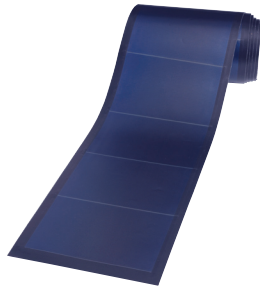


## About UNI-SOLAR®

UNI-SOLAR brand products are the world leader in flexible solar modules. The UNI-SOLAR photovoltaic laminate (PVL) is the only flexible photovoltaic product produced in commercially viable volumes. UNI-SOLAR laminates are well-suited to the commercial roofing and building-integrated photovoltaic (BIPV) markets, as they integrate easily into most commercial roofing materials. The result is a durable, easily installed solution for rooftop generation of clean, renewable energy.



## Product Overview

UNI-SOLAR photovoltaic laminates are composed of a thin-film photovoltaic material encapsulated in UV stabilized, weather-resistant polymers. The laminates are manufactured using a proprietary vacuum deposition and large-scale, roll-to-roll manufacturing process, which deposits amorphous silicon as a series of thin film layers onto a large roll of stainless steel.

UNI-SOLAR laminates are currently manufactured for commercial and BIPV roofing applications and are being developed for the residential roofing market. UNI-SOLAR laminates are easily integrated with roofing materials and can be installed without roof penetrations or mounting hardware. Weighing only 0.7 lbs/sq ft., UNI-SOLAR laminates do not require costly structural upgrades to low load bearing roofs. UNI-SOLAR laminates are sold to roofing material manufacturers and specialty solar installers/integrators, who incorporate our PV laminates into their products and systems for commercial sale.



Auburn Hills II Manufacturing Facility  
Auburn Hills, Michigan

## Key Features and Benefits

UNI-SOLAR laminates possess key attributes that make them ideal for rooftop and BIPV applications, including:

- / Up to 20% more energy production per installed watt compared to conventional crystalline modules
- / Easily installed without roof penetrations or mounting hardware
- / Lightweight and resistant to wind uplift
- / Highly durable and impact-resistant
- / Shadow and low-light tolerant
- / Excellent high-temperature performance
- / Flexible to match architectural roof curvatures or to integrate with membrane roofing materials



Rome Trade Fair - 1.4 MW  
Rome, Italy

## Company Description

United Solar Ovonic LLC, a subsidiary of Energy Conversion Devices, Inc. (ECD, NASDAQ: ENER), is the leader in photovoltaics for the building integrated and commercial rooftop markets, one of the fastest growing segments of the solar power industry. The company manufactures and sells thin-film solar laminates that convert sunlight to energy using proprietary technology. ECD's UNI-SOLAR® brand products are unique because of their flexibility, light weight, ease of installation, durability, and real-world energy production.

Energy Conversion Devices has a history of solar innovation. Its first prototype machine for manufacturing flexible thin-film photovoltaics was built in 1981 and the first production volume machine (2 MW) became operational in 1991. Since then, the production of UNI-SOLAR laminates has increased rapidly. The Auburn Hills 1 (AH1) facility, with 28 MW annual production capacity, began commercial production in May 2003. Auburn Hills 2 (AH2) operates at 30 MW annually and began commercial production in December 2006.

In March of 2007, ECD announced that Greenville, Michigan, was selected as the location of its third solar cell manufacturing plant with an annual production capacity of 60 MW. Greenville 1 (GV1) became operational in November 2007. A fourth manufacturing facility with an annual production capacity of 60 MW was added and Greenville 2 (GV2) became operational in September of 2008.

The company announced further expansion plans of its nameplate capacity in response to the growing global demand for thin-film, flexible solar laminates. The expansion includes adding 120 MWs nameplate capacity to its existing Greenville campus and a new 120 MW solar cell manufacturing plant in Battle Creek, Michigan.

Other major announcements in 2008 included ECD reaching profitability, closing a \$400 million financing deal enabling its growth to 1 GW in capacity, and unveiling the largest rooftop installation in the world of 12 MW at a General Motors facility in Zaragoza, Spain.



General Motors Facility (11.8 MW) • Zaragoza, Spain  
World's Largest Rooftop Solar System

## Manufacturing Facilities

Auburn Hills I, MI	(167,000 Square Feet)
Auburn Hills II, MI	(170,000 Square Feet)
Greenville I, MI	(expanding to 280,000 Square Feet)
Greenville II, MI	(expanding to 280,000 Square Feet)
Battle Creek, MI	(under construction, 265,000 Square Feet)
Tijuana, Mexico	(288,000 Square Feet)

**All solar cells are made in Michigan.**

## Partial Customer List

- / General Motors (Zaragoza, Spain): 11.8 MW
- / Volkswagen AG (Wolfsburg, Germany): 2.4 MW
- / US Army housing (Oahu, HI): 2 MW
- / TESCO Distribution Center (Los Angeles, CA): 2 MW
- / New Trade Fair (Rome, Italy): 1.4 MW

**Call 1.800.528.0617 or visit us at [www.uni-solar.com](http://www.uni-solar.com)**

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UNI-SOLAR laminates are ideal for commercial rooftops and carports. UNI-SOLAR offers three basic application options, all of which are scalable, easy to install, and deliver the best return on your investment.

- / The UNI-SOLAR standard product comes with an adhesive backing, allowing for easy 'peel-and-stick' application to existing metal and membrane rooftops in good condition.



Army Hawaii Family Housing LLC (2 MW) • Schofield Barracks, Oahu, Hawaii  
Actus Lend Lease

- / UNI-SOLAR laminates can be factory-integrated into a membrane sheet, or "solar mat," to create an easily deployed, removable solution for commercial rooftops. These sheets are attached directly to the roof via tape or hot air welding.
- / For new construction or re-roof projects, select roofing material manufacturers offer UNI-SOLAR laminates that are factory-integrated into metal, membrane, or mod-bit roofing materials and delivered to the worksite as roofing and solar as one.



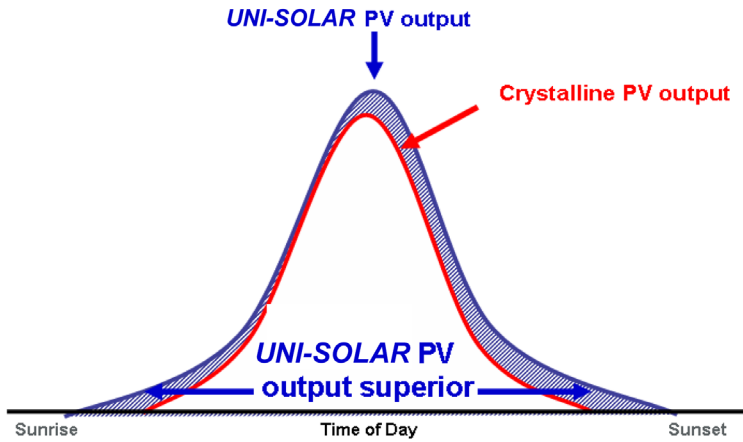
Coca-Cola Plant (329 kW) • Los Angeles, California  
Installed by, and Photo Courtesy of, Solar Integrated Technologies

Whatever UNI-SOLAR photovoltaic roofing solution you choose, you will be rewarded with benefits that result in the lowest costs and easiest ownership over the lifetime of your solar electric system.

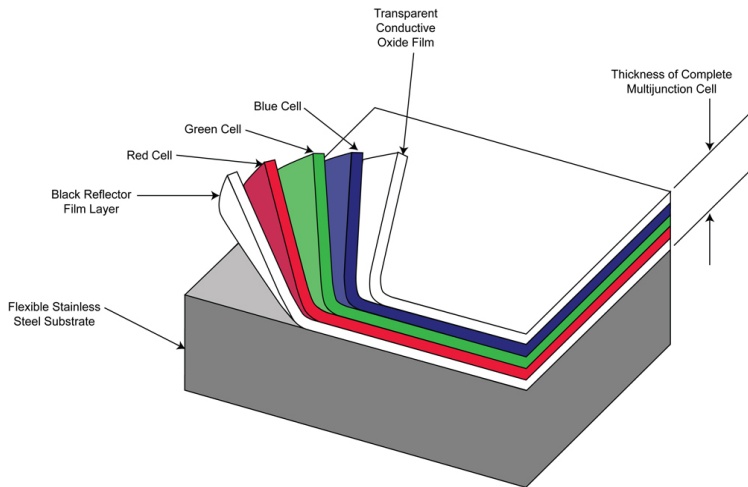
- / **Fewer parts.** UNI-SOLAR laminates are adhered directly to roofing materials; no racking system is required. This translates directly into material and labor cost savings, often resulting in a cost benefit of \$0.50-\$0.90/Wp. In addition, the lower voltage of our laminates, compared to other thin-film products, permits a greater number of laminates per string. Wiring, components and labor for interconnections are reduced, further lowering balance-of-system costs.
- / **No roof penetrations.** Because UNI-SOLAR laminates are adhered directly to roofing materials, there are no penetrations to the roof deck. UNI-SOLAR photovoltaic installations will not increase the risk of roof leaks.
- / **No structural roof reinforcements.** UNI-SOLAR laminates weigh less than one pound per square foot. Traditional glass modules can add 3-5 lbs/sq ft. of distributed weight to a roof and are typically installed on racks, which create higher point loads and increased wind loading. The combined weight and wind load of these competitive systems add risk to the building envelope and often require costly structural roof reinforcements.
- / **Extreme weather resistance.** UNI-SOLAR's "Wind Uplift Rating" is the best in the industry. Solar roofing systems using our technology have achieved wind ratings >185 MPH in the South Pacific and Florida. Glass-free modules mean you don't have to worry about breakage due to hail or other debris that Mother Nature might send your way.
- / **Easy maintenance.** UNI-SOLAR's integrated solution means that your roof will continue to be accessible. There is no racking system to trap debris and cause maintenance issues. The laminates themselves require very little maintenance and their low-weight and durability provide years of trouble-free energy production.
- / **Theft and vandalism resistant.** Racking systems typically used with traditional crystalline modules offer an opportunity for theft that is eliminated by UNI-SOLAR's direct-bond solution. In addition, our glass-free products are not prone to damage by vandals.
- / **25-year warranty.** UNI-SOLAR laminates are backed by a 25-year limited power output warranty, guaranteeing that the laminates will produce at least 80% of the minimum power output rating at 25 years from the date of sale.

**Low installation, balance-of-system, and ownership costs, plus UNI-SOLAR's superior energy production, mean UNI-SOLAR delivers the best return on your investment.**

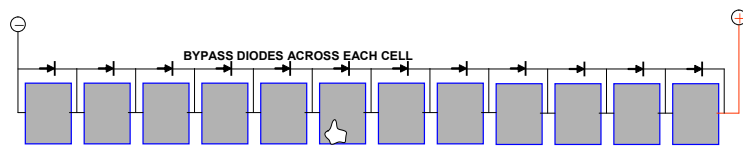
UNI-SOLAR's unique triple-junction amorphous silicon technology and flexible laminate construction produce up to 20% more energy per rated watt than traditional crystalline modules. UNI-SOLAR laminates produce energy for a longer portion of the day and perform better in real-world conditions.



Each UNI-SOLAR laminate utilizes the unique triple-junction thin-film silicon solar cells, where the blue, green and red lights of the solar spectrum are absorbed in different layers of the cell. This technology results in better performance in low and diffuse light conditions.



By-pass diodes are connected across each cell, allowing the modules to produce power even when partially shaded or soiled.



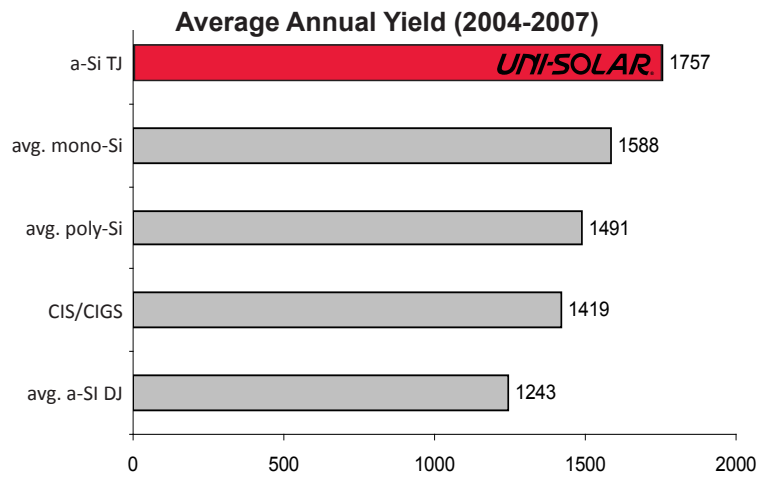
**UNI-SOLAR PV MODULE CELL CONNECTIONS**

Shade/Soil any one cell = Output loss of <4.5% (22-cell Laminate)  
Area of shade/soiling required to cover one cell = 9" x 14" (126 sq in)

In the solar business today, system purchases are made on a cost-per-watt basis. But, the return on investment (ROI) is determined by the amount of electricity, in kWh, the system produces. Third-party testing, conducted over a number of years in real-world conditions, shows that UNI-SOLAR produces more energy for your purchased watt and, therefore, provides the best return on investment.

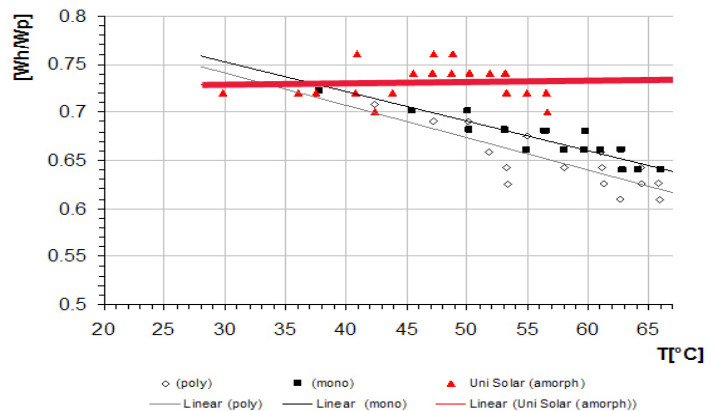
**Site: Tucson, Arizona, USA**

**Source: Tucson Electric Power, Arizona, USA**



UNI-SOLAR laminates provide better energy yield at high temperatures. Solar products are rated based on standard test conditions. In real outdoor conditions, cell temperatures increase with increased solar irradiation, reaching levels much higher than standard test conditions. Crystalline silicon modules experience a significant decline in kWh output at high temperature, while UNI-SOLAR laminates do not. As a result, UNI-SOLAR laminates produce more energy when you need it most.

**Yield in function of module temperature, Urbino, Central Italy (2003-2004)**



Source: University of Urbino, Urbino, Italy