Ascent Solar Technologies, Inc.
Form 10-K
March 22, 2012
Table of Contents

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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2011

or

o 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	20-3672603
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
12300 Grant Street, Thornton, CO	80241
(Address of principal executive offices)	(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	Name of Each Exchange on Which Registered
Common Stock, $0.0001 par value per share	The NASDAQ Global Market
Class B Warrants	

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 o No x

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 o No x

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 x No o

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes x No o

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting

company" in Rule 12b-2 of the Exchange Act.

Table of Contents

Large accelerated filer	o	Accelerated filer	o
Non-accelerated filer	o (Do not check if a smaller reporting company)	Smaller reporting company	x

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

As of June 30, 2011, 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 $23.1 million based upon the last reported sale price of the registrant's common stock on that date as reported by NASDAQ.

As of March 15, 2012, there were 40,957,854 shares of the Company's common stock issued and outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Part III incorporates certain information by reference from the registrant's definitive proxy statement for the 2012 annual meeting of stockholders, which will be filed no later than 120 days after the close of the registrant's fiscal year ended December 31, 2011.

Table of Contents

ASCENT SOLAR TECHNOLOGIES, INC.
Form 10-K Annual Report
for the Fiscal Year ended December 31, 2011
TABLE OF CONTENTS

		Page
PART I		1
Item 1.	Business	1
Item 1A.	Risk Factors	8
Item 1B.	Unresolved Staff Comments	19
Item 2.	Properties	19
Item 3.	Legal Proceedings	19
Item 4.	Mine Safety Disclosures	20
PART II		20
Item 5.	Market For Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	20
Item 6.	Selected Financial Data	21
Item 7.	Management's Discussion and Analysis of Financial Condition and Results of Operations	22
Item 7A.	Quantitative and Qualitative Disclosures About Market Risk	30
Item 8.	Financial Statements and Supplementary Data	31
Item 9.	Changes in and Disagreements With Accountants on Accounting and Financial Disclosure	31
Item 9A.	Controls and Procedures	31
Item 9B.	Other Information	32
PART III		32
Item 10.	Directors, Executive Officers and Corporate Governance	32
Item 11.	Executive Compensation	32
Item 12.	Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	32
Item 13.	Certain Relationships and Related Transactions, and Director Independence	32
Item 14.	Principal Accounting Fees and Services	32
PART IV		32
Item 15.	Exhibits, Financial Statement Schedules	32
	Signatures	34

Table of Contents

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 inte identify forward-looking statements. 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:

- Our limited operating history and lack of profitability;
- Our ability to secure equity or debt or other financing necessary to fund our operations and the acquisition of additional operating capacity;
- Our ability to meet our cost and performance metrics and to implement the production capacity that we have forecasted;
- Our ability to develop demand for, and sales of, our photovoltaic modules and establish strategic relationships with key distribution partners, including original equipment manufacturers, system integrators and distributors;
- Our ability to develop, internally and with partners, applications for our photovoltaic modules;
- Our ability to obtain necessary or desired certifications for our photovoltaic modules;
- The extent to which we are able to reduce the per watt manufacturing costs of our photovoltaic modules, and the extent to which our competitors are able to do the same with their photovoltaic modules;
- Our ability to qualify and effectively operate production tools pursuant to our business plan and within budgeted amounts;
- Our competitive position and that of our photovoltaic modules relative to others in the photovoltaic and thin-film markets;
- Our continued investment in research and development, and our ability to remain competitive through improvement of our existing technology and development of new technologies;
- The extent to which we are able to manage the expansion 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;
- Global demand for electricity and the market for renewable energy, including solar energy;
- The cost-effectiveness of photovoltaic-generated energy relative not only to that generated from conventional sources such as fossil fuels, but also to that generated from other renewable sources which include wind, biomass, geothermal and tidal power;
- The availability of, or changes to, government policies, subsidies and incentives that affect the use or cost of renewable energy;
- The emergence of disruptive or competing technologies in the energy industry;
- The extent to which our interests align with or deviate from that of TFG Radiant Investment Group Ltd. and its affiliates ("TFG Radiant") and Norsk Hydro Produksjon AS ("Norsk Hydro"), our largest stockholders, and their

Table of Contents

affiliates;
- Our ability to expand and protect the intellectual property portfolio that relates to our photovoltaic modules and processes;
- The extent to which we qualify to perform research and development under the federal government's Small Business Innovation Research program;
- Our ability to attract and retain key executives and employees;
- The continual good standing of our license from ITN Energy Systems, Inc.;
- The commencement or outcome of legal proceedings against us or by us, including proceedings relating to environmental matters or intellectual property rights;
- Foreign currency exchange fluctuations, political instability in certain foreign markets or the general state of geopolitical affairs; and
- General economic and business conditions, and in particular, conditions specific to the solar power industry.

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.

Table of Contents

PART I

Item 1. Business

Business Overview

We are a development stage company formed in October 2005 to commercialize flexible photovoltaic ("PV") modules using proprietary technology. Our technology was initially developed at ITN Energy Systems, Inc. ("ITN") beginning in 1994 and subsequently assigned and licensed to us. Our proprietary manufacturing process deposits multiple layers of materials, including a thin film of highly efficient copper-indium-gallium-diselenide ("CIGS") semiconductor material, on a flexible, lightweight, plastic substrate and then laser patterns the layers to create interconnected PV cells, or PV modules, in a process known as monolithic integration. We believe that our technology and manufacturing process, which results in a lighter, flexible module package, provides us with a unique market opportunity relative to both the crystalline silicon ("c-Si") based PV manufacturers that currently lead the PV market, as well as other thin-film PV manufacturers that use substrate materials such as glass, stainless steel or other metals that can be heavier and more rigid than plastics.

Currently, we are in limited production based on our ability to create demand within the emerging and specialty markets. Products in these markets carry higher average selling prices as compared to commodity markets. We continue to qualify our equipment and we have adjusted our utilization of equipment based on our near term forecast. In the near term we intend to focus on emerging and specialty markets with higher average selling prices, shifting our focus to rooftop applications in the longer term. Under our current business plan, we expect losses to continue until annual production reaches approximately 30 MW or more. We intend to augment our own manufacturing capabilities by licensing our proprietary manufacturing processes to others. Although we plan to continue manufacturing at our current facilities, our plans are also to have significant future production capacity enabled through partnerships, joint ventures or other commercial or licensing arrangements. To date, we have financed our operations primarily through public and private equity financings.

We believe that there remains strong interest in renewable energy in general and solar in particular, but existing global political and financial conditions are significantly disrupting key solar markets. Throughout 2011, there was a reduction in the then-current and expected average selling prices for PV modules. This was a result of many factors, most significantly the increased industry-wide manufacturing capacity, which has contributed to excess industry channel inventories, and a concurrent scaling back of government subsidies and incentives related to solar energy.

We believe that our lightweight flexible technology is transformational in nature, and will provide us advantages in serving the building applied photovoltaic ("BAPV") and building integrated photovoltaic ("BIPV") markets, which we expect will be our largest target markets, as well as specialty markets like defense, portable power, transportation, off grid and distributed power.

We believe that our use of CIGS on a flexible, durable, lightweight, high-tech plastic substrate will allow for unique and seamless integration of our PV modules into a variety of electronic products, building materials, defense, transportation and space applications, as well as other products and applications that may emerge. We believe that the unique attributes of our materials and manufacturing process will enable a reduction in the overall system and installation cost-per-watt ratios. For markets that place a high premium on weight, such as rooftop, defense, space and near-space markets, we believe our materials should provide attractive increases in power-to-weight ratio, and we believe that our materials have higher power-to-area ratios and voltage-to-area ratios than competing flexible PV thin-film technologies. These metrics will be critical as we position ourselves to compete in commercial rooftop applications and high value-added markets like defense, transportation, space and other solar module applications where weight and seamless or elegant integration are key considerations.

Product History

While focused on speed to market, we believe that quality and consistency of product will be paramount to our success in the marketplace. Our progression also takes into account market conditions, as well as financing options. In keeping with our philosophy, we completed construction of our initial production line in December 2007. In March 2008, we demonstrated initial operating capacity ("IOC") of that production line by initiating production trials as an end-to-end integrated process. Early IOC production trials resulted in average thin-film device efficiencies of 9.5% and small area monolithically integrated module efficiencies of over 7.0%. During 2008 optimization trials resulted in

thin-film device efficiencies in the 9.5% to 11.5% range and corresponding module efficiencies in the 7.0% to 9.0% range. The test modules measured approximately 15 centimeters wide by 30 centimeters long.

During the first quarter of 2009, we began limited production of monolithically integrated flexible CIGS modules in our initial production line and continued to provide sample modules to potential customers and development partners to explore

Table of Contents

integration of our products into new applications. In June 2009, we announced the fabrication of a five meter long CIGS module, which we believe is the largest flexible CIGS module consisting of integrated components ever produced on polyimide and possibly the largest CIGS module ever produced regardless of construction. Based on internal test and evaluation, this five meter long module weighed approximately two kilograms and produced 123 watts (under standard test conditions) with an aperture area efficiency of 9.1%.

In July 2009, we obtained independent verification by the U.S. Department of Energy's National Renewable Energy Laboratory ("NREL") that our modules measured 10.4% in conversion efficiency. The modules tested at NREL were approximately 15 centimeters wide by 30 centimeters long. In October 2009, NREL verified our achievement of a manufacturing milestone of 14.0% cell efficiency. We also announced a peak efficiency of 11.7% for CIGS modules. In December 2010, we achieved 12.1% module efficiency on the same form factor. In August 2009, 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. 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 BIPV and BAPV applications used in commercial, industrial and residential rooftop markets. Certification activities will continue as required as we introduce new products and make changes or improvements to our already certified products.

In June 2010, we announced that the Defense Advanced Research Projects Agency ("DARPA") selected us for an award under the Low-Cost Lightweight Portable Photovoltaics ("PoP") solicitation. The program we led entitled "Flexible High-performance Tandem-junction PV Array", consists of three gated phases that extend over 54 months. In late 2011, we were informed by DARPA that budget constraints may prevent progression to the second and third phases of this project. The goal of PoP is to demonstrate low-cost, lightweight PV that can stand up to battle conditions and environmental extremes while delivering a power conversion efficiency of 20% or greater by the end of the program.

Throughout 2011, we worked with dozens of customers in prototyping and developing applications for our products.

In the third quarter of 2011, we were awarded a patent: "Machine and Process for Sequential Multi-Sublayer Deposition of Copper Indium Gallium Diselenide Compound Semiconductors" (US 8,021,905). In addition, we filed four new patent applications during 2011.

Commercialization and Manufacturing Expansion Plan

We intend to be the first company to commercialize the manufacture of large, roll-format, PV modules that use CIGS on a flexible, plastic substrate. Our manufacturing expansion plan entails the qualification, testing and operation of our production tools to increase our production. We also intend to develop joint ventures and license our technology. During the year ended December 31, 2011, we had product sales of approximately $538,000, which we do not consider sufficient for exiting development stage.

Substantially all equipment necessary for production has been delivered as of December 31, 2011. Our 2011 production volumes were based primarily on market demand for our products in emerging and specialty markets. In March 2011, based on market conditions, we revised our near-term strategy to focus on applications for emerging and specialty markets, including off-grid, military and defense and consumer oriented products, which we believe will better leverage the unique characteristics of our product and carry higher average selling prices. Our long-term strategy is focused on these markets and the BIPV/BAPV markets.

During 2010, we applied for funding under the U.S. Department of Energy ("DOE") Loan Guarantee Program for an additional production facility with a nameplate capacity of 150 MW per year. On February 23, 2011, the DOE informed us that our submission was selected for due diligence review by the DOE. For a number of strategic and financial reasons, in April 2011, we informed the DOE that we were withdrawing our submission from further consideration under the program.

We analyze long-lived assets for impairment, both individually and as a group, whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. Due to recent significant adverse changes in market conditions, particularly the decreases in current and expected average selling prices for PV

modules, we concluded during the second quarter of 2011 that the carrying value of Property, Plant and Equipment may not be recoverable. This analysis utilized projected selling prices and operating costs under alternative scenarios to arrive at total estimated cash flows. As a result of this analysis, we recorded an impairment loss of $78.0 million in the carrying value of Property, Plant and Equipment and Deposits on manufacturing equipment in the quarter ended June 30, 2011. The impairment loss was measured as the amount by which the carrying amount of the underlying assets exceeded fair value, as calculated using the expected present value technique. Actual cash flows may differ from the forecasts used in the analysis. This analysis incorporated many

Table of Contents

different assumptions and estimates which involve a high degree of judgment. These assumptions and estimates, which may change significantly in the future, have a substantial impact on the actual impairment loss recorded.

The manufacture of photovoltaic modules is a capital-intensive business. Our unique technology enables the manufacture of differentiated PV products with high power density which are lightweight and flexible. We believe markets of substantial size will exist long term, requiring significant additional production capacity. We also believe that over time significant production volumes will be required to achieve appropriate product costs.

We plan to continue the development of our current PV technology to increase module efficiency, improve our manufacturing tooling and process capabilities and reduce manufacturing costs. We also plan to continue to take advantage of research and development contracts to fund a portion of this development.

We intend to augment our own manufacturing, product development and distribution capabilities by licensing our proprietary technology and manufacturing processes to others. We plan to continue manufacturing at our current facilities; however, our plans are to have significant future production capacity enabled through partnerships, joint ventures or other commercial or licensing arrangements. We expect such arrangements would transform our business model to one that is primarily focused on development of technologies. We plan to enable partners to commercialize such technologies in exchange for license fees, consulting revenues, non-recurring engineering fees, royalties, milestone payments, and other similar arrangements. We plan to select our partners based on their capabilities in volume manufacturing, application development, marketing, distribution, sales and service for the relevant technologies and markets.

Consistent with this change in strategy, on August 12, 2011, we completed a strategic alliance with TFG Radiant. As part of this strategic alliance, TFG Radiant acquired 6,400,000 shares of our common stock at a price of $1.15 per share or $7,360,000 in the aggregate. The closing price of our common stock on August 12, 2011 was $0.73. In addition, TFG Radiant received an option to acquire an additional 9,500,000 shares of our common stock at an exercise price of $1.55 per share. The option was approved by our shareholders on October 27, 2011. TFG Radiant may not exercise this option unless and until TFG Radiant meets a specified milestone associated with the construction of the first East Asia FAB. This option expires on February 12, 2014. In addition, in exchange for the grant by us of exclusive rights to manufacture and sell solar devices based on our proprietary CIGS PV technology in East Asia (comprised of China, Taiwan, Hong Kong, Thailand, Malaysia, Indonesia, Korea and Singapore), TFG Radiant has committed to invest $165 million to build an initial FAB in East Asia using our proprietary processes for manufacturing flexible CIGS PV, will provide consulting fees to us in connection with installation and commissioning of any FABs in East Asia, will provide license fees, royalty payments, and ownership interest in all East Asia FABs, and, subject to the East Asia FABs meeting certain milestones related to production and costs, will provide incentive payments to us of up to $250 million over time.

On January 4, 2012, we announced that TFG Radiant had agreed to purchase 8,067,390 shares of our common stock presently owned by Norsk Hydro for $4 million, or approximately $0.50 per share. The TFG Radiant purchase is expected to close prior to March 31, 2012. Upon closing of the purchase, TFG Radiant's ownership would increase to approximately 39% of our outstanding common stock.

On February 1, 2012, we announced the appointment of Victor Lee as President and Chief Executive Officer. Mr. Lee has served on our Board since November 2011. Mr. Lee is the managing director of Tertius Financial Group Pte Ltd, the joint venture partner with Radiant Group in TFG Radiant. As President and Chief Executive Officer, Mr. Lee will not receive any cash, equity or other compensation.

We are evaluating the timing of further expansion based on many factors that include demand, market conditions, product certification, availability of financing, technical advances, strategic partnerships and/or joint ventures and other factors.

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. We believe that we are the only company 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 that 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.

Table of Contents

- CIGS versus CdTe: Although CdTe modules have achieved conversion efficiencies that are generally comparable to CIGS in production, we believe that CdTe has never been successfully applied to a flexible substrate on a commercial scale. We believe that the use of CdTe on a rigid, transparent substrate, such as glass, makes CdTe unsuitable for a number of the applications that we are targeting in the BIPV/BAPV and other markets. We also believe that CIGS can achieve higher conversion efficiencies than CdTe in production.

Our choice of substrate material further differentiates us from other thin-film PV manufacturers. We believe that the use of a flexible, lightweight, insulating substrate that is easier to install provides clear advantages for commercial rooftops, higher value-added BIPV/BAPV markets, and other markets where rigid substrates are unsuitable in many associated applications. We also believe that our use of a flexible, plastic substrate provides us significant cost advantages because it enables us to employ monolithic integration techniques on larger components that 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 BIPV/BAPV, defense, transportation, off grid, portable power, aerial and other markets with transformational high quality, value-added product applications.

Competitive Strengths

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

- We are an early mover 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 BIPV/BAPV, defense, transportation, off grid, portable power, aerial and other markets. By applying CIGS to a flexible plastic substrate, we have developed a PV module that is efficient, lightweight and flexible, providing unique opportunities for integration into building material products, such as roofing membranes, shingles, siding and facades, metal and composite panels. Commercial rooftops alone are a major segment of the world solar market. The market for electronic components, such as electronic packages, casings, and accessories as well as defense portable power systems, transportation integrated applications and space and near-space solar power application solutions, also may prove to be a significant premium market. Relative to our thin-film competitors, we believe that our early mover 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 our 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 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 strategic relationship with TFG Radiant provides us with direct access to a potentially large customer base in the East Asia market. TFG Radiant is a joint venture of Radiant Group, a Chinese conglomerate in construction and real estate, and Tertius Financial Group, a private investment firm based in Singapore. The Radiant Group, with more than 3,000 personnel, operates various businesses across China, Indonesia, Singapore and Malaysia, including metal roofing and facades, import/export trading, real estate investment, project management and consultation, new-energy development, manufacturing and distribution and gold mining.
- 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 seventeen 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.

Table of Contents

- 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 un-packaged rolls of CIGS material for shipment worldwide to customers for encapsulation and integration into various products enhances our ability to work with partners internationally.

Markets and Marketing Strategy

Our modules can be directly incorporated into standard building and roofing materials, commercial transportation, automotive solutions, space applications, consumer electronics for portable power and durable off-grid solutions. Our marketing and distribution strategy is based on the formation of strategic relationships with key partners, including original equipment manufacturers ("OEMs"), system integrators, resellers and distributors. Our goal is to leverage our unique, transformational technology to enable power generation from a wide variety of applications within these markets.

The BIPV and BAPV markets represent a sizable opportunity for our products, as they could allow system providers to realize significant advantages over traditional PV systems. BIPV partners could benefit by integrating solar modules directly into building and construction materials at the time of manufacture or on-site by an integrator, thus reducing overall balance-of-system ("BOS") and installation costs. Potential solutions in this market include building products such as roofing membranes, shingles, siding, facades, shading devices, fabric structures and metal and composite panels. In BAPV applications, our lightweight solar modules can be attached to surfaces of existing structures without penetrating the roof surface or adding significant weight.

The defense market has a unique set of requirements that we feel are well suited to our products. When integrated with fabric to form re-deployable arrays, our highly efficient, rugged, lightweight modules may allow soldiers to minimize battery loads, reduce the use of conventional fuels, and increase safety through the streamlining of fuel transport operations. Our modules can also provide a reliable source of renewable power in remote areas, regardless of local infrastructure. We intend to reach the market primarily through partnerships with top systems providers in the defense market while simultaneously qualifying our products through the rigorous military testing process.

Transportation integrated PV, or integration of our flexible solar modules with vehicles such as commercial trucks, buses, trains and passenger cars, is another market segment that represents a significant opportunity. Due to their flexible form and durable, lightweight properties, our modules could be fitted to the exterior of various vehicles to provide supplemental power without significantly affecting the aerodynamics, weight and aesthetics of the vehicle. We are currently working with multiple integrators and OEMs to develop effective value-added solutions for this market.

The overall increase in usage of portable electronic devices coupled with large populations in emerging markets has created a need for portable, rugged sources of renewable energy. We have responded to this market development by creating small, portable, flexible solar modules in various output voltages to target both large and small scale energy requirements. Our modules can be integrated with a wide variety of existing devices to create new sources of renewable energy, or used as stand-alone chargers. We are currently working with multiple partners to develop innovative portable power solutions for both developed and emerging markets worldwide.

In addition to the markets mentioned above, an opportunity may exist for the integration of space and near-space vehicles with flexible solar modules. Customers in this market have historically required a high level of durability and conversion efficiency from solar module suppliers, and we believe that our products are aligned to compete in this premium market. We expect opportunities in this segment to develop gradually due to customers' extensive development, testing and evaluation processes.

We continue to supply our strategic partners with PV modules to support our partners' development, testing and certification of new integrated PV products, including product testing by several branches of the U.S. military. We believe that our high power density, high quality flexible solar modules enable new applications for solar power. By creating mutually beneficial partnerships and strategically penetrating the markets discussed above, we plan to transform the landscape of solar power generation with truly innovative end products.

Manufacturing Strategy

We manufacture our products by affixing a thin CIGS layer to a flexible, plastic substrate, and we use proprietary monolithic integration techniques that enable us to form complete PV modules with less or 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 that we can achieve cost savings in, and increase the reliability of, our PV modules. We also use a large

Table of Contents

format, roll-to-roll manufacturing process that permits us to fabricate our flexible PV modules in an integrated sequential operation.

During the first quarter of 2009, we began limited production of monolithically integrated flexible CIGS modules. In mid-2010, we began production of monolithically integrated flexible CIGS modules at our production plant in Thornton, Colorado.

The timing and amount of our production capacity and actual output will depend on a number of technical factors such as module efficiency, production yield and throughput. Our projections of annual rated production capacity have been and continue to be based on assumptions about these and other factors and we periodically revisit and revise these assumptions to account for realized rates and measurements on our production lines. Future production yield and throughput will depend on our continuing efforts to successfully ramp up the production equipment.

Substantially all tools ordered have been delivered to our production facility in Thornton, Colorado. We are continuing the process of qualifying certain production tools. The output of our production facility in 2012 will depend on product demand, market conditions, technical factors, and the final qualification of tools. We intend to continue to optimize our manufacturing processes including throughput, efficiency and yield to improve product performance and reduce manufacturing costs. We also intend to identify and evaluate suitable locations for new production lines for future expansion, domestically and abroad, that we believe will best serve our target markets and customers for future expansion.

Competition

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. Energy Conversion Devices, Inc. ("Energy Conversion") manufactures thin-film a-Si cells on flexible metal foil. These cells must be individually assembled in series and in parallel to form an integrated module similar to how c-Si products are manufactured. Companies currently developing or selling CIGS-based PV modules include Avancis GmbH & Co. KG, DayStar Technologies, Inc., Flisom AG, Global Solar Energy, Inc., HelioVolt Corporation, MiaSolé, Nanosolar, Inc., Nuvosun, Inc., Odersun AG, Q-Cells SE, Solibro GmbH, Solarion AG, Solar Frontier, SoloPower, Inc., Stion and Würth Solar GmbH & Co. A number of manufacturers that traditionally have manufactured and sold c-Si-based modules have entered, or in the future may enter, the market for thin-film PV modules, and potentially, CIGS-based PV modules. These efforts have been initiated both through internal development and the acquisition of external companies or the purchase of turnkey solutions offered by PV equipment providers.

The market for traditional, grid connected PV products is dominated by large manufacturers of c-Si technology. In 2010, the five largest of these manufacturers included: Suntech Power Holdings Co., Ltd. (China), JA Solar Holdings Co., Ltd. (China), Yingli Green Energy Holding Co. Ltd. (China), Trina Solar (China), and Motech Solar (Taiwan). We anticipate that while these leaders may continue to dominate the market with their silicon-based products, thin-film manufacturers will begin to capture an increasingly larger share of the market. In 2010, crystalline silicon PV technology represented approximately 86% of global market share, with the balance captured by thin-film.

We believe that our modules offer unique advantages. Their flexible form factor and high power density enable use on weight constrained or architecturally complex rooftops that may be unsuitable for glass-based modules. Product design agility and customer-focused development both yield modules that could be integrated into virtually any product to create a source of renewable energy. Whether compared to glass-based or flexible modules, our products offer competitive advantages making them unique in comparison to competing products.

Research and Development and Intellectual Property

We intend to continue to invest in research and development in order to provide near-term improvements to our manufacturing process and products, as well as to identify next-generation technologies relevant to both our existing and potential new markets. During 2011, 2010 and 2009 we incurred approximately $24.1 million, $24.4 million and $15.5 million, respectively, in research and development costs.

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 non-specific 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 of improvements to the licensed technologies and intellectual property that are outside of the CIGS PV field.

Table of Contents

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

1. “Apparatus and Method of Production of Thin-Film Photovoltaic Modules” (US Patent No. 7,271,333) (issued September 18, 2007)
2. “Flexible Photovoltaic Array With Integrated Wiring And Control Circuitry, And Associated Methods” (US Patent No. 7,812,247) (issued October 12, 2010) (co-owned with PermaCity Corporation)
3. “Machine and Process for Sequential Multi-Sublayer Deposition of Copper Indium Gallium Diselenide Compound Semiconductors” (US Patent No. 8,021,905) (issued September 20, 2011)
4. “Flexible High-Voltage Adaptable Current Photovoltaic Modules and Associated Methods” (US 11/877,632) (filed October 23, 2007) (co-owned with PermaCity Corporation)
5. "Flexible Photovoltaic Array with Integrated Wiring and Control Circuitry, and Associated Methods" (12/901,963) (filed October 11, 2010) (co-owned with PermaCity Corporation)
6. “Array of Monolithically Integrated ThinFilm Photovoltaic Cells and Associated Methods” (US 12/143,713) (filed June 20, 2008)
7. “Hybrid Multi-Junction Photovoltaic Cells and Associated Methods” (12/174,626) (filed July 16, 2008)

In addition, we have seven unpublished pending patent applications in related areas, four of which were filed in 2011.

Suppliers

We rely on several unaffiliated companies to supply certain raw materials used during the fabrication of our PV modules. We acquire these materials on a purchase order basis and do not have long term contracts 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 intend to monitor and explore opportunities for developing alternative sources to drive our manufacturing costs down.

Employees

As of December 31, 2011, we had 77 full 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 nano technologies. 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. Today, ITN provides us with a very limited amount of technical services. Dr. Mohan Misra, former Chairman of our Board of Directors and formerly our Chief Strategy Officer, has a controlling interest in ITN.

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.

7

Table of Contents

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. You may read and copy any material we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, D.C. 20549. You may also obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains an internet site at http://www.sec.gov that contains reports, proxy and information statements, and other information regarding issuers, including us, that file electronically. 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 Relating to Our Business

We have a limited history of operations, have not generated significant revenue from operations and have had limited production of our PV modules.

We have a limited operating history and have generated limited revenue from operations. Currently we are in limited production utilizing a combination of equipment from our production lines. Under our current business plan, we expect losses to continue until annual production reaches approximately 30 MW or more. We plan to continue manufacturing at our current facilities; however, our plans are to have significant future production capacity enabled through partnerships, joint ventures or other commercial or licensing arrangements. Our ability to achieve our business, commercialization and expansion objectives will depend on a number of factors, including whether:

- we successfully augment our manufacturing capabilities by licensing our proprietary manufacturing processes to others;
- we successfully ramp up commercial production on the equipment installed and to be installed in our own production lines;
- our products are successfully and timely certified for use in our target markets;
- we successfully qualify production tools to achieve the efficiencies, throughput and yield necessary to reach our cost targets as we expand our rated production capacity;
- the cost models on which we intend to rely for the manufacture of our PV modules prove accurate;
- our strategic alliance with TFG Radiant results in the manufacture and sale of sufficient products based on our proprietary technology;
- we raise sufficient capital to expand our total rated capacity to a level that will enable us to reach the economies of scale we believe necessary to achieve profitability;
- we receive timely delivery of production tools from our equipment suppliers;
- we effectively manage the planned expansion of our operations; and
- 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.

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 that we cannot now anticipate will arise. If we cannot

Table of Contents

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 $105.7 million for the year ended December 31, 2011 and reported an accumulated deficit of $183.0 million as of December 31, 2011. We expect to incur net losses for the foreseeable future. Our ability to achieve profitability depends on a number of factors, including the growth rate of the solar energy industry, market acceptance of thin-film and other PV modules, the competitiveness of our PV modules and our ability to increase production volumes. If we are unable to generate sufficient revenue to achieve profitability and positive cash flows, we might be unable to satisfy our commitments and may have to discontinue operations.

Our business is based on a new and unproven 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 new and unproven technology in commercial scale production. 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 that we 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 capacity successfully at our facilities or through strategic alliances would adversely impact our ability to sell PV modules into our target markets and would materially and adversely affect our business, results of operations and financial condition.

Our growth plan calls for the installation and operation of additional production tools at our facilities and to have significant future production capacity enabled through partnerships, joint ventures or other commercial or licensing arrangements. The successful completion and operation of future production tools will require substantial engineering resources and is subject to significant risks, including risks of cost overruns and delays, risks that we may not be able to successfully acquire, install, combine or operate the equipment needed, or the possibility that one or more of the production tools may never be qualified or become operational. 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 production tools, obtain on reasonable terms adequate facilities in which to install the production tools, or hire and train the additional employees and management needed to operate and maintain the production tools. In addition, our strategic alliances may not result in future production capacity in the amounts we anticipate or at all. 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 the incremental manufacturing costs of our PV modules 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

manage the rapid 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

Table of Contents

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.

Failure to receive timely delivery of production tools from our equipment suppliers could delay our planned expansion of manufacturing capacity and materially and adversely affect our results of operations and financial condition.

Although a significant amount of our production tools have been delivered, our planned expansion of our own manufacturing capacity depends on the timely delivery of production tools from our equipment suppliers and our good working relations with those suppliers. We cannot be certain that the equipment orders we place with these suppliers will be fulfilled as we expect or in a timely manner, or that we can preserve good working relationships, especially as we adjust delivery of outstanding orders. If delivery of the remaining production tools is not made on schedule or at all, then we might be unable to carry out our own manufacturing expansion plans, produce PV modules in the volumes and at the times that we expect or generate sufficient revenue from operations, and our business, results of operations and financial condition could be materially and adversely affected. In addition, certain process steps in our manufacturing process have machinery that is currently purchased from a single vendor. If we are unable to purchase certain equipment from a single source vendor, our operations or our expansion plans could be negatively affected. Plans for an additional production facility to be built pursuant to our Joint Development Agreement with TFG Radiant contemplate the incorporation of additional advances in equipment design. If the planned changes to this equipment are not achievable by the equipment suppliers or take longer to implement than planned, timing for the additional production facility could be delayed or may not occur at all.

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 PV modules 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 planned capacity expansion and continuing operations will likely require additional capital which we may not be able to obtain on favorable terms, if at all or without dilution to our stockholders.

Our planned capacity expansion and continuing operations will likely require additional capital. We currently are unable to determine what forms of financing, if any, will be available to us. 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. We cannot assure you that additional financing will be available on terms favorable to us, or at all. 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.

In addition, the terms of a loan we obtained from the Colorado Housing and Finance Authority (“CHFA”) in connection with our purchase and improvement of our Thornton, Colorado facility contain covenants that limit our ability, without the consent of CHFA, to create or incur additional indebtedness (other than obligations created or incurred in the ordinary course of business); merge or consolidate with any other entity; or make loans or advances to our officers, shareholders, directors or employees. The presence of these negative covenants gives CHFA the ability to bar

us from engaging in certain transactions in the future that we may determine are necessary or advisable to meet our business objectives, including debt offerings and acquisitions of or by other companies. If CHFA were to withhold its written consent under these or other circumstances, we could be forced to prepay such loans at a premium, which could adversely affect our business, results of operations and financial condition.

Table of Contents

Future sales or the potential for future sales of our securities may cause the trading price of our common stock to decline and could impair our ability to raise capital.

Sales of a substantial number of shares of our common stock or other securities in the public markets, or the perception that these sales may occur, could cause the market price of our common stock or other securities to decline and could materially impair our ability to raise capital through the sale of additional securities. A large number of our outstanding shares are not registered under the Securities Act of 1933, as amended. If and when these shares are registered or become eligible for sale to the public market, the market price of our common stock could decline.

We currently have certified a limited number of BIPV/BAPV PV modules and have recorded limited sales of such products; further, we expect that significant PV module sales will not occur for some time.

In 2010, an independent laboratory certified a certain one of our prototype products under the IEC 61646 standards. The successful conclusion of this testing established the viability of a flexible packaging solution that will endure over a long period of time. Certain BIPV/BAPV applications require certification as a prerequisite to sales of the product. We are in the process of obtaining certifications where required on our products and product families. Delays or obstacles in achieving these certifications could negatively impact our revenue or profitability. In addition, as we develop new products and product families, new certifications will be required. Delays in obtaining these certifications could have a negative impact on our financial results. Because we have not yet achieved large scale commercial production and because we believe additional PV modules will need to be certified in order for them to be commercially viable for sales into the BIPV/BAPV markets, we do not expect to record major BIPV/BAPV module sales for some time. We expect that it will be some time before we can determine whether our expectations relating to our products and their acceptance into BIPV/BAPV markets are confirmed. Further, because we will be required to invest substantial resources in pursuing our target markets in advance of any major revenue stream that may result from such investments, an unanticipated or longer than expected delay of revenue ramp-up could put a strain on our resources, adversely affecting our business, results of operations and financial condition, and could require us to seek additional capital.

If we are unable to find technologically satisfactory and economically viable packaging solutions for our products for use in target applications or markets, our business and results of operations may be materially and adversely affected.

In order to be used for a particular application or in a particular market, our PV modules must be packaged in a way that satisfies the environmental and usage demands or certification requirements of the application or market. For example, the BIPV/BAPV market typically requires certain independent certifications, and a demonstration that the product can survive designated adverse weather and other environmental conditions for an anticipated lifecycle of twenty to twenty-five years. We have several types of packaging that are in various states of testing, but until such time as cost-effective and technologically satisfactory solutions have been demonstrated over a period of time, our sales and revenue into those affected markets may be materially limited or negatively affected.

Our PV modules may never gain sufficient market acceptance, in which case we would be unable to sell our PV modules or achieve profitability.

Demand for our PV modules may never develop sufficiently, and our PV modules may never gain market acceptance, if we fail to produce PV modules that compare favorably against competing products on the basis of cost, quality, weight, efficiency and performance. Demand for our PV modules also will depend on our ability to develop and maintain successful relationships with key partners, including OEMs, system integrators, value-added resellers and distributors. If our PV modules 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 BIPV/BAPV, defense and portable power, transportation, and space and near-space. Although certain areas of the BIPV/BAPV market have started to develop, we believe this market, as well as the markets for portable power, and transportation 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 PV 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.

Large scale BIPV/BAPV may require third party financing. Third party financing often requires certain “bankability” standards for the PV supplier. We may be unable to meet these standards.

Table of Contents

Banks and other entities providing financing for solar energy projects endeavor to reduce risk on these projects by evaluating solar product quality, completion likelihood, power purchaser credit worthiness, project model quality, and environmental factors. Solar panels are typically the highest cost and most important components of the project cost. For most financing models, the solar modules must have strong power output for 20 years or longer. Companies providing traditional solar modules, or companies with a longer track record with their products may be deemed the lowest risk, whereas, thin-film products, with the exception of First Solar's product, may be deemed higher risk due to product immaturity. In some cases, third party insurance indemnification can be used to address this risk. Our limited operating history, the newness of our products, or our financial strength may not be as strong as our potential competitors, which may reduce the likelihood of project finance support from banks for projects involving our products resulting in our inability to sell our products into certain solar installations, which would negatively affect our revenue and profitability.

Failure to consummate strategic relationships with key partners in our various target market segments, such as portable power applications for defense and governmental agencies or space and near-space high value-added solar applications markets as well as the BIPV/BAPV and transportation markets, 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 BIPV/BAPV, defense and portable power systems, transportation, and space and near-space solar panel applications. Our marketing and distribution strategy is to form strategic relationships with distributors and value-added resellers 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 PV modules prove unsuitable for use in such applications; our projected revenues and operating results could be adversely affected. Further, to the extent that we are able to establish strategic relationships with key partners and distributors, those relationships may be on a non-exclusive basis (for example, our strategic relationship with TFG Radiant and Norsk Hydro are non-exclusive), which means that our partners are not obligated to use us as their sole source of PV modules, and may instead choose to use the products of our competitors. Any such reduction in demand for our PV modules may have a material adverse effect on our revenues, results of operations and financial condition.

If sufficient demand for PV solutions 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 at a relatively early stage of development, and the extent to which PV modules, including our own, will be widely adopted is uncertain. If PV technology proves unsuitable for widespread adoption or if demand for PV modules fails to develop sufficiently, we may be unable to grow our business, generate sufficient sales to attain profitability or continue operations. Many factors, many of which are outside of our control, may affect the viability of widespread adoption of PV technology and demand for PV modules, including:

- the cost effectiveness of PV modules and installed PV systems relative to other renewable energy sources, such as wind, geothermal, tidal power and other PV technologies;
- the cost effectiveness of PV modules and installed PV systems relative to conventional carbon based and other energy sources, such as coal, oil, natural gas and nuclear, and whether the levelized cost of PV can approach that of these conventional energy sources;
- whether PV-generated power reaches grid parity in the geographic markets where our products will be used;
- the availability and amount of government subsidies and incentives to support development of the solar energy industry;
- the deregulation of the electric power industry and the broader energy industry;
- the emergence of other disruptive technologies in the energy industry;
- the ease with which PV solutions can penetrate and adapt to existing energy industry infrastructure;
- the availability of raw materials used in the manufacture of PV products; and
- availability of capital to fund development of technology in the solar energy market.

We face intense competition from manufacturers of c-Si-based PV modules, other manufacturers of thin-film PV modules and other companies in the solar energy industry.

12

Table of Contents

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 that our main sources of competition are c-Si PV manufacturers, other thin-film PV manufacturers and companies developing other solar solutions, such as solar thermal and concentrated PV technologies.

The thin-film component of the industry is largely made up of a broad mix of technology platforms at various stages of development, and consists of a large and growing number of medium and small companies. Two of the largest thin-film PV manufacturers are First Solar and Energy Conversion. First Solar manufactures PV modules using CdTe affixed to glass. Energy Conversion manufactures PV modules using a-Si affixed to flexible metal foil. Competitors currently developing or selling CIGS-based PV modules include Avancis GmbH & Co. KG, DayStar Technologies, Inc., Flisom AG, Global Solar Energy, Inc., HelioVolt Corporation, MiaSolé, Nanosolar, Inc., Nuvosun, Inc., Odersun AG, Q-Cells SE, Solibro GmbH, Solarion AG, Solar Frontier, SoloPower, Inc., Stion and Würth Solar GmbH & Co. We believe that a number of manufacturers that traditionally have manufactured and sold c-Si-based modules have entered, or in the future may enter, the market for thin-film PV modules and, potentially, CIGS-based PV modules.

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.

A significant decrease in the price of c-Si-based PV modules could lead to pricing pressures on PV modules generally and force us to reduce the sales price of our PV modules.

During 2011 there was a significant decrease in the prices of c-Si-based PV modules. This led to pricing pressures on PV modules generally. In the face of such current and future downward pricing pressures, we might be forced to reduce the sales prices of our PV modules, which, absent a commensurate decrease in our manufacturing costs, could materially and adversely affect our results of operations and financial condition and prevent us from achieving profitability.

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.

We do not have sufficient life cycle data for our thin-film PV modules to reliably predict their lifespan in the field. Pending collection of such data over time, we may not be able to offer customers warranty terms equivalent to those of our competitors, which may adversely impact sales or market acceptance of our PV modules. Further, even if we offer warranty terms equivalent to those of our competitors, at this time we cannot guarantee that our PV modules will perform as expected during the lifespan that our customers will expect. If our PV modules fail to perform as expected while under warranty, or if we are unable to support the warranties, sales of our PV modules 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 and cause sales to decline.

If the supply of PV modules exceeds the demand for those modules, then we may be forced to reduce the price of our PV modules in order to compete effectively.

Throughout 2011, there were reductions in the then-current and expected average selling prices for PV modules. This was a result of many factors, most significantly the increased industry-wide manufacturing capacity, which has contributed to excess industry channel supply. In addition, there was a concurrent scaling back of government subsidies and incentives related to solar energy, which reduced industry demand. If either the overall PV module market or our target markets continue to encounter an overcapacity scenario, we may be forced to scale back our business plan. If government subsidies or incentives are discontinued, further reduced or substantially modified, or if renewable portfolio standards or similar production requirements are changed or eliminated, demand for our PV modules in the affected country or countries could decline or never

Table of Contents

develop. In either case, our business, results of operations and financial condition could be materially and adversely affected.

A U.S. and global economic downturn could negatively affect our business, results of operations, and financial condition.

The 2008 financial crisis and ensuing recession affected the banking system and financial markets, resulting in a tightening in the credit markets; a low level of liquidity in many financial markets; and extreme volatility in credit, fixed income, and equity markets. The recent European sovereign debt crisis has had a negative effect on world economic growth, which has increased concerns about global economic recovery and a possibility of further recession. Much like the 2008 financial crisis, there could be a number of follow-on effects from the current crisis on our business, including increased expense or inability to obtain debt financing or raise additional capital; insolvency of key suppliers, resulting in product delays; inability of customers to obtain credit to finance purchases of our products; decreased discretionary spending on BIPV/BAPV products; less new construction and building improvement projects, and/or customer insolvencies. The continued economic uncertainty increases the risk that the actual amounts realized in the future on our assets will differ significantly from the fair values currently assigned to them. The recent solvency concerns in Greece, Ireland and Spain could have an impact on the existence and magnitude of government sponsored initiatives related to solar installations and projects in Europe. Our success in the BIPV/BAPV markets can be affected by governmental subsidies for PV installations. Any reduction in existing or planned subsidies could negatively impact our future revenues in these market segments.

The interests of our largest stockholder, TFG Radiant, may conflict with our interests or your interests now or in the future.

TFG Radiant currently owns approximately 19% of our common stock and has contracted to purchase shares which will result in ownership of approximately 39% of our common stock upon completion. In addition, should TFG Radiant exercise its option to acquire more shares of common stock, we expect that it would hold over 50% of our voting stock. As a result of its large holding of our shares, TFG Radiant may have the ability to prevent any transaction that requires the approval of stockholders regardless of whether other stockholders believe that any such transaction is in their own best interests, with the exception of certain agreements TFG Radiant has made pursuant to the Amended and Restated Stockholders Agreement. TFG Radiant also has certain registration rights that could impact shareholders. Additionally, TFG Radiant currently holds one seat on our Board of Directors (and will obtain rights to a second board seat upon the closing of the currently pending acquisition of shares from Norsk Hydro), which affords TFG Radiant greater control and influence over matters affecting our business.

On February 1, 2012, Mr. Victor Lee was appointed by our Board as our President and Chief Executive Officer. Mr. Lee has served on our Board since November 2011. Mr. Lee is the managing director of Tertius Financial Group Pte Ltd, the joint venture partner with Radiant Group in TFG Radiant. As President and Chief Executive Officer, Mr. Lee will not receive any cash, equity or other compensation from us.

TFG Radiant may from time to time acquire and hold interests in businesses that compete directly or indirectly with us. TFG Radiant also may pursue opportunities (including by acquisition) that may be adverse to, or be in direct or indirect competition with us. Additionally, our potential customers may be competitors of TFG Radiant and our interests in selling to those customers could be divergent from TFG Radiant’s competitive interests. So long as TFG Radiant continues to own a significant amount of the outstanding shares of our common stock and Mr. Lee is President and Chief Executive Officer, TFG Radiant may be able to strongly influence or effectively control our decisions.

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.

Table of Contents

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 material 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 that 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 you that these agreements will provide meaningful protection of our trade secrets, know-how or other proprietary information in the event of any unauthorized use, misappropriation or disclosure of any such 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.

If third parties claim that we are infringing or misappropriating their intellectual property rights, we could be prohibited from selling our PV modules, be required to obtain licenses from third parties or be forced to develop non-infringing alternatives, and we could be subject to substantial monetary damages and injunctive relief.

The PV industry is characterized by the existence of a large number of patents and frequent litigation based on allegations of patent infringement. We are aware of numerous issued patents and pending patent applications owned by third parties that may relate to current and future generations of solar energy. The owners of these patents may assert that the manufacture, use or sale of any of our products infringes one or more claims of their patents. Moreover, because patent applications can take many years to issue, there may be currently pending applications, unknown to us, which may later result in issued patents that materially and adversely affect our business. Third parties could also assert claims against us that we have infringed or misappropriated their intellectual property rights. Whether or not such claims are valid, we cannot be certain that we have not infringed the intellectual property rights of such third parties. Any infringement or misappropriation claim could result in significant costs or substantial damages to our business or an inability to manufacture, market or sell any of our PV modules that are found to infringe or misappropriate. Even if we were to prevail in any such action, the litigation could result in substantial cost and diversion of resources that could materially and adversely affect our business. The large number of patents, the rapid rate of new patent issuances, the complexities of the technology involved and uncertainty of litigation increase the risk of business assets and management’s attention being diverted to patent litigation. Even if obtaining a license were feasible, it could be costly and time consuming. We might be forced to obtain additional licenses from our existing licensors in the event that the scope of the intellectual property we have licensed is too narrow to cover our activities, or in the event that the licensor did not have sufficient rights to grant us the license(s) purported granted. Also, some

of our licenses may restrict or limit our ability to grant sublicenses and/or assign rights under the licenses to third parties, which may limit our ability to pursue business opportunities.

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. Victor Lee, 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

Table of Contents

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 non-compliance 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.

Any change to our relationship with ITN could disrupt certain aspects of our business operations, including our research and development activities.

ITN provides us with technical services at an agreed upon cost. We have relied on these services to conduct a portion of our research and development activities, including those related to development and improvements of new PV technologies that may affect the viability of our products in the future. If we are unable to continue our arrangement with ITN, it could materially affect our ability to deliver on our plan.

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 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;

Table of Contents

- 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 modules.

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.

Our failure to qualify for Small Business Innovation Research funding could adversely impact our revenues from research and development contracts.

We currently receive funding for research and development under the Small Business Innovation Research ("SBIR") program. In 2011, our revenues generated from performance of these contracts totaled approximately $82,000. In order to continue to qualify for this funding, we must, among other things, remain American owned and independently operated and our size must remain under 500 employees. As a result of our relationship with TFG Radiant and our planned expansion plans, we cannot guarantee that we will be able to continue to qualify for SBIR funding. If we fail to qualify for SBIR funding, our revenues from research and development could decline or cease, and our net income and financial condition could be materially and adversely affected.

If the U.S. government terminates or delays any of our revenue-generating contracts with it, then the reduced funding could materially and adversely affect our results of operations and financial condition.

To date, we have relied heavily upon contracts with the U.S. government and federal agencies for our revenues and to fund our research and development activities. The U.S. government, as a counterparty to our agreements, generally has the right to unilaterally terminate or modify these contracts. If the U.S. government terminates or delays any of our contracts with it—for example, because of changed government priorities, budgets or appropriations—then our ability to perform or adequately fund ongoing research and development activities may be adversely affected. Further, such termination or delay could materially and adversely affect our results of operations and financial condition.

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 modules.

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.

Risks Relating to our Securities

Table of Contents

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 the NASDAQ Global 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 that we will be able to comply with all of these requirements or that 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 that 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 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 that 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 Exchange Act. A lack of investor confidence in the reliability and accuracy of our public reporting could cause our stock price to decline.

The price of our common stock may continue to be volatile.

Our common stock is currently traded on the NASDAQ Global 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, in the calendar year ended December 31, 2011, our common stock traded as low as $0.36 and as high as $3.95, and in 2010, traded as low as $2.00 and as high as $6.19. 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.

We are not currently in compliance with the minimum bid price rule of the NASDAQ Global Market and a delisting could limit the liquidity of our stock, increase its volatility and hinder our ability to raise capital.

Table of Contents

Under the rules of the NASDAQ Global Market, listed companies are required to maintain a share price of at least $1.00 per share and if the closing share price stays below $1.00 for a period of 30 consecutive business days, then the listed company would have a cure period of at least 180 days for the purpose of regaining compliance with the $1.00 per share minimum. As reported in our Current Report on Form 8-K filed on October 13, 2011, we received notice from the NASDAQ Global Market that we were not in compliance with the minimum bid price rule. If our share price does not sustain an increase sufficient for us to re-gain compliance during the relevant cure period ending in April 2012 we may be subject to de-listing procedures. We are considering various options that will enable us to avoid de-listing should the cure period expire, including a transfer to the NASDAQ Capital Market in order to extend the time that we have to regain compliance, or by effecting a reverse stock split in order to increase our share price above the required $1.00 bid price.

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.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We own an approximately 138,000 square foot manufacturing and office facility in Thornton, Colorado. In addition, we currently lease approximately 19,380 square feet of office and manufacturing space in Littleton, Colorado, which is primarily used for our research and development activities. This lease expires in December 2012.

Item 3. Legal Proceedings

On October 21, 2011, we were notified that a complaint (the “Lawsuit”) was filed by Jefferies & Company, Inc. (“Jefferies”) against us in state court located in the County and State of New York.

In December 2010, Ascent and Jefferies entered into an engagement agreement (the “Fee Agreement”) pursuant to which Jefferies was hired to act as our financial advisor in relation to certain potential transactions. In the Lawsuit, Jefferies claims that it is entitled to receive an investment banking fee of $3 million (plus expense reimbursement of approximately $49,000) under the Fee Agreement in connection with the August 2011 investment and strategic alliance transaction (the “Financing”) between Ascent and TFG Radiant Investment Group Ltd. and its affiliates (“TFG Radiant”).

At the August 12, 2011 closing of the Financing, Ascent received aggregate proceeds of $7,360,000 from the sale to TFG Radiant of 6,400,000 shares of our common stock (the “Tranche 1 Shares”) at a price of $1.15 per share. TFG Radiant also received an option to purchase an additional 9,500,000 shares of Ascent stock (the “Tranche 2 Shares”) at a price of $1.55 per share. We have not received any proceeds from the option for the Tranche 2 Shares because such option is not currently exercisable.

Ascent has paid Jefferies the fees it believes are owed under the Fee Agreement, which are a $100,000 retainer and approximately $49,000 of out-of-pocket expenses. Ascent believes that the Financing is not a covered transaction under the Fee Agreement and, accordingly, that the Lawsuit is without merit. We intend to vigorously defend the

Lawsuit.

This proceeding is subject to the uncertainties inherent in any litigation. It is subject to many uncertainties and to outcomes that are not predictable with assurance and that may not be known for an extended period of time. We record a liability in our financial statements for costs related to claims, including settlements and judgments, where we have assessed that a loss is probable and an amount can be reasonably estimated. It is not possible to predict the outcome for this legal proceeding. If the Lawsuit is determined adversely to Ascent, the costs associated with this proceeding could have a material

Table of Contents

adverse effect on our results of operations, financial position and/or cash flows of a future period.

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

Our common stock is traded on the NASDAQ Global Market under the symbol "ASTI." The following table sets forth the high and low sales price information per share for our common stock for the last two completed fiscal years.

Price Range of Common Stock

	High	Low
Fiscal 2010		
First Quarter	$6.19	$3.20
Second Quarter	$4.40	$2.57
Third Quarter	$3.28	$2.00
Fourth Quarter	$6.14	$3.01
Fiscal 2011		
First Quarter	$3.95	$2.50
Second Quarter	$2.50	$0.92
Third Quarter	$1.50	$0.60
Fourth Quarter	$0.90	$0.36

Holders

As of December 31, 2011, the number of record holders of our common stock was 33, and there were no holders of preferred stock. The vast majority of our publicly traded shares of common stock are held in street name, and we believe that the number of beneficial owners of our common stock was approximately 11,500 as of December 31, 2011.

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, 2011 and 2010, we did not pay any 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.

Stock Performance Graph

The following graph compares the cumulative five-year return provided shareholders on Ascent Solar Technologies, Inc. Common Stock relative to the cumulative total returns of the Russell 2000 Index (market index that tracks small cap companies) and the NASDAQ Clean Edge Green Energy U.S. Index (industry index covering five major sub-sectors; Renewable Electricity Generation, Renewable Fuels, Energy Storage & Conversion, Energy Intelligence and Advanced Energy-Related Materials).

Table of Contents

	12/31/2006	12/31/2007	12/31/2008	12/31/2009	12/31/2010	12/31/2011
Ascent Solar	$100.00	$857.24	$129.66	$182.76	$115.86	$13.45
Russell 2000	$100.00	$98.44	$65.17	$82.87	$105.14	$100.73
NASDAQ Clean Edge Green Energy*	$100.00	$167.17	$61.12	$88.45	$90.84	$53.77

* First date of index is 2/14/07

Assumptions:

- The graph covers the period from December 31, 2006 through December 31, 2011, the last trading day of our most recently completed fiscal year.
- The graph assumes that $100 was invested in our common stock on December 31, 2006 at the closing price on that date of $2.90 per share, in the Russell 2000 Index and the NASDAQ Clean Edge Energy Index, and that all dividends, if any, were reinvested. No cash dividends have been declared or paid on our common stock.
- Stockholder returns over the indicated period should not be considered indicative of future stockholder returns.

Item 6. Selected Financial Data

The following tables include selected financial data for each of our last five fiscal years. The statement of operations data for the years ended December 31, 2011, 2010 and 2009 and balance sheet data as of December 31, 2011 and 2010 have been derived from the audited financial statements appearing elsewhere in this report. The statement of operations data for the years ended December 31, 2008 and 2007 and the balance sheet data as of December 31, 2009, 2008 and 2007 have been derived from our audited financial statements appearing in our previous reports filed with the SEC. This data should be read in conjunction with the financial statements and notes therein, with the "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Item 7 of this report and with the other financial data set forth elsewhere in this report. Our historical results of operations are not necessarily indicative of results of operations to be expected for future periods.

Table of Contents

Statements of Operations Data	Year Ended December 31,				
In thousands except per share data	2011	2010	2009	2008	2007
Revenue	$3,950	$2,481	$1,464	$1,500	$1,003
Research and Development Expense	24,122	24,354	15,508	10,066	4,803
Selling, General and Administrative Expense	7,130	7,454	7,694	5,670	4,126
Impairment Loss	78,000	1,769	—	—	—
Loss from Operations	(105,302)	(31,096)	(21,738)	(14,236)	(7,926)
Net Loss	(105,744)	(31,234)	(20,923)	(13,215)	(6,503)
Basic and diluted net loss per share	$(3.02)	$(1.14)	$(0.93)	$(0.78)	$(0.70)

Balance Sheet Data	Year Ended December 31,				
In thousands	2011	2010	2009	2008	2007
Cash and investments	$23,915	$44,790	$60,506	$87,350	$37,701
Working capital	22,333	41,489	50,229	80,889	37,079
Total Assets	61,425	160,021	172,661	154,212	49,817
Long-Term Obligations	6,642	7,279	7,095	7,050	—
Stockholders' Equity	50,003	146,566	154,315	139,618	48,622

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 contains 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 development stage company formed to commercialize flexible PV modules using our proprietary technology. For the year ended December 31, 2011, we generated approximately $3.9 million of revenue. Our revenue from government research and development contracts was approximately $3.4 million, and our revenue from product sales was approximately$0.5 million. As of December 31, 2011, we had an accumulated deficit of approximately $183.0 million. Currently, we are in limited production based on our ability to create demand within emerging and specialty markets. Products in these markets carry higher average selling prices as compared to commodity markets. We continue to qualify our equipment and we have adjusted our utilization of equipment based on our near term forecast. In the near term we intend to focus on emerging and specialty markets with higher average selling prices, shifting our focus to rooftop applications in the longer term. Under our current business plan, we expect losses to continue until annual production reaches approximately 30 MW or more. We intend to augment our own manufacturing capabilities by licensing our proprietary manufacturing processes to others. Although we plan to continue manufacturing at our current facilities, our plans are also to have significant future production capacity enabled through partnerships, joint ventures or other commercial or licensing arrangements. To date, we have financed our operations primarily through public and private equity financings.

Throughout 2011, we worked with dozens of customers in prototyping and developing applications for our products. Substantially all equipment necessary for production has been delivered as of December 31, 2011. Our 2011 production volumes were based primarily on market demand for our products in emerging and specialty markets. In March 2011, based on market conditions, we revised our near-term strategy to focus on applications for emerging and specialty markets, including off-grid, military and defense and consumer oriented products, which we believe will better leverage the unique characteristics of our product and carry higher average selling prices. Our long-term

strategy is focused on these markets and the BIPV/BAPV markets.

Significant Trends, Uncertainties and Challenges

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

Table of Contents

- Our ability to qualify production tools to achieve desired production yields, throughput, module efficiencies and other performance targets, and to obtain necessary or desired certifications for our PV modules, in a timely manner;
- Our ability to maintain the listing of our common stock on the NASDAQ Global Market or Capital Market and the potential impact of a possible delisting on the market liquidity and price volatility of our common stock;
- Our ability to achieve projected operational performance and cost metrics;
- Our ability to consummate strategic relationships with key partners, including OEMs, customers, system integrators, value-added resellers and distributors who deal directly with manufacturers and end-users in the BIPV/BAPV, portable power, EIPV and government/defense solar panel markets;
- The availability of, or changes to, government policies, subsidies and incentives that effect the use or cost of renewable energy;
- Consumer acceptance of and demand for our products;
- Changes in the supply and demand for PV modules as well as fluctuations in selling prices for PV modules worldwide;
- Our ability to raise additional capital on terms favorable to us;
- Our ability to manage the planned expansion of our manufacturing facilities, operations and personnel;
- Our ability to enter into commercially viable licensing, joint ventures or other commercial arrangements;
- Our ability and the ability of our distributors, suppliers and customers to manage operations and orders and timely delivery of production tools; and
- Availability of raw materials.

Basis of Presentation: Our activities to date have consisted substantially of raising capital, research and development, and establishment of our production operation. Revenues to date have been generated primarily from our governmental research and development contracts and have not been significant. Our planned principal operations to commercialize flexible PV modules have commenced, but have generated limited revenue to date. Accordingly, we are considered to be in the development stage and we have provided additional disclosure of inception to date activity in our Statements of Operations, Statements of Stockholder's Equity and Comprehensive Income (Loss) and Statements of Cash Flows.

Significant Accounting Policies

Investments: We classify our investments as "available-for-sale." Such investments are carried at fair value, based on quoted market prices with the unrealized holding gains and losses reported as "Accumulated other comprehensive income (loss)" in the stockholders' equity section of our balance sheets included herein. Realized gains and losses on sales of securities are computed using the specific identification method. We evaluate declines in market value for potential impairment. If the decline results in a value below cost and is determined to be other than temporary, the investment is written down to its impaired value and a new cost basis is established.

Fair Value Estimates: The fair value of an asset or liability is the amount at which it could be exchanged or settled in a current transaction between willing parties. We have recorded investments at fair value and have classified them as Level 1, 2 or 3 within the fair value hierarchy. Fair values determined by Level 1 inputs utilize quoted prices in active markets for identical assets or liabilities. Fair values determined by Level 2 inputs utilize data points that are observable such as quoted prices and other inputs that can be corroborated by observable market data. Fair values determined by Level 3 inputs utilize unobservable data points for the asset or liability.

In addition to the items measured at fair value on a recurring basis, in conjunction with the significant impairment loss taken in 2011, we also measured certain property, plant and equipment at fair value on a nonrecurring basis. These fair value measurements rely primarily on our specific inputs and assumptions about the use of the assets, as observable inputs are not available. Accordingly, we determined that these fair value measurements reside primarily within Level 3 of the fair value hierarchy. The carrying value for cash and cash equivalents, restricted cash, accounts receivable, accounts payable, accrued property plant, and equipment, accrued expenses and other assets and liabilities approximate their fair values due to their short maturities.

Revenue Recognition: Revenue from governmental research and development contracts is generated under terms that are cost plus fee or firm fixed price. Revenue from cost plus fee contracts is recognized as costs are incurred on the basis of direct

23

Table of Contents

costs plus allowable indirect costs and an allocable portion of the fixed fee. Revenue from firm fixed price contracts is recognized under the percentage-of-completion method of accounting, with costs and estimated profits included in contract revenue as work is performed. If actual and estimated costs to complete a contract indicate a loss, provision is made currently for the loss anticipated on the contract. Revenue from commercial sales of flexible PV modules is recognized as modules are delivered and title has transferred to the customer. Product revenue through December 31, 2011 is included in research and development revenue as we are in the development stage and such revenues (totaling $538,005 for the year ended December 31, 2011) were generated from a limited number of customers as the product is being brought to market.

Inventories: All inventories are stated at the lower of cost or market, with cost determined using the weighted average method. Elements of cost include raw material acquisition and conversion costs, an allocated portion of indirect production costs, inventory maintenance costs and depreciation and amortization. When plant capacity is significantly underutilized, allocated costs included in inventories are based on a normal level of activity, with the excess costs charged to expense in the period incurred.

Inventory balances are frequently evaluated to ensure that they do not exceed net realizable value. The computation for net realizable value takes into account many factors, including expected demand, product lifecycle and development plans, module efficiency, quality issues, obsolescence and others. If actual demand and market conditions are less favorable than those estimated by management, additional inventory write-downs may be required. Our inventories have a long life cycle and obsolescence is not a significant factor in their valuation.

Property, Plant and Equipment: Property, plant and equipment are recorded at the original cost to us. Assets are depreciated over estimated useful lives of three to forty 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
Buildings	40
Manufacturing machinery and equipment	5 - 10
Furniture, fixtures, computer hardware/software	3 - 7
Leasehold improvements	life of lease

Long-lived assets: We analyze long-lived tangible assets (property, plant and equipment) and definitive-lived intangible assets (patents) for impairment by assessing if the asset cost will 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. During 2011 and 2010, we incurred significant impairments of our manufacturing facilities and equipment in the amounts of $78.0 million and $1.8 million, respectively, based on estimates prepared by management, as well as a valuation analysis by and independent firm.

Research and Development Costs: Research and development costs are incurred during the process of researching and developing new products and enhancing our manufacturing processes and consist primarily of compensation and related costs for personnel, materials, supplies and equipment depreciation. We expense these costs as incurred until the resulting product has been completed and tested and is ready for commercial manufacturing. We also incur research and development expenses on federal government research and development contracts and expense as incurred.

Share-Based Compensation: We measure and recognize compensation expense for all share-based payment awards made to employees, officers, directors, and consultants based on estimated fair values. We estimate the fair value of share-based payment awards on the date of grant using an option-pricing model. The value of the portion of the award that is ultimately expected to vest is recognized as expense over the requisite service period in our statements of operations included herein. 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. For purposes of determining estimated fair value of share-based payment awards on the date of grant, we use the Black-Scholes option-pricing model ("Black-Scholes Model") for option awards. The Black-Scholes Model requires the input of highly subjective assumptions. Because our employee stock options may have characteristics significantly different from those of traded options, and because changes in the subjective input assumptions can materially affect the fair value estimate, in management's opinion, the existing models may not provide a reliable single measure of the fair value of our employee stock

Table of Contents

options. Management will continue to assess the assumptions and methodologies used to calculate estimated fair value of share-based compensation. Circumstances may change and additional data may become available over time, which result in changes to these assumptions and methodologies, which could materially impact our fair value determination. We estimate the fair value of our restricted stock awards at our stock price on the grant date.

The accounting guidance for share-based compensation may be subject to further interpretation and refinement over time. There are significant differences among option valuation models, and this may result in a lack of comparability with other companies that use different models, methods and assumptions. If factors change and we employ different assumptions in the accounting for share-based compensation in future periods, or if we decide to use a different valuation model, the compensation expense that we record in the future may differ significantly from what it has recorded in the current period and could materially affect our loss from operations, net loss and net loss per share.

Use of Estimates: The preparation of financial statements in conformity with U.S. generally accepted accounting principles ("GAAP") requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Recent Accounting Pronouncements: In May 2011, the FASB issued ASU 2011-04, Fair Value Measurement Topic (Topic 820): Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRS. This Accounting Standards Update ("ASU") provides a consistent definition of fair value and sets forth common requirements for measurement of and disclosure about fair value in accordance with U.S. GAAP and International Financial Reporting Standards (“IFRS”). ASU 2011-04 amends existing fair value measurement and disclosure requirements including application of highest and best use and valuation premise concepts, measuring the fair value of an instrument classified in a reporting entity’s shareholders’ equity, measuring the fair value of financial instruments that are valued within a portfolio and disclosures in measurement categorized within Level 3 of the fair value hierarchy. This ASU is effective on a prospective basis during interim and annual periods beginning after December 15, 2011 and early application is not permitted. We do not expect the adoption of ASU 2011-04 will have a material impact on our financial position, results of operations or cash flows.

In June 2011, the FASB issued ASU 2011-05, Comprehensive Income (Topic 220): Presentation of Comprehensive Income. This ASU seeks to improve comparability, consistency and transparency of financial reporting with respect to comprehensive income by eliminating the option to present components of other comprehensive income as part of the statement of changes in stockholders’ equity, among other amendments. The amendments of this ASU require all non-owner changes in stockholders’ equity be presented either in a single continuous statement of comprehensive income or two separate but consecutive statements. This ASU is effective for fiscal years and interim periods beginning after December 15, 2011 and early adoption is permitted. The adoption of ASU 2011-05 will affect only financial statement presentation and will not impact our financial position, results of operations or cash flows.

Results of Operations

Comparison of the Years Ended December 31, 2011 and 2010

Our activities to date have substantially consisted of raising capital, business and product development, research and development and the development of our production lines.

Revenues. Our revenues were $3,949,911 for the year ended December 31, 2011 compared to $2,481,489 for the year ended December 31, 2010, an increase of $1,468,422. Revenues for the year ended December 31, 2011 and December 31, 2010 included product sales of $538,005 and $811,906, respectively. Revenues earned on our government research and development contracts increased by $1,742,323 for the year ended December 31, 2011 as a result of two new government contracts that were entered into and began generating revenue in June 2010.

Research and development. Research and development costs were $24,121,766 for the year ended December 31, 2011 compared to $24,354,224 for the year ended December 31, 2010, a decrease of $232,458. Research and development costs include the costs incurred for pre-production, production activities in our manufacturing facility and facility and equipment infrastructure costs. Research and development costs also include costs related to our governmental contracts. Costs related to pre-production and production activities decreased by approximately $1,555,000. The pre-production cost decreases were comprised of personnel related costs of approximately

$1,720,000, consulting and contract services of approximately $1,014,000, facility related costs of approximately $602,000 and stock option expense of approximately $356,000, offset by increases in depreciation and amortization of approximately $1,321,000 and materials and equipment related costs of approximately $841,000. Governmental research and development costs increased by approximately $1,323,000. The governmental research and development cost increases were comprised of consulting and contract service of approximately $1,211,000 and personnel related costs of approximately $179,000, offset by decreases in facilities related costs of

Table of Contents

approximately $114,000.

Selling, general and administrative. Selling, general and administrative expenses were $7,130,530 for the year ended December 31, 2011 compared to $7,453,830 for the year ended December 31, 2010, a decrease of $323,300. This decrease is primarily the result of reductions in stock option expense of approximately $812,000, personnel related costs of approximately $308,000 and depreciation and amortization expense of approximately $268,000, offset by increases in facility related costs of approximately $369,000, general supplies expenses of approximately $258,000, legal expenses of approximately $204,000, consulting and contract services of approximately $164,000, public company expenses of approximately $60,000 and marketing costs of approximately $26,000.

Impairment loss. As a result of significant changes in market conditions, particularly the decreases in current and expected average selling prices for PV modules, an impairment charge was taken against Property, Plant and Equipment during the second quarter of 2011. The impairment loss incurred on the write-down of Property, Plant and Equipment and Deposits on manufacturing equipment was $78,000,000 for year ended December 31, 2011 compared to $1,769,480 for year ended December 31, 2010, an increase of $76,230,520.

Interest expense. Interest expense was $113,471 and $0 for the years ended December 31, 2011 and 2010, respectively. Interest costs of $351,632 and $479,898 were incurred and capitalized as property, plant and equipment for the years ended December 31, 2011 and 2010, respectively. Interest incurred relates to our CHFA loan utilized for our production facility expansion in Thornton, Colorado.

Interest income. Interest income was $52,915 for the year ended December 31, 2011 compared to $42,756 for the year ended December 31, 2010, an increase of $10,159. Interest income represents interest on cash and short-term investments. Despite lower average cash balance, interest income increased due to slight improvements in interest rates in 2011 as compared to 2010.

Contract cancellation loss. Due to changes in our strategy, during the third quarter of 2011 we canceled delivery of certain equipment. As a result we recorded a loss of $590,774 for year ended December 31, 2011.

Realized gain (loss) on forward contracts. Realized gain (loss) on forward contracts includes gains and losses incurred when forward contracts mature. For the year ended December 31, 2011, we recorded a realized gain on forward contracts of $63,915 compared to $0 for the year ended December 31, 2010. The gain recorded for the year ended December 31, 2011 was generated from the exercise of foreign currency options held to hedge future equipment payments to be remitted in Yen.

Foreign currency transaction gain (loss). Foreign currency transaction gain (loss) is calculated on cash held in foreign currencies to reflect the current exchange rate. Foreign currency transaction gain was $145,940 for the year ended December 31, 2011 compared to foreign currency transaction loss of $180,621 for the year ended December 31, 2010, a net change of $326,561. The decreases and increases are the result of changes in the exchange rate related to our deposits of foreign currencies.

Net Loss. Our Net Loss was $105,743,860 for the year ended December 31, 2011 compared to a Net Loss of $31,233,718 for the year ended December 31, 2010, an increase in Net Loss of $74,510,142. The increase in Net Loss for the year ended December 31, 2011 can be summarized in variances in significant account activity as follows:

Table of Contents

	(Increase) decrease in Net Loss For the Year Ended December 31, 2011 Compared to the Year Ended December 31, 2010
Revenues	$ 1,468,422
Research and development costs	
Manufacturing research and development	(1,295,593)
Government research and development	1,199,208
Non-cash stock based compensation	328,843
Selling, general and administrative expenses	
Corporate selling, general and administrative	(488,718)
Non-cash stock based compensation	812,018
Impairment loss	(76,230,520)
Interest expense	(113,471)
Interest income	10,159
Contract cancellation loss	(590,774)
Realized gain on investments	(192)
Realized gain (loss) on forward contracts	63,915
Foreign currency transaction gain (loss)	326,561
Increase to Net Loss	$ (74,510,142)

Comparison of the Years Ended December 31, 2010 and 2009

Revenues. Our revenues were $2,481,489 for the year ended December 31, 2010 compared to $1,464,346 for the year ended December 31, 2009, an increase of $1,017,143. Revenues for the year ended December 31, 2010 included $811,906 of product sales, which constitutes the majority of the increase. Revenues earned on our government research and development contracts increased by $288,515 for the year ended December 31, 2010 as a result of two new government contracts that were entered into and began generating revenue in June 2010.

Research and development. Research and development costs were $24,354,224 for the year ended December 31, 2010 compared to $15,508,209 for the year ended December 31, 2009, an increase of $8,846,015. Research and development costs include the costs incurred for pre-production and production activities in our manufacturing facility and equipment infrastructure costs. Research and development costs also include costs related to our governmental contracts. Costs related to pre-production and production activities increased approximately $8,319,000. The pre-production cost increases were comprised of materials and equipment related costs of approximately $1,444,000, depreciation and amortization of approximately $3,875,000, personnel related costs of approximately $1,583,000, facility related costs of approximately $706,000, and consulting and contract services of approximately $588,000, offset by a decrease in stock compensation expense of approximately $85,000. Governmental research and development costs increased by approximately $527,000. The research and development cost increases were comprised of materials and equipment related costs of approximately $225,000, facilities related costs of approximately $165,000, and depreciation and amortization of approximately $140,000, offset by decreases in stock option expense of approximately $48,000 and personnel costs of approximately $16,000.

Selling, general and administrative. Selling, general and administrative expenses were $7,453,830 for the year ended December 31, 2010 compared to $7,694,566 for the year ended December 31, 2009, a decrease of $240,736. This decrease is the result of reductions in consulting and contract services of approximately $501,000 and approximately $124,000 in legal expense, offset by increases of approximately $68,000 in facility costs, approximately $170,000 in stock compensation expense and approximately $146,000 in personnel related costs associated with increased headcount.

Impairment loss. During the fourth quarter of 2010, there was a significant change in the planned usage of two manufacturing tools which impaired their value. Impairment loss incurred on the write-down of manufacturing tools

was $1,769,480 for the year ended December 31, 2010 compared to $0 for the year ended December 31, 2009.

Interest expense. Interest costs of $479,898 and $456,534 were incurred and capitalized into our property, plant and equipment for the years ended December 31, 2010 and 2009, respectively. Interest incurred relates to our CHFA loan utilized for our production facility expansion in Thornton, Colorado.

Table of Contents

Interest income. Interest income was $42,756 for the year ended December 31, 2010 compared to $531,697 for the year ended December 31, 2009, a decrease of $488,941. Interest income represents interest on cash and short term investments. The decrease in interest income is due to significantly lower interest rates in 2010 as compared to 2009 as well as a lower average cash balance.

Realized gain (loss) on forward contracts. Realized gain (loss) on forward contracts include gains and losses incurred when forward contracts mature. The realized loss on forward contracts was $0 for the year ended December 31, 2010 compared to $1,128,326 for the year ended December 31, 2009.

Unrealized gain on forward contracts. Unrealized gain on forward contracts reflects the difference between the spot rate and the forward rate on our forward contracts. Unrealized gains and losses on forward contracts are reversed when the contracts are settled. For the year ended December 31, 2010, the unrealized gain on forward contracts was $0 compared to $766,403 for the year ended December 31, 2009, the year in which all contracts matured.

Foreign currency transaction gain (loss). Foreign currency transaction gain (loss) is calculated on cash held in foreign currencies to reflect the current exchange rate. Foreign currency transaction loss was $180,621 for the year ended December 31, 2010 compared to foreign currency transaction gain of $586,555 for the year ended December 31, 2009, a net change of $767,176.

Net Loss. Our Net Loss was $31,233,718 for the year ended December 31, 2010 compared to a Net Loss of $20,922,717 for the year ended December 31, 2009, an increase in Net Loss of $10,311,001. The increase in Net Loss for the year ended December 31, 2010 can be summarized in variances in significant account activity as follows:

	(Increase) decrease in Net Loss For the Year Ended December 31, 2010 Compared to the Year Ended December 31, 2009
Revenues	$ 1,017,143
Research and development costs	
Manufacturing research and development	(8,406,423)
Government research and development	(572,710)
Non-cash stock based compensation	133,118
Selling, general and administrative expenses	
Corporate selling, general and administrative	410,365
Non-cash stock based compensation	(169,629)
Impairment loss	(1,769,480)
Interest expense	—
Interest income	(488,941)
Realized gain on investments	(59,191)
Realized gain (loss) on forward contracts	1,128,326
Unrealized gain on forward contracts	(766,403)
Foreign currency transaction gain (loss)	(767,176)
Increase to Net Loss	$ (10,311,001)

Liquidity and Capital Resources

As of December 31, 2011, we had approximately $23.9 million in cash and investments and working capital of approximately $22.3 million. We also had approximately $1.4 million in restricted cash securing equipment purchases which is included in “Other Assets” on our balance sheets included herein. We have remaining obligations for equipment purchases in the approximate amount of $4.1 million, of which approximately $1.6 million is recorded in “Accrued property, plant and equipment.”

On March 31, 2011, we announced a change in strategy that, in the near term, will focus our solar module technology on applications for emerging and specialty markets. Longer term we intend to participate in the building integrated

market. The change in strategy resulted in a change in leadership and sizing the company to a new cost structure, primarily through the termination of a portion of our workforce. We incurred a charge of approximately $450,000 in the quarter ended March 31,

Table of Contents

2011, comprised of severance costs. This charge has been expensed as “Research and development” and “Selling, general and administrative” in our accompanying statements of operations in the amounts of approximately $72,000 and $378,000, respectively. Approximately $139,000 is recorded under "Accrued expenses" in our balance sheets as of December 31, 2011 included herein.

Due to recent significant adverse changes in market conditions, particularly the decreases in current and expected average selling prices for PV modules, we concluded in the quarter ended June 30, 2011 that the carrying value of Property, Plant and Equipment and Deposits on manufacturing equipment may not be recoverable and a non-cash impairment charge of approximately $78.0 million was recorded.

The use of cash for operational expenses averaged approximately $1.0 million per month during the quarter ended December 31, 2011 compared to approximately $2.5 million per month during the quarter ended March 31, 2011, the date of the change in strategy, which reflects a decrease of approximately $1.5 million per month. Cash used for operational expenses is related to manufacturing and engineering activities, research and development, business development and general corporate expenses. As of December 31, 2011, we had 77 full-time employees and 10 contractors provided through an employment services provider. We expect our current cash balance to be sufficient to cover our planned capital and operational expenditures through December 31, 2012 based on currently known factors and limited projected revenues. We expect that we may need to raise additional capital to cover our operating losses and future manufacturing capacity expansion. The capital markets are currently volatile and there is no assurance that we will be able to raise additional capital on acceptable terms or at all. We currently are pursuing various avenues to obtain additional capital for further expansion.

For the twelve months ended December 31, 2011, our cash used in operations was approximately $19.9 million compared to approximately $21.6 million for the twelve months ended December 31, 2010, a decrease of $1.7 million. The decrease in cash used in operating activities for the year ended December 31, 2011 as compared to the same period in 2010 was primarily due to a decrease in net loss after deducting non cash adjustments, decrease in inventory purchases and net decrease in other assets. Partially offsetting the decrease in cash used in operations was a net decrease in other liabilities and increase in foreign currency transaction gain.

The total net change in cash and cash equivalents for the year ended December 31, 2011 was a decrease of approximately $16.0 million. The decrease in cash and cash equivalents was primarily the result of (i) negative cash from operating activities of approximately $19.9 million, primarily as a result of net loss (adjusted for non-cash expenses and other items such as depreciation and amortization, non-cash based stock based compensation, impairment on property, plant and equipment and cancellation fees and forfeited deposits on equipment), increases in inventories and decreases in other liabilities, partially offset by decreases in other assets, and (ii) negative cash from investing activities of approximately $3.0 million as a result of purchases of plant, property and equipment, partially offset by net purchases and maturities of available-for-sale securities and cash restricted for purchasing of manufacturing equipment. The decrease in cash and cash equivalents was partially offset by cash received from financing activities of approximately $7.0 million. The primary source of cash within financing activities was approximately $7.5 million in proceeds from sale of common stock, including approximately $7.2 million in net proceeds received from the August 2011 sale of stock to TFG Radiant.

On January 9, 2009, we filed a “shelf” Registration Statement on Form S-3 with the SEC. The SEC declared the registration statement effective on January 16, 2009. The shelf registration was utilized in connection with our public offering of approximately 4.6 million shares that closed on October 6, 2009 with gross proceeds of approximately $30 million. The shelf registration was further used with a public offering of approximately 5.3 million shares that closed on November 16, 2010 with gross proceeds of approximately $21.8 million. Through December 31, 2011, sales of $0.3 million were completed through an at-the-market facility established on February 28, 2011. This facility was terminated on January 4, 2012.

On August 12, 2011, we completed a strategic alliance with TFG Radiant. As part of this strategic alliance, TFG Radiant acquired 6,400,000 shares of our common stock at a price of $1.15 per share or $7,360,000 in the aggregate. The closing price of our common stock on August 12, 2011 was $0.73. In addition, TFG Radiant received an option to acquire an additional 9,500,000 shares of our common stock at an exercise price of $1.55 per share. The option was approved by our shareholders on October 27, 2011. This approval eliminated certain registration rights which would

have been otherwise available to TFG Radiant related to the 6,400,000 share purchase. TFG Radiant may not exercise this option unless and until TFG Radiant meets a specified milestone associated with the construction of the first East Asia FAB. This option expires on February 12, 2014.

On October 27, 2011, our Shareholders approved an increase in the number of authorized shares of common stock to 125,000,000.

On December 29, 2011, we filed a “shelf” Registration Statement on Form S-3 with the SEC. With the shelf registration, we may from time to time sell common stock, preferred stock, warrants or some combination in one or more offerings for up to $25.0 million. The registration became effective February 14, 2012. The new shelf registration replaces the previous shelf

Table of Contents

registration which, in accordance with SEC rules, expired in early 2012 .

On January 5, 2012, we entered into an At the Market Offering Sales Agreement pursuant to which we may issue and sell such number of shares of our common stock having an aggregate offering price of up to $5,000,000. Sales of common stock, if any, will be made at market prices by any method that is deemed an "at-the-market" offering as defined in Rule 415 under the Securities Act, including sales made directly on the NASDAQ stock exchange and any other trading market for our common stock, and sales to or through a market maker other than on an exchange. There is no assurance we will be able to sell shares of our common stock under this agreement at acceptable prices or at all. The aggregate compensation payable to the sales agent shall be equal to 3% of the gross sales price of the shares sold. As of March 22, 2012, 1,594,395 shares had been sold under this facility with net proceeds of $1,234,415.

Recent Developments

On February 1, 2012, we announced the appointment of Victor Lee as President and Chief Executive Officer. Mr. Lee has served on our Board since November 2011. Mr. Lee is the managing director of Tertius Financial Group Pte Ltd, the joint venture partner with Radiant Group in TFG Radiant. As President and Chief Executive Officer, Mr. Lee will not receive any cash, equity or other compensation.

Contractual Obligations

The following table presents our contractual obligations as of December 31, 2011. Our long-term debt obligation is related to our building loan and includes both principal and interest. Our purchase obligations include orders for equipment, inventory and operating expenses.

		Payments Due by Year (in thousands)			
Contractual Obligations	Total	Less Than 1 Year	1-3 Years	3-5 Years	More Than 5 Years
Long-term debt obligations	$11,556	$1,094	$2,081	$1,387	$6,994
Operating lease obligations	169	169	—	—	—
Purchase obligations	4,426	4,426	—	—	—
Total	$16,151	$5,689	$2,081	$1,387	$6,994

Off Balance Sheet Transactions

As of December 31, 2011, 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

Historically, we have purchased manufacturing equipment internationally, which exposes us to foreign currency risk. In July 2008 and March 2009, we entered into fair value hedges utilizing forward contracts designed to match scheduled contractual payments to equipment suppliers, which are payments denominated in Euros and Yen. The total notional value of the Euro forward contracts was €6.4 million with various contract settlement dates beginning September 15, 2008 through July 31, 2009. The total notional value of the Yen forward contracts was ¥521.4 million with contract settlement dates of March and April 2009. Those forward contracts had been settled as of December 31, 2009 and the currencies contracted for were delivered to us. However, not all payments have been made to our equipment suppliers, and we continue to have foreign currency risk. Included in Restricted cash is $1,427,053 related to €1,101,801 held as of December 31, 2011 in our bank account for future payments to equipment suppliers. Based on our overall currency rate exposure as of December 31, 2011, a near-term 10% appreciation or depreciation in the U.S. Dollar, relative to our foreign currencies on deposit, would have a positive or negative impact of approximately $0.1 million on our results of operations.

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.

Generally, our objective is to fix the dollar amount of our foreign currency denominated manufacturing equipment purchases at the time of order. Although our hedging activity described below is designed to fix the dollar amount to be

30

Table of Contents

expended, the asset purchased is recorded at the spot foreign currency rate in effect as of the date of the payment to the supplier. The difference between the spot rate and the forward rate has been reported as gain or loss on forward contract. 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.

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, 2011, our cash equivalents consisted of 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 that a change in interest rates will have a significant impact on our financial position, results of operations or cash flows.

Credit Risk

We have certain financial and derivative instruments that potentially subject us to credit risk. These consist primarily of cash, cash equivalents, restricted cash, investments, and forward foreign currency option contracts. We are exposed to credit losses in the event of nonperformance by the counter parties to our financial and derivative instruments. We place cash, cash equivalents, investments and forward foreign currency option contracts with various high-quality financial institutions, and exposure is limited at any one institution. We continuously evaluate the credit standing of our counter party financial institutions.

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 that are 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, 2011. Based on this evaluation, our management concluded that the design and operation of our disclosure controls and procedures were effective as of December 31, 2011.

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 that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that 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

31

Table of Contents

of our assets that could have a material effect on our financial statements.

Our management conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2011 based on the framework in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2011. Our management reviewed the results of its assessment with the Audit Committee.

This annual report does not include an attestation report from our independent registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by our registered public accounting firm pursuant to Sarbanes-Oxley Rule 404(c).

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the quarter ended December 31, 2011 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Incorporated by reference from the definitive proxy statement for our 2012 annual meeting of stockholders, which will be filed no later than 120 days after the close of our fiscal year ended December 31, 2011.

Item 11. Executive Compensation

Incorporated by reference from the definitive proxy statement for our 2012 annual meeting of stockholders, which will be filed no later than 120 days after the close of our fiscal year ended December 31, 2011.

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

Incorporated by reference from the definitive proxy statement for our 2012 annual meeting of stockholders, which will be filed no later than 120 days after the close of our fiscal year ended December 31, 2011.

Securities Authorized for Issuance under Equity Compensation Plans

The following table sets forth information as of December 31, 2011 relating to all of our equity compensation plans:

	Number of securities to be issued upon exercise of outstanding options, warrants and rights (1)	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans
Equity compensation plans approved by security holders	1,445,901	$ 2.58	2,265,791

(1) This column does not include 240,750 restricted stock awards or units.

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

Incorporated by reference from the definitive proxy statement for our 2012 annual meeting of stockholders, which will be filed no later than 120 days after the close of our fiscal year ended December 31, 2011.

Item 14. Principal Accounting Fees and Services

Incorporated by reference from the definitive proxy statement for our 2012 annual meeting of stockholders, which will be filed no later than 120 days after the close of our fiscal year ended December 31, 2011.

PART IV

Item 15. Exhibits and Financial Statement Schedules

Table of Contents

(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.

Table of Contents

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 22nd day of March, 2012.

ASCENT SOLAR TECHNOLOGIES, INC.

By: /S/ VICTOR LEE
Lee Kong Hian (aka Victor Lee)
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/ VICTOR LEE Lee Kong Hian (aka Victor Lee)	President & Chief Executive Officer and a Director (Principal executive officer)	March 22, 2012
/S/ GARY GATCHELL Gary Gatchell	Chief Financial Officer (Principal financial and accounting officer)	March 22, 2012
/S/ AMIT KUMAR Amit Kumar, Ph.D.	Chairman of the Board of Directors	March 22, 2012
/S/ RICHARD SWANSON Richard Swanson	Director	March 22, 2012
/S/ G. THOMAS MARSH G. Thomas Marsh	Director	March 22, 2012
/S/ KIM J. HUNTLEY Kim J. Huntley	Director	March 22, 2012
/S/ HANS OLAV KVALVAAG Hans Olav Kvalvaag	Director	March 22, 2012

Table of Contents

Ascent Solar Technologies, Inc.
Index to Financial Statements

	Page
Report of Independent Registered Public Accounting Firm	F - 1
Balance Sheets—As of December 31, 2011 and 2010	F - 2
Statements of Operations—For the years ended December 31, 2011, 2010 and 2009 and for the period from inception (October 18, 2005) through December 31, 2011	F - 3
Statements of Stockholders' Equity and Comprehensive Income (Loss)—For the period from inception (October 18, 2005) through December 31, 2011	F - 4
Statements of Cash Flows—For the years ended December 31, 2011, 2010, and 2009 and for the period from inception (October 18, 2005) through December 31, 2011	F - 7
Notes to Financial Statements	F - 8

Table of Contents

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors
Ascent Solar Technologies, Inc.
Thornton, Colorado

We have audited the accompanying balance sheets of Ascent Solar Technologies, Inc. (a Development Stage Company) as of December 31, 2011 and 2010 and the related statements of operations, stockholders' equity and comprehensive income (loss) and cash flows for the years ended December 31, 2011, 2010 and 2009 and for the period from inception (October 18, 2005) through December 31, 2011. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purposes of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Ascent Solar Technologies, Inc. as of December 31, 2011 and 2010, and the results of its operations and its cash flows for the years ended December 31, 2011, 2010 and 2009 and for the period from inception (October 18, 2005) through December 31, 2011 in conformity with U.S. generally accepted accounting principles.

/s/ HEIN & ASSOCIATES LLP

Denver, Colorado
March 22, 2012

Table of Contents

ASCENT SOLAR TECHNOLOGIES, INC.
(A Development Stage Company)

BALANCE SHEETS

	December 31, 2011	December 31, 2010
ASSETS		
Current Assets:		
Cash and cash equivalents	$11,298,885	$27,303,217
Investments	12,616,097	17,486,409
Trade receivables, net of allowance for doubtful accounts of $5,839 and $0, respectively	342,087	485,026
Related party receivable	—	2,524
Inventories	2,469,123	1,876,834
Prepaid expenses and other current assets	386,624	510,348
Total current assets	27,112,816	47,664,358
Property, Plant and Equipment:	36,897,531	110,709,320
Less accumulated depreciation and amortization	(7,964,875)	(10,706,478)
	28,932,656	100,002,842
Other Assets:		
Restricted cash	1,427,053	3,259,350
Deposits on manufacturing equipment	3,582,883	8,770,693
Patents, net of amortization of $28,248 and $17,186, respectively	308,785	259,439
Other non-current assets	60,312	64,062
	5,379,033	12,353,544
Total Assets	$61,424,505	$160,020,744
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities:		
Accounts payable	$658,605	$1,092,449
Related party payables	229	54,037
Accrued expenses	1,846,997	1,810,851
Accrued property, plant and equipment	1,626,317	2,385,301
Deferred contract revenue	—	250,705
Current portion of long-term debt	648,059	232,257
Current portion of long-term debt—related party	—	350,000
Total current liabilities	4,780,207	6,175,600
Long-Term Debt	6,615,070	6,863,129
Long-Term Debt—Related Party	—	400,000
Accrued Warranty Liability	26,660	15,900
Commitments and Contingencies (Notes 4, 12 & 19)		
Stockholders' Equity:		
Preferred stock, $0.0001 par value, 25,000,000 shares authorized, no shares outstanding	—	—
Common stock, $0.0001 par value, 125,000,000 shares authorized; 39,345,459 and 32,265,587 shares issued and outstanding at December 31, 2011 and 2010, respectively	3,935	3,226
Additional paid-in capital	233,004,550	223,826,191
Deficit accumulated during the development stage	(183,006,936)	(77,263,076)

Accumulated other comprehensive income (loss)	1,019	(226)
Total stockholders' equity	50,002,568	146,566,115
Total Liabilities and Stockholders' Equity	$61,424,505	$160,020,744

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

Table of Contents

ASCENT SOLAR TECHNOLOGIES, INC.
(A Development Stage Company)

STATEMENTS OF OPERATIONS

	For the Years Ended December 31,			For the Period from inception (October 18, 2005) through December 31, 2011
	2011	2010	2009	
Revenues	$3,949,911	$2,481,489	$1,464,346	$10,398,149
Costs and Expenses				
Research and development	24,121,766	24,354,224	15,508,209	79,685,683
Selling, general and administrative	7,130,530	7,453,830	7,694,566	35,822,030
Impairment loss	78,000,000	1,769,480	—	79,769,480
Total Costs and Expenses	109,252,296	33,577,534	23,202,775	195,277,193
Loss from Operations	(105,302,385)	(31,096,045)	(21,738,429)	(184,879,044)
Other Income/(Expense)				
Interest expense	(113,471)	—	—	(1,200,764)
Interest income	52,915	42,756	531,697	4,471,141
Contract cancellation loss	(590,774)	—	—	(590,774)
Realized gain on investments	—	192	59,383	27,472
Realized gain (loss) on forward contracts	63,915	—	(1,128,326)	(1,430,766)
Unrealized gain on forward contracts	—	—	766,403	—
Foreign currency transaction gain (loss)	145,940	(180,621)	586,555	595,799
	(441,475)	(137,673)	815,712	1,872,108
Net Loss	$(105,743,860)	$(31,233,718)	$(20,922,717)	$(183,006,936)
Net Loss Per Share (Basic and diluted)	$(3.02)	$(1.14)	$(0.93)	
Weighted Average Common Shares Outstanding (Basic and diluted)	34,985,914	27,506,007	22,432,803	

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

Table of Contents

ASCENT SOLAR TECHNOLOGIES, INC.
(A Development Stage Company)

STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE INCOME (LOSS)
For the Period from Inception (October 18, 2005) through December 31, 2011

	Common Stock		Preferred Stock		Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Total Stockholders' Equity
	Shares	Amount	Shares	Amount				
Balance at inception, October 18, 2005	—	$—	—	$—	$—	$—	$—	$—
Proceeds from sale of common stock (11/05 @ $.04 per share)	972,000	97	—	—	38,783	—	—	38,880
Founders stock	—	—	—	—	933,120	—	—	933,120
Stock based compensation	—	—	—	—	26,004	—	—	26,004
Net loss	—	—	—	—	—	(1,207,234)	—	(1,207,234)
Balance, December 31, 2005	972,000	$97	—	$—	$997,907	$(1,207,234)	$—	$(209,230)
Transfer of assets at historical cost (1/06 @ $0.03 per share)	1,028,000	103	—	—	31,097	—	—	31,200
Proceeds from IPO (7/06 @ $5.50 per unit)	3,000,000	300	—	—	16,499,700	—	—	16,500,000
IPO costs	—	—	—	—	(2,392,071)	—	—	(2,392,071)
Stock issued to bridge loan lenders (7/06 @ $2.75 per share)	290,894	29	—	—	799,971	—	—	800,000
Exercise of stock options (9/06 & 12/06 @ $0.10 per share)	31,200	3	—	—	3,117	—	—	3,120
Stock based compensation	—	—	—	—	348,943	—	—	348,943
Net loss	—	—	—	—	—	(4,180,912)	—	(4,180,912)
Balance, December 31, 2006	5,322,094	$532	—	$—	$16,288,664	$(5,388,146)	$—	$10,901,050
Exercise of stock options (1/07 -12/07 @ $.10) (7/07 - 12/07 @ $4.25) (9/07 - 12/07 @ $2.51 -$2.76)	169,963	17	—	—	346,417	—	—	346,434
Conversion of Class A public warrants at $6.60	3,098,382	310	—	—	20,449,011	—	—	20,449,321
Redemption of Class A public	—	—	—	—	(48,128)	—	—	(48,128)

warrants at $0.25 per share								
Conversion of Class B public warrants at $11.00 per share	11,000	1	—	—	120,999	—	—	121,000
Proceeds from private placement: Common stock (3/07 @ $5.77 and 8/07 @ $7.198)	2,534,462	254	—	—	15,962,003	—	—	15,962,257
Proceeds from private placement: Class B public warrants (8/07 @ $1.91)	—	—	—	—	3,754,468	—	—	3,754,468
Private placement costs	—	—	—	—	(75,807)	—	—	(75,807)
Exercise of representative's warrants (9/07 - 11/07 @ $6.60 per unit)	300,000	30	—	—	1,979,970	—	—	1,980,000
Stock based compensation	—	—	—	—	1,734,879	—	—	1,734,879
Net loss	—	—	—	—	—	(6,503,419)	—	(6,503,419)
Balance, December 31, 2007	11,435,901	$1,144	—	$—	$60,512,476	$(11,891,565)	$—	$48,622,055

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

Table of Contents

ASCENT SOLAR TECHNOLOGIES, INC.
(A Development Stage Company)

STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE INCOME (LOSS)
(Continued)
For the Period from Inception (October 18, 2005) through December 31, 2011

	Common Stock		Preferred Stock		Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Total Stockholders' Equity
	Shares	Amount	Shares	Amount				
Balance, December 31, 2007	11,435,901	$1,144	—	$—	$60,512,476	$(11,891,565)	$—	$48,622,055
Components of comprehensive loss								
Unrealized gain on investments	—	—	—	—	—	—	331,068	331,068
Net loss	—	—	—	—	—	(13,215,076)	—	(13,215,076)
Total comprehensive loss								(12,884,008)
Exercise of stock options (1/08 - 12/08 @ $0.10, $2.73, $2.90 & $4.25)	133,137	13	—	—	120,520	—	—	120,533
Conversion of Class B public warrants at $11.00 per share	98,800	10	—	—	1,086,790	—	—	1,086,800
Proceeds from private placement: Common stock (3/08 @ $9.262 & 10/08 @$6.176)	4,763,698	476	—	—	36,647,217	—	—	36,647,693
Proceeds from private placement: Class B public warrants (3/08 @ $3.954)	—	—	—	—	6,681,884	—	—	6,681,884
Exercise of representative's warrants (1/08 @ $6.60 per unit)	75,000	8	—	—	494,992	—	—	495,000
Proceeds from shareholder under Section 16(b)	—	—	—	—	148,109	—	—	148,109
Proceeds from secondary public offering (5/08 @ $14.00)	4,370,000	437	—	—	61,179,563	—	—	61,180,000
	—	—	—	—	(4,361,358)	—	—	(4,361,358)

Costs of secondary public offering								
Issuance of Restricted Stock	69,846	7	—	—	(7)	—	—	—
Stock based compensation	—	—	—	—	1,881,399	—	—	1,881,399
Balance, December 31, 2008	20,946,382	$2,095	—	$—	$164,391,585	$(25,106,641)	$331,068	$139,618,107
Components of comprehensive loss								
Unrealized loss on investments	—	—	—	—	—	—	(334,080)	(334,080)
Net loss	—	—	—	—	—	(20,922,717)	—	(20,922,717)
Total comprehensive loss				—				(21,256,797)
Exercise of stock options (1/09 - 12/09 @ $0.10, $2.76 & $4.25)	105,169	10	—	—	339,606	—	—	339,616
Proceeds from private placement: Common stock (10/09 @ $6.50)	769,230	77	—	—	4,999,918	—	—	4,999,995
Proceeds from public offering (10/09 @ $6.50)	4,615,385	461	—	—	29,999,542	—	—	30,000,003
Costs of public offering	—	—	—	—	(2,062,866)	—	—	(2,062,866)
Issuance of Restricted Stock	147,679	15	—	—	(15)	—	—	—
Stock based compensation	—	—	—	—	2,676,957	—	—	2,676,957
Balance, December 31, 2009	26,583,845	$2,658	—	$—	$200,344,727	$(46,029,358)	$(3,012)	$154,315,015

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

Table of Contents

ASCENT SOLAR TECHNOLOGIES, INC.
(A Development Stage Company)

STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE INCOME (LOSS)
(Continued)
For the Period from Inception (October 18, 2005) through December 31, 2011

	Common Stock		Preferred Stock		Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Total Stockholders' Equity
	Shares	Amount	Shares	Amount				
Balance, December 31, 2009	26,583,845	$2,658	—	$—	$200,344,727	$(46,029,358)	$(3,012)	$154,315,015
Components of comprehensive loss								
Unrealized loss on investments	—	—	—	—	—	—	2,786	2,786
Net loss	—	—	—	—	—	(31,233,718)	—	(31,233,718)
Total comprehensive loss								(31,230,932)
Proceeds from public offering (11/11 @ $4.15)	5,250,000	525	—	—	21,786,975	—	—	21,787,500
Costs of public offering	—	—	—	—	(1,409,937)	—	—	(1,409,937)
Exercise of stock options (1/10 - 12/10 @ $0.10, $2.90, $2.73, $2.76 & $3.17)	161,330	16	—	—	390,985	—	—	391,001
Issuance of Restricted Stock	270,412	27	—	—	(27)	—	—	—
Stock based compensation	—	—	—	—	2,713,468	—	—	2,713,468
Balance, December 31, 2010	32,265,587	$3,226	—	$—	$223,826,191	$(77,263,076)	$(226)	$146,566,115
Components of comprehensive loss								
Unrealized loss on investments	—	—	—	—	—	—	1,245	1,245
Net loss	—	—	—	—	—	(105,743,860)	—	(105,743,860)
Total comprehensive loss								(105,742,615)
	6,400,000	640	—	—	7,359,360	—	—	7,360,000

Proceeds from private offering (8/11 @ $1.15)								
Costs of private offering	—	—	—	—	(123,973)	—	—	(123,973)
Net Proceeds from At-The-Market offering sales (10/11 - 11/11, $0.81 - $0.83)	386,050	39	—	—	305,745	—	—	305,784
Exercise of stock options (1/11 - 9/11 @ $0.10)	57,000	6	—	—	5,694	—	—	5,700
Issuance of Common Stock to service provider (5/11 @ $1.31)	45,000	5	—	—	58,945	—	—	58,950
Issuance of Restricted Stock	191,822	19	—	—	(19)	—	—	—
Stock based compensation	—	—	—	—	1,572,607	—	—	1,572,607
Balance, December 31, 2011	39,345,459	$3,935	—	$—	$233,004,550	$(183,006,936)	$1,019	$50,002,568

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

Table of Contents

ASCENT SOLAR TECHNOLOGIES, INC.
(A Development Stage Company)

STATEMENTS OF CASH FLOWS

	For the Years Ended December 31,			For the Period from inception (October 18, 2005) through December 31, 2011
	2011	2010	2009	
Operating Activities:				
Net loss	$(105,743,860)	$(31,233,718)	$(20,922,717)	$ (183,006,936)
Adjustments to reconcile net loss to cash used in operating activities:				
Depreciation and amortization	7,541,962	6,690,601	2,582,706	18,347,024
Stock based compensation	1,572,607	2,713,468	2,676,957	11,887,377
Common stock issued for services	58,950	—	—	58,950
Foreign currency transaction gain (loss)	(145,940)	180,621	(586,555)	(595,799)
Realized gain (loss) on forward contracts	(63,915)	—	1,128,326	1,430,766
Unrealized gain on forward contracts	—	—	(766,403)	—
Charge off of deferred financing costs to interest expense	—	—	—	198,565
Charge off of bridge loan discount to interest expense	—	—	—	800,000
Impairment loss	78,000,000	1,769,480	—	79,769,480
Contract cancellation loss	590,774	—	—	590,774
Changes in operating assets and liabilities:				
Accounts receivable	142,939	(351,180)	202,389	(342,087)
Related party receivables	2,524	19,046	(21,570)	—
Inventories	(592,289)	(1,638,025)	(238,809)	(2,469,123)
Prepaid expenses and other current assets	123,724	68,472	167,868	(386,624)
Accounts payable	(433,844)	399,893	427,143	658,605
Related party payable	(53,808)	(141,917)	(67,327)	229
Accrued expenses	(691,346)	(341,024)	1,205,431	1,119,505
Deferred contract revenue	(250,705)	250,705	—	—
Warranty reserve	10,760	15,900	—	26,660
Net cash used in operating activities	(19,931,467)	(21,597,678)	(14,212,561)	(71,912,634)
Investing Activities:				
Purchases of available-for-sale-securities	(28,215,821)	(38,601,173)	(143,989,514)	(906,480,255)
Maturities and sales of available for-sale securities	33,087,378	59,906,220	157,003,665	893,865,178
Purchase of property, plant and equipment	(9,681,565)	(5,576,874)	(7,049,400)	(48,571,392)
Deposits on manufacturing equipment	—	(5,388,160)	(38,566,459)	(79,883,404)
Restricted cash for manufacturing equipment	1,832,297	(3,259,350)	2,300,000	(1,427,053)
Patent activity costs	(60,408)	(98,084)	(34,365)	(312,076)
Deposit on Building	—	—	—	(100,000)
Net cash provided by (used in) investing activities	(3,038,119)	6,982,579	(30,336,073)	(142,909,002)
Financing Activities:				

Proceeds from bridge loan financing	—	—	—	1,600,000
Repayment of bridge loan financing	—	—	—	(1,600,000)
Payment of debt financing costs	—	—	—	(273,565)
Payment of equity offering costs	—	(1,409,937)	(2,062,866)	(10,302,040)
Proceeds from debt	—	—	262,948	7,700,000
Repayment of debt	(582,257)	(217,463)	(187,151)	(1,186,871)
Repayment of debt—related party	—	(350,000)	—	(350,000)
Proceeds from shareholder under Section 16(b)	—	—	—	148,109
Proceeds from issuance of stock and warrants	7,547,511	22,178,501	35,339,614	230,433,016
Redemption of Class A warrants	—	—	—	(48,128)
Net cash provided by financing activities	6,965,254	20,201,101	33,352,545	226,120,521
Net change in cash and cash equivalents	(16,004,332)	5,586,002	(11,196,089)	11,298,885
Cash and cash equivalents at beginning of period	27,303,217	21,717,215	32,913,304	—
Cash and cash equivalents at end of period	$11,298,885	$27,303,217	$21,717,215	$ 11,298,885
Supplemental Cash Flow Information:				
Cash paid for interest	$113,471	$—	$—	$ 113,895
Cash paid for income taxes	$—	$—	$—	$ —
Non-Cash Transactions:				
Note with ITN and related capital expenditures	$—	$1,100,000	$—	$ 1,100,000
ITN initial contribution of assets for equity	$—	$—	$—	$ 31,200

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

Table of Contents
ASCENT SOLAR TECHNOLOGIES, INC.
(A Development Stage Company)

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 and core technologies. ITN, a private company incorporated in 1994, is an incubator dedicated to the development of thin-film, photovoltaic (“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 to Copper-Indium-Gallium-diSelenide (“CIGS”) PV products in particular. ITN formed Ascent to commercialize its investment in CIGS PV technologies. In January 2006, in exchange for 1,028,000 shares of common stock of Ascent, ITN assigned to Ascent certain CIGS PV technologies and trade secrets and granted to Ascent a perpetual, exclusive, royalty-free worldwide license to use, in connection with the manufacture, development, marketing and commercialization of CIGS PV to produce solar power, certain of ITN’s existing and future proprietary and control technologies that, although non-specific to CIGS PV, Ascent believes will be useful in its production of PV modules for its target markets. Upon receipt of the necessary government approvals and pursuant to novation in early 2007, ITN assigned government-funded research and development contracts to Ascent and also transferred the key personnel working on the contracts to Ascent. Today, ITN provides Ascent a limited amount of technical services.
NOTE 2. BASIS OF PRESENTATION
The Company’s activities to date have consisted substantially of raising capital, research and development, establishment and development of our production plant. Revenues to date have been primarily generated from the Company’s governmental research and development contracts and have not been significant. The Company’s planned principal operations to commercialize flexible photovoltaic ("PV") modules have commenced, but have generated limited revenue to date. Accordingly, the Company is considered to be in the development stage and has provided additional disclosure of inception to date activity in our Statements of Operations, Statements of Stockholders’ Equity and Comprehensive Income (Loss) and Statements of Cash Flows.
NOTE 3. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES
Cash Equivalents: The Company classifies all 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 that this results in significant credit risk.
Restricted Cash: The Company classifies all cash or cash items that are legally restricted to usage or withdrawal as restricted cash. If such funds are to be used to acquire non-current assets or to liquidate long-term liabilities, they shall be classified as long-term in the Balance Sheets. Funds restricted for the payment of interest, current maturities of debt or other current liabilities shall be classified as current.
Investments: The Company has classified its investments as “available-for-sale.” Such investments are carried at fair value, based on quoted market prices with the unrealized holding gains and losses reported as “Accumulated other comprehensive income (loss)” in the stockholders’ equity section of the Balance Sheets. Realized gains and losses on sales of securities are computed using the specific identification method. The Company evaluates declines in market value for potential impairment. If the decline results in a value below cost and is determined to be other than temporary, the investment is written down to its impaired value and a new cost basis is established.
Fair Value Estimates: The fair value of an asset or liability is the amount at which it could be exchanged or settled in a current transaction between willing parties. The Company has recorded investments at fair value and has classified them as Level 1, 2 or 3 within the fair value hierarchy. Fair values determined by Level 1 inputs utilize quoted prices in active markets for identical assets or liabilities. Fair values determined by Level 2 inputs utilize data points that are observable such as quoted prices and other inputs that can be corroborated by observable market data. Fair values determined by Level 3 inputs utilize unobservable data points for the asset or liability.
In addition to the items measured at fair value on a recurring basis, in conjunction with the significant impairment loss taken in 2011, the Company also measured certain property, plant and equipment at fair value on a nonrecurring basis.

These fair value measurements rely primarily on Company-specific inputs and the Company's assumptions about the use of the assets, as observable inputs are not available. Accordingly, the Company determined that these fair value measurements reside primarily within Level 3 of the fair value hierarchy. The carrying value for cash and cash equivalents, restricted cash, accounts

Table of Contents

receivable, accounts payable, accrued property plant, and equipment, accrued expenses and other assets and liabilities approximate their fair values due to their short maturities.

Foreign Currencies: Bank account balances held in foreign currencies are translated to U.S. dollars utilizing the period end exchange rate. Gains or losses incurred in connection with the Company's accounts held in foreign currency are recorded within foreign currency transaction gain (loss) in "Other Income/(Expense)" on the Statements of Operations.

Revenue Recognition: Revenue from governmental research and development contracts is generated under terms that are cost plus fee or firm fixed price. Revenue from cost plus fee contracts is recognized as costs are incurred on the basis of direct costs plus allowable indirect costs and an allocable portion of the fixed fee. Revenue from firm fixed price contracts is recognized under the percentage-of-completion method of accounting, with costs and estimated profits included in contract revenue as work is performed. If actual and estimated costs to complete a contract indicate a loss, provision is made currently for the loss anticipated on the contract. Revenue from commercial sales of flexible PV modules is recognized as modules are delivered and title has transferred to the customer. Product revenue through December 31, 2011 is included in research and development revenue as the Company is in the development stage and such revenues (totaling $538,005 for the year ended December 31, 2011) were generated from a limited number of customers as the product is being brought to market.

Shipping and Handling Costs: The Company classifies shipping and handling costs for solar modules shipped to our customers as a component of "Research and development costs" on the Company's Statements of Operations. Customer payments of shipping and handling costs are recorded as a component of "Revenues."

Deferred Contract Revenue: Deferred contract revenue is generated from governmental research and development contracts. The amount deferred represents billings in excess of costs incurred on firm fixed price deliverables. As of December 31, 2011 and 2010, deferred contract revenue was $0 and $250,705, respectively. Amounts classified in deferred contract revenue are expected to be recognized within one year of the Balance Sheet date.

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 credit-worthiness and current economic trends. Necessary reserves are established on an account-by-account basis. Account balances are written off against the allowance in the period in which the Company determines that is it probable that the receivable will not be recovered.

Product Warranties: The Company provides a limited warranty to the original purchaser of products against defective materials and workmanship. The Company also guarantees modules will achieve and maintain the stated conversion efficiency rating. 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.

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, 2011, the Company had $308,785 of net patent costs, of which $103,595 represents costs net of amortization incurred for awarded patents, and the remaining $205,190 represents costs incurred for patent applications to be filed. Amortization expense was $11,062 for the year ended December 31, 2011 and $5,675 the year ended December 31, 2010.

Inventories: All inventories are stated at the lower of cost or market, with cost determined using the weighted average method. Elements of cost include raw material acquisition and conversion costs, an allocated portion of indirect production costs, inventory maintenance costs and depreciation and amortization. When plant capacity is significantly underutilized, allocated costs included in inventories are based on a normal level of activity, with the excess costs charged to expense in the period incurred.

Inventory balances are frequently evaluated to ensure that they do not exceed net realizable value. The computation for net realizable value takes into account many factors, including expected demand, product lifecycle and development plans, module efficiency, quality issues, obsolescence and others. If actual demand and market

conditions are less favorable than those estimated by management, additional inventory write-downs may be required. The Company's inventories have a long life cycle and obsolescence is not a significant factor in their valuation. During the year ended December 31, 2011, the Company recognized a lower of cost or market adjustment on certain raw materials in the amount of $609,179. This expense is included within "Research and development" expense in the Condensed Statements of Operations.

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 forty years using the straight-line method, as presented in the table

Table of Contents

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
Buildings	40
Manufacturing machinery and equipment	5 - 10
Furniture, fixtures, computer hardware/software	3 - 7
Leasehold improvements	life of lease

Interest Capitalization: The Company capitalizes interest cost as part of the historical cost of acquiring or constructing certain assets during the period of time required to get the asset ready for its intended use. The Company capitalizes interest to the extent that expenditures to acquire or construct an asset have occurred and interest cost has been incurred.

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 that 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. During 2011 and 2010, the Company incurred significant impairments of its manufacturing facilities and equipment in the amounts of $78.0 million and $1.8 million, respectively, based on estimates prepared by management, as well as a valuation analysis by an independent firm.

Net Loss per Common Share: Basic earnings per share include no dilution and are computed by dividing income available to common stockholders by the weighted-average number of shares outstanding during the period. Diluted earnings per share reflect the potential of securities that could share in the earnings of the Company, similar to fully diluted earnings per share. Common stock equivalents consisting of IPO warrants (representative warrants), and stock options and unvested restricted stock outstanding as of December 31, 2011 of approximately 1.7 million shares, have been omitted from loss per share because they are anti-dilutive. Net loss per common share was the same for both basic and diluted methods for the periods ended December 31, 2011, 2010 and 2009.

Research and Development Costs: Research and development costs are incurred during the process of researching and developing new products and enhancing the Company’s manufacturing processes and consist primarily of personnel, materials, supplies and equipment depreciation. The Company expenses these costs as incurred, except for certain costs related to inventoried raw materials, work-in-process and finished goods. The Company also incurs research and development expenses on its federal government research and development contracts, which the Company expenses as incurred.

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 (2007-2011) in these jurisdictions. The Company believes that 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.

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 company

estimates the fair value of share-based payment awards on the date of grant using an option-pricing model for option awards. The value of the portion of the award that is ultimately expected to vest is recognized as expense 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. For purposes of determining estimated fair value of share-based payment awards on the

Table of Contents

date of grant the Company uses the Black-Scholes option-pricing model (“Black-Scholes Model”) for option awards. The Black-Scholes Model requires the input of highly subjective assumptions. Because the Company’s employee stock options may have characteristics significantly different from those of traded options, and because changes in the subjective input assumptions can materially affect the fair value estimate, in management’s opinion, the existing models may not provide a reliable single measure of the fair value of the Company’s employee stock options. Management will continue to assess the assumptions and methodologies used to calculate estimated fair value of share-based compensation. Circumstances may change and additional data may become available over time, which result in changes to these assumptions and methodologies, which could materially impact the Company’s fair value determination. The Company estimates the fair value of its restricted stock awards as its stock price on the grant date. The accounting guidance for share-based compensation may be subject to further interpretation and refinement over time. There are significant differences among option valuation models, and this may result in a lack of comparability with other companies that use different models, methods and assumptions. If factors change and the Company employs different assumptions in the accounting for share-based compensation in future periods, or if the Company decides to use a different valuation model, the compensation expense that the Company records in the future may differ significantly from what it has recorded in the current period and could materially affect its loss from operations, net loss and net loss per share.

Comprehensive Income (Loss): The Company’s comprehensive income (loss) consists of its net income (loss) and changes in unrealized gains or losses on available-for-sale investments, the impact of which has been excluded from net loss. The Company presents its comprehensive income (loss) in the Statements of Stockholders’ Equity and Comprehensive Income (Loss). The Company’s accumulated other comprehensive income (loss) is presented as a component of equity in the Balance Sheets and consists of the cumulative amount of unrealized gains or losses on available-for-sale investments that have been incurred since the inception of the Company’s business.

Reclassifications: Certain reclassifications have been made to the 2009 and 2010 financial information to conform to the 2011 presentation. Such reclassifications had no effect on net losses for those periods.

Use of Estimates: The preparation of financial statements in conformity with U.S. generally accepted accounting principles ("GAAP") requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

During the third quarter of 2011, the Company updated its estimates for service lives of certain manufacturing tools in order to better match depreciation expense with the periods these assets are expected to generate revenue. The change in services lives was accounted for prospectively as a change in accounting estimate effective July 1, 2011. The effect of this change on Net Loss and basic and diluted earnings per share was an increase of $931,117 and $0.02, respectively, for the year ended December 31, 2011.

Recent Accounting Pronouncements: In May 2011, the FASB issued ASU 2011-04, Fair Value Measurement Topic (Topic 820): Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRS. This Accounting Standards Update ("ASU") provides a consistent definition of fair value and sets forth common requirements for measurement of and disclosure about fair value in accordance with U.S. GAAP and International Financial Reporting Standards (“IFRS”). ASU 2011-04 amends existing fair value measurement and disclosure requirements including application of highest and best use and valuation premise concepts, measuring the fair value of an instrument classified in a reporting entity’s shareholders’ equity, measuring the fair value of financial instruments that are valued within a portfolio and disclosures in measurement categorized within Level 3 of the fair value hierarchy. This ASU is effective on a prospective basis during interim and annual periods beginning after December 15, 2011 and early application is not permitted. The Company does not expect the adoption of ASU 2011-04 will have a material impact on the Company’s financial position, results of operations or cash flows.

In June 2011, the FASB issued ASU 2011-05, Comprehensive Income (Topic 220): Presentation of Comprehensive Income. This ASU seeks to improve comparability, consistency and transparency of financial reporting with respect to comprehensive income by eliminating the option to present components of other comprehensive income as part of the statement of changes in stockholders’ equity, among other amendments. The amendments of this ASU require all

non-owner changes in stockholders' equity be presented either in a single continuous statement of comprehensive income or two separate but consecutive statements. This ASU is effective for fiscal years and interim periods beginning after December 15, 2011 and early adoption is permitted. The adoption of ASU 2011-05 will affect only financial statement presentation and will not impact the Company's financial position, results of operations or cash flows.

NOTE 4. LIQUIDITY AND CONTINUED OPERATIONS

Table of Contents

As of December 31, 2011, the Company had approximately $23.9 million in cash and investments and working capital of approximately $22.3 million. An additional $1.4 million in cash is restricted for future payments on equipment. Through December 31, 2011, sales of $0.3 million were completed through the At-The-Market facility. As discussed in Note 2, the Company is in the development stage and is currently incurring significant losses from operations as it works toward commercialization. The Company made cash payments of approximately $9.7 million in the year ended December 31, 2011 for property, plant and equipment. The Company has remaining obligations for equipment purchases in the approximate amount of $4.1 million, of which approximately $1.6 million is recorded in “Accrued property, plant and equipment”.

On March 31, 2011, the Company announced a change in strategy that, in the near term, will focus its solar module technology on applications for emerging and specialty markets. Longer term the Company intends to participate in the building integrated market. The change in strategy resulted in a change in leadership and sizing the company to a new cost structure, primarily through the termination of a portion of the Company’s workforce. The Company incurred a charge of approximately $450,000 in the quarter ended March 31, 2011, comprised of severance costs. This charge has been expensed as “Research and development” and “Selling, general and administrative” in the Statement of Operations in the amounts of approximately $72,000 and $378,000, respectively. Approximately $139,000 is recorded under "Accrued expenses" in the Balance Sheets as of December 31, 2011.

Due to recent significant adverse changes in market conditions, particularly the decreases in current and expected average selling prices for PV modules, the Company concluded in the quarter ended June 30, 2011 that the carrying value of Property, Plant and Equipment and Deposits on manufacturing equipment may not be recoverable and a non-cash impairment charge of approximately $78.0 million was recorded. See Note 10. Impairment for additional information.

The Company has commenced limited 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 actual full production capacity is achieved. Changes in the level of expected operating losses, the timing of planned capital expenditures or other factors may negatively impact cash flows and reduce current cash and investments faster than anticipated. The Company will need to raise additional capital or financing in the future. There is no assurance that the Company will be able to raise additional capital on acceptable terms or at all. The Company expects its current cash balance to be sufficient to cover planned capital and operational expenditures through December 31, 2012 based on currently known factors.

NOTE 5. RESTRICTED CASH

The Company established an irrevocable letter of credit with its bank in favor of an equipment vendor in the approximate amount of $3.0 million in February 2011. Approximately $1.6 million was paid in the quarter ending September 30, 2011 and the remainder of approximately $1.4 million was paid in the first quarter of 2012. The letter of credit is collateralized by an interest bearing account. The amount is reflected as “Restricted cash” under “Other Assets” in the Balance Sheets.

NOTE 6. FAIR VALUE MEASUREMENTS

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.

The following table represents the Company’s fair value hierarchy for its financial assets measured at fair value on a recurring basis and its classification on the balance sheet as of December 31, 2011:

Table of Contents

	Level 1	Level 2	Level 3	Total	Cash Equivalents	Investments
Financial Assets:						
U.S. government securities	$—	$4,381,313	$—	$4,381,313	$—	$4,381,313
Municipal bonds	—	3,185,886	—	3,185,886	—	3,185,886
Money market funds	1,986,737	—	—	1,986,737	1,986,737	—
Corporate securities	—	5,048,898	—	5,048,898	—	5,048,898
	$1,986,737	$12,616,097	$—	$14,602,834	$1,986,737	$12,616,097

As of the balance sheet date, the Company held securities issued by U.S. government agencies (AA+/Aaa/AAA ratings), municipalities (AA/Aa1/Aa2/AA- ratings) and A-1/P-1 rated corporate notes. Approximately $12.6 million of these securities are classified as Level 2 because the Company does not believe that it is possible to obtain a firm, up-to-date price of such securities from, for example, a major exchange; and as a result, the Company relies on its brokerage firm and investment manager to report its fair value of such securities at the end of each month. Investments have not been transferred between levels.

In addition to the items measured at fair value on a recurring basis, the Company also measured certain assets at fair value on a nonrecurring basis. As a result of an impairment analysis, at June 30, 2011 the Company recorded an impairment loss of $78.0 million to write down its long-lived assets to fair value (See Note 10. "Impairment" for additional information). This write-down resulted in net assets of approximately $32.2 million being recorded at fair value as of June 30, 2011 . These fair value measurements rely primarily on Company-specific inputs and the Company’s assumptions about the use of the assets, as observable inputs are not available. Accordingly, the Company determined that these fair value measurements reside primarily within Level 3 of the fair value hierarchy.

NOTE 7. INVESTMENTS

Securities held by the Company as of December 31, 2011 are classified as available-for-sale and consisted of U.S. government securities, municipal bonds and corporate securities. Such investments are carried at fair value, based on quoted market prices with the unrealized holding gains and losses reported as Accumulated other comprehensive income (loss) in the stockholders’ equity section of the Balance Sheets. Realized gains and losses on sales of securities are computed using the specific identification method. The Company evaluates declines in market value for potential impairment. If the decline results in a value below cost and is determined to be other than temporary, the investment is written down to its impaired value and a new cost basis is established. A summary of available-for-sale securities as of December 31, 2011 is as follows:

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
U.S. government securities	$4,379,892	$1,437	$(16)	$4,381,313
Municipal bonds	3,186,050	68	(232)	3,185,886
Corporate securities	5,049,136	4	(242)	5,048,898
Total	$12,615,078	$1,509	$(490)	$12,616,097

Contractual maturities of available-for-sale investments in the above schedule as of December 31, 2011 were all one year or less.

The Company typically invests in highly rated securities with low probabilities of default. The Company’s investment policy specifies minimum investment grade criteria, types of acceptable investments, concentration limitations and duration guidelines.

All securities having an unrealized loss as of December 31, 2011 have been in a loss position for less than twelve months.

NOTE 8. TRADE RECEIVABLES

Trade receivables consist of amounts generated from government contracts and sales of PV modules. Accounts receivable totaled $342,087 and $485,026 as of December 31, 2011 and 2010, respectively. Trade receivables were net of allowances for doubtful accounts of $5,839 and $0 as of December 31, 2011 and 2010, respectively.

Provisional Indirect Cost Rates - During 2010 and 2011, the Company billed 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 will result in the negotiation and

Table of Contents

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.

NOTE 9. PROPERTY, PLANT AND EQUIPMENT

The following table summarizes property, plant and equipment as of December 31, 2011 and 2010:

	As of December 31,	
	2011	2010
Building	$5,762,935	$19,506,814
Furniture, fixtures, computer hardware and computer software	339,820	1,151,745
Manufacturing machinery and equipment	29,673,297	72,111,366
Leasehold improvements	884,709	884,709
Net depreciable property, plant and equipment	36,660,761	93,654,634
Manufacturing machinery and equipment in progress	236,770	17,054,686
Property, plant and equipment	36,897,531	110,709,320
Less: Accumulated depreciation and amortization	(7,964,875)	(10,706,478)
Net property, plant and equipment	$28,932,656	$100,002,842

During the quarter ended June 30, 2011, an impairment charge in the amount of approximately $74.5 million was taken against Property, Plant and Equipment. This impairment, combined with a charge of approximately $3.5 million taken against Deposits on manufacturing equipment, resulted in a total write-down of $78.0 million.. See Note 10. "Impairment" and Note 12. "Deposits on Manufacturing Equipment."

Depreciation and amortization for the years ended December 31, 2011, 2010 and 2009 was $7,538,212, $6,681,176 and $2,580,044, respectively. Depreciation and amortization expense is recorded under "Research and development" expense and "Selling, general and administrative" expense in the Statements of Operations.

During the third quarter of 2011, the Company updated its estimates for service lives of certain manufacturing tools in order to better match depreciation expense with the periods these assets are expected to generate revenue. The change in services lives was accounted for prospectively as a change in accounting estimate effective July 1, 2011. The effect of this change on Net Loss and basic and diluted earnings per share was an increase of $931,117 and $0.02, respectively, for the year ended December 31, 2011. The Company incurred and capitalized interest costs related to its building loan as follows during the years ended December 31, 2011 and 2010.

	For the Years Ended December 31,	
	2011	2010
Interest cost incurred	$465,103	$479,898
Interest cost capitalized	(351,632)	(479,898)
Interest expense, net	$113,471	$—

NOTE 10. IMPAIRMENT

The Company analyzes its long-lived assets for impairment, both individually and as a group, whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. During the quarter ended June 30, 2011, as a result of recent significant adverse changes in market conditions, particularly the decreases in current and expected average selling prices for PV modules, the Company concluded that the carrying value of Property, Plant and Equipment may not be recoverable. This analysis utilized projected selling prices and operating costs under alternative scenarios to arrive at total estimated undiscounted cash flows. As a result of the analysis, the Company used discounted cash flows to calculate and record an impairment loss of $78.0 million in the carrying value of Property, Plant and Equipment and Deposits on manufacturing equipment. The impairment loss was measured as the amount by which the carrying amount of the underlying assets exceeded fair value, as calculated using the expected present value technique. Actual cash flows may differ from the forecasts used in the analysis. This analysis incorporated many different assumptions and estimates which involve a high degree of judgment. These assumptions and estimates, which may change significantly in the future, have a substantial impact on the actual impairment loss

recorded.

NOTE 11. INVENTORIES

Table of Contents

Inventories consisted of the following at December 31, 2011 and 2010:

	As of December 31,	
	2011	2010
Raw materials	$2,411,403	$1,468,425
Work in process	20,812	317,468
Finished goods	36,908	90,941
Total	$2,469,123	$1,876,834

During the year ended December 31, 2011, the Company recognized a lower of cost or market adjustment on certain raw materials in the amount of $609,179. This expense is included within “Research and development” expense in the Condensed Statements of Operations.

NOTE 12. DEPOSITS ON MANUFACTURING EQUIPMENT

As of December 31, 2011, deposits on manufacturing equipment related to the purchase of equipment not yet delivered were approximately $3.6 million. The equipment purchase agreements are conditional purchase obligations that have milestone-based deliverables, such as the Company’s acceptance of design requirements and successful installation and commissioning of the equipment.

NOTE 13. DEBT

In 2008, the Company acquired a manufacturing and office facility in Thornton, Colorado, for approximately $5.5 million. The purchase was financed by a promissory note, deed of trust and construction loan agreement (the “Construction Loan”) with the Colorado Housing and Finance Authority (“CHFA”), which provided the Company borrowing availability of up to $7.5 million for the building and building improvements. The Construction Loan terms required payments of interest at 6.6% on the outstanding balance. In 2009, the Construction Loan was converted to a permanent loan pursuant to a Loan Modification Agreement between the Company and CHFA (the “Permanent Loan”). The Permanent Loan has an interest rate of 6.6% and the principal will be amortized through its term to January 2028. The Company will incur a prepayment penalty if the Permanent Loan is prepaid prior to December 31, 2015. Further, pursuant to certain negative covenants in the Permanent Loan, the Company may not, among other things, without CHFA’s prior written consent (which by the terms of the deed of trust is subject to a reasonableness requirement): create or incur additional indebtedness (other than obligations created or incurred in the ordinary course of business); merge or consolidate with any other entity; or make loans or advances to the Company’s officers, shareholders, directors or employees.

On January 7, 2010, the Company and ITN entered into an equipment purchase agreement whereby the Company purchased seven research and development vacuum and deposition chambers for $1,100,000 from ITN. Payments in the amount of $350,000 were remitted to ITN in January 2010 and January 2011. A final payment, without interest, in the amount of $400,000 was paid in January 2012.

As of December 31, 2011, future principal payments on long-term debt are due as follows:

2012	$648,059
2013	264,935
2014	282,960
2015	302,210
2016	322,771
Thereafter	5,442,194
	$7,263,129

NOTE 14. DERIVATIVE FINANCIAL INSTRUMENTS

In prior years the Company was actively engaged in purchasing manufacturing equipment internationally and was exposed to foreign currency risk. In July 2008 and March 2009, the Company entered into fair value hedges utilizing forward contracts designed to match scheduled contractual payments to equipment suppliers which are denominated in Euros and Yen.

Although the hedging activity is designed to fix the dollar amount to be expended, the asset purchased is recorded at the spot rate in effect as of the date of the payment to the supplier. The difference between the spot rate and the

forward rate has been reported as Realized gain (loss) on forward contracts. From time to time the Company holds foreign currency options to

Table of Contents

hedge against equipment payments to be remitted in foreign currencies. Derivative financial instruments are not used for speculative or trading purposes.

At December 31, 2011, approximately $1.4 million included in Restricted cash was held in Euros. Accounts denominated in foreign currencies are held in the Company's bank account for future payments to equipment suppliers. Changes in exchange rates related to foreign currencies on deposit in the Company's bank accounts are reflected as Foreign currency transaction gain (loss) in the Statements of Operations.

NOTE 15. STOCKHOLDERS' EQUITY

At December 31, 2011, the Company's authorized capital stock consists of 125,000,000 shares of common stock, $0.0001 par value, and 25,000,000 shares of preferred stock, $0.0001 par value. Each share of common stock has the right to one vote.

Preferred stock, $0.0001 par value per share, may be issued in classes or series. Designations, powers, preferences, rights, qualifications, limitations and restrictions are determined by the Company's Board of Directors.

Initial Public Offering: The Company completed its initial public offering ("IPO") of 3,000,000 units in 2006. Each unit consisted of one share of common stock, one redeemable Class A warrant and two non-redeemable Class B warrants. The IPO price was $5.50 per unit. The net proceeds of the offering were approximately $14 million.

Class A warrants. In 2007, the Company announced that it intended to redeem its outstanding Class A warrants at $0.25 per warrant pursuant to its terms. There were 3,290,894 Class A warrants issued in connection with the Company's IPO. During the exercise period, 3,098,382 Class A warrants (94.1% of the total outstanding) were exercised for an equal number of shares of common stock, and the Company received approximately $20 million in proceeds from the warrant exercises. The Class A warrant exercise period ended July 10, 2011.

Class B warrants. The Class B warrants included in the units became exercisable in August 2006. The exercise price of a Class B public warrant was $11.00. During 2008 and 2007, 98,800 and 11,000 Class B warrants, respectively were exercised resulting in proceeds to the Company of approximately $1.09 million and $121,000 respectively. The Class B warrant exercise period ended July 10, 2011.

IPO warrants. Warrants to purchase 300,000 units at $6.60 were issued to underwriters of the Company's IPO in July 2006 (representative's warrants). A unit consisted of one share of common stock, one Class A redeemable warrant and two Class B non-redeemable warrants. The proceeds from exercises of representative's warrants were approximately $2.0 million in 2007 and $0.5 million in 2008. The representative's warrant exercise period ended July 10, 2011.

Private Placement of Securities: The Company completed a private placement of securities with Norsk Hydro Produksjon AS ("Norsk Hydro") in March 2007. Norsk Hydro purchased 1,600,000 shares of the Company's common stock (representing 23% of the Company's then outstanding common stock post transaction) for net proceeds of approximately $9.2 million.

In August 2007, Norsk Hydro acquired an additional 934,462 shares of the Company's common stock and 1,965,690 Class B warrants through the exercise of an option previously granted to Norsk Hydro and approved by the Company's stockholders. Gross proceeds to the Company were $10.48 million, and reflected per share and per warrant purchase prices equal to the average of the closing bids of each security, as reported by NASDAQ, for the five consecutive trading days preceding exercise (market price). After acquiring these additional shares, Norsk Hydro again held 23% of the then outstanding common shares, after its holdings were diluted as the result of the redemption of Class A warrants and 23% of total outstanding Class B warrants. Pursuant to a second option that was approved by Ascent's stockholders in June 2007, beginning December 13, 2007, Norsk Hydro was entitled to purchase additional shares and Class B warrants up to a maximum of 35% of each class of security.

In March 2008, Norsk Hydro acquired an additional 2,341,897 shares of the Company's common stock and 1,689,905 Class B warrants through the exercise of the second option previously granted to Norsk Hydro and approved by Ascent's stockholders in June 2007, resulting in Norsk Hydro ownership of approximately 35% of each class of security. Gross proceeds to the Company were $28.4 million, and reflected per share and per warrant market price. As a result of the Company's Secondary Public Offering in May 2008, Norsk Hydro's holdings were diluted to approximately 27% of the then outstanding common stock.

In October 2008, Norsk Hydro acquired an additional 2,421,801 shares of the Company's common stock. The purchase resulted in a return to Norsk Hydro's ownership of approximately 35% of the Company's then outstanding common stock. Gross proceeds to the Company from the follow on investment were approximately $15 million.

Table of Contents

In September 2009, the Company sold to Norsk Hydro 769,230 restricted shares of the Company's common stock for approximately $5.0 million in a private placement at a per share price equal to $6.50. Norsk Hydro was granted demand and piggy-back registration rights.

On August 12, 2011, the Company completed a strategic alliance with TFG Radiant Investment Group Ltd. and its affiliates ("TFG Radiant"). As part of this strategic alliance, TFG Radiant acquired 6,400,000 shares of the Company's common stock at a price of $1.15 per share or $7,360,000 in the aggregate. The closing price of the Company's common stock on August 12, 2011 was $0.73. In addition, TFG Radiant received an option to acquire an additional 9,500,000 shares of the Company's common stock at an exercise price of $1.55 per share. The option was approved by the Company's stockholders on October 27, 2011. This approval eliminated certain registration rights which would have been otherwise available to TFG Radiant related to the 6,400,000 share purchase. TFG Radiant may not exercise this option unless and until TFG Radiant meets a specified milestone associated with the construction of the first East Asia FAB. This option expires on February 12, 2014.

On January 4, 2012, the Company announced that TFG Radiant had agreed to purchase 8,067,390 shares of the Company's common stock owned by Norsk Hydro for $4 million, or approximately $0.50 per share. The TFG Radiant purchase is expected to close by March 31, 2012. Upon closing of the purchase, TFG Radiant's ownership would increase to approximately 39% of the Company's outstanding Common Stock.

Secondary Public Offerings: In May 2008, the Company completed a secondary public offering of 4,370,000 shares of common stock, which included 570,000 shares issued upon the underwriter's exercise of their overallotment in full. The offering price of $14.00 per share resulted in net proceeds of $56.8 million.

In October 2009, the Company completed a secondary offering of 4,615,385 shares of the Company's common stock at a price of $6.50 per share.The net proceeds to the Company were approximately $27.9 million.

In November 2010, the Company completed a secondary offering of 5,250,000 shares of the Company's common stock at a price of $4.15 per share. The net proceeds to the Company were approximately $20.4 million.

On February 28, 2011, the Company entered into an At-The-Market Equity Offering Sales Agreement. Under this agreement the Company issued and sold 386,050 shares of its common stock for gross proceeds of $315,270 during 2011. This agreement was terminated on January 4, 2012.

On December 29, 2011, we filed a "shelf" Registration Statement on Form S-3 with the SEC. With the shelf registration, we may from time to time sell common stock, preferred stock, warrants or some combination in one or more offerings for up to

$25.0 million. The registration became effective February 14, 2012. This shelf registration replaces the Company's prior shelf registration statement which, in accordance with SEC rules, expired in early 2012.

On January 5, 2012, the Company entered into an At-The-Market Equity Offering Sales Agreement under which the Company may issue and sell up to $5,000,000 of shares of its common stock from time to time. Sales of common stock, if any, will be made at market prices by any method that is deemed to be an "at the market" offering as defined in Rule 415 under the Securities Act, including sales made directly on the NASDAQ stock exchange and any other trading market for the Company's common stock, and sales to or through a market maker other than on an exchange. The aggregate compensation payable to the sales agent shall be equal to 3% of the gross sales price of the shares sold. As of March 22, 2012, 1,594,395 shares had been sold under this facility with net proceeds of $1,234,415.

NOTE 16. EQUITY PLANS AND SHARE-BASED COMPENSATION

Stock Option Plan: The Company's 2005 Stock Option Plan, as amended (the "Stock Option Plan") provides for the grant of incentive or non-statutory stock options to the Company's employees, directors and consultants. Upon recommendation of the Board of Directors, the stockholders approved increases in the total shares of common stock reserved for issuance under the Stock Option Plan at various times from 1,000,000 to 3,700,000 currently.

Restricted Stock Plan: The Company's 2008 Restricted Stock Plan, as amended (the "Restricted Stock Plan") was adopted by the Board of Directors and was approved by the stockholders on July 1, 2008. The Restricted Stock Plan initially reserved up to 750,000 shares of the Company's common stock for restricted stock awards and restricted stock units to eligible employees, directors and consultants of the Company. Upon recommendation of the Board of Directors, the stockholders approved an increase in the total shares of common stock reserved for issuance under the

Restricted Stock Plan from 750,000 to 1,550,000 shares.

The Stock Option Plan and the Restricted Stock Plan are administered by the Compensation Committee of the Board of Directors, which determines the terms of the option and share awards, including the exercise price, expiration date, vesting schedule and number of shares. The term of any incentive stock option granted under the Stock Option Plan may not exceed ten

Table of Contents

years, or five years for options granted to an optionee owning more than 10% of the Company's voting stock. The exercise price of an incentive stock option granted under the Option Plan must be equal to or greater than the fair market value of the shares of the Company's common stock on the date the option is granted. An incentive stock option granted to an optionee owning more than 10% of the Company's voting stock must have an exercise price equal to or greater than 110% of the fair market value of the Company's common stock on the date the option is granted. The exercise price of a non-statutory option granted under the Option Plan must be equal to or greater than 85% of the fair market value of the shares of the Company's common stock on the date the option is granted.

Grants Outside Existing Equity Plans: Prior to the adoption of the Restricted Stock Plan, the Board of Directors granted 40,000 restricted stock awards in connection with an executive employment agreement. In July 2009, the Board of Directors granted an inducement award (as defined in NASDAQ Rule 5635(c) (4)) made outside of the existing Stock Option Plan for 200,000 stock options.

Share Based Compensation: The Company measures share-based compensation cost at the grant date based on the fair value of the award and recognizes this cost as an expense over the grant recipients' requisite service periods for all awards made to employees, officers, directors and consultants.

The share-based compensation expense recognized in the Statements of Operations for the years ended December 31, 2011, 2010 and 2009:

	For the years ended December 31,		
	2011	2010	2009
Share-based compensation cost included in:			
Research and development	$302,101	$630,944	$764,062
Selling, general and administrative	1,270,506	2,082,524	1,912,895
Total share-based compensation cost	$1,572,607	$2,713,468	$2,676,957

The following table presents share-based compensation expense by type of award for the years ended December 31, 2011, 2010 and 2009:

	For the years ended December 31,		
	2011	2010	2009
Type of Award:			
Stock Options	$768,703	$1,252,732	$1,366,969
Restricted Stock Units and Awards	803,904	1,460,736	1,309,988
Total share-based compensation cost	$1,572,607	$2,713,468	$2,676,957

Stock Options:

The Company recognized share-based compensation expense for stock options of approximately $769,000 (approximately $731,000 to officers, directors and employees, and approximately $38,000 to outside providers) for the year ended December 31, 2011 related to stock option awards ultimately expected to vest and reduced for estimated forfeitures. Included in this amount is approximately $236,000 in additional expense due to accelerated vesting, resulting from the severance agreement with the Company's former CEO, Dr. Farhad Moghadam. The weighted average estimated fair value of employee stock options granted for the year ended December 31, 2011 and 2010 was $1.49 and $2.81 per share, respectively. Fair value was calculated using the Black-Scholes Model with the following assumptions:

	For the Years Ended December 31,		
	2011	2010	2009
Expected volatility	97.9%	100.8%	103.9-108.9%
Risk free interest rate	2.1%	2.2%	1.9-2.7%
Expected dividends	—	—	—
Expected life (in years)	6.25	6.03	5.7-6.5

Expected volatility is based on the historical volatility of the Company's stock. The risk-free rate of return is based on the yield of U.S. Treasury bonds with a maturity equal to the expected term of the award. Historical data is used to estimate forfeitures within the Company's valuation model. The Company's expected life of stock option awards is derived from historical experience and represents the period of time that awards are expected to be outstanding.

Table of Contents

As of December 31, 2011, total compensation cost related to non-vested stock options not yet recognized was approximately $1,067,000 which is expected to be recognized over a weighted average period of approximately 3.1 years. As of December 31, 2011, approximately 1,191,000 shares were vested or expected to vest in the future at a weighted average exercise price of $2.75. As of December 31, 2011, approximately 1,596,000 shares remained available for future grants under the Option Plan.

The following schedule summarizes stock option activity for grants made within the Stock Option Plan and outside the plan (shares in thousands):

	Stock Option Shares	Stock Options Weighted Average Exercise Price	Weighted Average Remaining Contractual Life in Years	Aggregate Intrinsic Value
Outstanding at December 31, 2008	1,092	$4.94	8.89	$894,198
Granted	380	7.59		
Exercised	(105)	(3.23)		$305,730
Canceled	(180)	(6.21)		
Outstanding at December 31, 2009	1,187	$5.74	8.41	$1,847,222
Granted	666	3.51		
Exercised	(161)	(2.42)		$349,135
Canceled	(176)	(5.52)		
Outstanding at December 31, 2010	1,516	$5.14	8.32	$527,463
Granted	1,295	$1.88		
Exercised	(57)	$(0.10)		$149,007
Canceled	(1,308)	$4.96		
Outstanding at December 31, 2011	1,446	$2.58	8.77	$4,437
Exercisable at December 31, 2011	298	$4.94	6.98	$4,437

Restricted Stock:

In addition to the stock options discussed above, the Company recognized share-based compensation expense related to restricted stock grants of approximately $804,000 for the year ended December 31, 2011. Included in this amount is approximately $40,000 in additional expense due to the accelerated vesting, resulting from the severance agreement with the Company's former CEO, Dr. Farhad Moghadam. The weighted average estimated fair value of restricted stock grants for the year ended December 31, 2011 and 2010 was $3.19 and $3.74, respectively.

Total unrecognized share-based compensation expense from unvested restricted stock as of December 31, 2011 was approximately $471,000 which is expected to be recognized over a weighted average period of approximately 2.5 years. As of December 31, 2011, approximately 205,000 shares were expected to vest in the future. As of December 31, 2011, approximately 669,000 shares remained available for future grants under the Restricted Stock Plan.

The following table summarizes non-vested restricted stock and the related activity as of December 31, 2011 and for the years ended December 31, 2011 and 2010 (shares in thousands):

Table of Contents

	Shares	Weighted Average Grant-Date Fair-Value
Non-vested at January 1, 2010	200	$6.85
Granted	325	3.74
Vested	(270)	
Forfeited	(9)	4.37
Non-vested at December 31, 2010	246	$5.48
Granted	488	3.19
Vested	(212)	
Forfeited	(281)	
Non-vested at December 31, 2011	241	$3.09

NOTE 17. INCOME TAXES

The Company records income taxes using the liability method. Under this method, deferred tax assets and liabilities 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.

At December 31, 2011, the Company had approximately $97,910,000 in net operating loss carryforwards that will expire beginning in 2025. Approximately $2,800,000 of the net operating loss carryover is not included in the calculation of the deferred tax asset since it is related to excess tax deductions from the exercise of stock options and vested restricted stock. 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. There were no significant ownership changes in 2011 that would affect utilization of the Company's net operating losses. 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, 2011 and 2010, the components of these temporary differences and the deferred tax asset were as follows:

	As of December 31, 2011	2010
Deferred Tax Asset		
Current:		
Accrued Expenses	$60,000	$81,000
Total Current	60,000	81,000
Non-current:		
Stock Based Compensation-Stock Options and Restricted Stock	1,064,000	1,100,000
Tax effect of NOL carryforward	36,134,000	24,109,000
Depreciation	30,016,000	880,000
Amortization	(117,000)	
Warranty reserve	10,000	6,000
Start-up costs	—	216,000
Capital losses	—	12,000
Capitalized manufacturing costs & property taxes on P,P&E	—	1,353,000
Total Non-current	67,107,000	27,676,000
Net deferred tax asset	67,167,000	27,757,000
Less valuation allowance	(67,167,000)	(27,757,000)
Net deferred tax asset	$—	$—

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. Based upon the level of historical losses and projections of

future taxable income over the periods in which the deferred tax assets are deductible, a full valuation allowance has been provided due to the uncertainty surrounding the timing and the amount of future revenues. The Company's deferred tax valuation

Table of Contents

allowance of $67,167,000 reflected above is an increase of $39,410,000 from the valuation allowance reflected as of December 31, 2010 of $27,757,000. The Company's effective tax rate for the years ended December 31, 2011 and 2010 differs from the statutory rate due to the following (expressed as a percentage of pre-tax income):

	2011		2010	
Federal statutory rate	(35	)%	(35	)%
State statutory rate	(3	)%	(3	)%
Permanent tax differences	—	%	—	%
Other	—	%	—	%
Increase in valuation allowance	38	%	38	%
	—	%	—	%

NOTE 18. RELATED PARTY TRANSACTIONS

Prior to January 1, 2011, ITN was considered a related party because ITN's sole owner, Dr. Mohan Misra, was Chairman of the Company's Board of Directors and held various executive positions. Effective January 1, 2011, Dr. Misra was no longer a member of the Board of Directors or an executive of the Company and ITN is no longer considered a related party.

ITN was a related party during the twelve months ended December 31, 2010 and 2009. Included in Selling, general and administrative expenses for the twelve months ended December 31, 2010 and 2009 was $390,824 and $815,196, respectively, of expenditures to ITN for facility sublease costs and administrative support expenses. Included in Research and development expense for the twelve months ended December 31, 2010 and 2009 was $618,765 and $1,861,609, respectively, of expenditures to ITN for supporting research and development and manufacturing activity, including charges for the use of research and development equipment. Related party payables of $54,037 as of December 31, 2010 represented costs remaining to be paid to ITN for these expenditures. "Property, plant and equipment" as of December 31, 2010 includes $2,296,118 paid to ITN for the construction of manufacturing and research and development equipment and installation labor costs for the Company's production lines.

On January 7, 2010, the Company and ITN entered into an equipment purchase agreement whereby the Company purchased seven research and development vacuum and deposition chambers for $1,100,000 from ITN. Payments in the amount of $350,000 were remitted to ITN in January 2010 and January 2011. A final payment, without interest, in the amount of $400,000 was paid in January 2012.

NOTE 19. COMMITMENTS & CONTINGENCIES

Lease Agreement: On June 25, 2010, the Company entered into a lease agreement for the facility in Littleton, Colorado. As of January 2012, the date the lease was extended, future minimum payments totaling $247,095 are due through December 31, 2012.

The Company is also responsible for payment of pass-through expenses such as property taxes, insurance, water and utilities. Rent expense for the years ended December 31, 2011, 2010 and 2009 was $265,256, $295,769 and $232,259, respectively.

Litigation: On October 21, 2011, the Company was notified that a complaint claiming $3,048,701 for an investment banking fee (the "Lawsuit") was filed by Jefferies & Company, Inc. ("Jefferies") against the Company in New York State Supreme Court in the County of New York. In December 2010, Ascent and Jefferies entered into an engagement agreement (the "Fee Agreement") pursuant to which Jefferies was hired to act as the Company's financial advisor in relation to certain potential transactions.

Ascent has paid Jefferies the fees it believes are owed under the Fee Agreement, which are a $100,000 retainer and approximately $49,000 of out-of-pocket expenses. Ascent believes that the Lawsuit is without merit. The Company intends to vigorously defend the Lawsuit.

This proceeding is subject to the uncertainties inherent in any litigation. It is subject to many uncertainties and to outcomes that are not predictable with assurance and that may not be known for an extended period of time. The Company records a liability in its financial statements for costs related to claims, including settlements and judgments, where the Company has assessed that a loss is probable and an amount can be reasonably estimated. It is not possible to predict the outcome for this legal proceeding. If the Lawsuit is determined adversely to the Company, the costs

associated with this proceeding could have a material adverse effect on the Company's results of operations, financial position and/or cash flows of

Table of Contents

a future period.

NOTE 20. RETIREMENT PLAN

On July 1, 2006, the Company adopted 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 that they are at least 21 years of age. The participants may elect through salary reduction to contribute up to ceilings established in the Internal Revenue Code. The Company will match 100% of the first six 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. Rights to benefits provided by the Company's discretionary and matching contributions vest 100% after the first year of service for all employees hired before January 1, 2010. For employees hired after December 31, 2009, matching contributions vest over a three-year period, one-third per year. Payments for 401(k) matching totaled $257,823, $366,006 and $276,315 for the years ended December 31, 2011, 2010 and 2009 respectively. Payments for 401(k) matching are recorded under "Research and development" expense and "Selling, general and administrative" expense in the Statements of Operations.

NOTE 21. SELECTED QUARTERLY FINANCIAL DATA (unaudited)

The following table presents selected unaudited Statements of Operations and Balance Sheet information for each of the quarters in the years ended December 31, 2011 and 2010 (in thousands, except per share data):

Selected Statements of Operations information:

Table of Contents

	For the Quarter Ended			
Year Ended December 31, 2011	December 31	September 30	June 30	March 31
Revenue	$751	$989	$1,027	$1,184
Research and Development Expense	4,681	4,145	6,701	8,595
Selling, General and Administrative Expense	1,511	1,524	1,642	2,454
Impairment Loss	—	—	78,000	—
Loss from Operations	(5,441)	(4,680)	(85,316)	(9,865)
Net Loss	(5,557)	(5,363)	(85,169)	(9,655)
Basic and diluted loss per share	$(0.14)	$(0.15)	$(2.63)	$(0.30)

Selected Balance Sheet information:

	For the Quarter Ended			
Year Ended December 31, 2011	December 31	September 30	June 30	March 31
Current Assets	$27,113	$31,094	$29,275	$35,532
Total Assets	61,425	66,447	69,096	153,502
Current Liabilities	4,780	4,780	9,423	8,951
Working Capital	22,333	26,314	19,852	26,581
Long-Term Obligations	6,642	6,704	6,763	6,823
Stockholders' Equity	50,003	54,963	52,910	137,728

Selected Statements of Operations information:

	For the Quarter Ended			
Year Ended December 31, 2010	December 31	September 30	June 30	March 31
Revenue	$1,196	$623	$446	$216
Research and Development Expense	7,450	6,418	5,928	4,558
Selling, General and Administrative Expense	1,650	1,754	1,919	2,131
Impairment Loss	1,769	—	—	—
Loss from Operations	(9,673)	(7,549)	(7,401)	(6,473)
Net Loss	(9,757)	(7,181)	(7,692)	(6,604)
Basic and diluted loss per share	$(0.33)	$(0.27)	$(0.29)	$(0.25)

Selected Balance Sheet information:

	For the Quarter Ended			
Year Ended December 31, 2010	December 31	September 30	June 30	March 31
Current Assets	$47,664	$37,560	$42,968	$52,470
Total Assets	160,021	148,020	154,498	164,510
Current Liabilities	6,176	5,647	5,493	8,440
Working Capital	41,488	31,913	37,475	44,030
Long-Term Obligations	7,279	7,323	7,381	7,439
Stockholders' Equity	146,566	135,051	141,624	148,632

Table of Contents

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	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))
3.2	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)
3.3	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)
3.4	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)
4.1	Form of Common Stock Certificate (incorporated by reference to Exhibit 4.1 to our Registration Statement on Form SB-2 filed on January 23, 2006 (Reg. No. 333-131216))
4.2	Form of Class B Warrant (incorporated by reference to Exhibit 4.3 to our Registration Statement on Form SB-2 filed on January 23, 2006 (Reg. No. 333-131216))
4.3	Form of Warrant Agreement between the Company and Computershare Trust Company, Inc. (incorporated by reference to Exhibit 4.5 to our Registration Statement on Form SB-2/A filed on April 20, 2006 (Reg. No. 333-131216))
4.4	Form of Representative's Purchase Warrant (incorporated by reference to Exhibit 4.6 to our Registration Statement on Form SB-2/A filed on July 10, 2006 (Reg. No 333-131216))
4.5	Stockholders' Agreement, dated March 13, 2007, between the Company and Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 99.2 to our Current Report on Form 8-K filed on March 13, 2007)
4.6	Registration Rights Agreement, dated March 13, 2007, between the Company and Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 99.3 to our Current Report on Form 8-K filed on March 13, 2007)
4.7	Registration Rights Agreement, dated October 6, 2009, between the Company and Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 10.2 to our Current Report on Form 8-K filed on October 1, 2009)
10.1	Executive Employment Agreement, dated March 31, 2008, between the Company and Gary Gatchell (incorporated by reference to Exhibit 99.1 to our Current Report on Form 8-K filed on March 31, 2008)†
10.2	Amended and Restated Executive Employment Agreement, dated August 3, 2009, between the Company and Farhad Moghadam (incorporated by reference to Exhibit 10.1 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2009)†
10.3	Restricted Stock Unit Agreement, dated August 3, 2009, between the Company and Farhad Moghadam (incorporated by reference to Exhibit 10.3 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2009)†

10.4	Stock Option Agreement, dated August 3, 2009, between the Company and Farhad Moghadam (incorporated by reference to Exhibit 10.4 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2009)†
10.5	Inducement Award Agreement, dated August 3, 2009, between the Company and Farhad Moghadam (incorporated by reference to Exhibit 10.5 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2009)†

Table of Contents

Exhibit No.	Description
10.6	Restricted Stock Award Agreement, dated March 31, 2008, between the Company and Gary Gatchell (incorporated by reference to Exhibit 10.43 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2008)†
10.7	Ascent Solar Technologies, Inc. Second Amended and Restated 2008 Restricted Stock Plan (including Form of Restricted Stock Award Agreement and Form of Restricted Stock Unit Agreement) (incorporated by reference to Exhibit 10.2 to our Current Report on Form 8-K filed on June 17, 2010)†
10.8	Ascent Solar Technologies, Inc. Fourth Amended and Restated 2005 Stock Option Plan (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on June 17, 2010)†
10.9	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))[CTR]
10.10	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))[CTR]
10.11	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))
10.12	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))[CTR]
10.13	Service Center Agreement, dated January 17, 2006, between the Company and ITN Energy Systems, Inc., as amended (incorporated by reference to Exhibit 10.6 to our Registration Statement on Form SB-2 filed on January 23, 2006 (Reg. No. 333-131216))
10.14	Administrative Services Agreement, dated January 17, 2006, between the Company and ITN Energy Systems, Inc., as amended (incorporated by reference to Exhibit 10.8 to our Registration Statement on Form SB-2 filed on January 23, 2006 (Reg. No. 333-131216))
10.15	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))
10.16	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)[CTR]
10.17	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)

10.18	Securities Purchase Agreement, dated March 13, 2007, between the Company and Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 99.1 to our Current Report on Form 8-K filed on March 13, 2007)
10.19	Amendment No. 1 to Securities Purchase Agreement, dated March 3, 2008, between the Company and Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 10.41 to our Annual Report on Form 10-K for the year ended December 31, 2007)
10.20	Construction Loan Agreement, dated February 8, 2008, between the Company and the Colorado Housing and Finance Authority (incorporated by reference to Exhibit 10.37 to our Annual Report on Form 10-K for the year ended December 31, 2007)

Table of Contents

Exhibit No.	Description
10.21	Promissory Note, dated February 8, 2008, issued to the Colorado Housing and Finance Authority (incorporated by reference to Exhibit 10.38 to our Annual Report on Form 10-K for the year ended December 31, 2007)
10.22	Loan Modification Agreement, dated January 29, 2009, between the Company and the Colorado Housing and Finance Authority (incorporated by reference to Exhibit 10.52 to our Annual Report on Form 10-K for the year ended December 31, 2008)
10.23	Cooperation Agreement, dated December 18, 2007, between the Company and Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on December 19, 2007)
10.24	Photovoltaic Module Supply Agreement, dated September 21, 2009, between the Company and Turtle Energy LLC (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on September 23, 2009)[CTR]
10.25	Securities Purchase Agreement, dated September 29, 2009, between the Company and Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on October 1, 2009)
10.26	Equipment Purchase Agreement, dated January 7, 2010, between the Company and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.46 to our Annual Report on Form 10-K for the year ended December 31, 2009)
10.27	At-the-Market Equity Offering Sales Agreement between the Company and Stifel, Nicolaus & Company, Incorporated dated February 28, 2011 (incorporated by reference to Exhibit 10.39 to our Annual Report on Form 10-K filed February 28, 2011)
10.28	Executive Employment Agreement dated March 31, 2011 between the Company and Ron Eller (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on April 6, 2011) †
10.29	Securities Purchase Agreement dated as of August 12, 2011 between TFG Radiant Investment Group Ltd. and the Company (incorporated by reference to Exhibit 99.1 to our Current Report on Form 8-K filed on August 15, 2011)
10.30	Stockholders Agreement dated as of August 12, 2011 between TFG Radiant Investment Group Ltd. and the Company (incorporated by reference to Exhibit 99.2 to our Current Report on Form 8-K filed on August 15, 2011)
10.31	Registration Rights Agreement dated as of August 12, 2011 between TFG Radiant Investment Group Ltd. and the Company (incorporated by reference to Exhibit 99.3 to our Current Report on Form 8-K filed on August 15, 2011)
10.32	Voting Agreement dated as of August 12, 2011 between TFG Radiant Investment Group Ltd. and Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 99.4 to our Current Report on Form 8-K filed on August 15, 2011)

10.33	Joint Development Agreement dated as of August 12, 2011 between TFG Radiant New-Energy Group Ltd. and the Company (incorporated by reference to Exhibit 10.5 to our Quarterly Report on Form 10-Q for the quarter ended September 30, 2011)[CTR]
10.34	At the Market Offering Sales Agreement dated as of January 5, 2012 between JonesTrading Institutional Services LLC and the Company (incorporated by reference to Exhibit 99.1 to our Current Report on Form 8-K filed on January 5, 2012)
10.35	Amended and Restated Stockholders Agreement dated as of December 30, 2011 between TFG Radiant Investment Group Ltd. and the Company (incorporated by reference to Exhibit 99.2 to our Current Report on Form 8-K filed on January 5, 2012)
10.36	Amended and Restated Registration Rights Agreement dated as of December 30, 2011 between TFG Radiant Investment Group Ltd. and the Company (incorporated by reference to Exhibit 99.3 to our Current Report on Form 8-K filed on January 5, 2012)

Table of Contents

Exhibit No.	Description
23.1	Consent of Hein & Associates LLP*
31.1	Chief Executive Officer Certification pursuant to section 302 of the Sarbanes-Oxley Act of 2002*
31.2	Chief Financial Officer Certification pursuant to section 302 of the Sarbanes-Oxley Act of 2002*
32.1	Chief Executive Officer Certification pursuant to section 906 of the Sarbanes-Oxley Act of 2002*
32.2	Chief Financial Officer Certification pursuant to section 906 of the Sarbanes-Oxley Act of 2002*

* 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.