



SolarClover creators target rooftop solar systems with lightweight, durable design

Enabled by DuPont™ Tefzel® ethylene tetrafluoroethylene (ETFE)-based frontsheets



SolarClover panels weigh half as much as standard solar panels



Tefzel-based frontsheets makes solar panels exceptionally tough



Tefzel sheds dirt, so panels are self-cleaning



Hexagonal shape makes panels easier to carry and install

SUMMARY

The residential solar market is poised for major growth, thanks to decreasing costs for solar technology and increasing consumer desire to be more environmentally conscious. With ease of installation and attractiveness as the starting points for its design, Armageddon Energy of Menlo Park, CA, created the SolarClover, an innovative new solar power system designed to appeal to homeowners and installers alike. Featuring DuPont™ Tefzel® ETFE film, the hexagonal SolarClover panels are lightweight, durable and aesthetically pleasing.

“With the Tefzel® ETFE, the panels are half the weight, they don’t need to be cleaned, and they’re cheaper to produce.”

Challenge

In designing its new residential rooftop solar system, Armageddon Energy started from a blank page, rather than adapting a design based on conventional solar panels using glass as the foundation for the panel’s frontsheets. When the development team came up with the inventive SolarClover system, designed to be easy to install and to appeal to homeowners, the challenge was to find the right materials that could achieve these objectives.

Solution

By taking glass out of the equation, the Armageddon team was able to make the panels smaller, lighter, more durable and less expensive. Instead of glass, the SolarClover panels feature DuPont™ Tefzel® ETFE-based frontsheets. Flexible, lighter and more durable than glass, the Tefzel® clear thermoplastic also delivers a very high level of light transmittance in the operating frequency range of the solar cells, which provides high power. Tefzel® is flexible and unbreakable; as a result, corners will not chip, making it easier to install, and it has no sharp edges, making it safer than glass.

Results

Each SolarClover system is comprised of three hexagonal panels, mounted on a triangular rack which is affixed to a roof’s rafters. A three-array SolarClover system produces 1.1 kilowatts of electricity, and additional SolarClover panels can easily be added for more power. The system packs flat, and the durability of the panels means it can be shipped just about anywhere. Thanks to its simplicity, the system can be installed by roofers, electricians or contractors, instead of requiring solar specialists.

“We did extensive research into ergonomics and user-friendliness to make our system intuitive. The triangular rack is very materials-efficient, the panel has no sharp corners and it’s lightweight, so it’s very easy to carry up a ladder,” said Mark Goldman, Chief Executive Officer, Armageddon Energy, Inc.

Armageddon worked closely with DuPont on the development of the SolarClover system, testing prototypes in the DuPont test chambers, and sharing expertise with DuPont engineers. Using Tefzel® for the frontsheets was the key to turning Armageddon’s blue-sky design into a viable product. “We couldn’t do this without the Tefzel®,” said Goldman. In fact, the Tefzel® ETFE-based frontsheets were even tested for bullet resistance, which is vitally important in military applications.

The installation, on the roof of the City Hall in San Jose, CA, is a high-profile location for the SolarClover system. In the nexus of innovation that is Silicon Valley, the 1 kilowatt system is a showcase for Armageddon’s creative approach.

“We started by looking at consumer perception and the barriers to adopting residential solar,” said Goldman. “The fact that the Tefzel® stays clean, is incredibly durable, and is much lighter than glass is a big deal. As residential solar takes off, we expect that non-glass panels will be a very significant part of the market.”

PROJECT LOCATION

San Jose, California



PROJECT DETAILS

Project	SolarClover installation at City Hall
Milestone reached	Lightweight, durable and attractive rooftop solar system
Benefits	Ease of installation reduces overall system costs
Material specified	DuPont™ Tefzel® ETFE film

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