represented by competent counsel of its choice, or has knowingly waived its right to use and retain counsel, in the negotiation and execution of this Note and the other Loan Documents; that it has read and fully understood the terms hereof; that the Borrower and any retained counsel have been afforded an opportunity to review, negotiate and modify the terms of this Note and the other Loan Documents; and that it intends to be bound hereby. In accordance with the foregoing, the general rule of construction to the effect that any ambiguities in a contract are to be resolved against the party drafting the contract shall not be employed in the construction and interpretation of this Note or any other Loan Document.

21. **Authorization to Obtain Credit Reports.** By signing below, each person, who is signing in his or her individual capacity, requests and provides written authorization to the Bank or its designee (and any assignee or potential assignee hereof) to obtain such individual's personal credit profile from one or more national credit bureaus. This authorization extends to obtaining a credit profile in (i) considering an application for credit that is evidenced, guaranteed or secured by this document, (ii) assessing creditworthiness and (iii) considering extensions of credit, including on an ongoing basis, as necessary for the purposes of (a) update, renewal or extension of such credit or additional credit, (b) reviewing, administering or collecting the resulting account and (c) reporting on the repayment and satisfaction of such credit obligations. By signing below, such individual further ratifies and confirms his or her prior requests and authorizations with respect to the matters set forth herein. For the avoidance of doubt, this provision does not apply to persons signing below in their capacities as officers or other authorized representatives of entities, organizations or governmental bodies.

22. **Counterparts; Electronic Signatures and Records.** This Note and any other Loan Document may be signed in any number of counterpart copies and by the parties hereto on separate counterparts, but all such copies shall constitute one and the same instrument. Notwithstanding any other provision herein, the Borrower agrees that this Note, the Loan Documents, any amendments thereto, and any other information, notice, signature card, agreement or authorization related thereto (each, a "**Communication**") may, at the Bank's option, be in the form of an electronic record. Any Communication may, at the Bank's option, be signed or executed using electronic signatures. For the avoidance of doubt, the authorization under this paragraph may include, without limitation, use or acceptance by the Bank of a manually signed paper Communication which has been converted into electronic form (such as scanned into PDF format) for transmission, delivery and/or retention.

23. **Automatic Payment.** If due to any act or omission of the Borrower or another Obligor the Bank cannot automatically deduct payments required under this Note or the other Loan Documents from a deposit account with the Bank (including due to the Borrower's revocation of its authorization to do so or failure to maintain such deposit account with the Bank or otherwise), the Bank may, at its option, upon 30 days' notice to the Borrower, increase the interest rate payable by the Borrower under this Note by 25 basis points (0.25%).

24. Depository. The Borrower will establish and maintain with the Bank the Borrower's primary depository accounts. If the Borrower fails to establish and/or maintain its primary depository accounts with the Bank, the Bank may, at its option, upon 30 days' notice to the Borrower, increase the interest rate payable by the Borrower under this Note by up to 100 basis points (1.00%). The Bank's right to increase the interest rate pursuant to this paragraph shall be in addition to any other rights or remedies the Bank may have under this Note, all of which are hereby reserved, and shall not constitute a waiver, release or limitation upon the Bank's exercise of any such rights or remedies.

25. State-Specific Provisions.

(a) **Power to Confess Judgment. The Borrower hereby irrevocably authorizes any attorney-at-law, including an attorney employed by or retained and paid by the Bank, to appear in any court of record in or of the State of Ohio, or in any other state or territory of the United States, at any time after the indebtedness evidenced by this Note becomes due, whether by acceleration or otherwise, to waive the issuing and service of process and to confess a judgment against the Borrower in favor of the Bank, and/or any assignee or holder hereof for the amount of principal and interest and expenses then appearing due from the Borrower under this Note, together with costs of suit and thereupon to release all errors and waive all right of appeal or stays of execution in any court of record. The Borrower hereby expressly (i) waives any conflict of interest of the attorney(s) retained by the Bank to confess judgment against the Borrower upon this Note, and (ii) consents to the receipt by such attorney(s) of a reasonable legal fee from the Bank for legal services rendered for confessing judgment against the Borrower upon this Note. A copy of this Note, certified by the Bank, may be filed in each such proceeding in place of filing the original as a warrant of attorney.**

26. Amendment and Restatement. This Note amends and restates, and is in substitution for, that certain Amended and Restated Revolving Line of Credit Note in the original principal amount of $7,000,000.00 payable to the order of the Bank and dated May 20, 2022 (the "**Existing Note**"). However, without duplication, this Note shall in no way extinguish, cancel or satisfy Borrower's unconditional obligation to repay all indebtedness evidenced by the Existing Note or constitute a novation of the Existing Note. Nothing herein is intended to extinguish, cancel or impair the lien priority or effect of any security agreement, pledge agreement or mortgage with respect to any Obligor's obligations hereunder and under any other document relating hereto. Notwithstanding anything to the contrary herein, if any amount outstanding as of the date hereof under the Existing Note bears interest based on a rate that is reset at the end of a specified interest period, and such interest period commenced prior to the date hereof, such amount shall continue to bear interest based on such rate, and the terms of the Existing Note applicable to amounts bearing interest based on such rate shall continue to apply to such amount, until the end of the then-current interest period, after which the interest rate (and related provisions) as stated in this Note shall apply.

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27. WAIVER OF JURY TRIAL. The Borrower irrevocably waives any and all rights the Borrower may have to a trial by jury in any action, proceeding or claim of any nature relating to this Note, any documents executed in connection with this Note or any transaction contemplated in any of such documents. The Borrower acknowledges that the foregoing waiver is knowing and voluntary.

The Borrower acknowledges that it has read and understands all the provisions of this Note, including the confession of judgment and waiver of jury trial, and has been advised by counsel as necessary or appropriate.

WITNESS the due execution hereof as a document under seal, as of the date first written above, with the intent to be legally bound hereby.

WARNING-BY SIGNING THIS PAPER YOU GIVE UP YOUR RIGHT TO NOTICE AND COURT TRIAL. IF YOU DO NOT PAY ON TIME A COURT JUDGMENT MAY BE TAKEN AGAINST YOU WITHOUT YOUR PRIOR KNOWLEDGE AND THE POWERS OF A COURT CAN BE USED TO COLLECT FROM YOU REGARDLESS OF ANY CLAIMS YOU MAY HAVE AGAINST THE CREDITOR WHETHER FOR RETURNED GOODS, FAULTY GOODS, FAILURE ON HIS PART TO COMPLY WITH THE AGREEMENT, OR ANY OTHER CAUSE.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION

By: /s/ Matthew Wolsfeld (SEAL)

Matthew Wolsfeld, Chief Financial Officer

Benchmark Replacement Rider

(a) **Benchmark Replacement.** Notwithstanding anything to the contrary herein or in any other Loan Document, if a Benchmark Transition Event and its related Benchmark Replacement Date have occurred in respect of any setting of the then-current Benchmark, then, (x) if the Benchmark Replacement is determined in accordance with clause (1) or (2) of the definition of "Benchmark Replacement" for such Benchmark Replacement Date, such Benchmark Replacement will replace such Benchmark for all purposes hereunder and under any Loan Document in respect of such Benchmark setting and subsequent Benchmark settings without any amendment, or further action or consent of any other party, hereto or to any other Loan Document; and (y) if a Benchmark Replacement is determined in accordance with clause (3) of the definition of "Benchmark Replacement" or clause (2) of the definition of "Benchmark Replacement Adjustment" for such Benchmark Replacement Date, such Benchmark Replacement will replace such Benchmark for all purposes hereunder and under any Loan Document in respect of any Benchmark setting at or after 5:00 p.m. (Eastern time) on the fifth (5^{th}) Business Day after the date notice of such Benchmark Replacement is provided to the Borrower without any amendment, or further action or consent of any other party, hereto or to any other Loan Document.

(b) **Benchmark Replacement Conforming Changes.** In connection with the use, administration, adoption or implementation of a Benchmark Replacement, the Bank will have the right to make Benchmark Replacement Conforming Changes from time to time and, notwithstanding anything to the contrary herein or in any other Loan Document, any amendments implementing such Benchmark Replacement Conforming Changes will become effective without any further action or consent of the Borrower.

(c) **Notices; Standards for Decisions and Determinations.** The Bank will promptly notify the Borrower of (i) the implementation of any Benchmark Replacement, (ii) the effectiveness of any Benchmark Replacement Conforming Changes in connection with the use, administration, adoption or implementation of a Benchmark Replacement and (iii) the commencement of any Benchmark Unavailability Period. Any determination, decision or election that may be made by the Bank pursuant to this Rider, including any determination with respect to a tenor, rate or adjustment or of the occurrence or non-occurrence of an event, circumstance or date and any decision to take or refrain from taking any action or selection, will be conclusive and binding absent manifest error and may be made in its sole discretion and without consent from the Borrower.

(d) **Benchmark Unavailability Period.** Upon the Borrower's receipt of notice of the commencement of a Benchmark Unavailability Period, amounts outstanding hereunder automatically will bear interest at the Fallback Rate.

(e) **Certain Defined Terms.** As used in this Rider:

"Available Tenor" means, as of any date of determination and with respect to the then-current Benchmark, as applicable, one month.

"Benchmark" means, initially, BSBY; provided that if a Benchmark Transition Event has occurred with respect to BSBY or the then-current Benchmark, then "Benchmark" means the applicable Benchmark Replacement to the extent that such Benchmark Replacement has replaced such prior benchmark rate pursuant to paragraph (a) of this Rider.

"Benchmark Replacement" means, for the Available Tenor, the first alternative set forth in the order below that can be determined by the Bank for the applicable Benchmark Replacement Date:

(1) the sum of: (a) Term SOFR and (b) the related Benchmark Replacement Adjustment;

(2) the sum of: (a) Daily Simple SOFR and (b) the related Benchmark Replacement Adjustment; and

(3) the sum of: (a) the alternate benchmark rate and (b) an adjustment (which may be a positive or negative value or zero), in each case, that has been selected by the Bank as the replacement for the Available Tenor of such Benchmark giving due consideration to any evolving or then-prevailing market convention for determining a benchmark rate and an adjustment as a replacement for the then-current Benchmark, including any applicable recommendations made by a Relevant Governmental Body, for U.S. dollar-denominated syndicated or bilateral commercial credit facilities at such time;

provided that any such Benchmark Replacement shall be administratively feasible as determined by the Bank in its sole discretion. If the Benchmark Replacement as determined pursuant to clause (1), (2) or (3) above would be less than the Floor, the Benchmark Replacement will be deemed to be the Floor for the purposes hereof and of the other Loan Documents.

"Benchmark Replacement Adjustment" means, for purposes of clauses (1) and (2) of the definition of "Benchmark Replacement," with respect to any replacement of the then-current Benchmark with an Unadjusted Benchmark Replacement for any setting of such Unadjusted Benchmark Replacement, the first alternative set forth in the order below that can be determined by the Bank:

(1) an adjustment (which may be a positive or negative value or zero) equal to the BSBY Long-Term Spread Adjustment for such Available Tenor as of the time such Benchmark Replacement is first set and is displayed on a screen or other information service that publishes such adjustment from time to time as selected by the Bank in its reasonable discretion; and

(2) an adjustment (which may be a positive or negative value or zero) that has been selected by the Bank as the replacement for such Available Tenor, giving due consideration to any evolving or then-prevailing market convention for determining a spread adjustment, or method for calculating or determining such spread adjustment, for the replacement of such Available Tenor of such Benchmark with the applicable Unadjusted Benchmark Replacement, including any applicable recommendations made by a Relevant Governmental Body, for U.S. dollar-denominated syndicated or bilateral commercial credit facilities at such time.

"Benchmark Replacement Conforming Changes" means, with respect to any Benchmark Replacement, any technical, administrative or operational changes (including changes to the definitions of "Base Rate," "Business Day" or "U.S. Government Securities Business Day," timing and frequency of determining rates and making payments of interest, timing of borrowing requests or prepayment, the applicability and length of lookback periods, the applicability of breakage provisions and other technical, administrative or operational matters) that the Bank decides may be appropriate to reflect the adoption and implementation of such Benchmark Replacement and to permit the administration thereof by the Bank in a manner substantially consistent with market practice (or, if the Bank decides that adoption of any portion of such market practice is not administratively feasible or if the Bank determines that no market practice for the administration of such Benchmark Replacement exists, in such other manner of administration as the Bank decides is reasonably necessary in connection with the administration of the Facility and the Loan Documents).

"Benchmark Replacement Date" means a date and time determined by the Bank, which date shall be no later than the earlier to occur of the following events with respect to the then-current Benchmark:

(1) in the case of clause (1) of the definition of "Benchmark Transition Event," the later of (a) the date of the public statement or publication of information referenced therein and (b) the date on which the Available Tenor of such Benchmark (or such component thereof) is no longer available or permitted to be used for determining the interest rate of U.S. dollar-denominated syndicated or bilateral commercial loans, or shall cease; or

(2) in the case of clause (2) of the definition of "Benchmark Transition Event," a date and time determined by the Bank as administratively feasible in its reasonable discretion and no later than 90 days following the date of the public statement or publication of information referenced therein.

"Benchmark Transition Event" means the occurrence of one or more of the following events with respect to the then-current Benchmark:

(1) a public statement or publication of information by or on behalf of (a) the administrator of such Benchmark (or the published component used in the calculation thereof), (b) a Governmental Authority having jurisdiction over such administrator with respect to its publication of such Benchmark or (c) a Governmental Authority having jurisdiction over the Bank, in each case acting in such capacity, identifying a specific date after which the Available Tenor of such Benchmark (or such component thereof) (i) shall or will no longer be made available or permitted to be used for determining the interest rate of U.S. dollar-denominated syndicated or bilateral commercial loans, or (ii) shall or will otherwise cease, provided that, at the time of any such statement or publication to the extent related solely to unavailability or cessation of such Benchmark, there is no successor administrator that will continue to provide the Available Tenor of such Benchmark (or such component thereof); or

(2) a public statement or publication of information by the administrator of such Benchmark (including a "Technical Note" published on the BSBY Website) that a BSBY Final Step Event has occurred for the Available Tenor of such Benchmark.

"Benchmark Unavailability Period" means, so long as a Benchmark Transition Event has occurred, the period (if any) (x) beginning at the time that a Benchmark Replacement Date has occurred if, at such time, no Benchmark Replacement has replaced the then-current Benchmark for all purposes hereunder and under any Loan Document in accordance with this Rider, and (y) ending at the time that a Benchmark Replacement has replaced the then-current Benchmark for all purposes hereunder and under any Loan Document in accordance with this Rider.

"BSBY Final Step Event" means, for any Available Tenor, either (i) the twentieth (20^{th}) consecutive U.S. Government Securities Business Day or (ii) the thirtieth (30^{th}) U.S. Government Securities Business Day within a rolling 90-day period, on which BSBY is calculated in accordance with "Level 6" (or any successor final step) of the "Alternative Calculation Waterfall" defined or set forth in BSBY's index methodology and rulebook, as published on the BSBY Website.

"BSBY Long-Term Spread Adjustment" means the most recently dated "BSBY SOFR 5Y Spread Adjustment" published on the BSBY Website.

"BSBY Website" means the "Bloomberg Short-Term Bank Yield Index" website at https://www.bloomberg.com/professional/product/indices/bsby/ (or any successor website).

"Daily Simple SOFR" means, for any day, SOFR, with the conventions for this rate (which may include a lookback) being established by the Bank in accordance with the conventions for this rate selected or recommended by the Relevant Governmental Body for determining "Daily Simple SOFR" for business loans; provided, that if the Bank decides that any such convention is not administratively feasible for the Bank, then the Bank may establish another convention in its reasonable discretion.

"Fallback Rate" means the alternative rate of interest that would have been applicable under the terms of the Facility (absent this Rider) if the Bank had given notice that the Benchmark cannot be determined or the Bank cannot make or maintain or fund loans based on such Benchmark or, if no such alternative rate is specified, the Base Rate.

"Floor" means the minimum rate of interest, if any, provided under the terms of the Facility with respect to BSBY or, if no minimum rate of interest is specified, zero.

"Governmental Authority" means the government of the United States of America or any other nation, or of any political subdivision thereof, whether state or local, and any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government (including any supra-national bodies such as the European Union or the European Central Bank).

"Relevant Governmental Body" means the Board of Governors of the Federal Reserve System of the United States and/or the Federal Reserve Bank of New York, or a committee officially endorsed or convened by the Board of Governors of the Federal Reserve System of the United States and/or the Federal Reserve Bank of New York, or any successor thereto.

"SOFR" means a rate equal to the secured overnight financing rate as published by the Federal Reserve Bank of New York (or a successor administrator of the secured overnight financing rate) on the website of the Federal Reserve Bank of New York, currently at http://www.newyorkfed.org, or any successor source for the secured overnight financing rate identified as such by the administrator of the secured overnight financing rate from time to time.

"Term SOFR" means, for the Applicable Tenor, the forward-looking term rate based on SOFR administered by CME Group Benchmark Administration Limited (or a successor administrator selected by the Bank in its reasonable discretion).

"Unadjusted Benchmark Replacement" means the applicable Benchmark Replacement excluding the related Benchmark Replacement Adjustment.

Exhibit 10.24

AMENDMENT TO CONSULTING AGREEMENT

This Amendment to Consulting Agreement (this "Amendment") is effective as of the 11th day of January, 2022, by and among Northern Technologies International Corporation, a Delaware corporation, located at 4201 Woodland Road, Circle Pines, MN 55014 ("NTIC"), BioPlastic Polymers LLC, a Michigan limited liability company, located at 4275 Conifer Circle, Okemos, Michigan, 48864 (the "Consultant"), and Ramani Narayan, Ph.D., an individual residing at 4275 Conifer Circle, Okemos, Michigan, 48864 ("Dr. Narayan") (NTIC, Consultant and Dr. Narayan being referred to collectively as the "Parties").

A. Effective as of January 11, 2017, the Parties entered into that certain Consulting Agreement (the "Consulting Agreement") pursuant to which the Consultant, and specifically Dr. Narayan, render consulting services to NTIC.

B. The Parties desire to amend the Consulting Agreement to extend the term thereof.

In consideration of the above recitals and mutual promises exchanged herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

1. <u>Defined Terms</u>. Terms not otherwise defined in this Amendment shall have the meanings assigned to such terms in the Consulting Agreement.

2. <u>Amendment to Section 9.1</u>. Section 9.1 of the Consulting Agreement is hereby deleted and replaced in its entirety with the following:

   The term of this Agreement shall be five (5) years until January 11, 2027 (the "Term"). Unless earlier terminated by the Parties, this Agreement shall terminate on January 11, 2027. Prior to January 11, 2027, the Parties shall discuss whether to extend the Term of this Agreement. Any extension of the Term of this Agreement must be mutually agreed upon by the Parties and set forth in writing as an amendment to this Agreement or as a new written agreement. For the sake of clarity and the avoidance of any doubt, if the Parties do not extend the Term of this Agreement by written amendment to this Agreement or as a new written agreement, this Agreement shall terminate on January 11, 2027.

3. <u>Entire Agreement</u>. This Amendment sets forth the entire understanding and agreement of the Parties in relation to the subject matter hereof and supersedes any prior negotiations and agreements between the Parties relative to such subject matter. Except as amended hereby, all other terms and conditions of the Consulting Agreement shall remain in full force and effect.

4. <u>Counterparts</u>. This Amendment may be executed in any number of counterparts, each of which shall be deemed an original and all of which shall together constitute one and the same instrument. PDF or facsimile signature pages shall be binding and have the same legal force and effect as original signature pages.

[signature page follows]

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of the dates set forth below.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION

By:	/s/ Matthew Wolsfeld
Name:	Matthew Wolsfeld
Title:	CFO
Date:	November 11, 2022

BIOPLASTIC POLYMERS LLC

By:	/s/ Ramani Narayan, Ph. D.
Name:	Ramani Narayan, Ph.D.
Title:	President and Sole Member
Date:	November 11, 2022

Exhibit 21.1

SUBSIDIARIES OF THE REGISTRANT

Name of Subsidiary	State or Other Jurisdiction of Incorporation or Organization	Ownership Interest	Names Under Which Subsidiary Does Business
NTI ASEAN LLC	Delaware	60%	Same
Northern Technologies Holding Company, LLC	Delaware	100%	Same
Natur-Tec India Private Limited	India	75%	Same
Natur Tec Lanka (Pvt) Ltd	Sri Lanka(1)	75%	Same
Zerust Prevenção de Corrosão S.A.	Brazil	85%	Same
NTIC (Shanghai) Co., Ltd.	China	100%	Same
ZERUST-EXCOR MEXICO, S. de R.L. de C.V	Mexico	100%	Same
NTIC Europe GmbH	Germany	100%	Same
Zerust Singapore Pte Ltd	Singapore(2)	60%	Same
Zerust Vietnam Co. Ltd	Vietnam(3)	60%	Same
HNTI Limited	India	100%	Same

(1) Natur Tec Lanka (Pvt) Ltd. is 100% owned by Natur-Tec India Private Limited and, therefore, indirectly owned by Northern Technologies International Corporation.

(2) Zerust Singapore Pte Ltd is 100% owned by NTI Asean LLC and, therefore, indirectly owned by Northern Technologies International Corporation.

(3) Zerust Vietnam Co. Ltd is 100% owned by Zerust Singapore Pte Ltd and, therefore, indirectly owned by Northern Technologies International Corporation.

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statements on Form S-8 (File No. 333-140244, 333-140245, 333-171828, 333-229391, and 333-252197) of Northern Technologies International Corporation and Subsidiaries of our report dated November 15, 2022, relating to the consolidated financial statements, which appears on page 56 of this annual report on Form 10-K for the year ended August 31, 2022.

/s/ Baker Tilly US, LLP

Minneapolis, Minnesota
November 15, 2022

Exhibit 31.1

CERTIFICATION PURSUANT TO SECTION 302(a) OF THE SARBANES-OXLEY ACT OF 2002

I, G. Patrick Lynch, certify that:

1. I have reviewed this annual report on Form 10-K of Northern Technologies International Corporation;

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

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

4. The registrant's other certifying officer(s) 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(s) 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.

Date: November 15, 2022

/s/ G. Patrick Lynch
G. Patrick Lynch
President and Chief Executive Officer
(principal executive officer)

Exhibit 31.2

CERTIFICATION PURSUANT TO SECTION 302(a) OF THE SARBANES-OXLEY ACT OF 2002

I, Matthew C. Wolsfeld, certify that:

1. I have reviewed this annual report on Form 10-K of Northern Technologies International Corporation;

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

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

4. The registrant's other certifying officer(s) 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(s) 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.

Date: November 15, 2022

/s/ Matthew C. Wolsfeld, CPA
Matthew C. Wolsfeld, CPA
Chief Financial Officer and Corporate Secretary
(principal financial officer)

Exhibit 32.1

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

In connection with the Annual Report on Form 10-K of Northern Technologies International Corporation (the "Company") for the fiscal year ended August 31, 2022 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, G. Patrick Lynch, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge and belief:

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

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

/s/ G. Patrick Lynch
G. Patrick. Lynch
President and Chief Executive Officer
(principal executive officer)

Circle Pines, Minnesota
November 15, 2022

Exhibit 32.2

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

In connection with the Annual Report on Form 10-K of Northern Technologies International Corporation (the “Company”) for the fiscal year ended August 31, 2022 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Matthew C. Wolsfeld, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge and belief:

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

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

/s/ Matthew C. Wolsfeld, CPA
Matthew C. Wolsfeld, CPA
Chief Financial Officer and Corporate Secretary
(principal financial officer and principal accounting officer)

Circle Pines, Minnesota
November 15, 2022