

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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 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 No. 001-32919

Ascent Solar Technologies, Inc.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

12300 Grant Street, Thornton, CO
(Address of principal executive offices)

20-3672603
(I.R.S. Employer
Identification No.)

80241
(Zip Code)

Registrant's telephone number including area code: 720-872-5000

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

Title of each class	Trading Symbol(s)	Name of exchange on which registered
Common Stock, \$0.0001 par value per share	ASTI	Nasdaq Capital 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 15(d) of the Exchange Act. Yes ☐ No ☒

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

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

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

Large accelerated filer

☐

Accelerated filer

☐

Non-accelerated filer

☒

Smaller reporting company

☒

Emerging growth company

☐

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

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

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

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

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

As of June 30, 2022, the last business day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the registrant's common stock held by non-affiliates was approximately \$24,086,974 based upon the last reported sale price of the registrant's common stock on that date as reported by OTC Markets Group ("OTC Markets").

As of March 10, 2023, there were 36,928,917 shares of our common stock issued and outstanding.

ASCENT SOLAR TECHNOLOGIES, INC.
Form 10-K Annual Report
for the Fiscal Year ended December 31, 2022
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FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K includes “forward-looking statements” that involve risks and uncertainties. Forward-looking statements include statements concerning our plans, objectives, goals, strategies, future events, future net sales or performance, capital expenditures, financing needs, plans or intentions relating to acquisitions, business trends and other information that is not historical information and, in particular, appear under headings including “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Business.” When used in this Annual Report, the words “estimates,” “expects,” “anticipates,” “projects,” “plans,” “intends,” “believes,” “forecasts,” “foresees,” “likely,” “may,” “should,” “goal,” “target,” and variations of such words or similar expressions are intended to identify forward-looking statements, but the absence of these words does not mean that a statement is not forward-looking. All forward-looking statements are based upon information available to us on the date of this Annual Report.

These forward-looking statements are subject to risks, uncertainties and other factors, many of which are outside of our control, that could cause actual results to differ materially from the results discussed in the forward-looking statements, including, among other things, the matters discussed in this Annual Report in the sections captioned “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” Factors you should consider that could cause these differences are:

- The impact of the COVID-19 pandemic on our business, results of operations, cash flows, financial condition and liquidity;
 - Our operating history and lack of profitability;
 - Our ability to develop demand for, and sales of, our products;
 - Our ability to attract and retain qualified personnel to implement our business plan and corporate growth strategies;
 - Our ability to develop sales, marketing and distribution capabilities;
 - Our ability to successfully develop and maintain strategic relationships with key partners;
 - The accuracy of our estimates and projections;
 - Our ability to secure additional financing to fund our short-term and long-term financial needs;
 - Our ability to maintain this listing of our common stock on the Nasdaq Capital Market;
 - The commencement, or outcome, of legal proceedings against us, or by us, including ongoing litigation proceedings;
 - Changes in our business plan or corporate strategies;
 - The extent to which we are able to manage the growth of our operations effectively, both domestically and abroad, whether directly owned or indirectly through licenses;
 - The supply, availability and price of equipment, components and raw materials, including the elements needed to produce our photovoltaic modules;
 - Our ability to expand and protect the intellectual property portfolio that relates to our photovoltaic modules and processes;
 - Our ability to maintain effective internal controls over financial reporting;
 - Our ability to achieve projected operation performance and cost metrics;
 - General economic and business conditions, and in particular, conditions specific to the solar power industry; and
 - Other risks and uncertainties discussed in greater detail in the section captioned “Risk Factors.”
-

There may be other factors that could cause our actual results to differ materially from the results referred to in the forward-looking statements. We undertake no obligation to publicly update or revise forward-looking statements to reflect subsequent events or circumstances after the date made, or to reflect the occurrence of unanticipated events, except as required by law.

References to “we,” “us,” “our,” “Ascent,” “Ascent Solar” or the “Company” in this Annual Report mean Ascent Solar Technologies, Inc.

PART I

Item 1. Business

Business Overview

Ascent Solar Technologies, Inc. ("Ascent" or the "Company") was incorporated on October 18, 2005 from the separation by ITN Energy Systems, Inc. ("ITN") of its Advanced Photovoltaic Division and all of that division's key personnel, core technologies, and certain trade secrets and royalty free licenses to use in connection with the manufacturing, developing marketing, and commercializing Copper-Indium-Gallium-diSelenide ("CIGS") photovoltaic ("PV") products.

We are an American solar technology company that manufactures and sells PV solar modules that are flexible, durable, and possess attractive power to weight and power to area performance. Our technology provides renewable power solutions to high-value production and specialty solar markets where traditional rigid solar panels are not suitable, including aerospace, agrivoltaics, and niche manufacturing/construction sectors. We operate in these target markets because they have highly specialized needs for power generation and offer attractive pricing due to the significant technological requirements.

We believe the value proposition of Ascent's proprietary solar technology not only aligns with the needs of customers in our target markets, but also overcomes many of the obstacles other solar technologies face in these unique markets. Ascent designs and develops finished products for end users in these areas and collaborates with strategic partners to design and develop custom integrated solutions for products like airships and fixed-wing UAVs. Ascent sees significant overlap in the needs of end users across some of these markets and believes it can achieve economies of scale in sourcing, development, and production in commercializing products for these customers.

The integration of Ascent's solar modules into space, near space, and aeronautic vehicles with ultra-lightweight and flexible solar modules is an important market opportunity for the Company. Customers in this market have historically required a high level of durability, high voltage and conversion efficiency from solar module suppliers, and we believe our products are well suited to compete in this premium market.

Product History

In March 2008, we demonstrated initial operating capacity of our first production line by beginning production trials as an end-to-end integrated process. By July 2009, we obtained independent verification by the U.S. Department of Energy's National Renewable Energy Laboratory ("NREL") that our modules of approximately 15 centimeters wide by 30 centimeters long measured 10.4% in conversion efficiency, which, by October 2009, NREL further verified our achievement of a manufacturing milestone of 14.0% cell efficiency as well as a peak efficiency of 11.4% for our CIGS modules. In October 2010, we completed internal qualification testing of a flexible packaging solution which successfully passed the rigorous standard of one thousand (1,000) hours of damp heat testing (85% relative humidity and 85° C temperature) guideline set forth by International Electrotechnical Commission ("IEC") 61646 standards for performance and long-term reliability of thin film solar modules. And in December 2010, we achieved 12.1% module efficiency on the same form factor.

In February 2010, three of our product configurations were certified by an independent laboratory on a variety of U.S. Department of Defense ("DOD") rugged standards known as MIL-STD-810G. In October 2010, we completed full external certification under IEC 61646 at an independent laboratory of a two-meter module. Achieving this certification is required for building integrated photovoltaic ("BIPV") and building applied photovoltaic ("BAPV") applications used in commercial, industrial and residential rooftop markets.

In March 2016, the Company announced a major breakthrough of our high-voltage superlight bare modules, achieving a power-to-weight ratio of 1,700 watts per kilogram at AM0 environment. What we believe is the "best-in-class" specific power is crucial to the aerospace industry where every pound of weight reduction would translate to incremental cost savings or increased in payloads. In December 2016, Ascent was selected by the Japan Aerospace Exploration Agency ("JAXA") as part of their next round of evaluations for providing solar technology for an upcoming mission to Jupiter, as well as to address additional missions. This decision followed an earlier round of investigation with promising results, during which the Company's flexible, monolithically integrated CIGS solar module was subjected to environmental extremes and continued to operate well. During the first phase of JAXA's evaluation, Ascent's PV was successfully tested below -146°C (-231°F) and up to +190°C (+374 °F), and to only 4% of the sunlight generally received in earth's orbit. In addition, JAXA has subjected Ascent's PV to radiation and mechanical testing.

During the third quarter of 2017, Ascent Solar demonstrated its breadth of capabilities at the US Special Operations Command ("SOCOM") exclusive Technical Experimentation ("TE") 17-3 Event in Washington, DC. SOCOM is tasked, by

the Department of Defense (“DoD”), with providing Special Operations Forces (“SOF”) with the latest war fighting technology available; in support of this effort, SOCOM sponsors an annual TE event. In July of 2017, SOCOM requested the participation of companies who have proficiency in the areas of Satellite Communication (“SATCOM”) and Unattended Ground Sensors (“UGS”) for a TE event. Ascent Solar was selected to participate on the basis and recognition that one of the primary issues facing the DoD today is the ability to power all of their war fighting technology. Ascent’s diverse line-up of rugged and lightweight portable solar products offers the potential for the DoD to generate unattended ongoing power, which could save lives and increase the efficiency of the war fighting effort. Ascent received an assessed score of a capability that has “high potential for SOF use with few limitations”.

During the third quarter of 2018, Ascent Solar was once again selected to demonstrate its breadth of capabilities at the SOCOM exclusive TE 18-3 Event in Washington, DC. In July of 2018, SOCOM requested the participation of companies who have proficiency in the areas of Intelligence, Surveillance and Reconnaissance (ISR), Small Unmanned Aerial Systems (SUAS) and Mobility for the TE event.

During 2021, the ASTI team further advanced product acceptance into the highly stringent space market with demonstrated solar module survivability under the guidance of NASA Marshall Space Flight Center (MSFC) MISSE X flight experiment on the International Space Station (ISS), advancing our Technology Readiness Level (TRL) to 6, with subsequent flights in 2022-23, both NASA and commercial, intended to achieve TRL 7. TRL 8 is commonly accepted as space qualified. Also during 2021, the ASTI team was able to utilize an ultra-thin lamination made from the coating material used during MISSE X to build custom modules for a customer to be tested for a future flight.

On September 15, 2021, the Company entered into a Long-Term Supply and Joint Development Agreement (“JDA”) with TubeSolar AG (“TubeSolar”), a significant existing stakeholder in the Company. Under the terms of the JDA, the Company will produce, and TubeSolar will purchase, thin-film PV foils (“PV Foils”) for use in TubeSolar’s solar modules for agricultural photovoltaic (“APV”) applications that require solar foils for its production. Under the JDA, the Company will receive up (i) to \$4 million of non-recurring engineering (“NRE”) fees, (ii) up to \$13.5 million of payments upon achievement of certain agreed production and cost structure milestones, and (iii) product revenues from sales of PV Foils to TubeSolar. The JDA has no fixed term, and may only be terminated by either party for breach.

The Company and TubeSolar have also jointly established a subsidiary company in Germany, in which TubeSolar holds a minority stake of 30% (the “JV”). The purpose of the JV is to establish and operate a PV manufacturing facility in Germany that will produce and deliver PV Foils exclusively to TubeSolar. Until the JV facility is fully operational, PV Foils will be manufactured in the Company’s existing facility in Thornton, Colorado. The parties expect to jointly develop next generation tooling for use in manufacturing PV Foils at the JV facility. The Company purchased 17,500 shares of the JV for 1 Euro per share, on November 10, 2021.

Due to the high durability enabled by the monolithic integration employed by our technology, the capability to customize modules into different form factors and what we believe is the industry leading light weight and flexibility provided by our modules, we believe that the potential applications for our products are extensive, including integrated solutions anywhere that may need power generation such as portable power solutions, vehicles in space or in flight or dual-use installations on agricultural land and has developed the following ways to utilize this technology:

- High-voltage SuperLight thin-film CIGS PV blankets. These 50W, fully laminated, flexible blankets were manufactured using a new process that was optimized for high performance in near-space conditions at elevated temperatures, and are custom designed for easy modular integration into series and parallel configurations to achieve the desired voltage and current required for such application.
- USB-based portable power systems with the XD™ series. The first product introduced was the XD-12 which, like previous products, is a folding, lightweight, easily stowable, PV system with USB power regulation. Unique to this generation of PV portable power is more PV power (12 Watts) and a 2.0 Amp smart USB output to enable the XD-12 to charge most smartphones, tablets, and USB-enabled devices as fast as a wall outlet. The enhanced smart USB circuit works with the device to be charged so that the device can determine the maximum power it is able to receive from the XD-12 and ensures the best possible charging performance directly from the sun.
- Micro-module for a space customer, approximately 12.8mm x 50mm (0.5in x 2.0in) in size that is ideal for both laboratory-scale environmental testing, and for subsequent integration into flight experiments.
- Ultra-light modules with substrate material used by a European based customer for their lighter-than-air, helium-filled airship project. In 2019, we completed a repeat order from the same customer who had since established its airship

development operation in the US. In 2020, we received a third and enlarged order from the same customer and completed the order in the second quarter of 2021. Most recently, in the 4th quarter of 2021 we received a fourth order that was shipped in 2022.

- Ultra-lightweight, flexible PV modules used in the flight of a production version of the Silent Falcon™ Unmanned Aircraft Systems
- Small area test cells and large, 19.5cm x 30cm monolithically integrated modules, all on a very thin, 25-micron (0.001 inch) plastic substrate to be used in JAXA's solar sail deployment demonstration project. The 19.5cm x 30cm module is a custom design to match the anticipated deployment mechanism and PV layout for the final Jovian spacecraft.

Commercialization and Manufacturing Strategy

We manufacture our products by affixing a thin CIGS layer to a flexible, plastic substrate using a large format, roll-to-roll process that permits us to fabricate our flexible PV modules in an integrated sequential operation. We use proprietary monolithic integration techniques which enable us to form complete PV modules with little to no costly back-end assembly of inter-cell connections. Traditional PV manufacturers assemble PV modules by bonding or soldering discrete PV cells together. This manufacturing step typically increases manufacturing costs and, at times, proves detrimental to the overall yield and reliability of the finished product. By reducing or eliminating this added step, using our proprietary monolithic integration techniques, we believe we can achieve cost savings in, and increase the reliability of, our PV modules.

Advantages of CIGS on a Flexible Plastic Substrate

Thin film PV solutions differ based on the type of semiconductor material chosen to act as a sunlight absorbing layer, and also on the type of substrate on which the sunlight absorbing layer is affixed. To the best of our knowledge, we believe we are the only company in the world currently focused on commercial scale production of PV modules using CIGS on a flexible, plastic substrate with monolithic integration. We utilize CIGS as a semiconductor material because, at the laboratory level, it has a higher demonstrated cell conversion efficiency than amorphous silicon ("a-Si") and cadmium telluride ("CdTe"). We also believe CIGS offers other compelling advantages over both a-Si and CdTe, including:

- *CIGS versus a-Si:* Although a-Si, like CIGS, can be deposited on a flexible substrate, its conversion efficiency, which already is generally much lower than that of CIGS, measurably degrades when it is exposed to ultraviolet light, including natural sunlight. To mitigate such degradation, manufacturers of a-Si solar cells are required to implement measures that add cost and complexity to their manufacturing processes.
- *CIGS versus CdTe:* Although CdTe modules have achieved conversion efficiencies that are generally comparable to CIGS in production, we believe CdTe has never been successfully applied to a flexible substrate on a commercial scale. We believe the use of CdTe on a rigid, transparent substrate, such as glass, is unsuitable for a number of our applications. We also believe CIGS can achieve higher conversion efficiencies than CdTe in production.

We believe our choice of substrate material further differentiates us from other thin-film PV manufacturers. We believe the use of a flexible, lightweight, insulating substrate that is easier to install provides clear advantages for our target markets, especially where rigid substrates are unsuitable. We also believe our use of a flexible, plastic substrate provides us significant cost advantages because it enables us to employ monolithic integration techniques on larger components, which we believe are unavailable to manufacturers who use flexible, metal substrates. Accordingly, we are able to significantly reduce part count, thereby reducing the need for costly back end assembly of inter cell connections. As the only company, to our knowledge, focused on the commercial production of PV modules using CIGS on a flexible, plastic substrate with monolithic integration, we believe we have the opportunity to address the aerospace, agrivoltaics and other weight-sensitive markets with transformational high quality, value added product applications. It is these same unique features and our overall manufacturing process that enable us to produce extremely robust, light and flexible products.

Competitive Strengths

We believe we possess a number of competitive strengths that provide us with an advantage over our competitors.

- ***We are a pioneer in CIGS technology with a proprietary, flexible, lightweight, high efficiency PV thin film product that positions us to penetrate a wide range of attractive high value added markets such as aerospace and agrivoltaics. In addition, we have provided renewable power solutions for off grid, portable power, transportation, defense, and other markets.*** By applying CIGS to a flexible plastic substrate, we have developed a PV module that is efficient, lightweight and flexible; with the highest power-to-weight ratio in at-scale commercially available solar.

The market for space and near-space solar power application solutions, agrivoltaics, portable power systems, and transportation integrated applications represent a significant premium market for the Company. Relative to our thin film competitors, we believe our advantage in thin film CIGS on plastic technology provides us with a superior product offering for these strategic market segments.

- ***We have the ability to manufacture PV modules for different markets and for customized applications without altering our production processes.*** Our ability to produce PV modules in customized shapes and sizes, or in a variety of shapes and sizes simultaneously, without interrupting production flow, provides us with flexibility in addressing target markets and product applications, and allows us to respond quickly to changing market conditions. Many of our competitors are limited by their technology and/or their manufacturing processes to a more restricted set of product opportunities.
- ***Our integrated, roll-to-roll manufacturing process and proprietary monolithic integration techniques provide us a potential cost advantage over our competitors.*** Historically, manufacturers have formed PV modules by manufacturing individual solar cells and then interconnecting them. Our large format, roll-to-roll manufacturing process allows for integrated continuous production. In addition, our proprietary monolithic integration techniques allow us to utilize laser patterning to create interconnects, thereby creating PV modules at the same time we create PV cells. In so doing, we are able to reduce or eliminate an entire back end processing step, saving time as well as labor and manufacturing costs relative to our competitors.
- ***Our lightweight, powerful, and durable solar panels provide a performance advantage over our competitors.*** For applications where a premium is placed on the weight and profile of the product, our ability to integrate our PV modules into portable packages offers the customer a lightweight and durable solution for all their portable electronics.
- ***Our proven research and development capabilities position us to continue the development of next generation PV modules and technologies.*** Our ability to produce CIGS based PV modules on a flexible plastic substrate is the result of a concerted research and development effort that began more than 20 years ago. We continue to pursue research and development in an effort to drive efficiency improvements in our current PV modules and to work toward next generation technologies and additional applications.
- ***Our manufacturing process can be differentiated into two distinct functions; a front-end module manufacturing process and a back-end packaging process.*** Our ability to produce finished unpackaged rolls of CIGS material for shipment worldwide to customers for encapsulation and integration into various products enhances our ability to work with partners internationally and domestically.

Markets and Marketing Strategy

We target high-value specialty solar markets including aerospace and agrivoltaics applications. This strategy enables us to fully leverage the unique advantages of our technology, including flexibility, durability and attractive power to weight and power to area performance. It further enables us to offer unique, differentiated solutions in large markets with less competition, and more attractive pricing.

We believe the value proposition of Ascent's proprietary solar technology not only aligns with the needs of customers in these markets, but also overcomes many of the obstacles other solar technologies face in these unique markets. Ascent has the capability to design and develop finished products for end users in these areas as well as collaborate with strategic partners to design and develop custom integrated solutions for products like airships and fixed-wing UAVs. Ascent sees significant overlap in the needs of end users across some of these verticals and believes it can achieve economies of scale in sourcing, development, and production in commercializing products for these customers.

Competition

We believe our thin film, monolithically integrated CIGS technology enables us to deliver sleek, lightweight, rugged, high performance solutions to serve these markets as competitors from other thin film and c-Si companies emerge. The landscape of thin film manufacturers encompasses a broad mix of technology platforms at various stages of development and consists of a number of medium and small companies.

The market for traditional, grid connected PV products is dominated by large manufacturers of c-Si technology, although thin film technology on glass has begun to emerge among the major players. We anticipate that while these large manufacturers may continue to dominate the market with their silicon-based products, thin film manufacturers will likely capture an increasingly larger share of the market, as is evident from the success of First Solar (CdTe).

We believe that our modules offer unique advantages. Their flexibility, low areal density (mass per unit area), and high specific power (power per unit mass) enable use on weight-sensitive applications, such as portable power, conformal aircraft surfaces, high altitude long endurance (HALE) fixed wing and lighter than air (LTA) vehicles, and space applications that are unsuitable for glass-based modules. Innovative product design, customer focused development, and our rapid prototyping capability yield modules that could be integrated into virtually any product to create a source of renewable energy. Whether compared to glass based or other flexible modules, our products offer competitive advantages making them unique in comparison to competing products. We consider PowerFilm Solar, Global Solar, MiaSolé, and Flisom to be our closest competitors in terms of technology in the specialty PV market.

Research and Development and Intellectual Property

Our technology was initially developed at ITN beginning in 1994. In early 2006, ITN assigned to us certain CIGS PV-specific technologies, and granted to us a perpetual, exclusive, royalty free, worldwide license to use these technologies in connection with the manufacture, development, marketing and commercialization of CIGS PV to produce solar power. In addition, certain of ITN's existing and future proprietary process and control technologies, although nonspecific to CIGS PV, were assigned to us. ITN retained the right to conduct research and development activities in connection with PV materials, and we agreed to grant a license back to ITN for improvements to the licensed technologies and intellectual property outside of the CIGS PV field.

We intend to continue to invest in research and development in order to provide near term improvements to our manufacturing process (including to reduce costs) and products (including improve technology to increase efficiency), as well as to identify next generation technologies relevant to both our existing and potential new markets. During the years ended December 31, 2022 and 2021 we incurred approximately \$5,975,921 and \$4,140,319, respectively, in research, development and manufacturing operations costs, which include research and development incurred in customizing products for customers, as well as manufacturing costs incurred while developing our product lines and manufacturing process. We also plan to continue to take advantage of research and development contracts to fund a portion of this development.

We protect our intellectual property through a combination of trade secrets and patent protections. We own the following patents:

Issued Patents

- 1 US Patent No. 9,640,692 entitled "Flexible Photovoltaic Array with Integrated Wiring and Control Circuitry, and Associated Methods" (issued October 12, 2010) (co-owned with PermaCity Corporation)
- 2 US Patent No. 8,426,725 entitled "Apparatus and Method for Hybrid Photovoltaic Device Having Multiple, Stacked, Heterogeneous, Semiconductor Junctions" (issued April 23, 2013)
- 3 US Patent No. 8,465,589 entitled "Machine and Process for Sequential Multi-Sublayer Deposition of Copper Indium Gallium Diselenide Compound Semiconductors" (issued June 18, 2013)
- 4 US Patent No. D697,502 entitled "Mobile Electronic Device Case" (issued January 14, 2014)
- 5 US Patent No. 8,648,253 entitled "Machine and Process for Continuous, Sequential, Deposition of Semiconductor Solar Absorbers Having Variable Semiconductor Composition Deposited in Multiple Sublayers" (issued February 11, 2014)
- 6 US Patent No. 9,538,671 entitled "System For Housing And Powering A Battery-Operated Device And Associated Methods" (issued January 3, 2017)
- 7 US Patent No. D781,228 entitled "Pocket-Sized Photovoltaic Based Fully Integrated Portable Power System" (issued March 14, 2017)
- 8 US Patent No. 9,601,650 entitled "Machine and Process for Continuous, Sequential, Deposition of Semiconductor Solar Absorbers Having Variable Semiconductor Composition Deposited in Multiple Sublayers" (issued March 21, 2017)
- 9 US Patent No. 9,634,175 entitled "Systems and Methods for Thermally Managing High-Temperature Processes on Temperature Sensitive Substrates" (issued April 25, 2017)

- 10 US Patent No. 9,640,706 entitled "Hybrid Multi-Junction Photovoltaic Cells and Associated Methods" (issued May 2, 2017)
- 11 US Patent No. 9,640,692 entitled "Flexible Photovoltaic Array with Integrated Wiring and Control Circuitry, and Associated Methods" (issued May 2, 2017)
- 12 US Patent No. 9,653,635 entitled Flexible High-Voltage Adaptable Current Photovoltaic Modules and Associated Methods (issued May 16, 2017)
- 13 US Patent No. 9,780,242 entitled "Multilayer Thin-Film Back Contact System for Flexible Photovoltaic Devices on Polymer Substrates" (issued October 3, 2017)
- 14 US Patent No. 9,929,306 entitled "Array of Monolithically Integrated Thin Film Photovoltaic Cells and Associated Methods" (issued March 27, 2018)

Suppliers

We rely on several unaffiliated companies to supply certain raw materials used during the fabrication of our PV modules and PV integrated electronics. We acquire these materials on a purchase order basis and do not have long term purchase quantity commitments with the suppliers, although we may enter into such contracts in the future. We currently acquire all of our high temperature plastic from one supplier, although alternative suppliers of similar materials exist. We purchase component molybdenum, copper, indium, gallium, selenium and indium tin oxides from a variety of suppliers. We also currently are in the process of identifying and negotiating arrangements with alternative suppliers of materials in the United States and Asia.

The manufacturing equipment and tools used in our production process have been purchased from various suppliers in Europe, the United States and Asia. Although we have had good relations with our existing equipment and tools suppliers, we monitor and explore opportunities for developing alternative sources to drive our manufacturing costs down.

Employees

As of December 31, 2022, we had 60 full-time and 2 part-time employees.

Company History

We were formed in October 2005 from the separation by ITN of its Advanced Photovoltaic Division and all of that division's key personnel and core technologies. ITN, a private company incorporated in 1994, is an incubator dedicated to the development of thin film, PV, battery, fuel cell and nanotechnologies. Through its work on research and development contracts for private and government entities, ITN developed proprietary processing and manufacturing know-how applicable to PV products generally, and to CIGS PV products in particular. Our Company was established by ITN to commercialize its investment in CIGS PV technologies. In January 2006, ITN assigned to us all its CIGS PV technologies and trade secrets and granted to us a perpetual, exclusive, royalty free worldwide license to use certain of ITN's proprietary process, control and design technologies in the production of CIGS PV modules. Upon receipt of the necessary government approvals in January 2007, ITN assigned government funded research and development contracts to us and also transferred the key personnel working on the contracts to us.

Corporate Information

We were incorporated under the laws of Delaware in October 2005. Our principal business office is located at 12300 Grant Street, Thornton, Colorado 80241, and our telephone number is (720) 872-5000. Our website address is www.AscentSolar.com. Information contained on our website or any other website does not constitute, and should not be considered, part of this Annual Report.

Available Information

We file with the Securities and Exchange Commission ("SEC") our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports, proxy statements and registration statements. Such filings are available to the public over the internet at the SEC's website at <http://www.sec.gov>. We make available free of charge on, or through, our website at www.AscentSolar.com our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to these reports filed or furnished pursuant to Section 13(a) or 15(d) of the

Securities Exchange Act of 1934, as amended (“Exchange Act”) as soon as reasonably practicable after we file these materials with the SEC.

Item 1A. Risk Factors

The risks included here are not exhaustive or exclusive. Other sections of this Annual Report may include additional factors which could adversely affect our business, results of operations and financial performance. We operate in a very competitive and rapidly changing environment. New risk factors emerge from time to time, and it is not possible for management to predict all such risk factors, nor can it assess the impact of all such risk factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements. Given these risks and uncertainties, investors should not place undue reliance on forward-looking statements as a prediction of actual results.

Risks related to the Coronavirus and COVID-19 Pandemic

The COVID-19 pandemic in the United States and world-wide has caused business disruption which may negatively impact the Company's operations and financial results. Public health officials have recommended and mandated precautions to mitigate the spread of COVID-19, including prohibitions on travel, congregating in heavily populated areas and stay-at-home orders or similar measures.

The COVID-19 pandemic affected the Company in many ways just as the whole world experienced. These included but were not limited to:

- Severe disruption to our restructuring and recapitalization efforts due to travel restrictions and lock-down measures implemented by authorities across the globe;
- Disruption to workforce scheduling and recruitment initiatives after new capital was secured;
- Longer lead time and higher cost in raw materials and equipment parts;
- Raising labor cost in line with overall inflation witnessed across the nation; and
- Extended products and development cycle and longer delivery time to our customers.

These and other impacts of the COVID-19 pandemic could have the effect of heightening many of the other risk factors disclosed in this Annual Report on Form 10-K. The ultimate impact depends on the severity and duration of the current COVID-19 pandemic and actions taken by governmental authorities and other third parties in response, each of which is uncertain, rapidly changing and difficult to predict. Any of these disruptions could adversely impact our business and results of operations.

Risks Relating to Our Business

Our continuing operations will require additional capital which we may not be able to obtain on favorable terms, if at all, or without dilution to our stockholders. Since inception, we have incurred significant losses. We expect to continue to incur net losses in the near term. For the year ended December 31, 2022, our cash used in operations was \$10,506,575. At December 31, 2022, we had cash and equivalents on hand of \$11,483,018.

Although we have commenced production at our manufacturing facility, we do not expect that sales revenue and cash flows will be sufficient to support operations and cash requirements until we have fully implemented our new strategy of focusing on high value PV products. Product revenues did not result in a positive cash flow for the 2022 year, and are not anticipated to result in a positive cash flow for the next twelve months.

During 2022, we entered into multiple financing agreements to fund operations, raising approximately \$16 million in net proceeds. We do not expect that sales revenue and cash flows will be sufficient to support operations and cash requirements for the foreseeable future, and we will depend on raising additional capital to maintain operations until we become profitable. There is no assurance that we will be able to raise additional capital on acceptable terms or at all. If we raise additional funds through the issuance of equity or convertible debt securities, the percentage ownership of our existing stockholders could be significantly diluted, and these newly issued securities may have rights, preferences or privileges senior to those of existing stockholders. If we raise additional funds through debt financing, which may involve restrictive covenants, our ability to operate our business may be restricted. If adequate funds are not available or are not available on acceptable terms, if and when needed, our ability to fund our operations, take advantage of unanticipated opportunities, develop or enhance our products, expand capacity or otherwise respond to competitive pressures could be significantly limited, and our business, results of operations and financial condition could be materially and adversely affected.

Our auditors have expressed substantial doubt about our ability to continue as a going concern. Our auditors' report on our December 31, 2022 financial statements expresses an opinion that our capital resources as of the date of their audit

report were not sufficient to sustain operations or complete our planned activities for the year 2023 unless we raised additional funds. Additionally, as a result of the Company's recurring losses from operations, and the need for additional financing to fund its operating and capital requirements, there is uncertainty regarding the Company's ability to maintain liquidity sufficient to operate its business effectively, which raises doubt as to the Company's ability to continue as a going concern. Management cannot provide any assurances that the Company will be successful in accomplishing any of its plans. Our December 31, 2022 financial statements do not include any adjustments that might be necessary should the Company be unable to continue as a going concern.

We have a limited history of operations, have not generated significant revenue from operations and have had limited production of our products. We have a limited operating history and have generated limited revenue from operations. Currently we are producing products in quantities necessary to meet current demand. Under our current business plan, we expect losses to continue until annual revenues and gross margins reach a high enough level to cover operating expenses. Our ability to achieve our business, commercialization and expansion objectives will depend on a number of factors, including whether:

- We can generate customer acceptance of and demand for our products;
- We successfully ramp up commercial production on the equipment installed;
- Our products are successfully and timely certified for use in our target markets;
- We successfully operate production tools to achieve the efficiencies, throughput and yield necessary to reach our cost targets;
- The products we design are saleable at a price sufficient to generate profits;
- We raise sufficient capital to enable us to reach a level of sales sufficient to achieve profitability on terms favorable to us;
- We are able to successfully design, manufacture, market, distribute and sell our products;
- We effectively manage the planned ramp up of our operations;
- We successfully develop and maintain strategic relationships with key partners, including OEMs, system integrators and distributors, who deal directly with end users in our target markets;
- Our ability to maintain the listing of our common stock on the Nasdaq Capital Market;
- Our ability to achieve projected operational performance and cost metrics;
- Our ability to enter into commercially viable licensing, joint venture, or other commercial arrangements; and
- The availability of raw materials.

Each of these factors is critical to our success and accomplishing each of these tasks may take longer or cost more than expected or may never be accomplished. It also is likely that problems we cannot now anticipate will arise. If we cannot overcome these problems, our business, results of operations and financial condition could be materially and adversely affected.

We have to date incurred net losses and may be unable to generate sufficient sales in the future to become profitable. We incurred a net loss of \$19,754,705 for the year ended December 31, 2022 and reported an accumulated deficit of \$447,537,493 as of December 31, 2022. We expect to incur net losses in the near term. Our ability to achieve profitability depends on a number of factors, including market acceptance of our specialty PV products at competitive prices. If we are unable to raise additional capital and generate sufficient revenue to achieve profitability and positive cash flows, we may be unable to satisfy our commitments and may have to discontinue operations.

Our business is based on a new technology, and if our PV modules or processes fail to achieve the performance and cost metrics that we expect, then we may be unable to develop demand for our PV modules and generate sufficient revenue to support our operations. Our CIGS on flexible plastic substrate technology is a relatively new technology. Our business plan and strategies assume that we will be able to achieve certain milestones and metrics in terms of throughput, uniformity of cell efficiencies, yield, encapsulation, packaging, cost and other production parameters. We cannot assure you that our technology will prove to be commercially viable in accordance with our plan and strategies. Further, we or our strategic partners and licensees may experience operational problems with such technology after its commercial introduction that could delay or defeat the ability of such technology to generate revenue or operating profits. If we are unable to achieve our targets on time and within our planned budget, then we may not be able to develop adequate demand for our PV modules, and our business, results of operations and financial condition could be materially and adversely affected.

Our failure to further refine our technology and develop and introduce improved PV products could render our PV modules uncompetitive or obsolete and reduce our net sales and market share. Our success requires us to invest significant financial resources in research and development to keep pace with technological advances in the solar energy industry. However, research and development activities are inherently uncertain, and we could encounter practical difficulties in commercializing our research results. Our expenditures on research and development may not be sufficient to produce the desired technological advances, or they may not produce corresponding benefits. Our PV modules may be rendered obsolete by the technological advances of our competitors, which could harm our results of operations and adversely impact our net sales and market share.

Failure to expand our manufacturing capability successfully at our facilities would adversely impact our ability to sell our products into our target markets and would materially and adversely affect our business, results of operations and financial condition. Our growth plan calls for production and operations at our facility. Successful operations will require substantial engineering and manufacturing resources and are subject to significant risks, including risks of cost overruns, delays and other risks, such as geopolitical unrest that may cause us not to be able to successfully operate in other countries. Furthermore, we may never be able to operate our production processes in high volume or at the volumes projected, make planned process and equipment improvements, attain projected manufacturing yields or desired annual capacity, obtain timely delivery of components, or hire and train the additional employees and management needed to scale our operations. Failure to meet these objectives on time and within our planned budget could materially and adversely affect our business, results of operations and financial condition.

We may be unable to manage the expansion of our operations and strategic alliances effectively. We will need to significantly expand our operations and form beneficial strategic alliances in order to reduce manufacturing costs through economies of scale and partnerships, secure contracts of commercially material amounts with reputable customers and capture a meaningful share of our target markets. To date, we have not successfully formed such strategic alliances and can give no assurances that we will be able to do so. To manage the expansion of our operations and alliances, we will be required to improve our operational and financial systems, oversight, procedures and controls and expand, train and manage our growing employee base. Our management team will also be required to maintain and cultivate our relationships with partners, customers, suppliers and other third parties and attract new partners, customers and suppliers. In addition, our current and planned operations, personnel, facility size and configuration, systems and internal procedures and controls, even when augmented through strategic alliances, might be inadequate or insufficient to support our future growth. If we cannot manage our growth effectively, we may be unable to take advantage of market opportunities, execute our business strategies or respond to competitive pressures, resulting in a material and adverse effect to our business, results of operations and financial condition.

We depend on a limited number of third-party suppliers for key raw materials, and their failure to perform could cause manufacturing delays and impair our ability to deliver PV modules to customers in the required quality and quantity and at a price that is profitable to us. Our failure to obtain raw materials and components that meet our quality, quantity and cost requirements in a timely manner could interrupt or impair our ability to manufacture our products or increase our manufacturing cost. Most of our key raw materials are either sole sourced or sourced by a limited number of third-party suppliers. As a result, the failure of any of our suppliers to perform could disrupt our supply chain and impair our operations. Many of our suppliers are small companies that may be unable to supply our increasing demand for raw materials as we implement our planned expansion. We may be unable to identify new suppliers in a timely manner or on commercially reasonable terms. Raw materials from new suppliers may also be less suited for our technology and yield PV modules with lower conversion efficiencies, higher failure rates and higher rates of degradation than PV modules manufactured with the raw materials from our current suppliers.

Our products may never gain sufficient market acceptance, in which case we would be unable to sell our products or achieve profitability. Demand for our products may never develop sufficiently, and our products may never gain market acceptance, if we fail to produce products that compare favorably against competing products on the basis of cost, quality, weight, efficiency and performance. Demand for our products also will depend on our ability to develop and maintain successful relationships with key partners, including distributors, retailers, OEMs, system integrators and value-added resellers. If our products fail to gain market acceptance as quickly as we envision or at all, our business, results of operations and financial condition could be materially and adversely affected.

We are targeting emerging markets for a significant portion of our planned product sales. These markets are new and may not develop as rapidly as we expect or may not develop at all. Our target markets include agrivoltaics, space and near space markets. Although certain areas of these markets have started to develop, some of them are in their infancy. We believe these markets have significant long-term potential; however, some or all of these markets may not develop and emerge as we expect. If the markets do develop as expected, there may be other products that could provide a superior product or a comparable product at lower prices than our products. If these markets do not develop as we expect, or if competitors are better able to capitalize on these markets our revenues and product margins may be negatively affected.

Failure to consummate strategic relationships with key partners in our various target market segments, such as defense and portable power, transportation, space and near space, and the respective implementations of the right strategic partnerships to enter these various specified markets, could adversely affect our projected sales, growth and revenues. We intend to sell thin-film PV modules for use in portable power systems, defense and portable power systems, transportation, agrivoltaics, space and near space solar panel applications. Our marketing and distribution strategy is to form strategic relationships with distributors, value added resellers and e-commerce to provide a foothold in these target markets. If we are unable to successfully establish working relationships with such market participants or if, due to cost, technical or other factors, our products prove unsuitable for use in such applications; our projected revenues and operating results could be adversely affected.

If sufficient demand for our products does not develop or takes longer to develop than we anticipate, we may be unable to grow our business, generate sufficient revenue to attain profitability or continue operations. The solar energy industry is currently dominated by the rigid crystalline silicon based technology. The extent to which our flexible thin film PV modules will be widely adopted is uncertain. Many factors, of which several are outside of our control, may affect the viability of widespread adoption and demand for our flexible PV modules.

We face intense competition from other manufacturers of thin-film PV modules and other companies in the solar energy industry. The solar energy and renewable energy industries are both highly competitive and continually evolving as participants strive to distinguish themselves within their markets and compete with the larger electric power industry. We believe our main sources of competition are other thin film PV manufacturers and companies developing other solar solutions, such as solar thermal and concentrated PV technologies.

Many of our existing and potential competitors have substantially greater financial, technical, manufacturing and other resources than we do. A competitor's greater size provides them with a competitive advantage because they often can realize economies of scale and purchase certain raw materials at lower prices. Many of our competitors also have greater brand name recognition, established distribution networks and large customer bases. In addition, many of our competitors have well-established relationships with our current and potential partners and distributors and have extensive knowledge of our target markets. As a result of their greater size, these competitors may be able to devote more resources to the research, development, promotion and sale of their products or respond more quickly to evolving industry standards and changes in market conditions than we can. Our failure to adapt to changing market conditions and to compete successfully with existing or future competitors could materially and adversely affect our business, results of operations and financial condition.

Problems with product quality or performance may cause us to incur warranty expenses, damage our market reputation and prevent us from maintaining or increasing our market share. If our products fail to perform as expected while under warranty, or if we are unable to support the warranties, sales of our products may be adversely affected or our costs may increase, and our business, results of operations and financial condition could be materially and adversely affected.

We may also be subject to warranty or product liability claims against us that are not covered by insurance or are in excess of our available insurance limits. In addition, quality issues can have various other ramifications, including delays in the recognition of revenue, loss of revenue, loss of future sales opportunities, increased costs associated with repairing or replacing products, and a negative impact on our goodwill and reputation. The possibility of future product failures could cause us to incur substantial expenses to repair or replace defective products. Furthermore, widespread product failures may damage our market reputation and reduce our market share causing sales to decline.

Currency translation risk may negatively affect our net sales, cost of equipment, cost of sales, gross margin or profitability and could result in exchange losses. Although our reporting currency is the U.S. dollar, we may conduct

business and incur costs in the local currencies of other countries in which we operate, make sales or buy equipment or materials. As a result, we are subject to currency translation risk. Our future contracts and obligations may be exposed to fluctuations in currency exchange rates, and, as a result, our capital expenditures or other costs may exceed what we have budgeted. Further, changes in exchange rates between foreign currencies and the U.S. dollar could affect our net sales and cost of sales and could result in exchange losses. We cannot accurately predict future exchange rates or the overall impact of future exchange rate fluctuations on our business, results of operations and financial condition.

A significant increase in the price of our raw materials could lead to higher overall costs of production, which would negatively affect our planned product margins, or make our products uncompetitive in the PV market. Our raw materials include high temperature plastics and various metals. Significant increases in the costs of these raw materials may impact our ability to compete in our target markets at a price sufficient to produce a profit.

Our intellectual property rights or our means of enforcing those rights may be inadequate to protect our business, which may result in the unauthorized use of our products or reduced sales or otherwise reduce our ability to compete. Our business and competitive position depends upon our ability to protect our intellectual property rights and proprietary technology, including any PV modules that we develop. We attempt to protect our intellectual property rights, primarily in the United States, through a combination of patent, trade secret and other intellectual property laws, as well as licensing agreements and third-party nondisclosure and assignment agreements. Because of the differences in foreign patent and other laws concerning intellectual property rights, our intellectual property rights may not receive the same degree of protection in foreign countries as they would in the United States. Our failure to obtain or maintain adequate protection of our intellectual property rights, for any reason, could have a materially adverse effect on our business, results of operations and financial condition. Further, any patents issued in connection with our efforts to develop new technology for PV modules may not be broad enough to protect all of the potential uses of our technology.

We also rely on unpatented proprietary technology. It is possible others will independently develop the same or similar technology or otherwise obtain access to our unpatented technology. To protect our trade secrets and other proprietary information, we require our employees, consultants and advisors to execute proprietary information and invention assignment agreements when they begin working for us. We cannot assure these agreements will provide meaningful protection of our trade secrets, unauthorized use, misappropriation or disclosure of trade secrets, know how or other proprietary information. Despite our efforts to protect this information, unauthorized parties may attempt to obtain and use information that we regard as proprietary. If we are unable to maintain the proprietary nature of our technologies, we could be materially adversely affected.

In addition, when others control the prosecution, maintenance and enforcement of certain important intellectual property, such as technology licensed to us, the protection and enforcement of the intellectual property rights may be outside of our control. If the entity that controls intellectual property rights that are licensed to us does not adequately protect those rights, our rights may be impaired, which may impact our ability to develop, market and commercialize our products. Further, if we breach the terms of any license agreement pursuant to which a third party licenses us intellectual property rights, our rights under that license may be affected and we may not be able to continue to use the licensed intellectual property rights, which could adversely affect our ability to develop, market and commercialize our products.

Third-party claims of intellectual property infringement may negatively impact the Company and the Company's future financial results. The Company's commercial success depends in part on its ability to develop, manufacture, market and sell its products and use its proprietary technology without infringing the patent rights of third parties. Numerous third-party U.S. and non-U.S. issued patents and pending applications exist in the area of the Company's products. The Company may in the future pursue available proceedings in the U.S. and foreign patent offices to challenge the validity of patents and patent applications. In addition, or alternatively, the Company may consider whether to seek to negotiate a license of rights to technology covered by one or more of such patents and patent applications. If any patents or patent applications cover the Company's products or technologies, the Company may not be free to manufacture or market its products as planned, absent such a license, which may not be available to the Company on commercially reasonable terms, or at all.

It is also possible that the Company has failed to identify relevant third-party patents or applications. For example, some applications may be held under government secrecy and US patent applications that will not be filed outside the United States remain confidential unless and until patents issue. Moreover, it is difficult for industry participants, including the Company, to identify all third-party patent rights that may be relevant to its product candidates and technologies because patent searching is imperfect due to differences in terminology among patents, incomplete databases and the difficulty in assessing the meaning of patent claims. The Company may fail to identify relevant patents or patent applications or may identify pending patent applications of potential interest but incorrectly predict the likelihood that such patents may issue with claims of relevance to its technology. In addition, the Company may be unaware of one or more issued patents that would be infringed by the

manufacture, sale or use of a current or future products, or the Company may incorrectly conclude that a third-party patent is invalid, unenforceable or not infringed by its activities. Additionally, pending patent applications that have been published can, subject to specified limitations, be later amended in a manner that could cover the Company's technologies, its products or the use of its products.

There have been many lawsuits and other proceedings filed by third parties involving patent and other intellectual property rights, including patent infringement lawsuits, interferences, oppositions, and reexamination, post-grant review and equivalent proceedings before the USPTO and corresponding foreign patent offices. Numerous U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields in which the Company is developing products or has existing products. As the industries the Company is involved in expand and more patents are issued, the risk increases that its product candidates may be subject to claims of infringement of the patent rights of third parties.

Parties making claims against the Company may obtain injunctive or other equitable relief, which could effectively block its ability to further develop and commercialize the Company's products. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of employee resources from the Company's business. In the event of a successful claim of infringement against the Company, the Company may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, pay royalties, redesign its infringing products or obtain one or more licenses from third parties, which may be impossible or require substantial time and monetary expenditure.

Our future success depends on retaining our Chief Executive Officer and existing management team and hiring and assimilating new key employees, and our inability to attract or retain key personnel would materially harm our business and results of operations. Our success depends on the continuing efforts and abilities of our executive officers, including Mr. Jeffrey Max, our President and Chief Executive Officer, our other executive officers, and key technical personnel. Our future success also will depend on our ability to attract and retain highly skilled employees, including management, technical and sales personnel. The loss of any of our key personnel, the inability to attract, retain or assimilate key personnel in the future, or delays in hiring required personnel could materially harm our business, results of operations and financial condition.

Our PV modules contain limited amounts of cadmium sulfide and claims of human exposure or future regulations could have a material adverse effect on our business, results of operations and financial condition. Our PV modules contain limited amounts of cadmium sulfide, which is regulated as a hazardous material due to the adverse health effects that may arise from human exposure and is banned in certain countries. We cannot assure you that human or environmental exposure to cadmium sulfide used in our PV modules will not occur. Any such exposure could result in third party claims against us, damage to our reputation and heightened regulatory scrutiny of our PV modules. Future regulation relating to the use of cadmium in various products could force us to seek regulatory exemptions or impact the manufacture and sale of our PV modules and could require us to incur unforeseen environmental related costs. The occurrence of future events such as these could limit our ability to sell and distribute our PV modules, and could have a material adverse effect on our business, results of operations and financial condition.

Environmental obligations and liabilities could have a substantial negative impact on our financial condition, cash flows and profitability. We are subject to a variety of federal, state, local and foreign laws and regulations relating to the protection of the environment, including those governing the use, handling, generation, processing, storage, transportation and disposal of, or human exposure to, hazardous and toxic materials (such as the cadmium used in our products), the discharge of pollutants into the air and water, and occupational health and safety. We are also subject to environmental laws which allow regulatory authorities to compel, or seek reimbursement for, cleanup of environmental contamination at sites now or formerly owned or operated by us and at facilities where our waste is or has been disposed. We may incur significant costs and capital expenditures in complying with these laws and regulations. In addition, violations of, or liabilities under, environmental laws or permits may result in restrictions being imposed on our operating activities or in our being subjected to substantial fines, penalties, criminal proceedings, third party property damage or personal injury claims, cleanup costs or other costs. Also, future developments such as more aggressive enforcement policies, the implementation of new, more stringent laws and regulations, or the discovery of presently unknown environmental conditions or noncompliance may require expenditures that could have a material adverse effect on our business, results of operations and financial condition. Further, greenhouse gas emissions have increasingly become the subject of international, national, state and local attention. Although future regulations could potentially lead to an increased use of alternative energy, there can be no guarantee that such future regulations will encourage solar technology. Given our limited history of operations, it is difficult to predict future environmental expenses.

We currently anticipate having substantial international operations that will subject us to a number of risks, including potential unfavorable political, regulatory, labor and tax conditions in foreign countries. We entered into the JDA with TubeSolar, a related party (see "Item 1 Business" for additional detail), and expect to expand our operations abroad

in the future and, as a result, we may be subject to the legal, political, social and regulatory requirements and economic conditions of foreign jurisdictions. Risks inherent to international operations, include, but are not limited to, the following:

- Difficulty in procuring supplies and supply contracts abroad;
- Difficulty in enforcing agreements in foreign legal systems;
- Foreign countries imposing additional withholding taxes or otherwise taxing our foreign income, imposing tariffs or adopting other restrictions on foreign trade and investment, including currency exchange controls;
- Inability to obtain, maintain or enforce intellectual property rights;
- Risk of nationalization;
- Changes in general economic and political conditions in the countries in which we may operate, including changes in the government incentives we might rely on;
- Unexpected adverse changes in foreign laws or regulatory requirements, including those with respect to environmental protection, export duties and quotas;
- Difficulty with staffing and managing widespread operations;
- Trade barriers such as export requirements, tariffs, taxes and other restrictions and expenses, which could increase the prices of our products and make us less competitive in some countries; and
- Difficulty of, and costs relating to, compliance with the different commercial and legal requirements of the international markets in which we plan to offer and sell our PV products.

Our business in foreign markets will require us to respond to rapid changes in market conditions in these countries. Our overall success as an international business depends, in part, on our ability to succeed in differing legal, regulatory, economic, social and political conditions. If we are not able to develop and implement policies and strategies that are effective in each location where we will do business, then our business, results of operations and financial condition could be materially and adversely affected.

Existing regulations and policies and changes to these regulations and policies may present technical, regulatory and economic barriers to the purchase and use of PV products, which may significantly reduce demand for our PV products. The market for electricity generation products is heavily influenced by foreign, U.S., state and local government regulations and policies concerning the electric utility industry, as well as policies promulgated by electric utilities. These regulations and policies often relate to electricity pricing and technical interconnection of customer owned electricity generation. In the United States and in a number of other countries, these regulations and policies have been modified in the past and may be modified again in the future. These regulations and policies could deter end user purchases of PV products and investment in the research and development of PV technology. For example, without a mandated regulatory exception for PV systems, utility customers are often charged interconnection or standby fees for putting distributed power generation on the electric utility grid. These fees could increase the cost to our end users of using PV systems and make them less desirable, thereby harming our business, prospects, results of operations and financial condition. In addition, electricity generated by PV systems mostly competes with expensive peak hour electricity, rather than the less expensive average price of electricity. Modifications to the peak hour pricing policies of utilities, such as to a flat rate, would require PV systems to achieve lower prices in order to compete with the price of electricity from other sources.

We anticipate that our PV modules and their use in installations will be subject to oversight and regulation in accordance with national and local ordinances relating to building codes, safety, environmental protection, utility interconnection and metering and related matters. It is difficult to track the requirements of individual states and design equipment to comply with the varying standards. Any new government regulations or utility policies pertaining to PV modules may result in significant additional expenses to us, our business partners and their customers and, as a result, could cause a significant reduction in demand for our PV modules.

We may be subject to risks related to our information technology systems, including the risk that we may be the subject of a cyber-attack and the risk that we may be in non-compliance with applicable privacy laws. Our operations depend, in part, on how well we and our vendors protect networks, equipment, information technology (IT) systems, and software against damage from a number of threats, including, but not limited to, cable cuts, damage to physical plants, natural disasters, intentional damage and destruction, fire, power loss, hacking, computer viruses, vandalism, theft, malware, ransomware and phishing attacks. Any of these and other events could result in IT system failures, delays, or increases in capital expenses. Our operations also depend on the timely maintenance, upgrade, and replacement of networks, equipment, and IT systems and software, as well as preemptive expenses to mitigate the risks of failures. The failure of IT systems or a component of IT systems could, depending on the nature of any such failure, adversely impact our reputation and results of operations.

As long as our significant stockholders, BD 1 Investment Holding, LLC (“BD1”), Crowdex Investment, LLC (“Crowdex”) and TubeSolar, maintain their current holdings, the ability of our other stockholders to influence matters requiring stockholder approval will be limited. As of March 10, 2023, BD1 beneficially owned 15,433,334 shares of our common stock, Crowdex beneficially owned 5,545,042 shares of our common stock, and TubeSolar beneficially owned 4,920,000 shares of our common stock. As of March 10, 2023, the Company had approximately 36,928,917 shares of common stock outstanding. Accordingly, BD1, Crowdex, and TubeSolar together would be able to cast approximately 70.1% of the votes entitled to vote at any meeting of stockholders of the Company (or written consent of stockholders in lieu of meeting). BD1, Crowdex, and TubeSolar, therefore, will, for the foreseeable future, have significant influence over our management and affairs, and will be able to control virtually all matters requiring stockholder approval, including the election of directors and significant corporate transactions such as mergers or sales of our Company or assets. On September 15, 2021, the Company entered into the JDA with TubeSolar. See “Item 1 Business” for additional detail.

The interests of our three largest stockholders may conflict with our interests or your interests now or in the future. Three of our stockholders, Crowdex, TubeSolar and BD1, collectively beneficially own approximately 70.1% of our Company’s common stock.

Crowdex is an investment holding company 100% directly and indirectly beneficially owned by Bernd Förtsch. One of our directors, David Peterson, is the manager of Crowdex.

TubeSolar is a developer of photovoltaic thin-film tubes to enable additional application opportunities in solar power generation compared to conventional solar modules. TubeSolar is a public company headquartered in Augsburg, Germany, whose shares are listed on XETRA (primary market Dusseldorf, Germany). Bernd Förtsch directly and indirectly owns a controlling interest in TubeSolar. On September 15, 2021, the Company entered into the JDA with TubeSolar. See “Item 1 Business” for additional detail.

BD1 is an investment holding company. BD1 is 100% owned by BD Vermögensverwaltung GmbH. BD Vermögensverwaltung GmbH is 100% owned by Solar Invest International SE. Johannes Kuhn and Ute Kuhn are the beneficial owners and members of the board of directors of Solar Invest International SE. BD Vermögensverwaltung GmbH and Solar Invest International SE together own approximately 18.9% of TubeSolar’s shares.

Various conflicts of interest between us and our controlling stockholders could arise. The ownership interest and voting power of our controlling stockholders could create or appear to create potential conflicts of interest when such controlling stockholders are faced with decisions relating to us. We may not be able to resolve any potential conflicts, and even if we do, the resolution may be less favorable to us than if we were dealing with an unaffiliated third party.

So long as Crowdex, TubeSolar and BD1 continue to beneficially own a significant amount of our outstanding equity securities, those stockholders may be able to strongly influence or effectively control our decisions.

Risks Relating to our Securities and an Investment in our Common Stock

The price of our common stock may continue to be volatile. Our common stock is currently traded on the Nasdaq Capital Market. The trading price of our common stock from time to time has fluctuated widely and may be subject to similar volatility in the future. For example, the calendar year ended December 31, 2021, our common stock ranged from \$10.00 to \$485.00, and in 2022, our common stock ranged from \$1.50 to \$33.00, all prices as adjusted for the reverse stock split. The trading price of our common stock in the future may be affected by a number of factors, including events described in these

Risk Factors. In recent years, broad stock market indices, in general, and smaller capitalization and PV companies, in particular, have experienced substantial price fluctuations. In a volatile market, we may experience wide fluctuations in the market price of our common stock. These fluctuations may have a negative effect on the market price of our common stock regardless of our operating performance. In the past, following periods of volatility in the market price of a company's securities, securities class action litigation has often been instituted. A securities class action suit against us could result in substantial costs, potential liabilities and the diversion of management's attention and resources and could have a material adverse effect on our financial condition.

As a public company we are subject to complex legal and accounting requirements that require us to incur substantial expenses, and our financial controls and procedures may not be sufficient to ensure timely and reliable reporting of financial information, which, as a public company, could materially harm our stock price and listing on Nasdaq Capital Market. As a public company, we are subject to numerous legal and accounting requirements that do not apply to private companies. The cost of compliance with many of these requirements is substantial, not only in absolute terms but, more importantly, in relation to the overall scope of the operations of a small company. Failure to comply with these requirements can have numerous adverse consequences including, but not limited to, our inability to file required periodic reports on a timely basis, loss of market confidence, delisting of our securities and/or governmental or private actions against us. We cannot assure you we will be able to comply with all of these requirements or the cost of such compliance will not prove to be a substantial competitive disadvantage vis-à-vis our privately held and larger public competitors.

The Sarbanes-Oxley Act of 2002 ("Sarbanes-Oxley") requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, we must perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of Sarbanes-Oxley. Our compliance with Section 404 of Sarbanes-Oxley will require we incur substantial accounting expense and expend significant management efforts. The effectiveness of our controls and procedures may, in the future, be limited by a variety of factors, including:

- Faulty human judgment and simple errors, omissions or mistakes;
- Fraudulent action of an individual or collusion of two or more people;
- Inappropriate management override of procedures; and
- The possibility that any enhancements to controls and procedures may still not be adequate to assure timely and accurate financial information.

If we are not able to comply with the requirements of Section 404 in a timely manner, or if we or our independent registered public accounting firm, identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, we may be subject to Nasdaq Capital market delisting, investigations by the SEC and civil or criminal sanctions.

Our ability to successfully implement our business plan and comply with Section 404 requires us to be able to prepare timely and accurate financial statements. We expect we will need to continue to improve existing, and implement new operational, financial and accounting systems, procedures and controls to manage our business effectively.

Any delay in the implementation of, or disruption in the transition to, new or enhanced systems, procedures or controls may cause our operations to suffer, and we may be unable to conclude that our internal control over financial reporting is effective as required under Section 404 of Sarbanes-Oxley. If we are unable to complete the required Section 404 assessment as to the adequacy of our internal control over financial reporting, if we fail to maintain or implement adequate controls, our ability to obtain additional financing could be impaired. In addition, investors could lose confidence in the reliability of our internal control over financial reporting and in the accuracy of our periodic reports filed under the Securities Exchange Act of 1934, as amended ("Exchange Act"). A lack of investor confidence in the reliability and accuracy of our public reporting could cause our stock price to decline.

Our stockholders may experience significant dilution as a result of shares of our common stock issued pursuant to our existing financing agreements and pursuant to new securities that we may issue in the future. We are likely to issue substantial amounts of additional common stock in connection with our existing secured financing agreements entered into on December 19, 2022. These financing agreements contain variable pricing mechanisms. The number of shares that we will issue pursuant to these agreements fluctuate based on the price of our common stock. We may also issue additional common stock

or securities convertible into or exchangeable or exercisable for common stock, in connection with future capital raising transactions.

The issuance of material amounts of common stock by us would cause our existing stockholders to experience significant dilution in their investment in our Company. Also, if we obtain additional financing involving the issuance of equity securities or securities convertible into equity securities, our existing stockholders' investment would be further diluted. Such dilution could cause the market price of our common stock to decline, which could impair our ability to raise additional financing.

Depending on market liquidity at the time, sales of such newly issued additional shares into the market may cause the trading price of our common stock to fall.

Sales of a significant number of shares of our common stock in the public markets or significant short sales of our stock, or the perception that such sales could occur, could depress the market price of our common stock and impair our ability to raise capital. Sales of a substantial number of shares of our common stock or other equity-related securities in the public markets could depress the market price of our common stock. If there are significant short sales of our stock, the price decline that could result from this activity may cause the share price to decline more so, which, in turn, may cause long holders of the stock to sell their shares, thereby contributing to sales of stock in the market. Such sales also may impair our ability to raise capital through the sale of additional equity securities in the future at a time and price that our management deems acceptable, if at all. In addition, a large number of our outstanding shares are not registered under the Securities Act. If and when these shares are registered or become eligible for sale to the public market, the market price of our common stock could also decline.

We may not be able to maintain our current listing for our common stock on the Nasdaq Capital Market.. Our inability to maintain our current listing on Nasdaq may limit the liquidity of our stock, increase its volatility, and hinder our ability to raise capital. Our common stock was listed on Nasdaq on August 24, 2022. The Nasdaq listing rules require listed securities to maintain a minimum bid price of \$1.00 per share. Our common stock has recently been trading on Nasdaq at a price below \$1.00 per share. If the closing bid price of our common stock is less than \$1.00 for the 30 consecutive trading days, we will no longer meet this requirement.

In this event, we would expect to receive a written notice from the listing qualifications department of Nasdaq indicating that the Company is not in compliance with the \$1.00 minimum bid price requirement. Such notice would not be expected to result in the immediate delisting of the Company's common stock from Nasdaq. We would expect Nasdaq to provide the Company with 180 calendar days in which to regain compliance. If at any time during this 180 calendar day period the bid price of the Company's common stock closes at or above \$1.00 per share for a minimum of ten consecutive trading days, the Nasdaq staff would typically provide the Company with a written confirmation of compliance and the matter would be closed.

Alternatively, if the Company fails to regain compliance with the bid price rule prior to the expiration of the initial 180 calendar day period, the Company may be eligible for an additional 180 calendar day compliance period, provided (i) it meets the continued listing requirement for market value of publicly held shares and all other applicable requirements for initial listing on Nasdaq (except for the bid price requirement) and (ii) it provides written notice to Nasdaq of its intention to cure this deficiency during the second compliance period by effecting a reverse stock split, if necessary. In the event the Company does not regain compliance with the bid price rule prior to the expiration of the initial 180 calendar day period, and if it appears to the Nasdaq staff that the Company will not be able to cure the deficiency, or if the Company is not otherwise eligible, the Nasdaq staff will provide the Company with written notification that its securities are subject to delisting from Nasdaq. At that time, the Company may appeal the delisting determination to a Nasdaq hearings panel.

If our common stock is delisted by Nasdaq, our common stock may be eligible for quotation on an over-the-counter quotation system or on the pink sheets. Upon any such delisting, our common stock would become subject to the regulations of the SEC relating to the market for penny stocks. A penny stock is any equity security not traded on a national securities exchange that has a market price of less than \$5.00 per share. The regulations applicable to penny stocks may severely affect the market liquidity for our common stock and could limit the ability of shareholders to sell securities in the secondary market. In such a case, an investor may find it more difficult to dispose of or obtain accurate quotations as to the market value of our common stock, and there can be no assurance that our common stock will be eligible for trading or quotation on any alternative exchanges or markets.

Delisting from Nasdaq could adversely affect our ability to raise additional financing through public or private sales of equity securities, would significantly affect the ability of investors to trade our securities and would negatively affect the value and liquidity of our common stock. Delisting could also have other negative results, including the potential loss of confidence by employees, the loss of institutional investor interest and fewer business development opportunities.

Some provisions of our charter documents and Delaware law may have anti-takeover effects that could discourage an acquisition of us by others, even if an acquisition would be beneficial to our stockholders, and may prevent attempts by our stockholders to replace or remove our current management. Provisions in our Certificate of Incorporation and Bylaws, each as amended, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us,

or for a change in the composition of our Board of Directors (our “Board”) or management to occur, even if doing so would benefit our stockholders. These provisions include:

- Authorizing the issuance of “blank check” preferred stock, the terms of which may be established and shares of which may be issued without stockholder approval;
- Dividing our Board into three classes;
- Limiting the removal of directors by the stockholders; and
- Limiting the ability of stockholders to call a special meeting of stockholders.

In addition, we are subject to Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with an interested stockholder for a period of three years following the date on which the stockholder became an interested stockholder, unless such transactions are approved by our Board. This provision could have the effect of delaying or preventing a change of control, whether or not it is desired by, or beneficial to, our stockholders.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our principal business office and manufacturing facility is located in a leased space at 12300 Grant Street, Thornton, Colorado 80241. We have approximately 30,000 square feet of fully equipped office space and 70,000 square feet of fully equipped manufacturing space. We consider our office space adequate for our current operations.

Item 3. Legal Proceedings

Details of the Company’s legal proceedings are included in Note 18 to the financial statements within Item 8 of this Annual Report on Form 10-K.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Market Information

On August 24, 2022, our common stock began trading on the Nasdaq Capital Market. Our trading symbol is "ASTI."

Holders

As of December 31, 2022, the number of record holders of our common stock was 29. Because many of our shares of common stock are held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of stockholders represented by these record holders.

Dividends

The holders of common stock are entitled to receive such dividends as may be declared by our Board of Directors. During the years ended December 31, 2022 and 2021, we did not pay any common stock dividends, and we do not expect to declare or pay any dividends in the foreseeable future. Payment of future dividends will be within the discretion of our Board of Directors and will depend on, among other factors, our retained earnings, capital requirements, and operating and financial condition.

Recent Sales of Unregistered Securities

During the year ended December 31, 2022, all sales of unregistered securities by the Company have been previously reported on a Form 8-K or Form 10-Q.

Issuer Purchases of Equity Securities

We did not repurchase any of our equity securities during the period covered by this Annual Report.

Item 6. [Reserved]

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

The following discussion of our financial condition and results of operations should be read in conjunction with our audited financial statements and the notes to those financial statements appearing elsewhere in this Form 10-K. This discussion and analysis contain statements of a forward-looking nature relating to future events or our future financial performance. As a result of many factors, our actual results may differ materially from those anticipated in these forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to be materially different from any future results, levels of activity, performance or achievements expressed or implied by these forward-looking statements.

Overview

We are a company formed to commercialize flexible PV modules using our proprietary technology. For the year ended December 31, 2022 we generated \$1,222,786 of total revenue, of which, product sales accounted for \$694,286 and milestone and engineering revenue accounted for \$528,500. As of December 31, 2022, we had an accumulated deficit of approximately \$447,537,493.

Significant Trends, Uncertainties and Challenges

We believe the significant trends, uncertainties and challenges that directly or indirectly affect our financial performance and results of operations include:

- Our ability to generate customer acceptance of and demand for our products;
- Successful ramping up of commercial production on the equipment installed;
- The substantial doubt about our ability to continue as a going concern due to our history of operating losses;
- Our products are successfully and timely certified for use in our target markets;
- Successful operating of production tools to achieve the efficiencies, throughput and yield necessary to reach our cost targets;
- The products we design are saleable at a price sufficient to generate profits;
- Our ability to raise sufficient capital to enable us to reach a level of sales sufficient to achieve profitability on terms favorable to us;
- Effective management of the planned ramp up of our domestic and international operations;
- Our ability to successfully develop and maintain strategic relationships with key partners, including OEMs, system integrators, and distributors, who deal directly with end users in our target markets;
- Our ability to maintain the listing of our common stock on the Nasdaq Capital Market;
- Our ability to maintain effective internal controls over financial reporting;
- Our ability to achieve projected operational performance and cost metrics;
- Our ability to enter into commercially viable licensing, joint venture, or other commercial arrangements;
- Availability of raw materials; and
- COVID-19 and the uncertainty around the continued duration and effect of the worldwide pandemic.

Basis of Presentation: The discussion and analysis of our financial condition and results of operations are based on our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States ("US GAAP"). The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. On an ongoing basis, we evaluate our estimates based on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these

estimates under different assumptions or conditions. We have identified the policies below as critical to our business operations and to the understanding of our financial results:

Significant Accounting Policies

Inventories: All inventories are stated at the lower of cost or net realizable value, with cost determined using the weighted average method. Inventory balances are frequently evaluated to ensure they do not exceed net realizable value. The computation for net realizable value takes into account many factors, including expected demand, product life cycle and development plans, module efficiency, quality issues, obsolescence and others. Management's judgment is required to determine reserves for obsolete or excess inventory. If actual demand and market conditions are less favorable than those estimated by management, additional inventory write downs may be required.

Impairment of Long-lived assets: We analyze our long-lived assets (property, plant and equipment) and definitive-lived intangible assets (patents) for impairment, both individually and as a group, whenever events or changes in circumstances indicate the carrying amount of the assets may not be recoverable. Events that might cause impairment would include significant current period operating or cash flow losses associated with the use of a long-lived asset or group of assets combined with a history of such losses, significant changes in the manner of use of assets and significant negative industry or economic trends. An undiscounted cash flow analysis is calculated to determine if an impairment exists. If an impairment is determined to exist, any related loss is calculated using the difference between the fair value and the carrying value of the assets.

Convertible Debt: The Company evaluates its convertible debt instruments to determine if there is an embedded derivative or other feature that requires bifurcation from the host contract. Please refer to Note 12 for further discussion on each convertible debt.

Derivatives: The Company evaluates its financial instruments under FASB ASC 815, "*Derivatives and Hedging*" to determine whether the instruments contain an embedded derivative. When an embedded derivative is present, the instrument is evaluated for a fair value adjustment upon issuance and at the end of every period. Any adjustments to fair value are treated as gains and losses in fair values of derivatives and are recorded on the Statement of Operations. Please refer to Note 10 for further discussion on embedded derivatives.

Revenue Recognition:

Product revenue. We recognize revenue for the sale of PV modules and other equipment sales at a point in time following the transfer of control of such products to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. For module and other equipment sales contracts that contain multiple performance obligations, we allocate the transaction price to each performance obligation identified in the contract based on relative standalone selling prices, or estimates of such prices, and recognize the related revenue as control of each individual product is transferred to the customer.

Milestone and engineering revenue. Each milestone and engineering arrangement is a separate performance obligation. The transaction price is estimated using the most likely amount method and revenue is recognized as the performance obligation is satisfied through achieving manufacturing or cost targets and engineering targets.

Government contract revenue. Revenue from government research and development contracts is generated under terms that are cost plus fee or firm fixed price. We generally recognize this revenue over time using cost-based input methods, which recognize revenue and gross profit as work is performed based on the relationship between actual costs incurred compared to the total estimated costs of the contract. In applying cost-based input methods of revenue recognition, we use the actual costs incurred relative to the total estimated costs to determine our progress towards contract completion and to calculate the corresponding amount of revenue to recognize.

Cost based input methods of revenue recognition are considered a faithful depiction of our efforts to satisfy long-term government research and development contracts and therefore reflect the performance obligations under such contracts. Costs incurred that do not contribute to satisfying our performance obligations are excluded from our input methods of revenue recognition as the amounts are not reflective of our transferring control under the contract. Costs incurred towards contract completion may include direct costs plus allowable indirect costs and an allocable portion of the fixed fee. If actual and estimated costs to complete a contract indicate a loss, provision is made currently for the loss anticipated on the contract.

Share-Based Compensation: The Company measures and recognizes compensation expense for all share-based payment awards made to employees, officers, directors, and consultants based on estimated fair values. The value of the portion of the award that is ultimately expected to vest, net of estimated forfeitures, is recognized as expense on a straight-line basis, over the

requisite service period in the Company's Statements of Operations. Share-based compensation is based on awards ultimately expected to vest and is reduced for estimated forfeitures. Forfeitures are estimated at the time of grant and revised, as necessary, in subsequent periods if actual forfeitures differ from those estimates. The Company estimates the fair value of its restricted stock awards as its stock price on the grant date.

Research, Development and Manufacturing Operations Costs: Research, development and manufacturing operations expenses include: 1) technology development costs, which include expenses incurred in researching new technology, improving existing technology and performing federal government research and development contracts, 2) product development costs, which include expenses incurred in developing new products and lowering product design costs, and 3) pre-production and production costs, which include engineering efforts to improve production processes, material yields and equipment utilization, and manufacturing efforts to produce saleable product. Research, development and manufacturing operations costs are expensed as incurred, with the exception of costs related to inventoried raw materials, work-in-process and finished goods, which are expensed as Cost of revenue as products are sold.

Recently Issued Accounting Standards

In August 2020, the FASB issued ASU No. 2020-06, *Debt - Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*. ASU 2020-06 will simplify the accounting for convertible instruments by reducing the number of accounting models for convertible debt instruments and convertible preferred stock. Limiting the accounting models results in fewer embedded conversion features being separately recognized from the host contract as compared with current GAAP. Convertible instruments that continue to be subject to separation models are (1) those with embedded conversion features that are not clearly and closely related to the host contract, that meet the definition of a derivative, and that do not qualify for a scope exception from derivative accounting and (2) convertible debt instruments issued with substantial premiums for which the premiums are recorded as paid-in capital. ASU 2020-06 also amends the guidance for the derivatives scope exception for contracts in an entity's own equity to reduce form-over-substance-based accounting conclusions. ASU 2020-06 will be effective for public companies that are smaller reporting companies for fiscal years beginning after December 15, 2023, including interim periods within those fiscal years. Early adoption is permitted, but no earlier than fiscal years beginning after December 15, 2020, including interim periods within those fiscal years. Management is evaluating the impact of this ASU on the Company's financial statement presentation.

Other new pronouncements issued but not effective as of December 31, 2022 are not expected to have a material impact on the Company's financial statements.

Results of Operations

Comparison of the Years Ended December 31, 2022 and 2021

	Year Ended December 31,		
	2022	2021	\$ Change
Revenues			
Product Revenue	694,286	607,783	86,503
Milestone and engineering	528,500	-	528,500
Total Revenues	1,222,786	607,783	615,003
Costs and Expenses			
Cost of Revenue	2,011,459	1,902,414	109,045
Research, development and manufacturing operations	5,975,921	4,140,319	1,835,602
Selling, general and administrative	4,736,562	3,297,982	1,438,580
Share-based compensation	5,478,734	-	5,478,734
Depreciation and amortization	75,645	57,314	18,331
Total Costs and Expenses	18,278,321	9,398,029	8,880,292
Loss From Operations	(17,055,535)	(8,790,246)	(8,265,289)
Other Income/(Expense)			
Other Income/(Expense), net	33,100	(169,423)	202,523
Interest Expense	(2,704,909)	(1,088,327)	(1,616,582)
Change in fair value of derivatives and gain on extinguishment of liabilities	-	4,047,993	(4,047,993)
Total Other Income/(Expense)	(2,671,809)	2,790,243	(5,462,052)
Income/(Loss) on Equity Method Investment	(27,361)	-	(27,361)
Net Income/(Loss)	(19,754,705)	(6,000,003)	(13,754,702)

Revenues. Our revenues increased by \$615,003, or 101%, for the year ended December 31, 2022 when compared to the same period in 2021. The increase in sales is due primarily to Milestone and engineering revenue from TubeSolar in the current period.

Cost of revenues. Cost of revenues is comprised primarily of repair and maintenance, direct labor and overhead expenses. Our cost of revenues increased by \$109,045, or 6% for the year ended December 31, 2022 when compared to the same period in 2021. The increase in cost of revenues is mainly due to the increase in materials and freight, and labor costs as a result of increased production during the current year. This is partially offset by lower repair and maintenance costs in the current period. Management believes our factory is currently significantly under-utilized, and a substantial increase in revenue would result in marginal increases to direct labor and overhead included in the cost of revenues.

Research, development and manufacturing operations. Research, development and manufacturing operations costs include costs incurred for product development, pre-production and production activities in our manufacturing facility. Research, development and manufacturing operations costs also include costs related to technology development. Research, development and manufacturing operations costs increased by \$1,835,602 or 44%, for the year ended December 31, 2022 when compared to the same period in 2021. The increase in cost is due primarily to increased operations in the current year as compared to the Company's restart status in the prior year.

Selling, general and administrative. Selling, general and administrative expenses increased by \$1,438,580, or 44%, for the year ended December 31, 2022 when compared to the same period in 2021. The increase in costs is due primarily to an increased level of operations in the current period as compared to the Company's restart status in the prior period. Additionally, the Company incurred a one-time termination expense of approximately \$500,000 and \$157,000 recognized with the departure of our former CEO and CFO, respectively, in the current period.

Share-based compensation. Share-based compensation expense increased by \$5,478,734 or 100%, for the year ended December 31, 2022 when compared to the same period in 2021. The increase is due primarily to the employment agreements between the Company and its new CEO and CFO and the restricted stock units grants made pursuant to such employment agreements.

Other Income. Other income decreased by \$5,462,052 or 196%, for the year ended December 31, 2022 when compared to the same period in 2021. The decline is due primarily to a gain from the change in fair value of derivative liabilities recognized in the prior period and not repeated in the current period and because the Company recognized the remaining discount on convertible debt of approximately \$2 million as interest expense upon conversion of these notes in the current period.

Net Income/(Loss). Our Net Loss was \$19,754,705 for the year ended December 31, 2022, compared to Net Loss of \$6,000,003 for the year ended December 31, 2021, an increase of \$13,754,702. The increase is due to the reasons described above.

Liquidity and Capital Resources

The Company has continued limited PV production at its manufacturing facility. The Company does not expect that sales revenue and cash flows will be sufficient to support operations and cash requirements until it has fully implemented its product strategy. During the year ended December 31, 2022 the Company used \$10,506,575 in cash for operations.

Additional projected product revenues are not anticipated to result in a positive cash flow position for the year 2023 overall and, as of December 31, 2022, the Company has working capital of \$7,470,521. Although the Company has working capital, additional financing will be required for the Company to reach a level of sufficient sales to achieve profitability.

The Company continues to accelerate sales and marketing efforts related to its specialty PV application strategies through expansion of its sales and distribution channels. The Company continues activities to secure additional financing through strategic or financial investors, but there is no assurance the Company will be able to raise additional capital on acceptable terms or at all. If the Company's revenues do not increase rapidly, and/or additional financing is not obtained, the Company will be required to significantly curtail operations to reduce costs and/or sell assets. Such actions would likely have an adverse impact on the Company's future operations.

As a result of the Company's recurring losses from operations, and the need for additional financing to fund its operating and capital requirements, there is uncertainty regarding the Company's ability to maintain liquidity sufficient to operate its business effectively, which raises substantial doubt as to the Company's ability to continue as a going concern.

Management cannot provide any assurances that the Company will be successful in accomplishing any of its plans. These financial statements do not include any adjustments that might be necessary should the Company be unable to continue as a going concern.

Statements of Cash Flows Comparison of the Years Ended December 31, 2022 and 2021

For the year ended December 31, 2022, our cash used in operations was \$10,506,575 compared to \$9,404,443 for the year ended December 31, 2021, an increase of \$1,102,132. The increase is primarily the result of scaling up operations during the current year as compared to the Company's restart status during 2021. For the year ended December 31, 2022, cash used in investing activities was \$265,472 compared to cash used in investing activities of \$301,522 for the year ended December 31, 2021. This change was primarily the result of a decrease purchase of equipment partially offset by a contribution to Ascent Germany. During the year ended December 31, 2022, cash used in operations of \$10,506,575 were primarily funded through \$18,500,000 in proceeds from issuances of debt and common stock.

Off Balance Sheet Transactions

As of December 31, 2022, we did not have any off-balance sheet arrangements as defined in Item 303(a)(4)(ii) of Regulation S-K.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Foreign Currency Exchange Risk

We hold no significant funds and have no future obligations denominated in foreign currencies as of December 31, 2022.

Although our reporting currency is the U.S. Dollar, we may conduct business and incur costs in the local currencies of other countries in which we may operate, make sales and buy materials. As a result, we are subject to currency translation risk. Further, changes in exchange rates between foreign currencies and the U.S. Dollar could affect our future net sales and cost of sales and could result in exchange losses.

Interest Rate Risk

Our exposure to market risks for changes in interest rates relates primarily to our cash equivalents and investment portfolio. As of December 31, 2022, our cash equivalents consisted only of operating accounts held with financial institutions. From time to time, we hold restricted funds, money market funds, investments in U.S. government securities and high-quality corporate securities. The primary objective of our investment activities is to preserve principal and provide liquidity on demand, while at the same time maximizing the income we receive from our investments without significantly increasing risk. The direct risk to us associated with fluctuating interest rates is limited to our investment portfolio, and we do not believe a change in interest rates will have a significant impact on our financial position, results of operations, or cash flows.

Item 8. Financial Statements and Supplementary Data

The Financial Statements and Supplementary Data required by this item are included in Part IV, Item 15(a)(1) and are presented beginning on Page F-1.

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

We maintain disclosure controls and procedures designed to ensure that information required to be disclosed in our reports filed or submitted under the Securities Exchange Act of 1934, as amended (the “Exchange Act”) is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms. Our disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed in our reports filed under the Exchange Act is accumulated and communicated to management as appropriate to allow timely decisions regarding required disclosures. Our management conducted an evaluation required by Rules 13a-15 and 15d-15 under the Exchange Act of the effectiveness of our disclosure controls and procedures as defined in Rules 13a-15 and 15d-15 under the Exchange Act as of December 31, 2022. Based on this evaluation, our management concluded the design and operation of our disclosure controls and procedures were effective as of December 31, 2022.

Management’s Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Our system of internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles in the United States of America and includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets;
- provide reasonable assurance transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on our financial statements.

Under the supervision of the Audit Committee of the Board of Directors and with the participation of our management, including our Chief Executive Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting using the criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this evaluation, our management concluded our internal control over financial reporting were effective as of December 31, 2022. Our management reviewed the results of its assessment with the Audit Committee.

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

Changes in Internal Control Over Financial Reporting

There were no other changes in internal control over financial reporting during the year ended December 31, 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

EXECUTIVE OFFICERS AND DIRECTORS

Our executive officers, continuing directors and director nominees, their ages and positions with us as of March 10, 2023, are as follows:

Name	Age	Position
Jeffrey Max	65	President and Chief Executive Officer
Paul Warley	61	Chief Financial Officer
David Peterson	53	Chairman of the Board, Director
Forrest Reynolds	52	Director
Louis Berezovsky	57	Director
Michael French	45	Director

Jeffrey Max has been the President and Chief Executive Officer of Ascent Solar Technologies Inc. since September 21, 2022. Mr. Max is a seasoned technology CEO, investor and entrepreneur with more than three decades of experience in scaling technology organizations. From 2019 to 2022, Mr. Max was Chairman and CEO of Agile Space Industries, Inc., an in-space propulsion solutions provider, specializing in additively manufactured hypergolic chemical systems. During Mr. Max's tenure, Agile expanded into design and manufacturing, securing contracts to supply thrusters for multiple NASA lunar lander missions. Under Mr. Max's leadership, Agile grew from a team of 6 to over 60, and acquired Tronix3D, a contract based additive manufacturer specializing in 3D printing of exotic metal alloys. Since 2018, Mr. Max has been Senior Advisor at The Liiv Group, an investment firm headquartered in New York City with portfolio companies providing media production, marketing and advertising services. Since 2016, Mr. Max has been Managing Partner of La Plata Capital Partners LLC, a privately owned investment company. From 2016 to 2019, Mr. Max was CEO of Rezolve, Inc., a mobile commerce and mobile engagement firm. From 2014 to 2016, he was President of Powa Technologies, Inc., a mobile commerce and e-commerce firm. From 2003 to 2014, Mr. Max was CEO of Venda, Inc., an ecommerce software as a service company. Mr. Max is a director of Orbital Assembly Corporation, an aviation and aerospace component manufacturer. We believe Mr. Max is well-qualified to serve as our CEO due to his business experience.

Paul Warley has been Chief Financial Officer of Ascent Solar Technologies Inc. since December 12, 2022. Mr. Warley has significant experience in corporate turnarounds, restructuring, cross-border trade and capital advisory work. From 2015 to 2022, Mr. Warley was president of Warley & Company LLC, a strategic advisory firm providing executive management, capital advisory and M&A services to middle-market companies in the service, construction, technology, oil & gas, clean energy, food, retail and green-building sectors. While at Warley & Company, from 2018 to 2019 Mr Warley was engaged as Chief Executive Officer and CFO of 360Imaging, a provider of products and services for implant surgery and digital dentistry. From 2011 to 2015, Mr. Warley served clients in the alternative energy industry as a managing director and additionally was Chief Compliance Officer with Deloitte Corporate Finance. From 1997 to 2011, Mr Warley was Managing Director and Region Manager for GE Capital. From 1984 to 1997, Mr. Warley was with Bank of America and Bankers Trust as a Senior Vice President. Mr. Warley holds the Financial Industry Regulatory Authority Series 7, 24 and 63 licenses. He earned his B.S. degree in Business Administration from The Citadel (The Military College of South Carolina) and served in the U.S. Army, attaining the rank of Captain. While at Warley & Company LLC, Mr. Warley provided corporate finance consulting services to BD1 Investment Holding LLC, the Company's largest stockholder. We believe Mr. Warley is well-qualified to serve as our CFO due to his business experience.

David Peterson has served on our Board since December 2020. Mr. Peterson has over 25 years of business management experience, including 9 years as a private equity investor, 6 years as a manager at an engineering consulting firm, and over 20 years of board experience. From April 2015 to present, Mr. Peterson has worked for EPD Consultants, Inc., a privately held engineering firm headquartered in Carson, California, where he serves as Senior Project Manager. From 2010 to 2015, Mr. Peterson was President and Co-Founder of Great Circle Industries, Inc., a water recycling company in southern California. His past experience includes being a board member at AIR-serv, LLC, a tire inflation vending machine manufacturer, where Mr. Peterson managed the acquisition process, including obtaining expansion of the company's credit facility, as that company completed 10 acquisitions and grew from \$10 million of EBITDA to \$20 million of EBITDA in the year prior to its sale for \$151 million to WindPoint Partners. Mr. Peterson has an MBA degree from the Marshall School of Business at the University of Southern California, and a B.A. from the University of California, Santa Cruz. Mr. Peterson is currently the Manager of Crowdex Investment, LLC, a significant equity investor in the Company. Mr. Peterson and Michael J. Gilbreth (our former

CFO) are cousins. We believe Mr. Peterson is well-qualified to serve as a director due to his extensive management and board experience.

Forrest Reynolds has over 28 years of business and management experience and is currently the Managing Partner of CalTex Capital, LLC, a privately held investment firm, as well as a Managing Director of The Vortex Group Family Office, LLC, a private family office, both of which are based in Texas. Previously, Mr. Reynolds served as the Chief Restructuring Officer for Centaur Gaming, LLC, a gaming development company located in Indianapolis, Indiana. In this capacity, Mr. Reynolds managed a \$1.0 billion Chapter 11 bankruptcy reorganization for the company. Prior to that, Mr. Reynolds worked in the investment banking industry for over 14 years holding various positions with several multinational investment banks including Credit Suisse, BT Alex Brown (later Deutsche Bank) and UBS. Mr. Reynolds sits on the board of several private companies and is actively involved with several charitable organizations. Mr. Reynolds graduated from The University of Texas at Austin where he received a B.B.A. in Finance and a B.A. in Economics. We believe Mr. Reynolds is well-qualified to serve as a director due to his knowledge and business experience.

Louis Berzovsky joined Eagle Infrastructure Services in July 2013 and leads the Finance and Accounting, M&A, Human Resources, Legal and IT functions. He has more than 30 years of experience in senior financial management positions across a variety of industries including 25 years of working in private equity sponsored portfolio companies. His accomplishments include the completion more than 60 acquisitions as well as multiple recapitalizations and successful sale processes. Prior to joining Eagle, Mr. Berzovsky previously served as Executive Vice President and Chief Financial Officer of ABRA Auto Body and Glass, Chief Financial Officer of ConvergeOne, and Chief Financial Officer of AIR-serv.

After receiving his B.S. in Accounting from the University of Minnesota, Carlson School of Management, he began his career at a Minneapolis based CPA firm. He is a Certified Management Accountant (CMA). He has also served as a member of the Board of Directors and as the Chairman of the Finance Committee for the Better Business Bureau of Minnesota and North Dakota since 2012. We believe Mr. Berzovsky is well-qualified to serve as a director due to his knowledge and business experience.

Michael French is currently Vice President of Space Systems for the Aerospace Industries Association. From February 2018 to July 2019, Mr. French was Senior Vice President, Commercial Space at Bryce Space and Technology, a privately held management consulting and market analysis firm. From April 2017 to February 2018, Mr. French was Principal at Port City Strategies, a privately held space industry consulting firm. From August 2011 to January 2017, Mr. French was Chief of Staff and Deputy Chief of Staff at the National Aeronautics and Space Administration (“NASA”). Mr. French has also held positions in the Executive Office of the President, The White House and as an attorney at Sheppard, Mullin, Richter, and Hampton LLP. Mr. French also serves on the Federal Aviation Administration’s Commercial Space Transportation Advisory Committee. Mr. French received a B.S. degree in Business Administration from the University of California, Berkeley in 1999 and J.D. from Harvard Law School in 2002. Mr. French brings significant aerospace industry leadership experience and market insight, with a particular focus on industry-government partnerships and investments across developing space technologies. We believe Mr. French is well-qualified to serve as a director due to his knowledge and business experience.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires our directors, executive officers, and persons holding more than 10% of our common stock to report their initial ownership of the common stock and other equity securities and any changes in that ownership in reports that must be filed with the SEC. The SEC has designated specific deadlines for these reports, and we must identify in our Annual Report on Form 10-K those persons who did not file these reports when due.

Based solely on a review of reports furnished to us, or written representations from reporting persons, we believe all directors, executive officers, and 10% owners timely filed all reports regarding transactions in our securities required to be filed in 2021 or 2022 by Section 16(a) under the Exchange Act, except that (i) Michael French filed a late Form 3 in 2022, and (ii) each of Jeffrey Max, Crowdex Investment, LLC, BD 1 Investment Holding, LLC, and TubeSolar AG filed one late Form 4 in 2022.

CORPORATE GOVERNANCE

Overview

Our Bylaws provide that the size of our Board of Directors is to be determined from time to time by resolution of the Board of Directors, but shall consist of at least two and no more than nine members. Our Board of Directors currently consists of four members. The Board has determined that the following directors are “independent” as required by the listing standards of the Nasdaq Capital Market and by our corporate governance guidelines: Mr. Reynolds, Mr. Berezovsky and Mr. French.

Our Certificate of Incorporation provides that the Board of Directors will be divided into three classes. Our Class 1 directors are Forrest Reynolds and Louis Berezovsky. Our Class 2 director is Michael French. Our Class 3 director is David Peterson.

Board Leadership Structure and Role in Risk Oversight

Our current Chief Executive Officer, Jeffry Max, is not a member of our Board. Notwithstanding the foregoing, our Board does not have a formal policy regarding separation of the Chairman and Chief Executive Officer roles, and the Board may in the future decide to implement such a policy if it deems it in the best interests of us and our stockholders.

Our corporate governance guidelines provide that unless the board chair is an independent director, the board shall appoint a Lead Independent Director. The Lead Independent Director chairs the executive sessions of the independent directors, coordinates the activities of the other independent directors and performs such other duties as deemed necessary by the board from time to time. Because our Chairman is not independent, the board has appointed Louis Berezovsky to serve as our Lead Independent Director.

Risk is inherent with every business, and how well a business manages risk can ultimately determine its success. We face a number of risks, including credit risk, interest rate risk, liquidity risk, operational risk, strategic risk and reputation risk. Management is responsible for the day-to-day management of risks we face, while the Board, as a whole and through its committees, has responsibility for the oversight of risk management. In its risk oversight role, the Board of Directors has the responsibility to satisfy itself that the risk management processes designed and implemented by management are adequate and functioning as designed. To do this, the Chairman of the Board meets regularly with management to discuss strategy and the risks we face. In addition, the Audit Committee regularly monitors our enterprise risk, including financial risks, through reports from management. Senior management attends the Board meetings and is available to address any questions or concerns raised by the Board on risk management and any other matters. The Chairman of the Board and independent members of the Board work together to provide strong, independent oversight of our management and affairs through the Board’s standing committees and, when necessary, executive sessions of the independent directors.

Committees of the Board of Directors

Our Board has three standing committees: an Audit Committee, a Compensation Committee, and a Nominating and Governance Committee. Each committee operates pursuant to a charter. The charters of the Audit Committee, the Compensation Committee, and the Nominating and Governance Committee can be found on our website www.ascentsolar.com.

Audit Committee. Our Audit Committee oversees our accounting and financial reporting processes, internal systems of accounting and financial controls, relationships with independent auditors, and audits of financial statements. Specific responsibilities include the following:

- selecting, hiring and terminating our independent auditors;
- evaluating the qualifications, independence and performance of our independent auditors;
- approving the audit and non-audit services to be performed by our independent auditors;
- reviewing the design, implementation, adequacy and effectiveness of our internal controls and critical accounting policies;
- reviewing and monitoring the enterprise risk management process;
- overseeing and monitoring the integrity of our financial statements and our compliance with legal and regulatory requirements as they relate to financial statements or accounting matters;

- reviewing, with management and our independent auditors, any earnings announcements and other public announcements regarding our results of operations; and
- preparing the report that the SEC requires in our annual proxy statement.

Our Audit Committee is comprised of Mr. Berezovsky, Mr. French and Mr. Reynolds. Mr. Berezovsky serves as Chairman of the Audit Committee. The Board has determined that all members of the Audit Committee are independent under the rules of the Nasdaq Capital Market, and that Mr. Berezovsky qualifies as an “audit committee financial expert,” as defined by the rules of the SEC.

Compensation Committee. Our Compensation Committee assists our Board in determining the development plans and compensation of our officers, directors and employees. Specific responsibilities include the following:

- approving the compensation and benefits of our executive officers;
- reviewing the performance objectives and actual performance of our officers; and
- administering our stock option and other equity compensation plans.

The Compensation Committee reviews all components of compensation including base salary, bonus, equity compensation, benefits and other perquisites. In addition to reviewing competitive market values, the Compensation Committee also examines the total compensation mix, pay-for-performance relationship and how all elements, in the aggregate, comprise the executives’ total compensation package. The CEO makes recommendations to the Compensation Committee from time to time regarding the appropriate mix and level of compensation for other officers. Those recommendations consider the objectives of our compensation philosophy and the range of compensation programs authorized by the Compensation Committee. The Compensation Committee may determine director compensation by reviewing peer group data. Although the Compensation Committee has the authority to retain outside third parties, it does not currently utilize any outside consultants. The Compensation Committee may delegate certain of its responsibilities, as it deems appropriate, to other committees or officers.

Our Compensation Committee is comprised of Mr. Berezovsky, Mr. French and Mr. Reynolds. Mr. Reynolds serves as Chairman of the Compensation Committee.

Our Board has determined that all members of the Compensation Committee are independent under the rules of the Nasdaq Capital Market.

Nominating and Governance Committee. Our Nominating and Governance Committee assists our Board by identifying and recommending individuals qualified to become members of our Board, reviewing correspondence from our stockholders, and establishing, evaluating and overseeing our corporate governance guidelines. Specific responsibilities include the following:

- evaluating the composition, size and governance of our Board and its committees and making recommendations regarding future planning and the appointment of directors to our committees;
- establishing a policy for considering stockholder nominees for election to our Board; and
- evaluating and recommending candidates for election to our Board.

Our Nominating and Governance Committee is comprised of Mr. Berezovsky, Mr. French and Mr. Reynolds. Mr. French serves as Chairman of our Nominating and Governance Committee. Our Board has determined that all members of the Nominating and Governance Committee are independent under the rules of Nasdaq Capital Market.

When considering potential director candidates for nomination or election, the following characteristics are considered in accordance with our Nominating and Governance Committee Charter:

- high standard of personal and professional ethics, integrity and values;
- training, experience and ability at making and overseeing policy in business, government and/or education sectors;
- willingness and ability to keep an open mind when considering matters affecting interests of us and our constituents;

- willingness and ability to devote the time and effort required to effectively fulfill the duties and responsibilities related to the Board and its committees;
- willingness and ability to serve on the Board for multiple terms, if nominated and elected, to enable development of a deeper understanding of our business affairs;
- willingness not to engage in activities or interests that may create a conflict of interest with a director's responsibilities and duties to us and our constituents; and
- willingness to act in the best interests of us and our constituents, and objectively assess Board, committee and management performances.

In addition, in order to maintain an effective mix of skills and backgrounds among the members of our Board, the following characteristics also may be considered when filling vacancies or identifying candidates:

- diversity (e.g., age, geography, professional, other);
- professional experience;
- industry knowledge (e.g., relevant industry or trade association participation);
- skills and expertise (e.g., accounting or financial);
- leadership qualities;
- public company board and committee experience;
- non-business-related activities and experience (e.g., academic, civic, public interest);
- continuity (including succession planning);
- size of the Board;
- number and type of committees, and committee sizes; and
- legal and other applicable requirements and recommendations, and other corporate governance-related guidance regarding Board and committee composition.

The Nominating and Governance Committee will consider candidates recommended by stockholders who follow the nomination procedures in our bylaws. The Nominating and Governance Committee does not have a formal policy with respect to diversity; however, as noted above, the Board and the Nominating and Governance Committee believe that it is essential that Board members represent diverse viewpoints.

Number of Meetings

The Board held a total of 12 meetings in 2022. Our Audit Committee held five meetings, our Compensation Committee held three meetings, and our Nominating and Governance Committee held two meetings in 2022. Each director attended at least 75% of the aggregate of the total number of meetings of the Board and the Board committees on which he served.

Board Member Attendance at Annual Stockholder Meetings

Although we do not have a formal policy regarding director attendance at annual stockholder meetings, directors are encouraged to attend these annual meetings absent extenuating circumstances. We did not hold our annual meeting during 2022 or 2021.

Stockholder Nominations

In accordance with our Bylaws, a stockholder wishing to nominate a director for election at an annual or special meeting of stockholders must timely submit a written proposal of nomination to us at our executive offices. To be timely, a written proposal of nomination for an annual meeting of stockholders must be received at least 90 calendar days but no more than 120 calendar days before the first anniversary of the date on which we held our annual meeting of stockholders in the immediately preceding year; *provided, however*, that in the event that the date of the annual meeting is advanced or delayed more than 30 calendar days from the anniversary of the annual meeting of stockholders in the immediately preceding year, the written

proposal must be received: (i) at least 90 calendar days but no more than 120 calendar days prior to the date of the annual meeting; or (ii) no more than 10 days after the date we first publicly announce the date of the annual meeting. A written proposal of nomination for a special meeting of stockholders must be received no earlier than 120 calendar days prior to the date of the special meeting nor any later than the later of: (i) 90 calendar days prior to the date of the special meeting; and (ii) 10 days after the date we first publicly announce the date of the special meeting.

Each written proposal for a nominee must contain: (i) the name, age, business address and telephone number, and residence address and telephone number of the nominee; (ii) the current principal occupation or employment of each nominee, and the principal occupation or employment of each nominee for the prior ten (10) years; (iii) a complete list of companies, whether publicly traded or privately held, on which the nominee serves (or, during any of the prior ten (10) years, has served) as a member of the board of directors; (iv) the number of shares of our common stock that are owned of record and beneficially by each nominee; (v) a statement whether the nominee, if elected, intends to tender, promptly following such person's failure to receive the required vote for election or reelection at the next meeting at which the nominee would face election or reelection, an irrevocable resignation effective upon acceptance of such resignation by the Board; (vi) a completed and signed questionnaire, representation and agreement relating to voting agreements or commitments to which the nominee is a party; (vii) other information concerning the nominee that would be required in a proxy statement soliciting the nominee's election; and (viii) information about, and representations from, the stockholder making the nomination.

A stockholder interested in submitting a nominee for election to the Board of Directors should refer to our Bylaws for additional requirements. Upon receipt of a written proposal of nomination meeting these requirements, the Nominating and Governance Committee of the Board will evaluate the nominee in accordance with its charter and the characteristics listed above.

Compensation Committee Interlocks and Insider Participation

None of the current members of our compensation committee has ever been an executive officer or employee of ours. None of our executive officers currently serves, or has served during the last completed fiscal year, on the compensation committee or board of directors of any other entity that has one or more executive officers serving as a member of our board of directors or compensation committee.

Director Compensation

Currently, each of our non-executive directors, consisting of Mr. Berezovsky, Mr. French and Mr. Reynolds, receive an annual retainer of \$55,000 in cash. Additionally, in 2022, Mr. Berezovsky, Mr. French and Mr. Reynolds were granted a one time cash fee of \$20,000, \$20,000, and \$25,000, respectively. There are currently no equity grants for service on the board of directors. We do not provide any perquisites to directors but will reimburse all directors for expenses incurred in physically attending meetings or performing their duties as directors.

The following Director Compensation Table summarizes the compensation of each of our non-employee directors for services rendered to us during the year ended December 31, 2022:

2022 Director Compensation Table

Name	Fees Earned or Paid in Cash (\$)	Stock Awards \$(1)	Option Awards \$(1)	All Other Compensation (\$) (1)	Total (\$)
Forrest Reynolds (2)	36,500	-	-	-	36,500
Louis Berezovsky (2)	31,500	-	-	-	31,500
Michael French (2)	31,500	-	-	-	31,500
Felix Mantke (2), (3), (4)	-	-	-	-	-
Amit Kumar (2)	35,600	-	-	-	35,600
Kim J. Huntley (2)	64,000	-	-	-	64,000
Will A. Clarke (2)	28,400	-	-	-	28,400
David Peterson (3)	-	-	-	-	-
Victor Lee (2), (3)	-	-	-	-	-

- (1) None.
- (2) In September 2022, at the request of the majority stockholders of the Company, Victor Lee, Amit Kumar, Kim Huntley and Will Clarke resigned from the Company's board of directors and Forrest Reynolds, Louis Berezovsky, Michael French, and Felix Mantke were appointed as new directors. The resignations of these four directors were not the result of any dispute or disagreement with the Company on any matter relating to the operations, policies or practices of the Company.
- (3) Non-independent directors do not receive compensation for their board service.
- (4) In December, 2022, Felix Mantke resigned from the Company's board of directors. His resignation was not the result of any dispute or disagreement with the Company on any matter relating to the operations, policies or practices of the Company.

In addition to the fees listed above, we reimburse the directors for travel expenses submitted to us related to their attendance at meetings of the Board or its committees. The directors did not receive any other compensation or personal benefits.

Code of Ethics

We have adopted a code of ethics that applies to our principal executive officer, principal financial officer, principal accounting officer and other senior finance and accounting staff. The code is designed to, among other things, deter wrongdoing and to promote the honest and ethical conduct of our officers and employees. The text of our code of ethics can be found on our Internet website at www.ascentsolar.com. If we effect an amendment to, or waiver from, a provision of our code of ethics, we intend to satisfy our disclosure requirements by posting a description of such amendment or waiver on that Internet website or via a current report on Form 8-K.

Communication with the Board of Directors

Stockholders may communicate with the Board by sending correspondence to our Chairman, c/o the Corporate Secretary, at our corporate address on the cover of this Form 10-K. It is our practice to forward all such correspondence to our Chairman, who is responsible for determining whether to relay the correspondence to the other members of the Board.

Item 11. Executive Compensation

We have opted to comply with the executive compensation disclosure rules applicable to "smaller reporting companies," as such term is defined in the rules promulgated under the Securities Act.

This section provides an overview of the compensation awarded to, earned by, or paid to each individual who served as our principal executive officer during 2022, and up to two of our next most highly compensated executive officers in respect of their service to our Company for 2022. Our named executive officers, or the Named Executive Officers, for the year ended December 31, 2022, are:

- Jeffrey Max, our current CEO;
- Victor Lee, our former CEO;
- Paul Warley, our current CFO; and
- Michael J. Gilbreth, our former CFO

The following Summary Compensation Table sets forth certain information regarding the compensation of our Named Executive Officers for services rendered in all capacities to us during the years ended December 31, 2022 and 2021.

Summary Compensation Table

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards (\$)	Option Awards (\$)	All Other Comp (\$)	Total (\$)
Jeffrey Max - Chief Executive Officer (1)	2022	227,400	-	18,980,800	-	21,500 (2)	19,229,700
Victor Lee - Chief Executive Officer (3)	2022	142,800	50,000 (4)	-	-	591,700 (5)	784,500
	2021	165,000	200,000 (6)	-	-	-	365,000
Paul Warley - Chief Financial Officer (7)	2022	17,300	-	2,086,000	-	-	2,103,300
Michael J. Gilbreth - Chief Financial Officer (8)	2022	161,700	24,800 (9)	-	-	157,300 (10)	343,800
	2021	165,000	74,250 (11)	-	-	-	239,250

- (1) Mr. Max joined the Company in September 2022. Mr. Max's employment agreement provides an annual base salary of \$850,000 of which, \$500,000 was initially deferred and accrued interest at an annual rate of 4% until the Company raised a minimum \$10 million of new capital. Upon completion of the capital raise, Mr. Max received his deferred compensation, including approximately \$800 of interest resulting in salary of approximately \$227,400. Mr. Max was also granted an inducement grant of restricted stock units ("RSUs") for an aggregate of 3,534,591 shares of Ascent's common stock valued at approximately \$18,980,000 on grant date. 20% of the RSUs are fully vested upon grant. The remaining 80% of the RSUs vests in equal monthly increments over the next thirty-six months.
- (2) The Company also paid \$20,200 to Mr. Max's attorneys for fees incurred in connection with the drafting, negotiation and execution of his employment agreement and approximately \$1,300 as a car allowance.
- (3) Mr. Lee's employment agreement provided for a minimum annual salary of \$300,000, which salary was increased to \$330,000 in 2016. Due to liquidity constraints, Mr. Lee agreed to limit his salary for 2022 and 2021 to the amounts shown in the salary column of the summary compensation table above.
- (4) Reflects a \$50,000 moving bonus paid to Mr. Lee.
- (5) Mr. Lee resigned as CEO in September 2022. Mr. Lee's separation agreement effective in September 2022, provided cash separation benefits of approximately \$591,700.
- (6) In April 2021, the Compensation Committee approved a special bonus to Mr. Lee of \$100,000, and in December 2021, the Compensation Committee approved an additional bonus to Mr. Lee of \$100,000 resulting in total 2021 bonuses of \$200,000 and paid in 2021.
- (7) Mr. Warley joined the Company in December 2022. Mr. Warley's employment agreement provides an annual base salary of \$305,000, which increased to \$350,000 in December 2022, after the Company raised a minimum \$10 million of new capital. Mr. Warley was also granted an inducement grant of 700,000 RSUs for an aggregate of 700,000 shares of Ascent's common stock valued at approximately \$2,086,000 on grant date. 20% of the RSUs are fully vested upon grant. The remaining 80% of the RSUs vests in equal monthly increments over the next thirty-six months.
- (8) Mr. Gilbreth joined the Company on October 5, 2020 and his employment agreement provided an annual salary of \$165,000. Mr. Gilbreth resigned as CFO in December 2022.
- (9) In May 2022, the Compensation Committee approved and paid a bonus to Mr. Gilbreth of \$24,800.

(10) In connection with his resignation, Mr. Gilbreth's separation agreement effective in December 2022, provided cash separation benefits of approximately \$157,300.

(11) In December 2021, the Compensation Committee approved and paid a bonus to Mr. Gilbreth of \$74,250.

Executive Employment Agreements

Jeff Max

On September 21, 2022, we entered into a three year employment agreement with Mr. Max. The employment agreement provides that Mr. Max will receive an annual base salary of \$850,000. A \$500,000 portion of the base salary is initially deferred and bears interest at an annual rate of 4%. Once the Company raises a minimum \$10 million of new capital, then (i) the deferred salary and accrued interest thereon will be paid in a lump sum and (ii) the Company will begin paying Mr. Max the full \$850,000 base salary amount. Mr. Max will also be eligible for an annual incentive bonus of up to 100% of his base salary if agreed bonus targets are achieved. The bonus performance objectives may include corporate, business unit or division, financial, strategic, individual or other objectives established with respect to that particular fiscal year by the Company in consultation with Mr. Max. Mr. Max was also granted an inducement grant of RSUs for an aggregate of 3,534,591 shares of Ascent's common stock. 20% of the RSUs are fully vested upon grant. The remaining 80% of the RSUs shall vest in equal monthly increments over the next thirty-six months. Any outstanding and unvested RSUs will accelerate and fully vest upon the earlier of (i) a change of control and (ii) the termination of Mr. Max's employment for any reason other than (x) by the Company for cause or (y) by Mr. Max without good reason. Additionally, Mr. Max is reimbursed for his Medicare premiums paid and receives a \$4,800 annual car allowance and is eligible to participate in the Company's standard benefit plans and programs.

Under Mr. Max's Employment Agreement, if the Company terminates Mr. Max without cause or Mr. Max terminates his employment for good reason or a change in control, Mr. Max will be entitled to receive (i) 12 months of base salary, (ii) any incentive bonus amounts that have been earned but not yet paid, and (iii) 12 months of continued reimbursement for medical coverage under Medicare. In addition, all RSUs and other equity awards will be immediately vested and settled. The employment agreement also includes customary non-competition, non-solicitation and non-interference provisions that Mr. Max must comply with for a period of 6 months, 12 months and 12 months, respectively, after termination of his employment with the Company.

Victor Lee

On April 4, 2014, we entered into an employment agreement with Mr. Lee. The employment agreement provides that Mr. Lee will receive an annual base salary of \$300,000, subject to annual adjustments as determined by our board. Mr. Lee will also be eligible for an annual bonus of up to 100% of his base salary as determined at the sole discretion of our board or compensation committee. Under this agreement, if the Company terminates Mr. Lee without cause, then subject to his execution of a release of claims, (i) Mr. Lee is entitled to receive twelve months of base salary from the date of termination, and (ii) the initial stock option grant that Mr. Lee received upon commencing employment will remain exercisable for a year following the termination date. The initial stock option grant is currently fully vested, but Mr. Lee was historically entitled to an additional year of vesting under such initial stock option grant upon termination without cause prior to the full vesting of the option. In addition, the employment agreement provides that Mr. Lee is eligible to participate in the Company's standard benefit plans and programs. Under the employment agreement, Mr. Lee is subject to a two year non-compete and non-solicit following termination of employment.

On September 21, 2022, we entered into a separation agreement with Mr. Lee. Under the separation agreement, Mr. Lee is entitled to the following separation benefits: (i) the Company will continue to pay to Mr. Lee his current base salary for the next 12 months; (ii) the Company will pay Mr. Lee's \$200,000 declared but unpaid cash bonus in two installments; and (iii) the Company shall pay COBRA premiums at the Company's current contribution level for the next 12 months. Separation benefits are included in All Other Comp in the Compensation Table.

Paul Warley

On December 12, 2022, we entered into an employment agreement with Mr. Warley. The employment agreement provides for a term through December 31, 2025, subject to earlier termination by the Company and Mr. Warley as provided in the Employment Agreement and provides Mr. Warley an annual base salary of \$305,000, which increases to \$350,000 once the Company raises a minimum \$10 million of new capital. Mr. Warley will also be eligible for an annual incentive bonus of up to 75% of his Base Salary if the agreed bonus targets are achieved and a moving allowance of up to \$30,000 if he relocates his primary residence to Colorado. Additionally, the Company granted Mr. Warley an inducement grant of RSUs for an aggregate of 700,000 shares of Ascent's common stock. 20% of the RSUs are fully vested upon grant. The remaining 80% of the RSUs

shall vest in equal monthly increments over the next thirty-six months. Any outstanding and unvested RSUs will accelerate and fully vest upon the earlier of (i) a change of control and (ii) the termination of Mr. Warley's employment for any reason other than (x) by the Company for cause or (y) by Mr. Warley without good reason. Mr. Warley is also eligible to participate in the Company's standard benefit plans and programs.

Under the employment agreement, if the Company terminates Mr. Warley without cause or Mr. Warley terminates his employment for good reason or a change in control, Mr. Warley will be entitled to receive half of his Base Salary amount then in effect during the period from (i) the termination date through (ii) the end of the term of the Employment Agreement. In addition, all RSUs and other equity awards will be immediately vested and settled. The employment agreement also includes customary non-competition and non-solicitation provisions that Mr. Warley must comply with for a period of 12 months after termination of his employment with the Company.

Michael J. Gilbreth

On October 5, 2020, the Company appointed Michael J. Gilbreth to serve as the Chief Financial Officer of the Company. The Company hired Mr. Gilbreth pursuant to the terms of a letter agreement and a standard and customary confidentiality, non-competition, and no-solicitation agreement. The offer letter provides for at-will employment with an annual base salary of \$165,000, and an annual bonus opportunity of up to 60% of base salary. An annual minimum bonus of 25% of base salary is guaranteed, and the additional 35% is discretionary.

On December 11, 2022, we entered into a separation agreement with Mr. Gilbreth. Under the separation agreement Mr. Gilbreth is entitled to the following separation benefits: (a) payment of ten (10) weeks' salary equal to \$35,577, 50% of which is payable on the first payroll period after effective date of the separation agreement, and the remaining 50% of which is payable on the next payroll period; and (b) payment of a bonus, which equals 60% of Mr. Gilbreth's current salary, or \$111,000, one-third (1/3) of which (\$37,000) shall be payable with the December 28, 2022 payroll date, another one-third (1/3) of which (\$37,000) shall be payable beginning the first payroll period after January 31, 2023, and the remaining one-third (1/3) of which (\$37,000) shall be payable on the first payroll period after the filing by the Company of its Annual Report on Form 10-K for the year ending December 31, 2022. Separation benefits are included in All Other Comp in the Compensation Table.

The following table sets forth information concerning the outstanding equity awards granted to the named executive officer as of December 31, 2022.

Outstanding Equity Awards at Fiscal Year-End 2022

Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Option Awards			Stock Awards	
		Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price (\$/sh)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested (\$)
Jeff Max (1)	-	-	-	-	2,592,033	4,225,000
Paul Warley (2)	-	-	-	-	560,000	912,800
Victor Lee (3)	*	-	*	12/19/2022	-	-
	*	-	*	12/19/2022	-	-
	*	-	*	12/19/2022	-	-
	*	-	*	12/19/2022	-	-
	*	-	*	12/19/2022	-	-
Michael J. Gilbreth	-	-	-	-	-	-

- (1) In September 2022, Mr. Max was granted an inducement grant of restricted stock units ("RSUs") for an aggregate of 3,534,591 shares of Ascent's common stock. 20% of the RSUs are fully vested upon grant. The remaining 80% of the RSUs vests in equal monthly increments over the next thirty-six months.

- (2) In December 2022, Mr. Warley was granted an inducement grant of for an aggregate of 700,000 shares of Ascent’s common stock. 20% of the RSUs are fully vested upon grant. The remaining 80% of the RSUs vests in equal monthly increments over the next thirty-six months.
- (3) After giving effect to the January 2022 reverse stock split, each of Mr. Lee’s outstanding stock options (i) is exercisable for fewer than one share, and (ii) has a per share exercise price in excess of \$6,000,000.

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

Security Ownership of Certain Beneficial Owners and Management

The following table shows information regarding the beneficial ownership of our common stock by our current directors, our Named Executive Officers, and our greater than 5% beneficial owners as of March 10, 2023.

Beneficial ownership is determined in accordance with the rules of the SEC and generally includes any shares over which a person exercises sole or shared voting or investment power and all shares issuable upon exercise of options or the vesting of restricted stock units within 60 days of March 10, 2023 (or May 14, 2023). For purposes of calculating the percentage of our common stock beneficially owned, the number of shares of our common stock includes 36,928,917 shares of our common stock outstanding as of March 10, 2023.

Unless otherwise indicated, each of the stockholders listed below has sole voting and investment power with respect to the shares beneficially owned.

The address for each director or Named Executive Officer is c/o Ascent Solar Technologies, Inc., 12300 Grant Street, Thornton, Colorado 80241.

Name of Beneficial Owner	No. of Shares Beneficially Owned	Percentage
5% Stockholders:		
Crowdex Investment, LLC (1)	5,545,042	15.0 %
BD 1 Investment Holding, LLC (2)	15,433,334	41.8 %
TubeSolar AG (3)	4,920,000	13.3 %
Named Executive Officers and Directors:		
Jeff Max (4)	1,256,743	3.40 %
Victor Lee (5)	-	*
Paul Warley (6)	217,778	*
Michael J. Gilbreth	-	*
Forrest Reynolds	-	*
Louis Berezovsky	-	*
Michael French	-	*
Felix Mantke	-	*
David Peterson (7)	-	*
All current directors and executive officers as a group (7 persons)	1,474,521	3.99 %

* Less than 1.0%

- (1) The address of Crowdex Investment, LLC ("Crowdex") is 1675 South State Street, Suite B, Kent County, Delaware 19901. Bernd Förtsch is the 100% direct and indirect beneficial owner of Crowdex.
- (2) The address of BD 1 Investment Holdings, LLC ("BD1") is 1675 South State Street, Suite B, Kent County, Delaware 19901. Johannes Kuhn and Ute Kuhn are the indirect beneficial owners of BD1.
- (3) The address for TubeSolar AG ("TubeSolar") is Berliner Allee 65, D – 86153 Augsburg, Germany. Bernd Förtsch directly and indirectly owns a controlling interest in TubeSolar. Mr. Förtsch disclaims beneficial ownership over any of the securities owned by TubeSolar.
- (4) Mr. Max's beneficial ownership includes 1,256,743 RSUs which would be vested by May 14, 2023. Does not include 2,277,848 RSUs which would not be vested by May 14, 2023.
- (5) Mr. Warley's beneficial ownership includes 217,778 RSUs which would be vested by May 14, 2023. Does not include 482,222 RSUs which would not be vested by May 14, 2023.
- (6) Mr. Peterson is the manager of Crowdex. Mr. Peterson disclaims beneficial ownership of any securities owned by Crowdex.

Securities Authorized for Issuance under Equity Compensation Plans

None. The Company does not have any currently effective equity incentive plans with securities authorized for future issuance. The executive equity grants made to Mr. Max and Mr. Warley in 2022 were made outside of a stockholder approved plan, in reliance upon the "inducement grant" exception provided for in the Nasdaq listing rules.

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

Relationship with Crowdex and TubeSolar

Crowdex and TubeSolar are both directly and indirectly beneficially owned and controlled by Bernd Förtsch.

On September 22, 2020, we entered into a securities purchase agreement ("Series 1A SPA") with Crowdex for the private placement of the Company's newly designated Series 1A Convertible Preferred Stock ("Series 1A Preferred Stock"). We sold

2,000 shares of Series 1A Preferred Stock to Crowdex in exchange for \$2,000,000 of gross proceeds at an initial closing under the Series 1A SPA on September 22, 2020.

In November 2020, Crowdex converted 1,200 shares of outstanding Series 1A Preferred Stock into 2,400,000 shares of Common Stock.

On November 27, 2020, we issued to Crowdex a \$500,000 unsecured convertible promissory note in a private placement and received \$500,000 of gross proceeds from the offering. On December 31, 2020, we sold 500 shares of Series 1A Preferred Stock to Crowdex in exchange for the cancellation of the note issued on November 27, 2020. There were no additional cash proceeds from this closing.

Crowdex acquired a \$250,000 aggregate principal amount convertible promissory note of the Company from the original noteholder, Penumbra Solar, Inc., in September 2020. On December 9, 2021, Crowdex converted the note, together with accrued interest, into 545,041 shares of common stock.

On January 4, 2021, the Company entered into a securities purchase agreement with TubeSolar. Pursuant to this securities purchase agreement, the Company sold 2,500 shares of Series 1A Preferred Stock to TubeSolar and received \$2,500,000 of gross proceeds on January 5, 2021. On July 19, 2021, we issued TubeSolar 120,000 shares of common stock upon the conversion by TubeSolar of 60 shares of Series 1A Preferred Stock. On September 3, 2021, we issued TubeSolar 80,000 shares of common stock upon the conversion by TubeSolar of 40 shares of Series 1A Preferred Stock.

On September 15, 2021, we entered into the JDA with TubeSolar to pursue the APV market. We also jointly established the JV. See “Item 1 Business” for additional detail.

On February 1, 2022:

- Crowdex converted their remaining 1,300 shares of Series 1A Preferred Stock into 2,600,000 shares of common stock;
- TubeSolar converted their remaining 2,400 shares of Series 1A Preferred Stock into 4,800,000 shares of common stock.

Relationship with BD1

On December 18, 2020, the Company entered into a securities exchange agreement (“BD1 Exchange Agreement”) with BD1. BD1 had previously acquired all of the Company’s existing outstanding unsecured notes (other than notes held by Global Ichiban and Crowdex) from the original note holders. Pursuant to the terms of the BD1 Exchange Agreement, BD1 agreed to surrender and exchange all of its outstanding promissory notes with principal balances of approximately \$10.4 million (including accrued interest and default penalties). In exchange and without the payment of any additional consideration, the Company issued to BD1 two unsecured convertible promissory notes with principal amounts of \$10,340,000 (the “First Exchange Note”) and \$160,000 (the “Second Exchange Note”). On August 16, 2021, BD1 sold and assigned a portion of the First Exchange Note equal to \$600,000 in principal amount to Nanyang Investment Management Pte Ltd (“Nanyang”) on behalf of a client account for a purchase price of \$600,000, and on January 21, 2022, further sold and assigned a portion of the First Exchange Note equal to \$1,000,000 in principal amount to Nanyang on behalf of a client account for a purchase price of \$1,000,000. On January 3, 2022, BD1 sold and assigned a portion of the First Exchange Note equal to \$1,000,000 in principal amount to Fleur Capital Pte Ltd (“Fleur”) on behalf of a client account for a purchase price of \$1,000,000. The Company has issued to BD1 an unsecured convertible promissory note with principal amount of \$7,740,000 replacing the First Exchange Note (the “Replacement Note” and, together with the Second Exchange Note, the “BD1 Exchange Notes”).

On August 2, 2021, we entered into a securities purchase agreement with BD1 for the private placement of an aggregate of 133,334 shares of our common stock at a fixed price of \$75 (as adjusted for the reverse stock split) per share in two tranches of 66,667 shares in exchange for \$10,000,000 of aggregate gross proceeds. On September 2, 2021, we closed on the first tranche and, on November 5, 2021, we closed on the second tranche, receiving aggregate gross proceeds of \$10,000,000.

On February 1, 2022, BD1 converted its \$7,900,000 aggregate outstanding principal amount of BD1 Exchange Notes into 15,800,000 shares of common stock.

Johannes Kuhn is the indirect beneficial owner of BD1.

Policies and Procedures with Respect to Transactions with Related Persons

The Board recognizes that related person transactions can present a heightened risk of potential or actual conflicts of interest. Accordingly, our Audit Committee charter requires that all such transactions will be reviewed and subject to approval by members of our Audit Committee, which will have access, at our expense, to our or independent legal counsel. Future transactions with our officers, directors or greater than five percent stockholders will be on terms no less favorable to us than could be obtained from independent third parties.

Director Independence

Our Board of Directors has determined that three out of our four directors are independent directors, as defined under the applicable rules of the Nasdaq Capital Market listing standards. The independent directors are Messrs. Berezovsky, French and Reynolds.

Item 14. Principal Accounting Fees and Services

PRINCIPAL ACCOUNTANTS

Fees for audit and related services by our accounting firm, Haynie & Company, for the years ended December 31, 2022 and 2021 were as follows:

	2022	2021
Audit fees	\$ 155,500	\$ 155,500
Audit related fees	40,500	12,700
Total audit and audit related fees	196,000	168,200
All other fees	-	-
Total Fees	\$ 196,000	\$ 168,200

Audit fees for Haynie & Company for fiscal year 2022 and 2021 represents aggregate fees for the 2022 and 2021 annual audit and quarterly reviews of the financial statements. Audit-related services consisted primarily of audit of employee benefit plan and work performed in connection with our registration statements.

Audit Committee Pre-Approval Policies and Procedures

The Audit Committee charter provides that the Audit Committee will pre-approve all audit services and non-audit services to be provided by our independent auditors before the accountant is engaged to render these services. The Audit Committee may consult with management in the decision making process, but may not delegate this authority to management. The Audit Committee may delegate its authority to pre-approve services to one or more committee members, provided that the designees present the pre-approvals to the full committee at the next committee meeting. All audit and non-audit services performed by our independent accountants have been pre-approved by our Audit Committee to assure that such services do not impair the auditors' independence from us.

PART IV

Item 15. Exhibits and Financial Statement Schedules

- (a) The following documents are filed as part of this Annual Report on Form 10-K:
 - (1) Financial Statements—See Index to Financial Statements at Item 8 of the Annual Report on Form 10-K.
 - (2) Financial Statement Schedules—Supplemental schedules are not provided because of the absence of conditions under which they are required or because the required information is given in the financial statements or notes thereto.
 - (3) Exhibits: See Item 15(b) below.
- (b) Exhibits: The exhibits listed on the accompanying Index to Exhibits on this Form 10-K are filed or incorporated into this Form 10-K by reference.

INDEX TO EXHIBITS

Set forth below is a list of exhibits that are being filed or incorporated by reference into this Annual Report on Form 10-K:

Exhibit No.	Description
3.1	<u>Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.2 to our Registration Statement on Form SB-2 filed on January 23, 2006 (Reg. No. 333-131216))</u>
3.2	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to our Quarterly Report on Form 10-Q for the quarter ended September 30, 2011)</u>
3.3	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed February 11, 2014)</u>
3.4	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Company, dated August 26, 2014, (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed September 2, 2014)</u>
3.5	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Company, dated October 27, 2014 (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K dated October 28, 2014)</u>
3.6	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Company, dated December 22, 2014, (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K dated December 23, 2014)</u>
3.7	<u>Second Amended and Restated Bylaws (incorporated by reference to Exhibit 3.2 to our Current Report on Form 8-K filed on February 17, 2009)</u>
3.8	<u>First Amendment to Second Amended and Restated Bylaws (incorporated by reference to Exhibit 3.3 to our Quarterly Report on Form 10-Q for the quarter ended September 30, 2009)</u>
3.9	<u>Second Amendment to Second Amended and Restated Bylaws (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed January 25, 2013)</u>
3.10	<u>Third Amendment to Second Amended and Restated Bylaws (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed December 18, 2015)</u>
3.11	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Company, dated May 26, 2016 (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed June 2, 2016)</u>
3.12	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Company, dated September 15, 2016 (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed September 16, 2016)</u>
3.13	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Company, dated March 16, 2017 (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed March 17, 2017)</u>
3.14	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Company, dated July 19, 2018 (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed July 23, 2018)</u>
3.15	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Company, dated September 23, 2021 (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed September 24, 2021)</u>
3.16	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Company, dated January 27, 2022 (incorporated by reference to Exhibit 3.1 to our Current Report on Form 8-K filed February 2, 2022)</u>
4.1	<u>Form of Common Stock Certificate (incorporated by reference to Exhibit 4.1 to our Registration Statement on Form SB-2/A filed on June 6, 2006 (Reg. No. 333-131216))</u>
4.2	<u>Certificate of Designations of Series A Preferred Stock (filed as Exhibit 4.2 to our Registration Statement on Form S-3 filed July 1, 2013 (Reg. No. 333-189739))</u>
4.3	<u>Description of Securities (incorporated by reference to Exhibit 4.3 to our Annual Report on Form 10-K filed May 13, 2022)</u>
10.1	<u>Securities Purchase Agreement, dated January 17, 2006, between the Company and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.1 to our Registration Statement on Form SB-2 filed on January 23, 2006 (Reg. No. 333-131216))</u> CTR
10.2	<u>Invention and Trade Secret Assignment Agreement, dated January 17, 2006, between the Company and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.2 to our Registration Statement on Form SB-2 filed on January 23, 2006 (Reg. No. 333-131216))</u> CTR

10.3	<u>Patent Application Assignment Agreement, dated January 17, 2006, between the Company and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.3 to our Registration Statement on Form SB-2 filed on January 23, 2006 (Reg. No. 333-131216))</u>
10.4	<u>License Agreement, dated January 17, 2006, between the Company and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.4 to our Registration Statement on Form SB-2 filed on January 23, 2006 (Reg. No. 333-131216))</u> CTR
10.5	<u>Letter Agreement, dated November 23, 2005, among the Company, ITN Energy Systems, Inc. and the University of Delaware (incorporated by reference to Exhibit 10.16 to our Registration Statement on Form SB-2/A filed on May 26, 2006 (Reg. No. 333-131216))</u>
10.6	<u>License Agreement, dated November 21, 2006, between the Company and UD Technology Corporation (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on November 29, 2006)</u> CTR
10.7	<u>Novation Agreement, dated January 1, 2007, among the Company, ITN Energy Systems, Inc. and the United States Government (incorporated by reference to Exhibit 10.23 to our Annual Report on Form 10-KSB for the year ended December 31, 2006)</u>
10.8†	<u>Executive Employment Agreement, dated April 4, 2014, between the Company and Victor Lee (filed as Exhibit 10.1 to our Current Report on Form 8-K filed on April 9, 2014)</u>
10.9†	<u>Seventh Amended and Restated 2005 Stock Option Plan (incorporated by reference to Annex B of our definitive proxy statement dated April 22, 2016)</u>
10.10†	<u>Seventh Amended and Restated 2008 Restricted Stock Plan Stock Option Plan Plan (incorporated by reference to Annex A of our definitive proxy statement dated April 22, 2016)</u>
10.11	<u>Industrial Lease for 12300 Grant Street, Thornton, Colorado dated September 21, 2020 (incorporated by reference to Exhibit 10.50 to our Annual Report on Form 10-K filed January 29, 2021)</u>
10.12	<u>Long-Term Supply and Joint Development Agreement dated September 15, 2021 (incorporated by reference to Exhibit 10.2 to our Quarterly Report on Form 10-Q for the quarter ended September 30, 2021)</u>
10.13	<u>Fleur Capital Unsecured Convertible Promissory Note dated January 3, 2022 (incorporated by reference to Exhibit 10.13 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2022)</u>
10.14	<u>Nanyang Unsecured Convertible Promissory Note dated January 21, 2022 (incorporated by reference to Exhibit 10.14 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2022)</u>
10.15	<u>Bridge Promissory Note dated August 3, 2022 (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on August 8, 2022)</u>
10.16	<u>Securities Purchase Agreement dated August 8, 2022 (incorporated by reference to Exhibit 10.2 to our Current Report on Form 8-K filed on August 8, 2022)</u>
10.17	<u>Common Stock Warrant dated August 19, 2022 (incorporated by reference to Exhibit 10.3 to our Current Report on Form 8-K filed on August 19, 2022)</u>
10.18†	<u>Separation Agreement and Release of Claims between the Company and Victor Lee dated September 21, 2022 (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on September 22, 2022)</u>
10.19†	<u>Employment Agreement between the Company and Jeffrey Max dated September 21, 2022 (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on September 27, 2022)</u>
10.20†	<u>Separation Agreement between the Company and Michael Gilbreth effective December 11, 2022 (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on December 12, 2022)</u>
10.21†	<u>Employment Agreement between the Company and Paul Warley dated December 12, 2022 (incorporated by reference to Exhibit 10.2 to our Current Report on Form 8-K filed on December 12, 2022)</u>
10.22	<u>Securities Purchase Contract, dated as of December 19, 2022 (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on December 20, 2022)</u>
10.23	<u>Form of Security Agreement, dated as of December 19, 2022 (incorporated by reference to Exhibit 10.2 to our Current Report on Form 8-K filed on December 20, 2022)</u>
10.24	<u>Form of Registered Advance Note 2022 (incorporated by reference to Exhibit 4.1 to our Current Report on Form 8-K filed on December 20, 2022)</u>
10.25	<u>Form of Private Placement Advance Note (incorporated by reference to Exhibit 4.2 to our Current Report on Form 8-K filed on December 20, 2022)</u>
10.26	<u>Form of Warrant Note (incorporated by reference to Exhibit 4.3 to our Current Report on Form 8-K filed on December 20, 2022)</u>
23.1*	<u>Consent of Haynie & Company</u>
31.1*	<u>Chief Executive Officer Certification pursuant to section 302 of the Sarbanes-Oxley Act of 2002</u>
31.2*	<u>Chief Financial Officer Certification pursuant to section 302 of the Sarbanes-Oxley Act of 2002</u>
32.1*	<u>Chief Executive Officer Certification pursuant to section 906 of the Sarbanes-Oxley Act of 2002</u>
32.2*	<u>Chief Financial Officer Certification pursuant to section 906 of the Sarbanes-Oxley Act of 2002</u>

101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)
*	Filed herewith
CTR	Portions of this exhibit have been omitted pursuant to a request for confidential treatment.
†	Denotes management contract or compensatory plan or arrangement.

Item 16. Form 10-K Summary

None.

ASCENT SOLAR TECHNOLOGIES, INC.

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 on the 10th day of March, 2023.

ASCENT SOLAR TECHNOLOGIES, INC.

By: /S/ JEFFREY MAX

Jeffrey Max
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 in the capacities and on the dates indicated.

Signature	Capacities	Date
/S/ JEFFREY MAX Jeffrey Max	President & Chief Executive Officer (Principal Executive Officer)	March 10, 2023
/S/ PAUL WARLEY Paul Warley	Chief Financial Officer (Principal Financial and Accounting Officer)	March 10, 2023
/S/ DAVID PETERSON David Peterson	Chairman of the Board of Directors	March 10, 2023
/S/ LOUIS BEREZOVSKY Louis Berezovsky	Director	March 10, 2023
/S/ MICHAEL FRENCH Michael French	Director	March 10, 2023
/S/ FORREST REYNOLDS Forrest Reynolds	Director	March 10, 2023

Ascent Solar Technologies, Inc.

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and
Stockholders of Ascent Solar Technologies, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of Ascent Solar Technologies, Inc. (the Company) as of December 31, 2022 and 2021, and the related statements of operations and comprehensive income, stockholders' deficit, and cash flows for each of the years in the two-year period ended December 31, 2022, and the related notes (collectively referred to as the financial statements). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the years in the two-year period ended December 31, 2022, in conformity with accounting principles generally accepted in the United States of America.

Substantial Doubt about the Company's Ability to Continue as a Going Concern

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 4 to the financial statements, the Company has continued limited photovoltaic production at its manufacturing facility which has led to continued operating losses and the Company does not expect that sales revenue and operating cash flows will be sufficient to support operations. The Company also has a working capital deficit and is dependent on outside financing to fund its operations. There is no assurance that the Company will be able to raise additional capital. These factors raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 4. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the 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 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 financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate 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 matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Complex Financing Transactions

Description of the Matter:

The Company's financing transactions include debt conversion features that require analysis to determine if there is an embedded derivative, if derivative accounting is required and if the conversion feature should be bifurcated. The Company also issued warrants that require evaluation to determine if they are accounted for as a liability or equity and the calculations to estimate the fair value for the allocation of proceeds. The financing transactions are discussed in Note 12 and Note 15 to the financial statements.

How We Addressed the Matter in Our Audit:

We reviewed the underlying agreements, evaluated management's analysis, and compared that to applicable accounting guidance. We also tested the inputs used for the allocation of proceeds.

Revenue Recognition

Description of the Matter:

The Company's long-term contract with a customer includes non-recurring milestone and engineering payments upon completion of certain tasks. Management analyzed the underlying performance obligations to determine if the revenue should be recognized over time or at a point in time. Revenue recognition is discussed in Note 1 to the financial statements.

How We Addressed the Matter in Our Audit:

We reviewed the underlying agreement, evaluated management's revenue recognition analysis, and tested certain revenue transactions to ensure the performance obligation was met prior to recognizing revenue.

/s/ Haynie & Company

Haynie & Company
Salt Lake City, Utah
March 10, 2023

We have served as the Company's auditor since 2017.

ASCENT SOLAR TECHNOLOGIES, INC.
BALANCE SHEETS

	December 31, 2022	December 31, 2021
ASSETS		
Current Assets:		
Cash and cash equivalents	\$ 11,483,018	\$ 5,961,760
Trade receivables, net of allowance of \$26,000 and \$26,000, respectively	1,769	49,250
Inventories	615,283	592,172
Prepaid and other current assets	344,110	247,736
Total current assets	12,444,180	6,850,918
Property, Plant and Equipment:		
Accumulated depreciation	(22,038,508)	(22,146,273)
	551,661	279,662
Other Assets:		
Operating lease right-of-use assets, net	4,324,514	4,984,688
Patents, net of accumulated amortization of \$154,218 and \$135,050, respectively	79,983	86,595
Equity method investment	61,379	21,205
Other non-current assets	1,214,985	625,000
	5,680,861	5,717,488
Total Assets	18,676,702	12,848,068
LIABILITIES AND STOCKHOLDERS' DEFICIT		
Current Liabilities:		
Accounts payable	\$ 595,157	\$ 642,165
Related party payables	67,164	45,000
Accrued expenses	888,869	657,216
Accrued payroll	490,185	230,698
Severance payable	437,079	-
Accrued professional services fees	952,573	103,620
Accrued interest	559,060	475,671
Current portion of operating lease liability	733,572	646,742
Other payable	250,000	250,000
Total current liabilities	4,973,659	3,051,112
Long-Term Liabilities:		
Non-current operating lease liabilities	3,827,878	4,532,490
Non-current convertible notes, net	5,268,399	8,076,847
Accrued warranty liability	21,225	21,225
Total liabilities	14,091,161	15,681,674
Commitments and contingencies (Note 18)		
Stockholders' Deficit:		
Series A preferred stock, \$.0001 par value; 750,000 shares authorized; 48,100 and 48,100 shares issued and outstanding, respectively (\$850,301 and \$801,533 Liquidation Preference, respectively)	5	5
Common stock, \$.0001 par value, 500,000,000 authorized; 34,000,812 and 4,786,804 shares issued and outstanding, respectively	3,400	479
Additional paid in capital	452,135,653	424,948,698
Accumulated deficit	(447,537,493)	(427,782,788)
Accumulated other comprehensive loss	(16,024)	-
Total stockholders' equity (deficit)	4,585,541	(2,833,606)
Total Liabilities and Stockholders' Equity (Deficit)	\$ 18,676,702	\$ 12,848,068

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

ASCENT SOLAR TECHNOLOGIES, INC.
STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME

	For the Years Ended December 31,	
	2022	2021
Revenues		
Products	\$ 694,286	\$ 607,783
Milestone and engineering	528,500	-
Total Revenues	<u>1,222,786</u>	<u>607,783</u>
Costs and Expenses		
Costs of revenue	2,011,459	1,902,414
Research, development and manufacturing operations	5,975,921	4,140,319
Selling, general and administrative	4,736,562	3,297,982
Share-based compensation	5,478,734	-
Depreciation and amortization	75,645	57,314
Total Costs and Expenses	<u>18,278,321</u>	<u>9,398,029</u>
Loss from Operations	(17,055,535)	(8,790,246)
Other Income/(Expense)		
Other income/(expense), net	33,100	(169,423)
Interest expense	(2,704,909)	(1,088,327)
Change in fair value of derivatives and loss on extinguishment of liabilities, net	-	4,047,993
Total Other Income/(Expense)	<u>(2,671,809)</u>	<u>2,790,243</u>
Income/(Loss) on Equity Method Investment	<u>(27,361)</u>	<u>-</u>
Net Income/(Loss)	<u>\$ (19,754,705)</u>	<u>\$ (6,000,003)</u>
Net Income/(Loss) Per Share (Basic)	\$ (0.66)	\$ (1.54)
Net Income/(Loss) Per Share (Diluted)	\$ (0.66)	\$ (1.54)
Weighted Average Common Shares Outstanding (Basic)	29,803,237	3,894,015
Weighted Average Common Shares Outstanding (Diluted)	29,803,237	3,894,015
Other Comprehensive Income/(Loss)		
Foreign currency translation gain/(loss)	(16,024)	-
Net Comprehensive Income/(Loss)	<u>\$ (19,770,729)</u>	<u>\$ (6,000,003)</u>

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

ASCENT SOLAR TECHNOLOGIES, INC.
STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT)

	Series A Preferred Stock		Series A1 Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated Deficit	Other Accumulated Comprehensi ve Loss	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount	Shares	Amount				
Balance at January 1, 2021	<u>48,100</u>	<u>\$ 5</u>	<u>1,300</u>	<u>\$ -</u>	<u>3,660,439</u>	<u>\$ 366</u>	<u>\$ 401,590,211</u>	<u>\$ (421,782,785)</u>	<u>\$ -</u>	<u>(20,192,203)</u>
Proceeds from issuance of Series 1A Preferred Stock	-	-	2,500	-	-	-	2,500,000	-	-	2,500,000
Proceeds from issuance of Common Stock	-	-	-	-	148,334	15	12,999,985	-	-	13,000,000
Conversion of Global Ichiban Note into Common Shares	-	-	-	-	33,600	3	5,799,997	-	-	5,800,000
Loss on Extinguishment of Liabilities	-	-	-	-	-	-	1,686,079	-	-	1,686,079
Conversion of TubeSolar Series 1A Preferred Stock into Common Stock	-	-	(100)	-	200,000	20	(20)	-	-	-
Conversion of Nanyang Note into Common Stock	-	-	-	-	200,000	20	99,980	-	-	100,000
Conversion of Crowdex Note into Common Stock	-	-	-	-	545,042	55	272,466	-	-	272,521
Net Loss								(6,000,003)	-	(6,000,003)
Balance at December 31, 2021	<u>48,100</u>	<u>\$ 5</u>	<u>3,700</u>	<u>\$ -</u>	<u>4,787,415</u>	<u>\$ 479</u>	<u>\$ 424,948,698</u>	<u>\$ (427,782,788)</u>	<u>\$ -</u>	<u>(2,833,606)</u>
Conversion of TubeSolar Series 1A Preferred Stock into Common Stock	-	-	(2,400)	-	4,800,000	480	(480)	-	-	-
Conversion of Crowdex Series 1A Preferred Stock into Common Stock	-	-	(1,300)	-	2,600,000	260	(260)	-	-	-
Conversion of BD1 Note into Common Shares	-	-	-	-	15,800,000	1,580	7,898,420	-	-	7,900,000
Conversion of Nanyang Note into Common Shares	-	-	-	-	3,000,000	300	1,499,700	-	-	1,500,000
Conversion of Fleur Note into Common Shares	-	-	-	-	2,000,000	200	999,800	-	-	1,000,000
Conversion of Sabby Note into Common Shares	-	-	-	-	70,000	7	107,094	-	-	107,101
Private placement warrants	-	-	-	-	-	-	2,990,029	-	-	2,990,029
Beneficial conversion feature	-	-	-	-	-	-	4,490,029	-	-	4,490,029
Proceeds from private placement:										-
Common stock (8/19 @ \$2.70)	-	-	-	-	943,397	94	2,551,311	-	-	2,551,405
Warrants (8/19 @ \$1.73)	-	-	-	-	-	-	2,448,595	-	-	2,448,595
Private placement costs	-	-	-	-	-	-	(1,276,017)	-	-	(1,276,017)
Share-based compensation	-	-	-	-	-	-	5,478,734	-	-	5,478,734
Net Loss	-	-	-	-	-	-	-	(19,754,705)	-	(19,754,705)
Foreign Currency Translation Loss	-	-	-	-	-	-	-	-	(16,024)	(16,024)
Balance at December 31, 2022	<u>48,100</u>	<u>\$ 5</u>	<u>-</u>	<u>\$ -</u>	<u>34,000,812</u>	<u>\$ 3,400</u>	<u>\$ 452,135,653</u>	<u>\$ (447,537,493)</u>	<u>\$ (16,024)</u>	<u>\$ 4,585,541</u>

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

ASCENT SOLAR TECHNOLOGIES, INC.
STATEMENTS OF CASH FLOWS

	For the Years Ended December 31,	
	2022	2021
Operating Activities:		
Net income/(loss)	\$ (19,754,705)	\$ (6,000,003)
Adjustments to reconcile net loss to cash used in operating activities:		
Depreciation and amortization	75,645	57,314
Share-based compensation	5,478,734	—
Operating lease asset amortization	694,229	648,975
Loss on equity method investment	27,361	—
Patent write off	—	297,702
Amortization of debt discount	2,609,389	1,008,162
Warranty reserve	—	7,082
Change in fair value of derivatives and (gain) on extinguishment of liabilities, net	—	(4,047,993)
Other	4,497	—
Changes in operating assets and liabilities:		
Accounts receivable	47,481	(43,711)
Inventories	(23,111)	(57,741)
Prepaid expenses and other current assets	(686,359)	(301,161)
Accounts payable	(47,008)	(77,173)
Related party payable	22,164	(90,834)
Operating lease liabilities	(656,334)	(575,401)
Accrued interest	83,389	62,781
Accrued expenses	1,618,053	(292,442)
Net cash (used in) operating activities	(10,506,575)	(9,404,443)
Investing Activities:		
Purchase of property, plant and equipment	(169,357)	(280,317)
Contributions to equity method investment	(83,559)	(21,205)
Patent activity costs	(12,556)	—
Net cash provided by (used in) investing activities	(265,472)	(301,522)
Financing Activities:		
Proceeds from issuance of convertible debt and warrants	13,500,000	—
Proceeds from issuance of stock and warrants	5,000,000	15,500,000
Financing issuance cost	(2,206,695)	—
Net cash provided by (used in) financing activities	16,293,305	15,500,000
Net change in cash and cash equivalents	5,521,258	5,794,035
Cash and cash equivalents at beginning of period	5,961,760	167,725
Cash and cash equivalents at end of period	\$ 11,483,018	\$ 5,961,760
Supplemental Cash Flow Information:		
Cash paid for interest	\$ —	\$ —
Non-Cash Transactions:		
Conversions of preferred stock and convertible notes to equity	\$ 10,507,101	\$ 6,072,521
Series 1A preferred stock conversion	\$ 740	\$ 100,000
Extinguishment of note payable	\$ —	\$ 193,200
Operating lease assets obtained in exchange for operating lease liabilities	\$ 53,193	\$ —
Purchase of equipment not yet paid at end of the year	\$ 159,119	\$ —
Conversion of bridge loan into common stock and warrants	\$ 1,000,000	\$ —

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

ASCENT SOLAR TECHNOLOGIES, INC.

NOTES TO FINANCIAL STATEMENTS

NOTE 1. ORGANIZATION

Ascent Solar Technologies, Inc. ("Ascent" or the "Company") was incorporated on October 18, 2005 from the separation by ITN Energy Systems, Inc. ("ITN") of its Advanced Photovoltaic Division and all of that division's key personnel, core technologies, and certain trade secrets and royalty free licenses to use in connection with the manufacturing, developing marketing, and commercializing Copper-Indium-Gallium-diSelenide ("CIGS") photovoltaic ("PV") products. ITN, a private company incorporated in 1994, is an incubator dedicated to the development of thin film, PV, battery, fuel cell and nano technologies. Through its work on research and development contracts for private and governmental entities, ITN developed proprietary processing and manufacturing know how applicable to PV products generally, and CIGS PV products in particular. ITN formed Ascent to commercialize its investment in CIGS PV technologies.

The Company focus is on integrating its PV products into scalable and high value markets such as agrivoltaics, aerospace, satellites, near earth orbiting vehicles, and fixed wing unmanned aerial vehicles ("UAV"). The value proposition of Ascent's proprietary solar technology not only aligns with the needs of customers in these industries, but also overcomes many of the obstacles other solar technologies face in these unique markets. Ascent has the capability to design and develop finished products for end users in these areas as well as collaborate with strategic partners to design and develop custom integrated solutions for products like fixed-wing UAVs. Ascent sees significant overlap of the needs of end users across some of these industries and can achieve economies of scale in sourcing, development, and production in commercializing products for these customers.

On January 28, 2022, the Company effected a reverse stock split of the Company's common stock, par value \$0.0001 per share (the "Common Stock") at a ratio of one-for-five thousand (the "Reverse Stock Split"). The Company's common stock began trading on a split-adjusted basis on January 31, 2022. Stockholders also received one whole share of Common Stock in lieu of a fractional share and no fractional shares were issued. All shares and per share amounts in the financial statements and accompanying notes have been retroactively adjusted to give effect to the Reverse Stock Split.

Following the Reverse Stock Split, the Company's issued and outstanding shares of Common Stock were decreased from approximately 23.74 billion pre-split shares to 4.81 million post-split shares. In connection with the Reverse Stock Split effectiveness, the number of authorized shares of the Company's Common Stock were decreased from 30 billion to 500 million shares.

Although the Company is focused on various markets for its product, the Chief Executive Officer makes significant operating decisions and assesses the performance of the Company as a single business segment. Accordingly, the Company has one reportable segment.

NOTE 2. BASIS OF PRESENTATION

The accompanying financial statements have been derived from the accounting records of the Company as of December 31, 2022 and 2021, and the results of operations for the years then ended.

The preparation of financial statements in conformity with US GAAP 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 financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

NOTE 3. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Cash Equivalents: The Company classifies all short-term investments in interest bearing bank accounts and highly liquid debt securities purchased with an original maturity of three months or less to be cash equivalents. The Company maintains cash balances which may exceed federally insured limits. The Company does not believe this results in significant credit risk.

Inventories: All inventories are stated at the lower of cost or net realizable value, with cost determined using the weighted average method. Inventory balances are frequently evaluated to ensure they do not exceed net realizable value. The computation for net realizable value takes into account many factors, including expected demand, product life cycle and development plans, module efficiency, quality issues, obsolescence and others. Management's judgment is required to determine reserves for obsolete or excess inventory. As of December 31, 2022, and 2021, the Company had inventory reserve balances of \$338,348 and \$395,943, respectively. If actual demand and market conditions are less favorable than those estimated by management, additional inventory write downs may be required.

Property, Plant and Equipment: Property, plant and equipment are recorded at the original cost to the Company. Assets are being depreciated over estimated useful lives of three to 10 years using the straight-line method, as presented in the table below, commencing when the asset is placed in service. Leasehold improvements are depreciated over the shorter of the remainder of the lease term or the life of the improvements. Upon retirement or disposal, the cost of the asset disposed of and the related accumulated depreciation are removed from the accounts and any gain or loss is reflected in income. Expenditures for repairs and maintenance are expensed as incurred.

	Useful Lives in Years
Manufacturing machinery and equipment	5 - 10
Furniture, fixtures, computer hardware/software	3 - 7
Leasehold improvements	life of lease

Patents: At such time as the Company is awarded patents, patent costs are amortized on a straight-line basis over the legal life on the patents, or over their estimated useful lives, whichever is shorter. As of December 31, 2022, and 2021, the Company had net patent costs of \$79,983 and \$86,595, respectively. Of these amounts \$25,847 and \$45,015 represent costs net of amortization incurred for awarded patents, and the remaining \$54,136 and \$41,580 represents costs incurred for patent in process applications as of December 31, 2022 and 2021, respectively. During the years ended December 31, 2022 and 2021, the Company capitalized \$12,556 and \$0 in patent costs, respectively, as it worked to secure design rights and trademarks for newly developed products. Amortization expense was \$19,168 and \$37,891 for the years ended December 31, 2022 and 2021, respectively.

During the year ended December 31, 2021, the Company concluded that certain expired patents were not curable and certain patents in process would not be granted. As such, during the year ended December 31, 2021, the Company wrote off the remaining book value of these assets and recorded a charge of \$297,702 in Other income/(expense) in the Statement of Operations.

As of December 31, 2022, future amortization of patents is expected as follows:

2023	\$	19,168
2024		6,493
2025		186
	\$	<u>25,847</u>

Impairment of Long-lived Assets: The Company analyzes its long-lived assets (property, plant and equipment) and definitive-lived intangible assets (patents) for impairment, both individually and as a group, whenever events or changes in circumstances indicate the carrying amount of the assets may not be recoverable. Events that might cause impairment would include significant current period operating or cash flow losses associated with the use of a long-lived asset or group of assets combined with a history of such losses, significant changes in the manner of use of assets and significant negative industry or economic trends. An undiscounted cash flow analysis is calculated to determine if impairment exists. If impairment is determined to exist, any related loss is calculated using the difference between the fair value and the carrying value of the assets. During the years ended December 31, 2022 and 2021, the Company did not incur impairments of its manufacturing facilities and equipment.

Equity Method Investment: The Company accounts for its investments in stock of other entities over which the Company has significant influence, but not control, using the equity method of accounting. Under the equity method of accounting, the Company increases its investment for contributions made and records its proportionate share of net earnings, declared dividends and partnership distributions based on the most recently available financial statements of the investee. The Company re-evaluates the classification at each balance sheet date and when events or changes in circumstances indicate that there is a change in the Company's ability to exercise significant influence. The Company evaluates its equity method investments for potential impairment whenever events or changes in circumstances indicate that there is an other-than-temporary decline in the value of the investment. Declines in fair value that are deemed to be other-than-temporary are charged to Other income (expense), net.

Related Party Payables: The Company accounts for fees due to board members in the related party payables account on the Balance Sheets.

Convertible Notes: The Company issues, from time to time, convertible notes. Refer to Note 12 for further information.

Convertible Preferred Stock: The Company evaluates its preferred stock instruments under FASB ASC 480, *"Distinguishing Liabilities from Equity"* to determine the classification, and thereby the accounting treatment, of the instruments. Refer to Notes 13 and 14 for further discussion on the classification of each instrument.

Derivatives: The Company evaluates its financial instruments under FASB ASC 815, *"Derivatives and Hedging"* to determine whether the instruments contain an embedded derivative. When an embedded derivative is present, the instrument is evaluated for a fair value adjustment upon issuance and at the end of every reporting period. Any adjustments to fair value are treated as gains and losses in fair values of derivatives and are recorded in the Statements of Operations. Refer to Note 10 for further discussion on embedded derivatives.

Product Warranties: The Company provides a limited warranty to the original purchaser of products against defective materials and workmanship. The Company also guarantees that standalone modules and PV integrated consumer electronics will achieve and maintain the stated conversion efficiency rating for certain products. Warranty accruals are recorded at the time of sale and are estimated based upon product warranty terms, historical experience and analysis of peer company product returns. The Company assesses the adequacy of its liabilities and makes adjustments as necessary based on known or anticipated warranty claims, or as new information becomes available.

Leases: The Company determines if an arrangement is a lease or contains a lease at the inception of the contract. The Company accounts for non-lease components, such as certain taxes, insurance and common area maintenance, separate from the lease arrangement. Operating lease liabilities, which represent the Company's obligation to make lease payments arising from the lease, and corresponding Operating lease right-of-use assets, which represent the Company's right to use an underlying asset for the lease term, are recognized at the commencement date of the lease based on the present value of fixed future payments over the lease term. The Company utilizes the lease term for which it is reasonably certain to use the underlying asset, including consideration of options to extend or terminate the lease. Incentives received from landlords are recorded as a reduction to the lease right-of-use assets. The Company does not recognize lease right-of-use assets and corresponding lease liabilities for leases with initial terms of 12 months or less.

The Company calculates the present value of future payments using the discount rate implicit in the lease, if available, or its incremental borrowing rate. The incremental borrowing rate is the rate of interest that a lessee would have to pay to borrow on a collateralized basis over a similar term at an amount equal to the lease payments in a similar economic environment. In determining the Company's operating lease right of use assets and operating lease liabilities, the Company applied these incremental borrowing rates to the minimum lease payments within the lease agreement.

Revenue Recognition:

Product revenue. The Company recognizes revenue for the sale of PV modules and other equipment sales at a point in time following the transfer of control of such products to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. For module and other equipment sales contracts that contain multiple performance obligations, the Company allocates the transaction price to each performance obligation identified in the contract

based on relative standalone selling prices, or estimates of such prices, and recognize the related revenue as control of each individual product is transferred to the customer.

During the years ended December 31, 2022 and 2021, the Company recognized product revenue of \$694,286 and \$607,783, respectively. For the years ended December 31, 2022 and 2021, one customer's revenue individually represented 82% and 83%, respectively, of the Company's product total revenue.

Milestone and engineering revenue. Each milestone and engineering arrangement is a separate performance obligation. The transaction price is estimated using the most likely amount method and revenue is recognized as the performance obligation is satisfied through achieving manufacturing, costs or engineering targets. During the year ended December 31, 2022, the Company recognized total milestone revenue of \$528,500. The Company did not have Milestone and engineering revenue during the year ended December 31, 2021.

Government contracts revenue. Revenue from government research and development contracts is generated under terms that are cost plus fee or firm fixed price. The Company generally recognizes this revenue over time using cost-based input methods, which recognize revenue and gross profit as work is performed based on the relationship between actual costs incurred compared to the total estimated costs of the contract. In applying cost-based input methods of revenue recognition, we use the actual costs incurred relative to the total estimated costs to determine our progress towards contract completion and to calculate the corresponding amount of revenue to recognize.

Cost based input methods of revenue recognition are considered a faithful depiction of our efforts to satisfy long-term government research and development contracts and therefore reflect the performance obligations under such contracts. Costs incurred that do not contribute to satisfying the Company's performance obligations are excluded from our input methods of revenue recognition as the amounts are not reflective of transferring control under the contract. Costs incurred towards contract completion may include direct costs plus allowable indirect costs and an allocable portion of the fixed fee. If actual and estimated costs to complete a contract indicate a loss, provision is made currently for the loss anticipated on the contract.

No government contract revenue was recognized for the years ended December 31, 2022 and 2021.

As a practical expedient, the Company elects to exclude disclosures related to certain unsatisfied performance obligations. These performance obligations include the milestone performance obligations which are wholly unsatisfied as of December 31, 2022.

Receivables and Allowance for Doubtful Accounts: Trade accounts receivable are recorded at the invoiced amount as the result of transactions with customers. The Company maintains allowances for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. The Company estimates the collectability of accounts receivable using analysis of historical bad debts, customer creditworthiness and current economic trends. Reserves are established on an account-by-account basis and are written off against the allowance in the period in which the Company determines that it is probable that the receivable will not be recovered.

The Company bills the government under cost-based research and development contracts at provisional billing rates which permit the recovery of indirect costs. These rates are subject to audit on an annual basis by the government agencies' cognizant audit agency. The cost audit may result in the negotiation and determination of the final indirect cost rates. In the opinion of management, re-determination of any cost-based contracts will not have a material effect on the Company's financial position or results of operations.

As of December 31, 2022 and 2021, the Company had an accounts receivable, net balance of \$1,769 and \$49,250, respectively. As of December 31, 2022 and 2021, the Company had an allowance for doubtful accounts of \$26,000 and \$26,000, respectively.

The payment terms and conditions in customer contracts vary. Customers required to prepay are represented by deferred revenues, included in Accrued Liabilities on the Balance Sheets, until the Company's performance obligations are satisfied. Invoiced customers are typically required to pay within 30 days of invoicing. Deferred revenue was as follows:

Balance as of January 1, 2021	\$	307,500
Additions		22,500
Recognized as revenue		(307,500)
Balance as of December 31, 2021		22,500
Additions		229,813
Recognized as revenue		(239,313)
Balance as of December 31, 2022	\$	13,000

Shipping and Handling Costs: The Company classifies shipping and handling costs for products shipped to customers as a component of “Cost of revenues” on the Company’s Statements of Operations. Customer payments of shipping and handling costs are recorded as a component of Revenues.

Share-Based Compensation: The Company measures and recognizes compensation expense for all share-based payment awards made to employees, officers, directors, and consultants based on estimated fair values. The value of the portion of the award that is ultimately expected to vest, net of estimated forfeitures, is recognized as expense on a straight-line basis, over the requisite service period in the Company’s Statements of Operations. Forfeitures are estimated at the time of grant and revised, as necessary, in subsequent periods if actual forfeitures differ from those estimates. The Company estimates the fair value of its restricted stock awards as its stock price on the grant date.

Research, Development and Manufacturing Operations Costs: Research, development and manufacturing operations expenses were \$5,975,921 and \$4,140,319 for the years ended December 31, 2022 and 2021, respectively. Research, development and manufacturing operations expenses include: 1) technology development costs, which include expenses incurred in researching new technology, improving existing technology and performing federal government research and development contracts, 2) product development costs, which include expenses incurred in developing new products and lowering product design costs, and 3) pre-production and production costs, which include engineering efforts to improve production processes, material yields and equipment utilization, and manufacturing efforts to produce saleable product. Research, development and manufacturing operations costs are expensed as incurred, with the exception of costs related to inventoried raw materials, work-in-process and finished goods, which are expensed as cost of revenue as products are sold.

Marketing and Advertising Costs: Marketing and advertising costs are expensed as incurred. Marketing and advertising expenses were \$7,605 and \$8,912 for the years ended December 31, 2022 and 2021, respectively.

Income Taxes: Deferred income taxes are provided using the liability method whereby deferred tax assets are recognized for deductible temporary differences and operating loss and tax credit carry forwards and deferred tax liabilities are recognized for taxable temporary differences. Temporary differences are the differences between the reported amounts of assets and liabilities and their tax bases. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized. Deferred tax assets and liabilities are adjusted for the effects of the changes in tax laws and rates as of the date of enactment. Interest and penalties, if applicable, would be recorded in operations.

The Company has analyzed filing positions in all of the federal and state jurisdictions where it is required to file income tax returns, as well as all open tax years (2019-2022) in these jurisdictions. The Company believes its income tax filing positions and deductions will be sustained on audit and does not anticipate any adjustments that will result in a material adverse effect on the Company’s financial condition, results of operations, or cash flows. Therefore, no reserves for uncertain income tax positions have been recorded.

Earnings per Share: Earnings per share (“EPS”) are the amount of earnings attributable to each share of common stock. Basic EPS has been computed by dividing income available to common stockholders by the weighted-average number of common shares outstanding during the period. Income available to common stockholders includes dividends on cumulative preferred stock (whether or not earned). Diluted earnings per share have been computed by dividing net income adjusted on an if-converted basis for the period by the weighted average number of common shares and potentially dilutive common share outstanding (which consist of options and convertible securities using the treasury stock method or the if-converted method, as applicable, to the extent they are dilutive).

Approximately 1.4 million dilutive shares and 3.9 million warrants for the year ended December 31, 2022 and approximately 28.2 million dilutive shares for the year ended December 31, 2021 were omitted because they were anti-dilutive.

Fair Value Estimates: Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. The Company uses fair value hierarchy based on three levels of inputs, of which, the first two are considered observable and the last unobservable, to measure fair value:

- Level 1 – Quoted prices in active markets for identical assets or liabilities.
- Level 2 – Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3 – Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

Certain long-lived assets and current liabilities have been measured at fair value on a recurring and non-recurring basis. The carrying amount of our long-term debt outstanding approximates fair value because the Company's current borrowing rate does not materially differ from market rates for similar bank borrowings and are considered to be Level 2. The carrying value for cash and cash equivalents, accrued expenses and other assets and liabilities approximate their fair values due to their short maturities.

Reclassifications: Certain prior year balances have been reclassified to conform to current year presentation. Specifically, prior year accrued expenses was disaggregated to conform to the current year presentation.

Recently Issued Accounting Standards

In August 2020, the FASB issued ASU No. 2020-06, *Debt – Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*. ASU 2020-06 will simplify the accounting for convertible instruments by reducing the number of accounting models for convertible debt instruments and convertible preferred stock. Limiting the accounting models results in fewer embedded conversion features being separately recognized from the host contract as compared with current GAAP. Convertible instruments that continue to be subject to separation models are (1) those with embedded conversion features that are not clearly and closely related to the host contract, that meet the definition of a derivative, and that do not qualify for a scope exception from derivative accounting and (2) convertible debt instruments issued with substantial premiums for which the premiums are recorded as paid-in capital. ASU 2020-06 also amends the guidance for the derivatives scope exception for contracts in an entity's own equity to reduce form-over-substance-based accounting conclusions. ASU 2020-06 will be effective for smaller reporting public companies for fiscal years beginning after December 15, 2023, including interim periods within those fiscal years. Early adoption is permitted, but no earlier than fiscal years beginning after December 15, 2020, including interim periods within those fiscal years. Management is evaluating the impact of this ASU on the Company's financial statement presentation.

Other new pronouncements issued but not effective as of December 31, 2022 are not expected to have a material impact on the Company's financial statements.

NOTE 4. LIQUIDITY, CONTINUED OPERATIONS, AND GOING CONCERN

The Company is currently focusing on integrating its PV products into scalable and high value markets which includes agrivoltaics, aerospace, etc. and has limited PV production at its manufacturing facility. The Company does not expect that sales revenue and cash flows will be sufficient to support operations and cash requirements until it has fully implemented its relaunch strategy. During the year ended December 31, 2022 the Company used \$10,506,575 in cash for operations. As of December 31, 2022, the Company had \$662,321 in accounts and related party payables and \$559,060 in interest payable.

Additionally, projected product revenues are not anticipated to result in a positive cash flow position for the year 2023 overall and, as of December 31, 2022, the Company has a working capital of \$7,470,521. Although the Company has working capital, additional financing will be required for the Company to reach a level of sufficient sales to achieve profitability.

The Company continues to seek additional funding through strategic or financial investors, but there is no assurance the Company will be able to raise additional capital on acceptable terms or at all. If the Company's revenues do not increase rapidly, and/or additional financing is not obtained, the Company will be required to significantly curtail operations to reduce costs and/or sell assets. Such actions would likely have an adverse impact on the Company's future operations.

As a result of the Company's recurring losses from operations, and the need for additional financing to fund its operating and capital requirements, there is uncertainty regarding the Company's ability to maintain liquidity sufficient to operate its business effectively, which raises substantial doubt as to the Company's ability to continue as a going concern.

Management cannot provide any assurances that the Company will be successful in accomplishing any of its plans. These financial statements do not include any adjustments that might be necessary should the Company be unable to continue as a going concern.

NOTE 5. RELATED PARTY TRANSACTIONS

On September 15, 2021, the Company entered into a Long-Term Supply and Joint Development Agreement (“JDA”) with TubeSolar, a significant stakeholder in the Company. Under the terms of the JDA, the Company will produce, and TubeSolar will purchase, thin-film PV foils (“PV Foils”) for use in TubeSolar’s solar modules for agricultural photovoltaic (“APV”) applications that require solar foils for its production. Additionally, the Company will receive (i) up to \$4 million of non-recurring engineering (“NRE”) fees, (ii) up to \$13.5 million of payments upon achievement of certain agreed upon production and cost structure milestones and (iii) product revenues from sales of PV Foils to TubeSolar. The JDA has no fixed term, and may only be terminated by either party for breach. The Company recognized \$512,000 of NRE revenue and \$3,000 product revenue under the JDA during the year ended December 31, 2022. The Company recognized \$40,000 in product revenue from TubeSolar during the year ended December 31, 2021.

The Company and TubeSolar also established Ascent Solar Technologies Germany GmbH (“Ascent Germany”), in which TubeSolar holds of 30% of the entity. Ascent Germany was established to operate a PV manufacturing facility in Germany that will produce and deliver PV Foils exclusively to TubeSolar. Until Ascent Germany’s facility is fully operational, PV Foils will be manufactured in the Company’s existing facility in Thornton, Colorado. The parties expect to jointly develop next generation tooling for use in manufacturing PV Foils at the JV facility. The Company accounts for this investment as an equity method investment as it does not have control of this entity, but does have significant influence over the activities that most significantly impact the entity’s operations and financial performance. The Company contributed \$83,559 and \$21,205 to Ascent Germany during the years ended December 31, 2022 and 2021, respectively. The Company currently cannot quantify its maximum exposure in this entity.

NOTE 6. PROPERTY, PLANT AND EQUIPMENT

The following table summarizes property, plant and equipment as of December 31, 2022 and 2021:

	As of December 31,	
	2022	2021
Furniture, fixtures, computer hardware and computer software	\$ 482,235	\$ 473,448
Leasehold improvements	87,957	45,000
Manufacturing machinery and equipment	21,739,504	21,818,624
Manufacturing machinery and equipment, in progress	280,473	88,863
Depreciable property, plant and equipment	22,590,169	22,425,935
Less: Accumulated depreciation and amortization	(22,038,508)	(22,146,273)
Net property, plant and equipment	\$ 551,661	\$ 279,662

Depreciation expense for the years ended December 31, 2022 and 2021 was \$56,477 and \$19,423, respectively. Depreciation expense is recorded under “Depreciation and amortization expense” in the Statements of Operations.

NOTE 7. OPERATING LEASES

The Company’s operating leases are primarily comprised of approximately 100,000 rentable square feet for its manufacturing and operations and a Company car. The building lease term is for 88 months commencing on September 21, 2020 at a rent of \$50,000 per month including taxes, insurance and common area maintenance until December 31, 2020. Beginning January 1, 2021, the rent adjusted to \$80,000 per month on a triple net basis and shall increase at an annual rate of 3% per annum until December 31, 2027.

As of December 31, 2022 and 2021, assets and liabilities related to the Company’s lease were as follows:

	As of December 31,	
	2022	2021
Operating lease right-of-use assets, net	\$ 4,324,514	\$ 4,984,688
Current portion of operating lease liability	733,572	646,742
Non-current portion of operating lease liability	3,827,878	4,532,490

During the years ended December 31, 2022 and 2021 the Company recorded operating lease costs included in Selling, general, and administrative expenses on the Statement of Operations of \$1,042,346 and \$1,033,570, respectively.

Future maturities of the operating lease liability are as follows:

2023	\$	1,029,633
2024		1,060,187
2025		1,090,196
2026		1,112,903
2027		1,146,291
Total lease payments	\$	5,439,210
Less amounts representing interest	\$	(877,760)
Present value of lease liability	\$	4,561,450

The remaining weighted average lease term and discount rate of the operating lease is 59.8 months and 7.0% respectively.

NOTE 8. INVENTORIES

Inventories consisted of the following at December 31, 2022 and 2021:

	As of December 31,	
	2022	2021
Raw materials	\$ 577,799	\$ 575,154
Work in process	37,351	15,803
Finished goods	133	1,215
Total	\$ 615,283	\$ 592,172

NOTE 9. NOTES PAYABLE

Prior to 2020, the Company entered into an agreement with A vendor (“Vendor”) to convert the balance of their account into a note payable in the amount of \$250,000. The note bears interest of 5% per annum and matured on February 28, 2018. As of December 31, 2022, the Company had not made any payments on this note, the accrued interest was \$68,836, and the note is due upon demand. This note is recorded as Other payable in the Balance Sheets.

NOTE 10. SECURED PROMISSORY NOTE

Global Ichiban Secured Promissory Notes

As of January 1, 2021, the Company had an outstanding secured convertible promissory notes issued to Global Ichiban Limited (“Global”) with a principal amount of \$5,800,000 (“GI Note”) and remaining discount of \$394,363. Principal on the GI Note, if not converted, would be payable in a lump sum on September 30, 2022. The GI Note does not bear any accrued interest but bears a default interest rate of 18% in the event of a default. The GI Note is secured by a lien on substantially all of the Company’s assets pursuant to the Security Agreement dated November 30, 2017 (the “Security Agreement”) entered into between the Company and Global. On March 9, 2021, the Company entered into a settlement agreement (“Settlement”) with Global. Pursuant to the Settlement, the Company issued 33,600 shares of Common Stock of the Company to Global in exchange for the cancellation of the remaining GI Note of \$5,800,000.

The conversion option associated with the GI Note was deemed to include an embedded derivative that required bifurcation and separate accounting under ASC Topic 815, *Derivative and Hedging*. As such, the Company ascertained the value of the conversion option as if separate from the convertible issuance and recorded that value as a derivative liability. The fair value measurements rely primarily on Company-specific inputs and the Company’s own assumptions. With the absence of observable inputs, the Company determined these recurring fair value measurements reside primarily within Level 3 of the fair value hierarchy. The derivative associated with the notes approximates management’s estimate of the fair value of the embedded derivative liability based on using a Monte Carlo simulation following a Geometric Brownian Motion.

Management assessed the fair value of this embedded derivative, as of January 1, 2021, using the following assumptions: annual volatility of 62%, and a dividend yield of 0%. As a result of the fair value assessment, the Company valued the derivative liability at \$5,303,984 as of January 1, 2021.

On March 9, 2021, as a result of the Settlement, the entire GI Note was canceled and the Company recorded an aggregate net gain of \$5,303,984 as “Change in fair value of derivatives and gain/loss on extinguishment of liabilities, net” in the Statement of Operations to properly reflect that the value of the embedded derivative had been eliminated.

NOTE 11. PROMISSORY NOTES

SBA PPP

On April 17, 2020, the Company obtained a PPP Loan from Vectra Bank Colorado (“Vectra”) in the aggregate amount of \$193,200, which was established under the CARES Act, as administered by the Small Business Association (“SBA”). Under the terms of the CARES Act and the PPP, all or a portion of the principal amount of the PPP Loan is subject to forgiveness so long as, over the 24-week period following the Company’s receipt of the proceeds of the PPP Loan, the Company uses those proceeds for payroll costs, rent, utility costs or the maintenance of employee and compensation levels. The PPP Loan is unsecured, guaranteed by the SBA, and has a two-year term, maturing on April 17, 2022. Interest accrues on the loan beginning with the initial disbursement; however, payments of principal and interest are deferred until Vectra’s determination of the amount of forgiveness applied for by the Company is approved by the SBA. If the Company does not apply for forgiveness within 10 months after the last day of the covered period (defined, at the Company’s election as 24 weeks), such payments will be due that month. On September 4, 2021, the Company received notification from Vectra that the SBA has forgiven the PPP loan. The Company recognized \$195,852 of forgiven principal and accrued interest in Change in fair value of derivatives and gain/(loss) on extinguishment of liabilities, net in the Statements of Operations.

NOTE 12. CONVERTIBLE NOTES

The following tables provide a summary of the activity of the Company's convertible notes:

	Principal Balance 1/1/2021	New Notes	Notes assigned or exchanged	Notes converted	Principal Balance 12/31/2021	Less: Discount Balance	Net Principal Balance 12/31/2021
BD1 Notes (related party)	\$ 10,500,000	\$ —	\$ (600,000)	\$ —	\$ 9,900,000	\$ (2,210,182)	\$ 7,689,818
Crowdex Note (related party)	250,000	—	—	(250,000)	—	—	—
Nanyang Note	—	—	600,000	(100,000)	500,000	(112,971)	387,029
	<u>\$ 10,750,000</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ (350,000)</u>	<u>\$ 10,400,000</u>	<u>\$ (2,323,153)</u>	<u>\$ 8,076,847</u>

	Principal Balance 12/31/2021	New Notes	Notes assigned or exchanged	Notes converted	Principal Balance 12/31/2022	Less: Discount Balance	Net Principal Balance 12/31/2022
BD1 Notes (related party)	\$ 9,900,000	\$ —	\$ (2,000,000)	\$ (7,900,000)	\$ —	\$ —	\$ —
Nanyang Note	500,000	—	1,000,000	(1,500,000)	—	—	—
Fleur	—	—	1,000,000	(1,000,000)	—	—	—
Sabby	—	7,500,000	—	(107,101)	7,392,899	(4,777,643)	2,615,256
L1	—	7,500,000	—	—	7,500,000	(4,846,857)	2,653,143
	<u>\$ 10,400,000</u>	<u>\$ 15,000,000</u>	<u>\$ —</u>	<u>\$ (10,507,101)</u>	<u>\$ 14,892,899</u>	<u>\$ (9,624,500)</u>	<u>\$ 5,268,399</u>

BD1 Convertible Note

On December 18, 2020, the Company entered into a securities exchange agreement (“BD1 Exchange Agreement”) with BD1, who had previously acquired \$6,252,000 of principal of existing unsecured debt and \$1,145,000 of accrued interest from a number of investors. Pursuant to the terms of the BD1 Exchange Agreement, BD1 agreed to surrender and exchange all of its outstanding promissory notes with principal balances of approximately \$10.4 million (including accrued interest and default penalties). In exchange, the Company issued to BD1 two unsecured convertible notes with an aggregate principal amount of \$10,500,000 (“BD1 Exchange Notes”). The BD1 Exchange Notes do not bear any interest, and will mature on December 18, 2025. BD1 has the right, at any time until the BD1 Exchange Notes are fully paid, to convert any outstanding and unpaid principal into shares of Common Stock at a fixed conversion price equal to \$0.50 per share. Accordingly, the Company would issue 21,000,000 shares of Common Stock upon a full conversion of the BD1 Exchange Notes.

On August 13, 2021, BD1 assigned \$600,000 of its outstanding principal balance to Nanyang Investment Management Pte Ltd (“Nanyang”). As of December 31, 2021, BD1 held notes with an aggregate principal amount of \$9,900,000 convertible to 19,800,000 shares of common stock.

On January 3, 2022, BD1 assigned \$1,000,000 of its convertible notes to Fleur Capital Pte Ltd (“Fleur”). On January 21, 2022, BD1 assigned \$1,000,000 of its convertible notes to Nanyang. The aggregate remaining principal balance held by BD1 after these assignments was \$7,900,000. On February 1, 2022, BD1 converted all of their remaining \$7,900,000 aggregate outstanding principal amount into 15,800,000 shares of common stock. The remaining discount of approximately \$1,721,000 was charged to interest expense upon conversion.

Nanyang Convertible Note

On August 13, 2021, as discussed above, BD1 assigned \$600,000 of the BD1 Exchange Notes to Nanyang. This note does not bear any interest and will mature on December 18, 2025. Nanyang has the right, at any time until the note is fully paid, to convert any outstanding and unpaid principal into share of common stock at a fixed conversion price equal to \$0.50 per share. Accordingly, the Company would issue 1,200,000 common shares upon full conversion of this note. Shares of common stock may not be issued pursuant to this note if, after giving effect to the conversion or issuance, Nanyang, together with its affiliates, would beneficially own in excess of 4.99% of the outstanding shares of the Company’s common stock.

On October 13, 2021, \$100,000 of Nanyang’s convertible notes were converted into 200,000 shares of common stock. As of December 31, 2021, Nanyang held notes with an aggregate principal amount of \$500,000 convertible to 1,000,000 shares of common stock.

On January 21, 2022, as discussed above, BD1 assigned \$1,000,000 of the BD1 Convertible Notes to Nanyang. This note does not bear any interest and will mature on December 18, 2025. Nanyang has the right, at any time until the note is fully paid, to convert any outstanding and unpaid principal into shares of common stock at a fixed conversion price equal to \$0.50 per share. Shares of common stock may not be issued pursuant to this note if, after giving effect to the conversion or issuance, Nanyang, together with its affiliates, would beneficially own in excess of 4.99% of the outstanding shares of the Company’s common stock. The discount on the principal is charged to interest expense, ratably, over the life of the note.

On February 2, 2022, Nanyang converted \$600,000 of their convertible notes into 1,200,000 shares of common stock. The associated discount on the converted portion of the notes of approximately \$133,000 was charged to interest expense.

In July 2022, the Company and Nanyang agreed to waive the 4.99% cap on securities beneficially owned by Nanyang and its affiliates. On July 11, 2022, Nanyang converted all of their remaining \$900,000 balance of their convertible notes into 1,800,000 shares of common stock. The remaining associated discount of approximately \$176,000 on the note was charged to interest expense.

Fleur Convertible Note

On January 21, 2022, as discussed above, BD1 assigned \$1,000,000 of the BD1 Convertible Notes to Fleur. This note does not bear any interest and will mature on December 18, 2025. Fleur has the right, at any time until the note is fully paid, to convert any outstanding and unpaid principal into shares of common stock at a fixed conversion price equal to \$0.50 per share. Shares of common stock may not be issued pursuant to this note if, after giving effect to the conversion or issuance, Fleur, together with its affiliates, would beneficially own in excess of 4.99% of the outstanding shares of the Company’s common stock. The discount on the principal is charged to interest expense, ratably, over the life of the note.

On February 2, 2022, Fleur converted \$700,000 of their convertible notes into 1,400,000 shares of common stock. The associated discount on the converted portion of the notes of approximately \$155,000 was charged to interest expense. The discount on the remaining principal will be charged to interest expense, ratably, over the life of the note.

In July 2022, the Company and Fleur agreed to waive the 4.99% cap on securities beneficially owned by Fleur. On July 11, 2022, Fleur converted all of their remaining \$300,000 balance of their convertible notes into 600,000 shares of common stock. The remaining associated discount of approximately \$59,000 on the note was charged to interest expense.

Sabby / L1 Convertible Note

On December 19, 2022, the Company entered into a Securities Purchase Contract (the “Purchase Contract”) with two institutional investors (each, an “Investor” and collectively, the “Investors”) for the issuance of \$12,500,000 in aggregate principal amount of Senior Secured Original Issue 10% Discount Convertible Advance Notes, for a purchase price of \$11,250,000 in cash, net of an original issuance discount of \$1,250,000 (the “Registered Advance Notes”), which matures in 18 months, bears 4.5% interest per annum, payable, at the option of the Company, in kind or in cash, subject to certain conditions, and is convertible, at the option of the holders from time to time, into shares of the Company’s Common Stock, or repayable in cash at maturity.

Under the Purchase Contract, in a concurrent private placement (the “Private Placement”), the Company issued to the Investors an additional \$2,500,000 in aggregate principal amount of Senior Secured Original Issue 10% Discount Convertible Advance Notes, for a purchase price of \$2,250,000 in cash, net of an original issuance discount of \$250,000 (the “Private Placement Advance Notes” and, together with the Registered Advance Notes, the “Advance Notes”), which matures in 18 months, bears 4.5% interest per annum, payable, at the option of the Company, in kind or in cash, subject to certain conditions, and is convertible, at the option of the holders from time to time, into shares of the Company’s Common Stock, or repayable in cash at maturity.

The Advanced Notes are also secured by a pledge of all assets of the Company pursuant to a Security Agreement, dated as of December 19, 2022 and can be converted, at the option of the Investors, into shares of the Company’s Common Stock at a conversion price, which is equal to the lower of (1) a 30% premium to the average of the five most recent daily volume weighted average price (“VWAPs”) of the Common Stock as measured on the day prior to the issuance of the Registered Advance Notes (the “Fixed Conversion Price”) and (2) 92.5% of the three lowest VWAPs of the Common Stock on the 10 trading days preceding delivery of a Conversion Notice by an Investor. The conversion price cannot be less than \$0.57 if required in accordance with the rules and regulations of Nasdaq. An Investor (together with its affiliates) may not convert any portion of such Investor’s Advance Notes to the extent that the Investor would beneficially own more than 4.99% of the Company’s outstanding shares of Common Stock after conversion, except that upon at least 61 days prior notice from the Investor to the Company, the Investor may increase the maximum amount of its beneficial ownership of the Company’s outstanding shares of Common Stock after converting the holder’s Advance Notes to up to 9.99% of the number of shares of Common Stock outstanding immediately after giving effect to the conversion.

Additionally, the Investors have the option to require early prepayment of the principal amount of the Registered Advance Notes in cash from up to 30% of the gross proceeds of any subsequent issuance by the Company, for cash, of shares of the Company’s Common Stock or convertible securities, or any combination of units thereof. The Company, pursuant to the terms in the Purchase Contract, 210 days after the date of the Purchase Contract, may request that one of the Investors (the “Additional Advance Notes Investor”) acquire from the Company for a purchase price equal to 90% of the principal amounts thereof, additional Advance Notes (the “Additional Advance Notes”) to be issued in a registered direct offering in an aggregate principal amount not to exceed \$1,000,000 (or, with the consent of the Additional Advance Notes Investor, \$2,000,000) in any given month, up to an aggregate principal amount of \$35,000,000 of Additional Advance Notes, provided, however, that no more than one Additional Advance Note may be issued during any 30-day period.

The Company also issued to the Investors warrants to purchase up to 2,513,406 shares of Common Stock (the “Warrants”), which have a five-year term and an exercise price of \$3.93 per share, in each case subject to adjustment in accordance with the terms thereof. The Warrants are exercisable for cash. If, at the time the holder exercises any Warrants, a registration statement registering the issuance of the shares of Common Stock underlying the Warrants is not then effective or available for the issuance of such shares, then the Warrants may be net exercised on a cashless basis according to a formula set forth in the Warrants. There were 2,513,406 warrants outstanding as of December 31, 2022.

On December 19, 2022, the Company received \$13,500,000 of gross proceeds from the Investors. The \$13,500,000 was allocated between the Advanced Notes and Warrants purchased based on the relative fair value of these instruments. The fair value of the Advanced Notes was estimated as the proceeds received and the fair value of the Warrants was determined using the Black Scholes model using the following inputs and are both considered to be Level 2 inputs on the fair value hierarchy:

	Warrants
Expected stock price volatility	129.5 %
Dividend yield	0 %
Risk-free interest rate	3.7 %
Expected life of the warrants (in years)	2.5

Additionally, the Company determined the conversion feature was beneficial to the Investors at the date of issuance. The Company allocated a portion of the proceeds to the beneficial conversion feature (“BCF”) based on its intrinsic value. The Company then allocated transaction costs based on these allocations resulting in the following allocation of proceeds:

	Gross Amount	Allocation	Original Note Discount	Transaction Costs	Net Amount
Convertible Debt	\$ 15,000,000	\$ (7,480,058)	\$ (1,500,000)	\$ (930,678)	\$ 5,089,264
Warrants	—	2,990,029	—	(462,256)	2,527,773
BCF	—	4,490,029	—	(694,155)	3,795,874
	<u>\$ 15,000,000</u>	<u>\$ —</u>	<u>\$ (1,500,000)</u>	<u>\$ (2,087,089)</u>	<u>\$ 11,412,911</u>

The discount on the note is recorded as interest expense ratably over the term of the note. During the year ended December 31, 2022, an Investor converted \$107,101 principal into 70,000 shares of Common Stock. Interest payable on the Advance Notes, as of December 31, 2022 is approximately \$22,100.

NOTE 13. SERIES A PREFERRED STOCK

Holders of Series A Preferred Stock are entitled to cumulative dividends at a rate of 8% per annum when and if declared by the Board of Directors at its sole discretion. The dividends may be paid in cash or in the form of common stock (valued at 10% below market price, but not to exceed the lowest closing price during the applicable measurement period), at the discretion of the Board of Directors. The dividend rate on the Series A Preferred Stock is indexed to the Company's stock price and subject to adjustment.

The Series A Preferred Stock may be converted into shares of common stock at the option of the Company if the closing price of the common stock exceeds \$1,160,000, as adjusted, for twenty consecutive trading days, or by the holder at any time. The Company has the right to redeem the Series A Preferred Stock at a price of \$8.00 per share, plus any accrued and unpaid dividends. At December 31, 2022, the preferred shares were not eligible for conversion to common shares at the option of the Company. The holder of the preferred shares may convert to common shares at any time. After making adjustment for the Company's prior reverse stock splits, all 48,100 outstanding Series A preferred shares are convertible into less than one common share. Upon any conversion (whether at the option of the Company or the holder), the holder is entitled to receive any accrued but unpaid dividends.

Except as otherwise required by law (or with respect to approval of certain actions), the Series A Preferred Stock shall have no voting rights. Upon any liquidation, dissolution or winding up of the Company, after payment or provision for payment of debts and other liabilities of the Company, the holders of Series A Preferred Stock shall be entitled to receive, pari passu with any distribution to the holders of common stock of the Company, an amount equal to \$8.00 per share of Series A Preferred Stock plus any accrued and unpaid dividends.

As of December 31, 2022, there were 48,100 shares of Series A Preferred Stock outstanding and accrued and unpaid dividends of \$465,501.

NOTE 14. SERIES 1A PREFERRED STOCK

Each share of Series 1A Preferred Stock has an original issue price of \$1,000 per share. Shares of the Series 1A Preferred Stock are convertible into common stock at a fixed conversion price equal to \$0.50 per common share, subject to standard ratable anti-dilution adjustments.

Outstanding shares of Series 1A Preferred Stock are entitled to vote together with the holders of common stock as a single class (on an as-converted to common stock basis) on any matter presented to the stockholders of the Company for their action or consideration at any meeting of stock holders (or written consent of stockholders in lieu of meeting).

Holders of the Series 1A Preferred Stock are not entitled to any fixed rate of dividends. If the Company pays a dividend or otherwise makes a distribution payable on shares of common stock, holders of the Series 1A Preferred Stock will receive such dividend or distribution on an as-converted to common stock basis. There are no specified redemption rights for the Series 1A Preferred Stock. Upon liquidation, dissolution or winding up, holders of Series 1A Preferred Stock will be entitled to be paid out of the Company's assets, prior to the holders of our common stock, an amount equal to \$1,000 per share plus any accrued but unpaid dividends (if any) thereon.

As of January 1, 2021, Crowdex Investment, LLC ("Crowdex") owned 1,300 shares of Series 1A Preferred Stock. On February 1, 2022, Crowdex converted their 1,300 shares of Series 1A Preferred Stock into 2,600,000 shares of common stock.

On January 4, 2021, the Company entered into a securities purchase agreement ("Series 1A Tranche 2 SPA") with TubeSolar. Pursuant to the Series 1A Tranche 2 SPA, the Company sold 2,500 shares of Series 1A Preferred Stock to TubeSolar and received \$2,500,000 of gross proceeds on January 5, 2021. During the year ended December 31, 2021, TubeSolar converted

100 shares of Series 1A Preferred Stock into 200,000 shares of common stock. On February 1, 2022 TubeSolar converted their remaining 2,400 shares of Series 1A Preferred Stock into 4,800,000 shares of common stock.

NOTE 15. STOCKHOLDERS' EQUITY (DEFICIT)

Common Stock

At, the Company had 500 million shares of common stock, \$0.0001 par value, authorized for issuance. Each share of common stock has the right to one vote. As of December 31, 2022, the Company had 34,000,812 shares of common stock outstanding. The Company has not declared or paid any dividends related to the common stock through December 31, 2022.

On March 4, 2021, Baybridge purchased 15,000 shares of the Company's common stock for an aggregate purchase price of \$3,000,000.

On August 2, 2021, the Company entered into a common stock purchase agreement ("Common Stock SPA") with BD1 for the placement of 133,333 shares of the Company's common stock for an aggregate purchase price of \$10,000,000. The first tranche of 66,667 shares for \$5,000,000 closed on September 2, 2021 and the second tranche closed on November 5, 2021.

Private Placement Offering

On August 4, 2022, the Company received \$1,000,000 of gross proceeds pursuant to an unsecured convertible promissory note (the "Bridge Note") sold and issued to Lucro Investments VCC – ESG Opportunities Fund ("Lucro"), an affiliate of Fleur. The Bridge Note matures on February 3, 2023 (the "Maturity Date") and does not bear interest (except in the event of a default). If the Company completes a "Qualified Financing", the \$1 million outstanding principal amount of the Bridge Note will automatically convert into the type of securities offered by the Company in the Qualified Financing on the same pricing, terms and conditions as specified in the Qualified Financing. A Qualified Financing is defined as (i) the Company's issuance and sale of shares of its equity or equity-linked securities to investors, (ii) on or before the Maturity Date, (iii) in a financing with total proceeds to the Company of at least \$5,000,000 (inclusive of the conversion of the \$1,000,000 Bridge Note), and (iv) which financing would result in the listing of the Company's common stock on the Nasdaq Capital Market ("Nasdaq").

On August 8, 2022, the Company entered into a securities purchase agreement ("SPA") with Lucro for the private placement (the "Common Stock Private Placement") of an aggregate of 943,397 shares (the "Shares") of the Company's common stock and warrants exercisable for up to an additional 1,415,095 shares of Common Stock (the "Warrants"). The Shares and Warrants were sold in units (the "Units") at a fixed price of \$5.30 per Unit. Each Unit consists of (i) one Share and (ii) Warrants exercisable for 1.5 shares of Common Stock.

Each Warrant is exercisable for five years at an exercise price of \$5.30 per one share of Common Stock. The holder may not exercise the Warrants to the extent that, after giving effect to such exercise, the holder would beneficially own in excess of 9.99% of the shares of Common Stock outstanding, or, at the holder's election on not less than 61 days notice, 19.99%. The Warrants are exercisable for cash. If, at the time the holder exercises any Warrants, a registration statement registering the issuance of the shares of Common Stock underlying the Warrants is not then effective or available for the issuance of such shares, then the Warrants may be net exercised on a cashless basis according to a formula set forth in the Warrants. There were 1,415,905 warrants outstanding at December 31, 2022.

On August 19, 2022, the Company received \$4,000,000 of gross proceeds from the Common Stock Private Placement and the \$1,000,000 Bridge Note was canceled and converted into Common Stock and Warrants. The \$5,000,000 was allocated between the Common Stock and Warrants purchased based on the relative fair value of these instruments. The fair value of the Common Stocks was determined using the closing price of the stock at close if the SPA (Level 1 on the fair value hierarchy) and the fair value of the Warrants was determined using the Black Scholes model using the following inputs (Level 2 on the fair value hierarchy):

	Warrants
Expected stock price volatility	82 %
Dividend yield	0 %
Risk-free interest rate	3 %
Expected life of the warrants (in years)	5

Warrants

As of December 31, 2022, there are 3,929,311 outstanding warrants with exercise prices between \$3.93 and \$5.30 per share.

Preferred Stock

December 31, 2022, the Company had 25,000,000 shares of preferred stock, \$0.0001 par value, authorized for issuance. Preferred stock may be issued in classes or series. Designations, powers, preferences, rights, qualifications and restrictions are determined by the Company's Board of Directors. The following table summarizes the designations, shares authorized, and shares outstanding for the Company's Preferred Stock:

Preferred Stock Series Designation	Shares Authorized	Shares Outstanding
Series A	750,000	48,100
Series 1A	5,000	—
Series B-1	2,000	—
Series B-2	1,000	—
Series C	1,000	—
Series D	3,000	—
Series D-1	2,500	—
Series E	2,800	—
Series F	7,000	—
Series G	2,000	—
Series H	2,500	—
Series I	1,000	—
Series J	1,350	—
Series J-1	1,000	—
Series K	20,000	—

Series A Preferred Stock

Refer to Note 13 for Series A Preferred Stock activity.

Series 1A Preferred Stock

Refer to Note 14 for Series 1A Preferred Stock activity.

Series B-1, B-2, C, D, D-1, E, F, G, H, I, J, J-1, and K Preferred Stock

There were no transactions involving the Series B-1, B-2, C, D, D-1, E, G, H, I, J, J-1, or K during the years ended December 31, 2022 and 2021.

NOTE 16. SHARE-BASED COMPENSATION

On September 21, 2022, the Company's Board of Directors appointed Jeffrey Max as the Company's new Chief Executive Officer and granted an inducement grant of restricted stock units ("RSUs") for an aggregate of 3,534,591 shares of Ascent's common stock. 20% of the RSUs are fully vested upon grant. The remaining 80% of the RSUs vests in equal monthly increments over the next 36 months. Any outstanding and unvested RSUs will accelerate and fully vest upon the earlier of (i) a change of control and (ii) the termination of Mr. Max's employment for any reason other than (x) by the Company for cause or (y) by Mr. Max without good reason. The estimated fair value of the restricted stock unit is \$5.37, the closing price at grant date. The RSUs will settle in eight equal increments on the last business day of each calendar quarter beginning with the initial settlement date of September 30, 2024.

On December 12, 2022, the Company's Board of Directors appointed Paul Warley as the Company's new Chief Financial Officer and granted him an inducement grant of RSUs for an aggregate of 700,000 shares of Ascent's common stock. 20% of the RSUs are fully vested upon grant. The remaining 80% of the RSUs vests in equal monthly increments over the next 36 months. Any outstanding and unvested RSUs will accelerate and fully vest upon the earlier of (i) a change of control and (ii) the termination of Mr. Warley's employment for any reason other than (x) by the Company for cause or (y) by Mr. Warley without good reason. The estimated fair value of the restricted stock unit is \$2.98, the closing price at grant date. The RSUs

will settle in eight equal increments on the last business day of each calendar quarter beginning with the initial settlement date of December 31, 2024.

The Company recognized share-based compensation expense related to restricted stock grants of \$5,478,734 for the year ended December 31, 2022.

Total unrecognized share-based compensation expense from unvested restricted stock as of December 31, 2022 was approximately \$15,588,000 is expected to be recognized over a weighted average period of approximately 33.5 months. As of December 31, 2022, 3,152,033 shares were expected to vest in the future. The following table summarizes non-vested restricted stock and the related activity as of and for the year ended December 31, 2022:

	Shares	Weighted Average Grant Date Fair Value
Non-vested at January 1, 2022	—	\$ —
Granted	4,234,591	4.97
Vested	(1,082,558)	5.06
Non-vested at December 31, 2022	3,152,033	\$ 4.95

NOTE 17. INCOME TAXES

The Company records income taxes using the liability method. Under this method, deferred tax assets and are computed for the expected future impact of temporary differences between the financial statement and income tax bases of assets and liabilities using current income tax rates and for the expected future tax benefit to be derived from tax loss and tax credit carryforwards. ASC 740 provides detailed guidance for the financial statement recognition, measurement and disclosure of uncertain tax positions recognized in the financial statements. Tax positions must meet a “more-likely-than-not” recognition threshold before a benefit is recognized in the financial statements.

At December 31, 2022, the Company had \$233.6 million of cumulative net operating loss carryforwards for federal income tax purposes that were available to offset future taxable income through the year 2037. At December 31, 2022, the Company had \$74.7 million of cumulative net operating loss carryforwards for federal income tax purposes that were available to offset future taxable income indefinitely. Under the Internal Revenue Code, the future utilization of net operating losses may be limited in certain circumstances where there is a significant ownership change. The Company prepared an analysis for the year ended December 31, 2012 and determined that a significant change in ownership had occurred as a result of the cumulative effect of the sales of common stock through its offerings. Such change limited the Company’s utilizable net operating loss carryforwards to \$298.4 million for the year ended December 31, 2022. Available net operating loss carryforwards may be further limited in the event of another significant ownership change.

Deferred income taxes reflect an estimate of the cumulative temporary differences recognized for financial reporting purposes from that recognized for income tax reporting purposes. At December 31, 2022 and 2021, the components of these temporary differences and the deferred tax asset were as follows:

	As of December 31,	
	2022	2021
Deferred Tax Asset		
Accrued expenses	\$ 388,000	\$ 104,000
Inventory allowance	83,000	98,000
Other	7,000	5,000
Operating lease liability	1,122,000	1,280,000
Tax effect of NOL carryforward	76,089,000	74,167,000
Share-based compensation	1,348,000	—
Depreciation	(52,000)	596,000
Section 174 costs	355,000	—
Warranty reserve	5,000	5,000
Gross Deferred Tax Asset	79,345,000	76,255,000
Valuation allowance	(78,261,000)	(75,003,000)
Net Deferred Tax Asset	\$ 1,084,000	\$ 1,252,000
Operating lease right-of-use asset, net	(1,064,000)	(1,231,000)
Amortization	(20,000)	(21,000)
Net Deferred Tax Liability	\$ (1,084,000)	\$ (1,252,000)
Total	—	—

In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies in making this assessment. Based upon the level of historical losses and projections of future taxable income over the periods in which the deferred tax assets are deductible, management believes it is not more-likely-than-not that the Company will realize the benefits of these deductible differences at December 31, 2022. The Company's deferred tax valuation allowance of \$78.3 million reflected above is an increase of \$3.3 million from the valuation allowance reflected as of December 31, 2021 of \$75.0 million.

As of December 31, 2022, the Company has not recorded a liability for uncertain tax positions. The Company recognizes interest and penalties related to uncertain tax positions in income tax (benefit)/expense. No interest and penalties related to uncertain tax positions were accrued at December 31, 2022.

The Company's effective tax rate for the years ended December 31, 2022 and 2021 differs from the statutory rate due to the following (expressed as a percentage of pre-tax income):

	2022	2021
Federal statutory rate	21.0 %	21.0 %
State statutory rate	3.1 %	5.4 %
Permanent tax differences	(2.9) %	(3.9) %
Derivative/Warrant Revaluation	— %	— %
Debt Discount	— %	12.7 %
Deferred true-ups	(3.3) %	4.9 %
Deferred rate change	(1.4) %	— %
Other	— %	0.7 %
Change in valuation allowance	(16.5) %	(40.8) %
	— %	— %

NOTE 18. COMMITMENTS AND CONTINGENCIES

On September 21, 2022, the Company and Mr. Lee entered into a Separation Agreement and Release of Claims September 21, 2022 (the "Separation Agreement"). Under the Separation Agreement Mr. Lee is entitled, subject to his non-revocation of a general release of claims in favor of the Company, to the following separation benefits: (i) payment of twelve (12) months salary equal to \$360,000, which amount shall be payable in accordance with the Company's customary payroll practices and regular payroll time periods as in effect from time to time; (ii) the Company will pay Mr. Lee's \$200,000 declared but unpaid cash bonus in two installments; and (iii) the Company shall pay COBRA premiums at the Company's current contribution level for the next 12 months. The Company accrued liabilities of approximately \$363,000 included in Severance Payable on the Balance Sheet as of December 31, 2022.

The Company is subject to various legal proceedings, both asserted and unasserted, that arise in the ordinary course of business. The Company cannot predict the ultimate outcome of such legal proceedings or in certain instances provide reasonable ranges of potential losses. However, as of the date of this report, the Company believes that none of these claims will have a material adverse effect on its financial position or results of operations. In the event of unexpected subsequent developments and given the inherent unpredictability of these legal proceedings, there can be no assurance that the Company's assessment of any claim will reflect the ultimate outcome, and an adverse outcome in certain matters could, from time to time, have a material adverse effect on the Company's financial position or results of operations in particular annual periods.

NOTE 19. RETIREMENT PLAN

The Company has a qualified 401(k) plan which provides retirement benefits for all of its eligible employees. Under the plan, employees become eligible to participate at the first entry date, provided they are at least 21 years of age. The Company will match 100% of the first four percent of employee contributions. In addition, the Company may make discretionary contributions to the Plan as determined by the Board of Directors. Employees are immediately vested in all salary reduction contributions. Employer contributions vest over a three-year period, one-third per year. Employer 401(k) match expense was \$129,040 and \$31,423 for the year ended December 31, 2022 and 2021, respectively. 401(k) match expenses are recorded under "Research, development and manufacturing operations" expense and "Selling, general and administrative" expense in the Statements of Operations.

NOTE 20. SUBSEQUENT EVENTS

Subsequent to December 31, 2022, Sabby and L1 converted approximately \$2.5 million principal into 2,928,105 shares of Common Stock.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statements of Ascent Solar Technologies, Inc. on Forms S-8 (Nos. 333-142768, 333-152642, 333-152643, 333-161794, 333-171355, 333-171356, 333-182410, 333-205516, 333-259837, 333-267915, and 333-267971), of our report dated March 10, 2023 relating to our audit of the financial statements, which appears in this Annual Report on Form 10-K for the year ended December 31, 2022.

/s/ Haynie & Company

Haynie & Company
Salt Lake City, Utah
March 10, 2023

ASCENT SOLAR TECHNOLOGIES, INC.

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Jeffery Max, certify that:

1. I have reviewed this Annual Report on Form 10-K of Ascent Solar Technologies, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(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 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 officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of 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.

March 10, 2023

/s/ JEFFREY MAX

Jeffrey Max

President and Chief Executive Officer

(Principal Executive Officer and Authorized Signatory)

ASCENT SOLAR TECHNOLOGIES, INC.

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Paul Warley, certify that:

1. I have reviewed this Annual Report on Form 10-K of Ascent Solar Technologies, Inc.;

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

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

4. The registrant's other certifying officer(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 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 officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of 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.

March 10, 2023

/s/ PAUL WARLEY

Paul Warley

Chief Financial Officer

(Chief Accounting Officer and Authorized Signatory)

ASCENT SOLAR TECHNOLOGIES, INC.

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 of Ascent Solar Technologies, Inc. (the “Company”) on Form 10-K for the period ended December 31, 2022 as filed with the Securities and Exchange Commission on the date therein specified (the “Report”), I, Jeffrey Max, 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 my knowledge:

- (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.

March 10, 2023

/s/ JEFFREY MAX

Jeffrey Max
President and Chief Executive Officer
(Principal Executive Officer and Authorized Signatory)

ASCENT SOLAR TECHNOLOGIES, INC.

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 of Ascent Solar Technologies, Inc. (the “Company”) on Form 10-K for the period ended December 31, 2022 as filed with the Securities and Exchange Commission on the date therein specified (the “Report”), I, Paul Warley, 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 my knowledge:

- (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.

March 10, 2023

/s/ PAUL WARLEY

Paul Warley
Chief Financial Officer
(Chief Accounting Officer and Authorized Signatory)
