

# Bringing Solar Power to Your World



In October 2005, ITN Energy Systems spun-off Ascent Solar Technologies to commercialize flexible photovoltaic (PV) modules using proprietary technology. This unique technology, assigned and licensed to Ascent Solar by ITN, employs a proprietary manufacturing process which deposits multiple layers of materials, including a thin-film of highly efficient copperindium-gallium-diselenide (CIGS) semiconductor material, on a flexible, lightweight, plastic substrate. The layers are laser patterned to create interconnected PV cells, or PV modules, in a process known as monolithic integration. This technology provides Ascent Solar with significant advantages over both the crystalline silicon (c-Si) based PV manufacturers as well as other thin-film manufacturers that use rigid and/or heavier substrate materials such as glass or metals.

## Company Vision and Mission

### Our Vision

We bring the POWER of the SUN to enable new life experiences with solar applications to Everyone, Everywhere.

### Our Mission

We are a leader in manufacturing innovative, unique, high-performance, flexible thin-film solar powered products for existing and emerging electronic, transportation, building, defense and space applications. We focus our results-oriented teams to effectively manage market opportunities, achieve customer satisfaction and expand market share.

## Ascent Solar Technologies – Bringing Solar Power to Your World

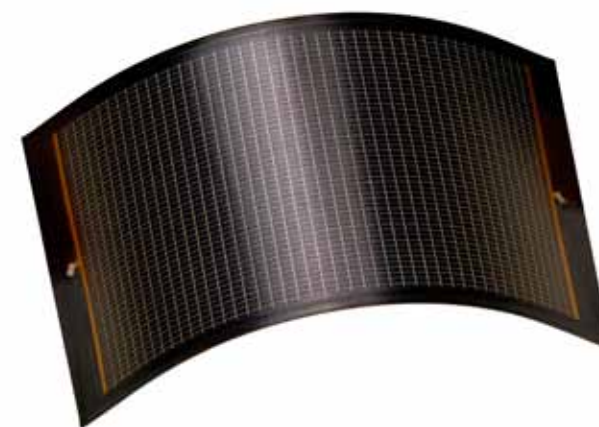
Ascent Solar brings flexible energy to products that people and businesses use every day. As a leader in photovoltaic solutions, we work with visionary designers, manufacturers and integrators that add solar power to consumer electronics, transportation, buildings, and defense applications. Ascent Solar WaveSol™ modules are lightweight, durable and flexible and can easily integrate into a variety of solutions.

| WaveSol Products                                 |                 |       |         |
|--|-----------------|-------|---------|
| WaveSol Light                                    | Size            | Watts | Weight  |
| WaveSol Light - 320 (Available First Half, 2011) | 5-meter         | 320   | TBD     |
| WaveSol Light - 280 (Available First Half, 2011) | 5-meter         | 280   | TBD     |
| WaveSol Light - 240 (Available First Half, 2011) | 5-meter         | 240   | TBD     |
| WaveSol Light - 160 (Available First Half, 2011) | 5-meter         | 160   | 3.4 kg  |
| WaveSol Light - 140                              | 5-meter         | 140   | 3.4 kg  |
| WaveSol Light - 120                              | 5-meter         | 120   | 3.4 kg  |
| WaveSol Light - 55                               | 2-meter         | 55    | 1.3 kg  |
| WaveSol Light - 50                               | 2-meter         | 50    | 1.3 kg  |
| WaveSol Light - 45                               | 2-meter         | 45    | 1.3 kg  |
| WaveSol Light - 40                               | 2-meter         | 40    | 1.3 kg  |
| WaveSol Light - 21                               | 1-meter         | 21    | 0.65 kg |
| WaveSol Light - 24                               | 1-meter         | 24    | 0.65 kg |
| WaveSol Light - 27                               | 1-meter         | 27    | 0.65 kg |
| WaveSol Mobile                                   | Size            | Watts | Weight  |
| WaveSol Mobile                                   | 344 mm x 170 mm | 4.5   | 105g    |
| WaveSol Mobile                                   | 344 mm x 170 mm | 4     | 105g    |
| WaveSol Mobile (Fringe)                          | Size            | Watts | Weight  |
| WaveSol Mobile                                   | 370 mm x 202 mm | 4.5   | 115g    |
| WaveSol Mobile                                   | 370 mm x 202 mm | 4     | 115g    |
| WaveSol USB                                      | Size            | Watts | Weight  |
| WaveSol USB 3.2 (Available Q1, 2011)             | 320 mm x 152 mm | 3.2   | 83g     |
| WaveSol USB 6.5 (Available Q1, 2011)             | 667 mm x 152 mm | 6.5   | 160g    |
| WaveSol USB 9.8 (Available Q1, 2011)             | 989 mm x 152 mm | 9.8   | 250g    |

For BIPV product information, email: [bipv@ascentsolar.com](mailto:bipv@ascentsolar.com)

For EIPV product information, email: [eipv@ascentsolar.com](mailto:eipv@ascentsolar.com)

For Defense product information, email: [military@ascentsolar.com](mailto:military@ascentsolar.com)



093008-Rev.00

## Ascent Solar Technologies, Inc.

12300 N. Grant St.  
 Thornton, CO 80241  
 Phone: +1 720-872-5000  
 Fax: +1 720-872-5077  
[info@ascentsolar.com](mailto:info@ascentsolar.com)  
[www.ascentsolar.com](http://www.ascentsolar.com)



# Ascent Solar Flexible Energy

# High Technology = High Power

## Commercial Production Demonstrated

Ascent Solar's flexible, thin-film technology performance, verified by the National Renewable Energy Laboratory at 11.4% module level efficiency, is a key indication of both the manufacturing uniformity and performance potential of our products. This is just the beginning of what we believe to be a superior thin-film PV product. We continue to expand the performance envelope of this technology to build more efficient, flexible and durable products that meet the highest market demands.

## Winner of the R&D 100 Award

Ascent Solar has been named as a 2010 R&D 100 Award Winner by R&D Technology Magazine. This award recognizes the 100 most technologically significant new products and processes of the year. This achievement puts us among an elite group of global companies

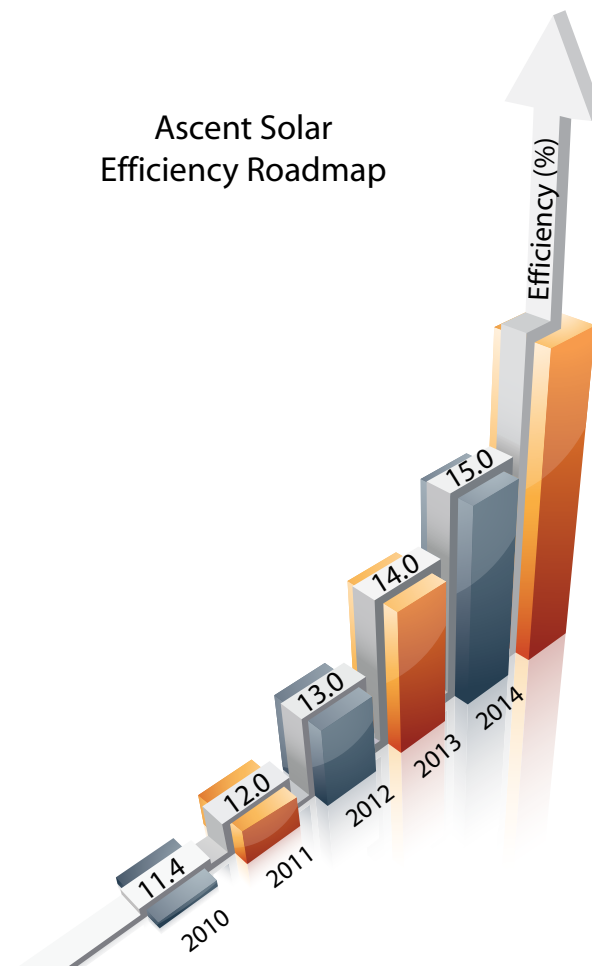
(non-research lab). Ascent Solar was the only PV focused company to receive such an award this year.



## Ascent Solar Wins Multi-Million Dollar Darpa Contract

The Defense Advanced Research Projects Agency (DARPA) has awarded Ascent Solar a contract under the Low-Cost Lightweight Portable Photovoltaics (PoP) solicitation. The program, entitled "Flexible High-performance Tandem-junction PV Array", consists of three gated phases. The first phase of the program is an 18 month contract valued at approximately \$3.8M. The entire program is anticipated to continue over 54 months. The goal of PoP is to demonstrate low-cost, lightweight photovoltaics (PV) that can stand up to battle conditions and environmental extremes while delivering a power conversion efficiency of 20% or greater.

Ascent Solar Efficiency Roadmap



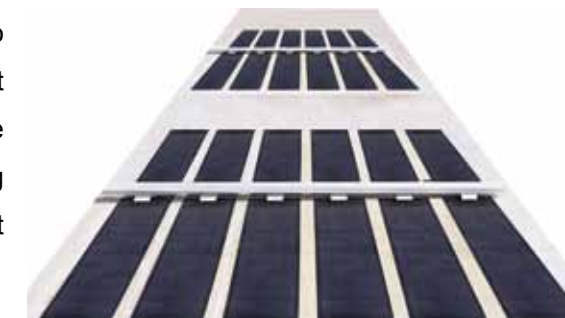
# Products & Applications



## WaveSol™ Light

Ascent Solar's WaveSol™ Light thin-film products easily integrate into innovative building integrated photovoltaic (BIPV) designs. Ascent's best in class power density improves overall system performance and these modules harness the power of the sun, transforming ordinary building materials into high value, alternative energy solutions. WaveSol™ Light delivers flexible energy to off-grid and grid-connected PV solutions.

- Facades
- Solar Control Solutions
- Low Slope Roofs
- Pitched Roofs



## WaveSol™ Mobile

Ascent Solar is making flexible energy for consumer products a reality. The Ascent Solar WaveSol™ Mobile is an incredibly versatile module which enables a number of innovative electronic integrated photovoltaic (EIPV) devices including laptop or cell phone chargers, 12-volt battery chargers, or integrated solar bags. WaveSol Mobile offers best in class power density and durability in a lightweight and flexible form factor that easily integrates with consumer end-products.

- Portable Power Products
- 12-Volt Battery Solutions
- Integrated Consumer Electronics



## WaveSol™ Extreme

Ascent Solar's WaveSol™ Extreme flexible, thin-film PV modules enable innovative solar-powered products which increase the efficiency of military operations. With Ascent Solar's products defense integrators and manufacturers can create the lightest weight, most durable military products powered by the high-efficiency and reliability of solar. WaveSol Extreme is MIL-STD-810G certified.

- Tactical Shelters
- Man Portable Solar Chargers



# Key Markets & Solutions

## Building Integrated Photovoltaics (BIPV) & Building Applied Photovoltaics (BAPV)

With today's rising energy costs and pressure to reduce carbon emissions, architects, building designers and construction planners are putting more focus on the integration of solar technology into their choice of building materials. Ascent Solar provides flexible modules for integration into building materials enabling cost-effective, high-performance solar solutions. Our built-to-last solar modules for roofing and shading applications decrease energy costs and provide a clean, renewable source of power.



## Transportation

Ascent Solar is paving the way in providing clean energy solutions for the electrification of transportation. Ascent Solar's flexible energy solutions provide transportation and automobile company's major fuel savings by helping to reduce emissions and shorten cooling times.

## Electronic Integrated Photovoltaics (EIPV)

Solar technology has become increasingly popular in our everyday lives. Ascent Solar's flexible energy solutions can be integrated in many different product applications offering a better overall solution for companies looking to offer green, solar-integrated products. We are a technology enabler for manufacturers and integrators offering a multitude of solar-powered consumer electronic products, including cell phones, bags with battery chargers, laptop computers, iPods®, and tents. The portable power solutions made possible by our rugged and efficient modules are nearly endless.



## Defense

Ascent Solar defense modules enables increased supply chain independence over traditional diesel gensets and other compromising energy forms. These modules are produced with a non-reflective, durable finish, which significantly reduces glare. This significantly minimizes risk of incidental detection when deployed.