

Ascent Solar Technologies, Inc.
Form S-3/A
July 26, 2013
Table of Contents

As filed with the Securities and Exchange Commission on July 26, 2013
Registration No. 333-189739

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

AMENDMENT NO. 1 TO
FORM S-3

REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

ASCENT SOLAR TECHNOLOGIES, INC.
(Exact name of registrant as specified in its charter)

Delaware
(State or jurisdiction of
incorporation or organization)

20-3672603
(IRS Employer
Identification No.)

12300 North Grant Street
Thornton, Colorado 80241
(720) 872-5000

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Gary Gatchell
12300 North Grant Street
Thornton, Colorado 80241
(720) 872-5000

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:
James Carroll
Faegre Baker Daniels LLP
1470 Walnut Street, Suite 300
Boulder, Colorado 80304
(303) 447-7700

Approximate date of commencement of proposed sale to the public: From time to time after this registration statement becomes effective as determined by market conditions and other factors.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box:

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box:

Table of Contents

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box:

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box:

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 definitions of "large accelerated filer," "accelerated filer," and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

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

CALCULATION OF REGISTRATION FEE

| Title of Class of Securities to be Registered | Amount To be Registered | Proposed Maximum Aggregate Price Per Share(1) | Proposed Maximum Aggregate Offering Price | Amount of Registration Fee * |
|---|-------------------------|---|---|------------------------------|
| Common Stock, par value \$0.0001 | 2,500,000 shares (2) | \$0.7416 | \$1,854,000 | \$252.89 |
| Common Stock, par value \$0.0001 | 5,000,000 shares (3) | \$0.7416 | \$3,708,000 | \$505.78 |
| Common Stock, par value \$0.0001 | 1,750,000 shares (4) | \$0.7416 | \$1,297,800 | \$177.02 |
| Common Stock, par value \$0.0001 | 1,833,333 shares (5) | \$0.7416 | \$1,359,600 | \$185.45 |
| Total | 11,083,333 shares | \$0.7416 | \$8,219,400 | \$1,121.14 |

- Estimated solely for purposes of calculating the registration fee pursuant to Rule 457(c) under the Securities Act
- (1) of 1933, as amended, using the average of the high and low prices as reported on the NASDAQ Global Market on June 26, 2013, which was \$0.7416 per share.
 - (2) Represents shares of common stock previously issued in a private placement.
 - (3) Represents shares issuable upon conversion of Series A Preferred Stock issued at the first closing and the second closing referred to in the attached prospectus.
 - (4) Represents shares issuable upon exercise of warrants issued at the first closing and the second closing referred to in the attached prospectus.

Represents shares which may be issued from time to time in the event that the issuer elects to pay dividends and
(5) make-whole amounts (if any) on the Series A Preferred Stock issued at the first closing and the second closing referred to in the attached prospectus, in the form of common stock rather than cash.

* Previously paid.

Table of Contents

The Registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

Table of Contents

The information in this prospectus is not complete and may be changed. These securities may not be sold until the related registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED JULY 26, 2013

PROSPECTUS

ASCENT SOLAR TECHNOLOGIES, INC.

11,083,333 shares of common stock

The selling stockholders named in this prospectus are offering to sell up to 11,083,333 shares of common stock of Ascent Solar Technologies, Inc. We will not receive any proceeds from the resale of shares of our common stock by the selling stockholders.

Our common stock is traded on the Nasdaq Global Market under the symbol "ASTI." On July 25, 2013, the last reported sale price of our common stock on the Nasdaq Global Market was \$1.05 per share.

Our principal executive offices are located at 12300 North Grant Street, Thornton, Colorado 80241.

These are speculative securities. Investing in these securities involves significant risks. You should purchase these securities only if you can afford a complete loss of your investment. See "Risk Factors" beginning on page 4.

The selling stockholders are offering these shares of common stock. The selling stockholders may sell all or a portion of these shares from time to time in market transactions through any market on which our common stock is then traded, in negotiated transactions or otherwise, and at prices and on terms that will be determined by the then prevailing market price or at negotiated prices directly or through a broker or brokers, who may act as agent or as principal or by a combination of such methods of sale. The selling stockholders will receive all proceeds from the sale of the common stock. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution."

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR PASSED UPON THE ADEQUACY OR ACCURACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this prospectus is _____, 2013

Table of Contents

| | |
|---|-----------|
| TABLE OF CONTENTS | |
| <u>ABOUT THIS PROSPECTUS</u> | <u>1</u> |
| <u>PROSPECTUS SUMMARY</u> | <u>1</u> |
| <u>THIS OFFERING</u> | <u>2</u> |
| <u>FORWARD-LOOKING STATEMENTS</u> | <u>4</u> |
| <u>RISK FACTORS</u> | <u>5</u> |
| <u>USE OF PROCEEDS</u> | <u>14</u> |
| <u>SELLING STOCKHOLDERS</u> | <u>14</u> |
| <u>PLAN OF DISTRIBUTION</u> | <u>15</u> |
| <u>EXPERTS</u> | <u>16</u> |
| <u>LEGAL MATTERS</u> | <u>16</u> |
| <u>INFORMATION INCORPORATED BY REFERENCE</u> | <u>17</u> |
| <u>WHERE YOU CAN FIND MORE INFORMATION</u> | <u>17</u> |
| <u>INDEMNIFICATION</u> | <u>17</u> |
| <u>DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION OF SECURITIES ACT</u> | <u>18</u> |
| <u>LIABILITIES</u> | |
| DEALER PROSPECTUS DELIVERY OBLIGATION | |

In this prospectus, references to “we,” “us,” “our,” “Ascent,” “Ascent Solar” or the “Company” mean Ascent Solar Technologies, Inc.

Table of Contents

About This Prospectus

You should rely only on the information contained or incorporated by reference in this prospectus or a prospectus supplement. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. You should not assume that the information appearing in this prospectus, any prospectus supplement or any document incorporated by reference is accurate as of any date other than its date, regardless of the time of delivery of the prospectus or prospectus supplement or any sale of securities. Our business, financial condition, results of operations and prospects may have changed since those dates.

PROSPECTUS SUMMARY

This summary highlights information contained in this prospectus. While we believe that this summary highlights some of the most important information about Ascent Solar Technologies, Inc. and this offering, you should read this entire prospectus and the documents incorporated by reference carefully, including “Risk Factors,” before deciding to invest in our securities.

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 using a roll-to-roll process 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.

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 electronics products, defense, transportation and space applications, as well as other products and applications that may emerge.

Recent Strategic Developments

Introduction of EnerPlex™ Consumer Products

Following the appointment of our new President and CEO in February 2012, we began to reposition our business model with an immediate focus into developing downstream consumer products. In June 2012, we launched our new EnerPlex brand line of consumer products, and introduced the first product under the EnerPlex brand with a solar-assisted charger for the iPhone® 4/4S smart phone featuring our ultra light CIGS thin film technology. This charger incorporates our ultra light and thin solar module into a sleek, protective iPhone® 4/4S case, along with a thin battery. The charger adds minimal weight and size to an iPhone® smart phone, yet provides significantly improved battery life by harnessing sunlight for electric power. With this line of products we plan to move up the value chain with a much improved profit margin as products are developed and designed in-house and sold directly to end consumers or through distributors globally.

This charger is the first product in our planned line of smart phone chargers and related consumer portable power products. We intend to introduce a wide range of EnerPlex solutions for a variety of consumer products.

In August 2012, we announced the launch of the second version of Surfr™, a solar assisted charger for the Samsung® Galaxy S® III, which provides 85% additional battery life.

In December 2012, we launched the EnerPlex Kickr™ and EnerPlex Jumpr™ product series. The EnerPlex Kickr IV is an extremely portable, compact and durable solar charging device, approximately seven inches by seven inches when folded, and weighing only 316 grams, or less than half a pound. The Kickr IV provides 4.5 watts regulated power that can help charge

Table of Contents

phones, tablets, digital cameras, and other devices. Complementing the Kickr IV is the Jumpr 4400 and the Jumpr 4800, rechargeable, portable battery packs providing from three to five complete charge cycles for a smart phone. Currently, we are working to develop the iPhone® 5 version of the Surfr solar assisted charger. Our consumer products are available to customers through third party distributors and retailers and through our website at www.EnerPlex.biz, our retail website.

During 2013, we plan to continue our expansion of distribution channels in the U.S. and worldwide. We continue to design and manufacture PV integrated consumer electronics as well as portable power applications for commercial and military users. Due to the high durability of the monolithic integration employed by our technology, the capability to customize modules into different form factors and the industry leading light weight and flexibility provided by our modules, we feel that the potential applications for our products are numerous.

Suqian Joint Venture

On July 2, 2013, we entered into a framework agreement (the “Suqian Agreement”) for the establishment of a joint venture with the Government of the Municipal City of Suqian in Jiangsu Province, China (“Suqian”). The agreement covers a multi-faceted, three-phase project. Completion of all three phases would involve an anticipated investment of up to \$500 million over six years, primarily funded by Suqian.

Under the Suqian Agreement, in the first phase we will form a joint venture entity (“JV”) with Suqian, in which we will have majority interest of up to 80%. The JV will build a factory to manufacture our proprietary photovoltaic modules. We will contribute proprietary technology and intellectual property, approximately \$1.6 million in cash and certain equipment from our Colorado facility. Suqian will provide cash of approximately \$32.5 million as well as rent-free use of a 270,000 square foot factory that is currently being built in the Suqian Economic & Industrial Development Science Park. This factory is expandable to 1,000,000 square feet for phases two and three of the Suqian Agreement. The total project size of phase one under the agreement is expected to be approximately \$160 million. We will have the right to purchase this factory within the first five years at the initial construction cost, as well as the right to purchase Suqian's ownership interest in the JV for a modest nominal cost above Suqian's cash investment.

The implementation of the Suqian Agreement, including the formation of the JV entity, will be subject to a number of contractual conditions and governmental approvals. Such conditions and approvals must be obtained in the future in order for the Suqian factory to be built and become operational.

Need for Additional Capital

Since inception, the Company has incurred significant losses. The Company expects to continue to incur net losses in the near term. For the six months ended June 30, 2013, our cash used in operations was \$10.0 million. At June 30, 2013, the Company had cash and equivalents of approximately \$4.0 million.

Once the Company receives the full proceeds from the recent Series A preferred stock and warrant financing, the Company believes it will require minimal additional cash liquidity to continue operations through the end of the 2013 year. The Company will need to raise additional capital, however, to continue the current level of operations into 2014. The Company has begun to explore opportunities to secure additional financing through strategic or financial investors, but there is no assurance that the Company will be able to raise additional capital on acceptable terms or at all. If the Company's revenues do not increase rapidly, and/or additional financing is not obtained, the Company will be required to significantly curtail operations to reduce costs and/or sell assets. Such actions would likely have an adverse impact on the Company's future operations.

Corporate Information

We are incorporated under the laws of Delaware. 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 part of this prospectus.

THIS OFFERING

Loong Purchase Agreement Transaction

2

Table of Contents

On April 26, 2013, the Company entered into a Stock Purchase Agreement (the “Loong Purchase Agreement”) with Foo Joo Loong (“Loong”), pursuant to which Loong agreed to purchase from the Company, and we agreed to sell to Loong (subject to the terms and conditions set forth therein), an aggregate of 2,500,000 shares of common stock at a per share price of \$0.57. The closing under the Loong Purchase Agreement occurred on May 10, 2013 and resulted in gross proceeds of \$1,425,000 to the Company.

Seow Purchase Agreement Transaction

On June 17, 2013, the Company entered into a Securities Purchase Agreement (the “Seow Purchase Agreement”) with Seng Wei Seow (“Seow”), pursuant to which Seow agreed to purchase from the Company, and we agreed to sell to Seow (subject to the terms and conditions set forth therein), an aggregate of \$6,000,000 of Series A Preferred Stock at a price of \$8.00 per share of Series A Preferred Stock and warrants (the “Warrants”) to purchase up to 2,625,000 shares of common stock of the Company at an exercise price of \$0.90 per share of common stock.

The initial closing under the Seow Purchase Agreement, pursuant to which the Company sold to Seow 125,000 shares of Series A Preferred Stock and a Warrant to purchase 437,500 shares of common stock for a purchase price of \$1,000,000, occurred on June 20, 2013 (the “Initial Closing”). Subsequent closings under the Seow Purchase Agreement (“Subsequent Closings”) will occur in two tranches. The second closing will occur immediately after the effectiveness of the Registration Statement of which this prospectus forms a part and will be for 375,000 shares of Series A Preferred Stock and a Warrant to purchase 1,312,500 shares of common stock. The third closing will occur approximately 30 days after the second closing and will be for 250,000 shares of Series A Preferred Stock and a Warrant to purchase 875,000 shares of common stock. The shares of common stock issuable in connection with the third closing securities are not included in the registration statement of which this prospectus forms a part.

The Warrants have a three year term.

In connection with the Seow Purchase Agreement, the Company filed a Certificate of Designations of Preferences, Rights and Limitations of Series A Preferred Stock (“Certificate of Designation”) with the Secretary of State of Delaware. Under the Certificate of Designation, the Series A Preferred Stock ranks senior to the Company's common stock with respect to dividend rights, pari passu with respect to rights upon liquidation to the Company's common stock, and junior to all existing and future indebtedness. Except as otherwise required by law (or with respect to approval of certain actions), the Series A Preferred Stock shall have no voting rights. Holders of Series A Preferred Stock are entitled to cumulative dividends at a rate of 8.0% per annum when and if declared by the Board of Directors in its sole discretion. The dividends may be paid in cash or in the form of common stock at the discretion of the Board of Directors. The dividend rate on the Series A Preferred Stock is subject to adjustment in certain circumstances as set forth in the Certificate of Designation.

The Series A Preferred Stock may be converted into shares of common stock of the Company at the option of (x) the Company (subject to the satisfaction of certain equity conditions set forth in the Certificate of Designation) if the closing price of the common stock exceeds 200% of the conversion price of \$0.80 for any 20 consecutive trading days) or (y) the holder at any time. In the event of a conversion at the election of the holder or the Company, the Company shall issue to the holder such number of shares of common stock equal to (a) the Original Issue Price (as defined in the Certificate of Designation), multiplied by (b) the number of shares being converted, divided by (c) the conversion price of \$0.80.

Unless the Company has received the approval of the holders of a majority of the Series A Preferred Stock then outstanding, the Company may not (i) alter or change adversely the powers, preferences or rights given to the Series A Preferred Stock or alter or amend the Certificate of Designation, (ii) authorize or create any class of stock ranking as to distribution of dividends senior to the Series A Preferred Stock, (iii) amend its certificate of incorporation or other charter documents in breach of any of the provisions in the Certificate of Designation, (iv) increase the authorized number of shares of Series A Preferred Stock, or (v) enter into any agreement with respect to the foregoing.

The Company will have the right to redeem the Series A Preferred Stock at a price of \$8.00 per share plus any accrued and unpaid dividends plus the Make-Whole Amount (as defined in the Certificate of Designation), if any.

At no time will the Company issue shares of common stock in connection with the securities issued pursuant to the Seow Purchase Agreement (whether upon exercise of Warrants, conversion of Series A Preferred Stock, payment of dividends in common stock or payment of make whole amounts in common stock) if such transaction (when

aggregated with all other issuances in connection with the Seow Purchase Agreement) would result in the issuance of more than 19.999% of the amount of common stock of the Company issued and outstanding on the date of the Seow Purchase Agreement unless (i) the Company's stockholders shall have approved the issuance of shares of common stock in excess of 20%, or (ii) Nasdaq has provided a waiver of Listing Rule 5635(d).

Table of Contents

In connection with the Seow Purchase Agreement, the Company entered into a Registration Rights Agreement, pursuant to which the Company agreed to register the shares of common stock issuable in connection with the Seow Purchase Agreement, including common stock issuable (i) upon conversion of the shares of Series A Preferred Stock, (ii) in connection with the payment of dividends and Make-Whole Amounts (if any) in the event that the Company elects to pay such amounts in the form of common stock rather than cash, and (iii) upon exercise of the Warrants. The Company agreed to file such registration statement on or before July 15, 2013 and to use its best efforts to have such registration statement declared effective on or before the 90th day after July 15, 2013.

This prospectus includes (i) 2,500,000 shares of common stock issued under the Loong Purchase, (ii) 1,750,000 shares of common stock issuable upon the exercise of the Warrants issuable at the first closing and the second closing under the Seow Purchase Agreement, (iii) up to 1,833,333 shares of common stock which may be issuable as dividends and make whole amounts in kind to the holder of the Series A Preferred Stock issuable at the first closing and the second closing under the Seow Purchase Agreement, and (iv) 5,000,000 shares of common stock issuable upon conversion of the Series A Preferred Stock issuable at the first and second closing under the Seow Purchase Agreement. The common stock issuable in connection with the securities that will be issued at the third closing under the Seow Purchase Agreement are not included in the registration statement of which this prospectus forms a part.

| | |
|---|--------------|
| Common stock outstanding prior to the offering | 51,523,758 * |
| Common stock offered by the selling stockholders | 11,083,333 |
| Common stock to be outstanding after the offering | 66,898,758** |

Use of proceeds We will not receive any proceeds from the sale of the securities hereunder. See “Use of Proceeds” for a complete description.

* As of May 1, 2013.

Assumes (i) the issuance of 2,500,000 shares under the Loong Purchase Agreement on May 10, 2013, (ii) the issuance and exercise of all of the Warrants issuable under the Seow Purchase Agreement, (iii) issuance and

** conversion of all shares of Series A Preferred Stock issuable under the Seow Purchase Agreement, and (iv) the issuer elects to pay dividends and make-whole amounts (if any) on the Series A Preferred Stock issuable under the Seow Purchase Agreement in the form of common stock, rather than cash.

FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference into it contain forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. Forward-looking statements are those that predict or describe future events or trends and that do not relate solely to historical matters. You can generally identify forward-looking statements as statements containing the words “believe,” “expect,” “may,” “will,” “could,” “would,” “anticipate,” “intend,” “estimate,” “project,” “plan,” “continue,” “assume” or other similar expressions, although not forward-looking statements contain these identifying words. All statements contained in this prospectus supplement regarding our future strategy, plans and expectations regarding clinical trials, future regulatory approvals, our plans for the commercialization of our products, future operations, projected financial position, potential future revenues, projected costs, future prospects, and results that might be obtained by pursuing management's current plans and objectives are forward-looking statements. Forward-looking statements include, but are not necessarily limited to, those relating to:

- our limited operating history and lack of profitability;
- our ability to successfully design, manufacture and sell our newly introduced EnerPlex line of consumer products;
- our ability to develop demand for, and sales of, our photovoltaic products;

- our ability to successfully sell or license our products;
- our ability to attract and retain qualified personnel to implement our business plan and corporate growth strategies;
- our ability to develop sales, marketing, and distribution capabilities;
- the accuracy of our estimates and projections;

Table of Contents

- our ability to secure additional financing to fund our short-term and long-term financial needs;
- our ability to maintain the listing of our common stock on the Nasdaq Global or Capital Market;
- the commencement or outcome of legal proceedings against us or by us, including ongoing litigation and proceedings;
- changes in our business plan and corporate strategies; and
- other risks and uncertainties discussed in greater detail in the section captioned "Risk Factors."

You should not place undue reliance on our forward-looking statements because the matters they describe are subject to known and unknown risks, uncertainties and other unpredictable factors, many of which are beyond our control. Our forward-looking statements are based on the information currently available to us and speak only as of the date on the cover of this prospectus supplement. New risks and uncertainties arise from time to time, and it is impossible for us to predict these matters or how they may affect us. Over time, our actual results, performance or achievements will likely differ from the anticipated results, performance or achievements that are expressed or implied by our forward-looking statements, and such differences might be significant and materially adverse to our investors. We have no duty to, and do not intend to, update or revise the forward-looking statements in this prospectus after the date of this prospectus except to the extent required by the federal securities laws. You should consider all risks and uncertainties disclosed in our filings with the Securities and Exchange Commission, or the SEC, described in the sections of this prospectus supplement and the accompanying prospectus entitled "Where You Can Find More Information" and "Information Incorporated by Reference," all of which are accessible on the SEC's website at www.sec.gov.

RISK FACTORS

An investment in our securities involves a high degree of risk and many uncertainties discussed in the section entitled "Risk Factors" in our annual report on Form 10-K for the year ended December 31, 2012, which is incorporated by reference into this prospectus. You should carefully consider the risk factors before purchasing our securities. If one or more of the possibilities described as risks actually occurs, our operating results and financial condition would likely suffer and the trading price of our securities could fall, causing you to lose some or all of your investment in the securities we are offering.

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 producing consumer oriented products in quantities necessary to meet current demand. Under our current business plan, we expect losses to continue until annual revenues and gross margins reach a high enough level to cover operating expenses. We plan to continue manufacturing at our current facilities and we are leveraging contract manufacturers in Asia for components and for final assembly of finished goods. Our ability to achieve our business, commercialization and expansion objectives will depend on a number of factors, including whether:

- we can generate customer acceptance of and demand for our products;
- we successfully ramp up commercial production on the equipment installed;
- our products are successfully and timely certified for use in our target markets;
- we successfully operate production tools to achieve the efficiencies, throughput and yield necessary to reach our cost targets;
- the products we design are saleable at a price sufficient to generate profits;
- our strategic alliance with TFG Radiant Investment Group Ltd. ("TFG Radiant") results in the design, manufacture and sale of sufficient products to achieve profitability;
- we raise sufficient capital to enable us to reach a level of sales sufficient to achieve profitability on terms favorable to us;
- we are able to be successful in designing, manufacturing, marketing, distributing and selling our newly introduced line of consumer oriented products;
- we effectively manage the planned ramp up of our operations;
-

we successfully develop and maintain strategic relationships with key partners, including OEMs, system integrators and distributors, who deal directly with end users in our target markets;
our ability to maintain the listing of our common stock on the NASDAQ Global Market or Capital Market;

5

Table of Contents

our ability to achieve projected operational performance and cost metrics;
our ability to enter into commercially viable licensing, joint venture, or other commercial arrangements; and
availability of raw materials.

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

We have to date incurred net losses and may be unable to generate sufficient sales in the future to become profitable. We incurred a net loss of \$28.8 million for the year ended December 31, 2012 and reported an accumulated deficit of \$211.8 million as of December 31, 2012. We expect to incur net losses in the near term. Our ability to achieve profitability depends on a number of factors, including market acceptance of our consumer oriented products at competitive prices. If we are unable to generate sufficient revenue to achieve profitability and positive cash flows, we may be unable to satisfy our commitments and may have to discontinue operations.

Our newly introduced EnerPlex line of consumer oriented products exposes us to many new risks and uncertainties.

Following the appointment of our new President and CEO in February 2012, we repositioned our business model with an immediate focus into developing downstream consumer products. In 2012 we launched our new EnerPlex brand line of consumer products, and introduced the first product under the EnerPlex brand with a solar assisted mobile phone charger incorporating our CIGS PV thin film technology. This new line of consumer oriented products exposes us to many risks and uncertainties that are new to our business.

We have extremely limited experience in the design, manufacture, marketing, distribution and sale of consumer oriented products. Our ability to be successful with our newly introduced line of consumer oriented products will depend on a number of factors, including whether:

- we can achieve and maintain customer acceptance of our new consumer oriented products;
- we can rapidly develop and successfully introduce large numbers of new consumer oriented products in response to changing consumer preferences, the introduction of new consumer electronics products (such as new mobile phone models) that our EnerPlex products are designed to integrate with, and the introduction of new products by competing manufacturers;
- we can maintain an adequate level of product quality over multiple consumer oriented products which must be designed, manufactured and introduced rapidly to keep pace with changing consumer preferences and competitive factors;
- we can successfully manage our third party contract manufacturers located outside the U.S. on whom we are heavily dependent for the production of our consumer oriented products;
- we can successfully distribute our consumer oriented products through distributors, wholesalers, internet retailers and brick and mortar retailers (many of whom distribute products from competing manufacturers) on whom we are heavily dependent; and
- we can successfully manage the substantial inventory and other asset risks associated with the manufacture and sale of consumer electronic products, given the rapid and unpredictable pace of product obsolescence in such consumer markets.

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

6

Table of Contents

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 capability successfully at our facilities or through our strategic alliances would adversely impact our ability to sell our products into our target markets and would materially and adversely affect our business, results of operations and financial condition.

Our growth plan calls for production and operation at our facility and at contract manufacturers in Asia. Successful operations will require substantial engineering and manufacturing resources and is subject to significant risks, including risks of cost overruns and delays, risks that we may not be able to successfully operate. Furthermore, we may never be able to operate our production processes in high volume or at the volumes projected, make planned process and equipment improvements, attain projected manufacturing yields or desired annual capacity, obtain timely delivery of components, or hire and train the additional employees and management needed to scale our operations. Failure to meet these objectives on time and within our planned budget could materially and adversely affect our business, results of operations and financial condition.

We may be unable to manage the expansion of our operations and strategic alliances effectively.

We will need to significantly expand our operations and form beneficial strategic alliances in order to reduce manufacturing costs through economies of scale and partnerships, secure contracts of commercially material amounts with reputable customers and capture a meaningful share of our target markets. To manage the expansion of our operations and alliances, we will be required to improve our operational and financial systems, oversight, procedures and controls and expand, train and manage our growing employee base. Our management team will also be required to maintain and cultivate our relationships with partners, customers, suppliers and other third parties and attract new partners, customers and suppliers. In addition, our current and planned operations, personnel, facility size and configuration, systems and internal procedures and controls, even when augmented through strategic alliances, might be inadequate or insufficient to support our future growth. If we cannot manage our growth effectively, we may be unable to take advantage of market opportunities, execute our business strategies or respond to competitive pressures, resulting in a material and adverse effect to our business, results of operations and financial condition.

We depend on a limited number of third party suppliers for key raw materials, and their failure to perform could cause manufacturing delays and impair our ability to deliver PV modules to customers in the required quality and quantity and at a price that is profitable to us.

Our failure to obtain raw materials and components that meet our quality, quantity and cost requirements in a timely manner could interrupt or impair our ability to manufacture our 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 ramp up 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 production ramp up and continuing operations will 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

Table of Contents

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.

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

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

We are targeting emerging markets for a significant portion of our planned product sales. These markets are new and may not develop as rapidly as we expect, or may not develop at all.

Our target markets include consumer electronics, defense and portable power, transportation, space and near space and BIPV/BAPV. Although certain areas of these markets have started to develop, we believe they are in their infancy. We believe these markets have significant long term potential, however, some or all of these markets may not develop and emerge as we expect. If the markets do develop as expected, there may be other products that could provide a superior product or a comparable product at lower prices than our products. If these markets do not develop as we expect, or if competitors are better able to capitalize on these markets our revenues and product margins may be negatively affected.

Failure to consummate strategic relationships with key partners in our various target market segments, such as consumer electronics, defense and portable power, transportation, space and near space and BIPV/BAPV, 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 consumer electronics, defense and portable power systems, transportation, space and near space solar panel applications and BIPV/BAPV. 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 products prove unsuitable for use in such applications; our projected revenues and operating results could be adversely affected.

If sufficient demand for our products does not develop or takes longer to develop than we anticipate, we may be unable to grow our business, generate sufficient revenue to attain profitability or continue operations.

The solar energy industry is 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.

Table of Contents

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

The solar energy and renewable energy industries are both highly competitive and continually evolving as participants strive to distinguish themselves within their markets and compete with the larger electric power industry. We believe that our main sources of competition are other thin film PV manufacturers and companies developing other solar solutions, such as solar thermal and concentrated PV technologies. Many of our existing and potential competitors have substantially greater financial, technical, manufacturing and other resources than we do. A competitor's greater size provides them with a competitive advantage because they often can realize economies of scale and purchase certain raw materials at lower prices.

Many of our competitors also have greater brand name recognition, established distribution networks and large customer bases. In addition, many of our competitors have well-established relationships with our current and potential partners and distributors and have extensive knowledge of our target markets. As a result of their greater size, these competitors may be able to devote more resources to the research, development, promotion and sale of their products or respond more quickly to evolving industry standards and changes in market conditions than we can. Our failure to adapt to changing market conditions and to compete successfully with existing or future competitors could materially and adversely affect our business, results of operations and financial condition.

Problems with product quality or performance may cause us to incur warranty expenses, damage our market reputation and prevent us from maintaining or increasing our market share.

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.

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

As of May 1, 2013 and prior to the Loong and Seow investment transactions, TFG Radiant owned approximately 31% of our common stock. In addition, should TFG Radiant exercise its option to acquire more shares of common stock, we expect that it would hold over 42% of our voting stock (calculated prior to the Loong and Seow investment transactions). 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 two seats on our Board of Directors, which affords TFG Radiant greater control and influence over matters affecting our business.

In addition, on February 1, 2012, Mr. Victor Lee was appointed by our Board as our President and Chief Executive Officer. Mr. Lee is the managing director of Tertius Financial Group Pte Ltd, the joint venture partner with Radiant Group in TFG Radiant.

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

Table of Contents

currencies and the U.S. dollar could affect our net sales and cost of sales and could result in exchange losses. We cannot accurately predict future exchange rates or the overall impact of future exchange rate fluctuations on our business, results of operations and financial condition.

A significant increase in the price of our raw materials could lead to higher overall costs of production, which would negatively affect our planned product margins, or make our products uncompetitive in the PV market.

Our raw materials include high temperature plastics and various metals. Significant increases in the costs of these raw materials may impact our ability to compete in our target markets at a price sufficient to produce a profit.

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

Table of Contents

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 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.

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;
- 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;

Table of Contents

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.

Existing regulations and policies and changes to these regulations and policies may present technical, regulatory and economic barriers to the purchase and use of PV products, which may significantly reduce demand for our PV products.

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

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

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

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

Table of Contents

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, 2012, our common stock traded as low as \$0.42 and as high as \$1.94, and in 2011, traded as low as \$0.36 and as high as \$3.95. 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.

Under the rules of the NASDAQ Global Market, listed companies are required to maintain a share bid price of at least \$1.00 per share and if the closing share bid 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 bid price minimum. As reported in our Current Reports on Form 8-K filed on December 7, 2012 and June 7, 2013, we are not in compliance with the minimum bid price rule. We have requested a hearing with a Nasdaq Hearings Panel, which was held on July 11, 2013. If we do not receive an extension from the hearing panel and our share price does not increase sufficiently for us to re-gain compliance, our Board of Directors will implement a reverse stock split in order to increase our stock price to a level that would result in compliance with the minimum bid price rule. Our stockholders approved a reverse stock split at our annual stockholder meeting on June 18, 2013.

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.

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 through subsequent equity offerings.

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.

If you purchase the securities sold in this offering, you may experience dilution if we issue additional equity securities in future fundraising transactions.

If we issue additional common stock, or securities convertible into or exchangeable or exercisable for common stock, our stockholders, including investors who purchase shares in this offering, will experience dilution, and any such issuances may result in downward pressure on the price of our common stock.

The terms of the Seow Purchase Agreement may result in the future issuance of significant additional shares of common stock by the Company including (i) up to 2,625,000 shares of common stock issuable upon the exercise of the Warrants, (ii) up to 7,500,000 shares of common stock issuable upon conversion of the Series A Preferred Stock, and (iii) an indeterminate number of additional shares in the event that the Company elects to pay dividends and make-whole amounts (if any) due on the Series A Preferred Stock in the form of shares rather than cash.

Some provisions of our charter documents and Delaware law may have anti-takeover effects that could discourage an acquisition of us by others, even if an acquisition would be beneficial to our stockholders, and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our Certificate of Incorporation and Bylaws, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us, or for a change in the composition of our Board of Directors (our "Board") or management to occur, even if doing so would benefit our stockholders. These provisions include:

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

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

TFG Radiant, our largest stockholder, is exempt from the general prohibitions of Section 203 because the transaction by which it became an interested stockholder was approved by our Board. Because TFG Radiant has two representatives on our Board, it is less likely that a third party could become an interested stockholder without the consent of TFG Radiant.

Current stockholders will be diluted if we elect to pay dividends and make-whole amounts on the Series A Preferred Stock in the form of common stock.

To the extent we issue common stock in payment of the make-whole amounts (if any) for redemption of the Series A Preferred Stock, or elect to pay dividends on the Series A Preferred Stock in the form of our common stock, rather than cash, such issuances will dilute the ownership interests of existing stockholders.

USE OF PROCEEDS

This prospectus relates to shares of our common stock that may be offered and sold from time to time by the selling stockholders. We will not receive any of the proceeds resulting from the sale of common stock by the selling stockholders.

SELLING STOCKHOLDERS

Below is information with respect to the beneficial ownership of our securities by the selling stockholders as of June 28, 2013. Except as described below, the selling stockholders do not have, and have not had, any position, office or other material

14

relationship with us or any of our affiliates beyond his investment in, or receipt of, our securities, during the past three years. The selling stockholders are not broker-dealers or affiliate of a broker-dealer. See “Plan of Distribution” for additional information about the selling stockholders and the manner in which the selling stockholders may dispose of their shares. Beneficial ownership has been determined in accordance with the rules of the SEC, and generally means that a person has beneficial ownership of a security if he, she or it possesses sole or shares voting or investment power of that security, and includes option that are currently exercisable or exercisable within 60 days. Our registration of these securities does not necessarily mean that the selling stockholders will sell any or all of the securities covered by this prospectus. The percentages for the selling stockholders are based on 54,028,758 outstanding shares of common stock, plus the additional shares that the selling stockholders are deemed to beneficially own as set forth in the table. The selling stockholders may sell all, some or none of their securities in this offering. See “Plan of Distribution.”

| Name and address of selling stockholder | Number of shares beneficially owned prior to the offering | Number of shares offered | Number of shares owned after the offering | Percentage of shares owned after the offering |
|---|---|--------------------------|---|---|
| Seng Wei Seow | 1,988,123 (1) | 8,583,333 (2) | — | — % |
| Foo Joo Loong | 2,500,000 (3) | 2,500,000 | — | — % |

(1) Includes (i) shares of common stock issuable upon conversion of the Series A Preferred Stock previously issued in the first closing under the Seow Purchase Agreement, (ii) shares of common stock issuable upon exercise of the warrants previously issued in the first closing under the Seow Purchase Agreement, and (iii) 300,623 shares owned prior to the first closing.

(2) Represents (i) shares of common stock issuable upon conversion of the Series A Preferred Stock issued or issuable at the first and second closing under the Seow Purchase Agreement, (ii) shares of common stock issuable upon exercise of the warrants previously issued or issuable at the first and second closing under the Seow Purchase Agreement, and (iii) shares of common stock which may be issued from time to time in the event that the issuer elects to pay dividends or make-whole amounts (if any) on such Series A Preferred Stock in the form of common stock, rather than cash.

(3) Represents shares of common stock issued under the Loong Purchase Agreement.

PLAN OF DISTRIBUTION

The selling stockholders of the common stock and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their shares of common stock on the NASDAQ Global Market or any other stock exchange, market or trading facility on which the shares are traded or in private transactions. These sales may be at fixed or negotiated prices. The selling stockholders may use any one or more of the following methods when selling shares:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales entered into after the effective date of the registration statement of which this prospectus is a part;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
-

through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
• a combination of any such methods of sale; or
• any other method permitted pursuant to applicable law.

Table of Contents

Broker-dealers engaged by the selling stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the selling stockholders (or, if any broker-dealer acts as agent for the purchaser of shares, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440.

In connection with the sale of the common stock or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of the common stock short and deliver these securities to close out its short position, or loan or pledge the common stock to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The selling stockholders may be deemed underwriters within the meaning of the Securities Act and any broker-dealers or agents that are involved in selling the shares may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the shares purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. The selling stockholders have informed the Company that they do not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the common stock. In no event shall any broker-dealer receive fees, commissions and markups which, in the aggregate, would exceed five percent (5%).

The Company is required to pay certain fees and expenses incurred by the Company incident to the registration of the shares. The Company has agreed to indemnify the selling stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

Because the selling stockholders may be deemed “underwriters” within the meaning of the Securities Act, they will be subject to the prospectus delivery requirements of the Securities Act including Rule 172 thereunder. In addition, any securities covered by this prospectus which qualify for sale pursuant to Rule 144 under the Securities Act may be sold under Rule 144 rather than under this prospectus. There is no underwriter or coordinating broker acting in connection with the proposed sale of the resale shares by the selling stockholders.

We agreed to keep this prospectus effective until all of the shares covered by the registration statement (i) have been sold, thereunder or pursuant to Rule 144, or (ii) (A) may be sold without volume or manner-of-sale restrictions pursuant to Rule 144 and (B) (I) may be sold without the requirement for the Company to be in compliance with the current public information requirement under Rule 144 or (II) the Company is in compliance with the current public information requirement under Rule 144, or (iii) no shares are then outstanding, as determined by the counsel to the Company pursuant to a written opinion letter to such effect, addressed and acceptable to the Company's transfer agent and the affected holder of the shares. The resale shares will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale shares may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale shares may not simultaneously engage in market making activities with respect to the common stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the selling stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of shares of the common stock by the selling stockholders or any other person. We will make copies of this prospectus available to the selling stockholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale.

EXPERTS

The financial statements in our Annual Report on Form 10-K for the year ended December 31, 2012 have been audited by Hein & Associates LLP, an independent registered public accounting firm, to the extent and for the periods set forth in their report, and are incorporated in this prospectus by reference in reliance upon such report and upon the authority of such firm as experts in accounting and auditing.

LEGAL MATTERS

The validity of the securities offered hereby will be passed on by Faegre Baker Daniels LLP, Boulder, Colorado.

INFORMATION INCORPORATED BY REFERENCE

This prospectus is part of a registration statement on Form S-3. The SEC allows this filing to “incorporate by reference” information that the Company previously has filed with the SEC. This means the Company can disclose important information to you by referring you to other documents that it has filed with the SEC. The information that is incorporated by reference is considered part of this prospectus, and information that the Company files later will automatically update and may supersede this information. For further information about the Company and the securities being offered, you should refer to the registration statement and the following documents that are incorporated by reference:

• Our annual report on Form 10-K filed on March 14, 2013, which contains audited financial statements for the fiscal year ended December 31, 2012;

• Our definitive proxy statement on Schedule 14A filed on April 29, 2013;

• Our quarterly report on Form 10-Q filed on May 9, 2013;

• Our current reports on Form 8-K filed on January 25, 2013, May 9, 2013, June 7, 2013 and June 21, 2013;

• All other reports filed by us pursuant to Section 13(a) or 15(d) of the Exchange Act since the end of the fiscal year covered by the annual report referred to above; and

• The description of our common stock contained in Forms 8-A filed on June 19, 2006 and August 8, 2006 and any amendments or reports filed for the purpose of updating such description.

All documents filed by the Company subsequent to those listed above with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, prior to the termination of the offering, shall be deemed to be incorporated by reference into this prospectus and to be a part hereof from the date of filing of such documents. Any statement contained in a document incorporated by reference herein shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

You may request a copy of all documents that are incorporated by reference in this prospectus by writing or telephoning us at the following address and number: Ascent Solar Technologies, Inc., Attention: Corporate Secretary, 12300 North Grant Street, Thornton, Colorado 80241, telephone (720) 872-5000. We will provide copies of all documents requested (not including exhibits to those documents, unless the exhibits are specifically incorporated by reference into those documents or this prospectus) without charge.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus is part of a registration statement on Form S-3 filed with the SEC under the Securities Act. This prospectus does not contain all the information set forth in the registration statement because certain information has been incorporated into the registration statement by reference in accordance with the rules and regulations of the SEC. Please review the documents incorporated by reference for a more complete description of the matters to which such documents relate.

We are subject to the informational reporting requirements of the Exchange Act. In accordance with the Exchange Act, we file reports, proxy statements, and other information with the SEC. You can inspect and copy these reports, proxy statements, and other information at the Public Reference Room of the SEC, 100 F Street, N.E., Washington, D.C. 20549, at prescribed rates. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference rooms. Our SEC filings are also available on the SEC's web site. The address of this site is <http://www.sec.gov>.

INDEMNIFICATION

Our Certificate of Incorporation contains provisions that limit the liability of our directors for monetary damages to the fullest extent permitted by Delaware law. Consequently, our directors will not be personally liable to stockholders for monetary damages for any breach of fiduciary duties as directors, except liability for the following:

- Any breach of their duty of loyalty to our company or our stockholders;
- Acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law;

• Unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the Delaware General Corporation Law; and
• Any transaction from which the director derived an improper personal benefit.

Our Bylaws provide that we are required to indemnify our directors and officers and may indemnify our employees and other agents to the fullest extent permitted by Delaware law. Our Bylaws also provide that we shall advance expenses incurred by a director or officer before the final disposition of any action or proceeding upon receipt of an undertaking from or on behalf of that director or officer to repay the advance if it is ultimately determined that he or she is not entitled to be indemnified. We have entered and expect to continue to enter into agreements to indemnify our directors, executive officers and other employees as determined by the Board. These agreements provide for indemnification for related expenses including attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding. We believe that these provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers. We also maintain directors' and officers' liability insurance.

The limitation of liability and indemnification provisions in our Certificate of Incorporation and Bylaws may discourage stockholders from bringing a lawsuit against our directors for breach of their fiduciary duty. They may also reduce the likelihood of derivative litigation against our directors and officers, even though an action, if successful, might benefit us and other stockholders. Furthermore, a stockholder's investment may be adversely affected to the extent that we pay the costs of settlement and damage awards against directors and officers as required by these indemnification provisions. At present, there is no pending litigation or proceeding involving any of our directors, officers or employees regarding which indemnification is sought, and we are not aware of any threatened litigation that may result in claims for indemnification.

DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION OF SECURITIES ACT LIABILITIES

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling us pursuant to the foregoing provisions, we have been informed that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

DEALER PROSPECTUS DELIVERY OBLIGATION

Until the date that is 90 days from the date of this prospectus, all dealers that effect transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to the dealers' obligation to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

Table of Contents

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The estimated expenses of the offering, all of which are to be borne by the Registrant, are as follows:

| | |
|--------------------------------|----------|
| SEC Registration Fee | \$ 1,122 |
| Printing and Engraving * | 5,000 |
| Accounting Fees and Expenses * | 15,000 |
| Legal Fees and Expenses * | 15,000 |
| Transfer Agent Fees * | 5,000 |
| Miscellaneous * | 3,878 |
| Total* | \$45,000 |

* Estimated

Item 15. Indemnification of Directors and Officers.

Under Delaware law, a corporation may indemnify any person who was or is a party or is threatened to be made a party to an action (other than an action by or in the right of the corporation) by reason of his service as a director or officer of the corporation, or his service, at the corporation's request, as a director, officer, employee or agent of another corporation or other enterprise, against expenses (including attorneys' fees) that are actually and reasonably incurred by him ("Expenses"), and judgments, fines and amounts paid in settlement that are actually and reasonably incurred by him, in connection with the defense or settlement of such action, provided that he acted in good faith and in a manner he reasonably believed to be in or not opposed to the corporation's best interests, and, with respect to any criminal action or proceeding, had no reasonable cause to believe that his conduct was unlawful. Although Delaware law permits a corporation to indemnify any person referred to above against Expenses in connection with the defense or settlement of an action by or in the right of the corporation, provided that he acted in good faith and in a manner he reasonably believed to be in or not opposed to the corporation's best interests, if such person has been judged liable to the corporation, indemnification is only permitted to the extent that the Court of Chancery (or the court in which the action was brought) determines that, despite the adjudication of liability, such person is entitled to indemnity for such Expenses as the court deems proper. The General Corporation Law of the State of Delaware also provides for mandatory indemnification of any director, officer, employee or agent against Expenses to the extent such person has been successful in any proceeding covered by the statute. In addition, the General Corporation Law of the State of Delaware provides the general authorization of advancement of a director's or officer's litigation expenses in lieu of requiring the authorization of such advancement by the board of directors in specific cases, and that indemnification and advancement of expenses provided by the statute shall not be deemed exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled under any bylaw, agreement or otherwise.

The Bylaws of the Company provide for the broad indemnification by the directors and officers of the Company and for advancement of litigation expenses to the fullest extent permitted by current Delaware law. The Company also has entered into indemnification contracts with its directors and officers.

The Company maintains a policy of directors and officers liability insurance which reimburses the Company for expenses which it may incur in connection with the foregoing indemnity provisions and which may provide direct indemnification to directors and officers where the Company is unable to do so.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of Registrant pursuant to the above, the Registrant has been advised that in the

opinion of the SEC such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable.

II - 1

Table of Contents

Item 16. Exhibits.

| Exhibit Number | 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 January 23, 2006 (Reg. No. 333-131216), as amended) |
| 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 filed November 10, 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 January 23, 2006 (Reg. No. 333-131216), as amended) |
| 4.2 | Certificate of Designations of Series A Preferred Stock* |
| 4.3 | Form of Warrant* |
| 5.1 | Opinion of Faegre Baker Daniels LLP** |
| 10.1 | Stock Purchase Agreement, dated April 26, 2013, between the Company and Foo Joo Loong* |
| 10.2 | Securities Purchase Agreement, dated June 17, 2013, between the Company and Seng Wei Seow* |
| 23.1 | Consent of Hein & Associates LLP** |
| 23.3 | Consent of Faegre Baker Daniels LLP (included in Exhibit 5.1) |

*Previously filed.

** Filed herewith.

Item 17. Undertakings.

1. The undersigned registrant hereby undertakes to file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933.

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement.

Provided, however, that paragraphs (B)(1)(i) and (B)(1)(ii) of this section do not apply if the registration statement is on Form S-3, Form S-8 or Form F-3, and the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in the registration statement.

2. The undersigned registrant hereby undertakes that, for the purpose of determining any liability under the Securities Act of 1933, as amended, each such post-effective amendment shall be deemed to be a new registration statement relating to the

II - 2

Table of Contents

securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

3. The undersigned registrant hereby undertakes to remove from registration by means of a post-effective amendment any of the securities being registered that remain unsold at the termination of the offering.

4. The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

5. The undersigned registrant hereby undertakes that, for the purposes of determining liability to any purchaser: If the registrant is subject to Rule 430C, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

6. That, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

7. Insofar as indemnification for liabilities arising under the Securities Act of 1933, as amended, may be permitted to directors, officers and controlling persons of the undersigned registrant according the foregoing provisions, or otherwise, the undersigned registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933, as amended, and will be governed by the final adjudication of such issue.

Table of Contents

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this amendment no. 1 to the registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in Thornton, Colorado on July 26, 2013.

Ascent Solar Technologies, Inc.

By: /s/ VICTOR LEE

Victor Lee

President and Chief Executive Officer

Table of Contents

POWER OF ATTORNEY

Pursuant to the requirements of the Securities Act, this amendment no. 1 to the registration statement has been signed below by the following persons in the capacities and on the dates indicated.

| Signature | Title | Date |
|--|---|---------------|
| /s/ VICTOR LEE Lee Kong Hian (aka Victor Lee) | President & Chief Executive Officer Director (Principal Executive Officer) | July 26, 2013 |
| /s/ GARY GATCHELL Gary Gatchell | Chief Financial Officer (Principal financial and accounting officer) | July 26, 2013 |
| * Amit Kumar, Ph.D. | Chairman of the Board of Directors | July 26, 2013 |
| * Kim J. Huntley | Director | July 26, 2013 |
| * G. Thomas Marsh | Director | July 26, 2013 |
| * Xu Biao (aka Winston Xu) | Director | July 26, 2013 |

* By /s/ GARY GATCHELL
Gary Gatchell, as
Attorney-in-Fact

Table of Contents

EXHIBIT INDEX

| Exhibit Number | 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 January 23, 2006 (Reg. No. 333-131216), as amended) |
| 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 filed November 10, 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 January 23, 2006 (Reg. No. 333-131216), as amended) |
| 4.2 | Certificate of Designations of Series A Preferred Stock* |
| 4.3 | Form of Warrant* |
| 5.1 | Opinion of Faegre Baker Daniels LLP** |
| 10.1 | Stock Purchase Agreement, dated April 26, 2013, between the Company and Foo Joo Loong* |
| 10.2 | Securities Purchase Agreement, dated June 17, 2013, between the Company and Seng Wei Seow* |
| 23.1 | Consent of Hein & Associates LLP** |
| 23.3 | Consent of Faegre Baker Daniels LLP (included in Exhibit 5.1) |

* Previously filed.

** Filed herewith.