

Materials Engineering and Adhesive Expertise Help Solaro Deliver Advanced Solar Powered Attic Ventilation



The heart of Solaro's solar powered attic fan is a unique solar panel.

**Bonding, Joining
& Sealing**

Moisture, mold, and mildew — common problems found year round in homeowners' attics. For Solaro of Lake Elsinore, CA, the solution isn't a hardwired attic fan, but a green approach based on solar energy. Solaro's attic fan is a self-contained, solar-powered unit that automatically keeps attics properly ventilated.

Attic temperatures can reach more than 150°F in summer, increasing the heat inside a home and causing damage to the roof and everything under it. Unvented, the high temperature can also cost more in electricity to run air conditioning.

In winter, moisture generated by appliances or baths and showers becomes trapped in an unvented attic, condensing in the cold air to form mold and mildew.

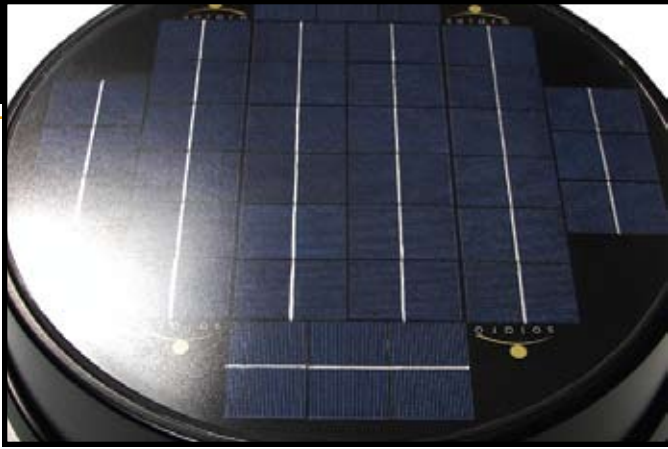
A Different Approach to Attic Ventilation

The engineers at Solaro have designed a solution to attic fan ventilation that provides a high airflow rate, a low roof profile, and is completely self-powered using the sun. The fan has a low profile to be aesthetically pleasing, coupled with a high quality motor that can ventilate up to 1,250 sq. ft.

The custom motor is precisely balanced for quiet operation. It is made of zinc coated steel to protect against corrosion. An automatic thermostat starts the high performance motor when the temperature in the attic space reaches 80°F. The aluminum 12" diameter, five blade fan is also exceedingly quiet. The attic fan assembly includes a heavy gauge, 1/8" stainless steel screen to keep everything but air out of the attic.

Solar Panel

The heart of the fan is its unique solar panel. This proprietary panel design performs from morning into night without adjustment to meet the sun's rays. The panel is a 20 Watt, high purity, multicrystalline silicon solar cell panel. It is less than 18" in diameter and used solely to power the fan. The multicrystalline cells perform extraordinarily well in dim lighting conditions so that the fan can be working automatically from before dawn until after sunset. The proprietary tempered glass panel functions in any weather.



The fan seal must provide watertight protection and withstand exposure to the elements.

Selecting the Right Converter and Adhesives

To ensure fail-safe, maintenance-free operation, Solaro is working with a flexible materials converter, Fabrico, who has experience with materials and adhesives for the solar market. Solaro requires a silicone edge seal as well as an adhesive that will affix the solar panel to the top of the fan.

Based on its materials expertise, Fabrico has selected a 3M caulk product to provide a watertight seal for the edge of the unit that will stand up to the harsh exposure to sun, rain, snow, and ice. The silicone edge seal protects against moisture and contaminants while eliminating the need for metal fasteners.

In addition, Fabrico is using a conductive adhesive to join the solar panel to the vent. The acrylic adhesive provides low outgassing and good ionic characteristics. It also delivers excellent shear strength required in an outdoor environment.

Fabrico is also investigating EVA backsheet materials, bus bars, and sealing corner materials for Solaro, as well as, the best method for affixing junction boxes to solar panels. With its materials and converting expertise, Fabrico provides Solaro with custom solutions for solar applications that require slitting, laminating, die-cutting, and printing.

Fabrico identified a silicone edge seal and conductive adhesive to connect the solar panel to the top of the fan.

Material Partners

Fabrico has strategic relationships with world-class materials suppliers, such as 3M and Loctite®, to assist its customers in selecting the best material for the intended use and to expedite materials sourcing. Whether adhesive films or liquid, all critical material properties are considered in every Fabrico project, including chemical, thermal, and moisture resistance.

With more than 30 years of materials experience, Fabrico engineers also understand the impact of material selection on the overall manufacturing process, and design material systems that optimize production efficiency and improve overall cost-effectiveness.



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