

Thin Flexible Solar Panels

PowerFilm

PowerFilm has developed a range of thin, flexible solar panels in a variety of sizes and configurations. The company's solar panels are manufactured on a flexible, thin plastic substrate that is as thin as 1/1000th of an inch thick, producing solar panels that are much thinner and more lightweight, flexible and durable than rigid crystalline panels. This technology enables easier integration into roofing materials and allows for simple, robust, low cost building installations. To create its solar powered products, PowerFilm has pioneered the production of thin, flexible solar panels on plastic substrates through a proprietary roll-to-roll manufacturing process.

Roll-to-roll manufacturing significantly reduces manufacturing costs. PowerFilm manufactures and sells monolithically-integrated solar panels on plastic using a true roll-to-roll manufacturing process. Monolithic integration is the automatic built-in-connection of individual solar cells. Monolithic integration reduces manufacturing costs (eliminates expensive labor for manual connection) and increases durability (eliminates stress-prone manual connections of individual solar cells).

Flexible yet durable polyimide substrate results in enhanced flexibility, paper thinness, and lighter weight. The substrate is as thin as 1 mil(0.025mm) thick. Amorphous silicon is the absorber layer in the solar panels. The amount of silicon used in PowerFilm solar panels is as low as 1% of the amount used in traditional solar panels. PowerFilm has a strong environmental profile and is cadmium free. Single and tandem junction devices are manufactured. Finished panels are encapsulated in materials appropriate for the application environment. Flexible solar panels are 13 Inches Wide and come in lengths of up to 2400 feet.

Product and Building Integration Technology

PowerFilm Solar has developed low-cost technology to integrate the solar panels with products and building materials. The solar panels can be combined with several backing materials, including fabric, metal, and fiberglass.

Building integrated solar electric power, sometimes called building integrated photovoltaics (BIPV), is the combination of thin and flexible solar panels with standard building materials such as standing seam metal roofing, single-ply elastomeric membrane roofing, or architectural fabric. Thin and flexible PowerFilm solar panels have an attractive design and can be installed in a low-cost manner. This makes these solar panels especially well suited for building integrated applications.

PowerFilm's initial building integrated solar power application is solar field shelters it has developed for the US Army, with its field shelter partner Johnson Outdoors/Eureka Tents. Shipments of solar field shelters to the US Army began in 2005.

PowerFilm is in the advanced stages of development of its 20-year lifetime building integrated solar panels for integration with metal roofing, membrane roofing, and architectural fabric. The company has completed a 10-kilowatt demonstration and evaluation project on metal roofing.

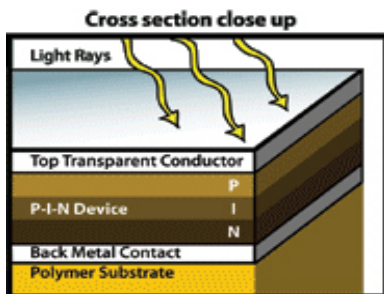
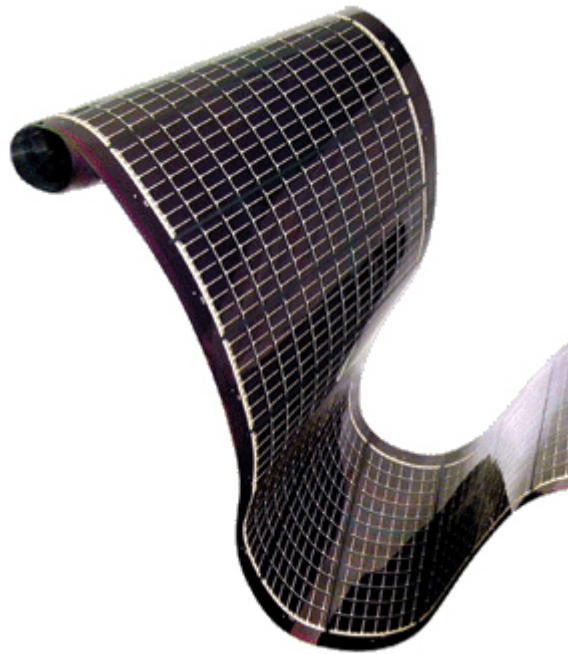
Architectural Fabric: PowerFilm can be integrated with durable single-ply roofing membrane. Single-ply roofing membrane is commonly used on commercial buildings, warehouses, hospitals, and schools. The lightweight nature of PowerFilm, along with the durability of PowerFilm, is valued in these applications. Integrating rolls of membrane roofing with roll-manufactured PowerFilm is attractive from both a sustainability and an economic perspective.

Metal Roofing: PowerFilm is integrated with standing seam metal roofing and is conformable to a variety of architectural styles. The low profile and flexibility of PowerFilm enables it to be incorporated with innovative straight or curved architectural structures. PowerFilm not only provides power but also enhances the overall building design

Source: www.powerfilmsolar.com

Nanosolar

Nanosolar is another company that produces thin, flexible solar panels. Nanosolar SolarPly™ is a light-weight solar-electric cell foil which can be cut to any size. Non-fragile, no soldering required for electrical contact. For more information, go to www.nanosolar.com/products.htm



Images of Powerfilm's Flexible Solar Panel Product (source: www.powerfilmsolar.com)