

Integrated Solar Products

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Product Integrated, Building Integrated

PowerFilm Solar is a worldwide technology and product leader in photovoltaics. The company develops, manufactures, and markets the PowerFilm line of next-generation solar panels that can be easily integrated with products and buildings in a low-cost way. PowerFilm Solar was the first and remains the only company in the world that manufactures and sells monolithically-integrated photovoltaics on plastic using a true roll-to-roll manufacturing process. This eliminates the need for damage-prone manual connections of individual solar cells. PowerFilm is made of amorphous silicon, a natural resource in abundant supply and is cadmium free, unlike some other solar technologies. PowerFilm performs well in diverse environments, including hot sun, and does not suffer from wasted over-voltage. PowerFilm products are manufactured with single and tandem junction technology, not costly triple junction technology.

PowerFilm Advantages

- Easy and low-cost integration with products and building materials.
- Aesthetically pleasing thin and conformable design.
- World's most lightweight photovoltaics making it ultra portable.
- Durable construction, especially with monolithic integration.
- Positive environmental profile.

Technical Features

- Monolithic integration of individual cells into modules.
- Paper thin flexible plastic substrate as thin as 1 mil (0.025 mm).
- Unsurpassed flexibility enables curving around 2 inches (5 cm) in diameter.
- Specific power up to 1000 Watts/kg.
- Can be dropped, stepped on, even riddled with bullets.
- Flexible polymer substrate is durable unlike fragile glass and corrosive metal.
- Designed to meet military specifications.
- Cadmium free.

Revolutionary Technology Platform

- **Roll to Roll Manufacturing**
- **Monolithic Integration**
- **Flexible Polymer Substrate**

Integrated Solar Products

PowerFilm is available in a variety of standard and custom configurations to meet specific voltage, current, footprint, and use environment needs. PowerFilm Solar has developed technology to integrate PowerFilm with fabric, metal, and other materials.

Markets and Applications



Consumer Electronics

- Laptop Computers
- Cell Phones/ Satellite Phones
- PDA's/ GPS
- Handheld Gaming
- Portable Audio

Outdoor & Recreation

- Camping/ Hiking/ Climbing
- Hunting/ Fishing
- Walking
- Marine
- RV

Remote, Military & Disaster Relief

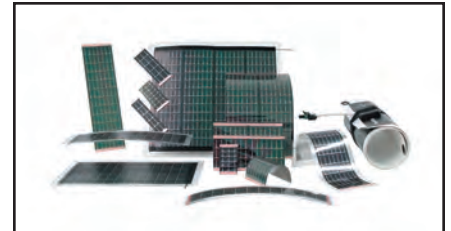
- Field Communication
- Medical Refrigeration
- Remote Sensors & Controls
- Transportation
- Air & Space
- Automobiles
- Oil & Gas

Building Integrated Photovoltaics (BIPV)

- Architectural Fabric
- Metal Roofing
- Membrane Roofing

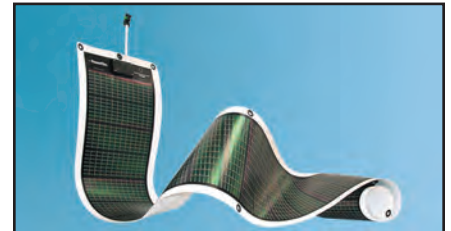
OEM Components

- Large and small standard and custom solar modules for a variety of use environments.
- Conformable to curved surfaces.
- Lightweight for low-cost shipping.



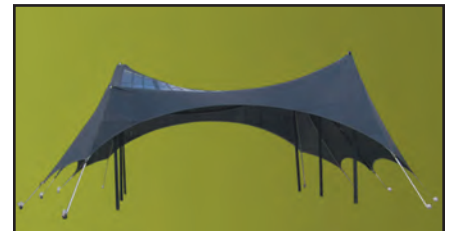
Consumer-Ready Products

- Ultra compact foldable and rollable solar battery chargers.
- Solar-recharged headphone radio.



Military Products

- AA foldable solar charger with specialized charging circuit.
- Ultra compact foldable and rollable solar battery chargers.
- Field shelters with integrated solar power: Power Shade, Temper Fly, and Quad



Building Integrated

- Architectural fabric for tensile structure design.
- Metal roofing.
- Membrane roofing.

