

## How Fleets are Using Solar Power

Solar panels have moved off building rooftops and onto trucks, tractors, and trailers.

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Canada's Groupe Robert is using six solar panels and four deep-cycle batteries to keep drivers comfortable and batteries charged. Photo: Groupe Robert

Royal Jones is always trying something new to improve fuel economy. The president and CEO of Mesilla Valley Transportation is known as an early adopter of technologies from 6x2 drivetrains to trailer aerodynamics — even going so far as to make his own prototypes. That's what he tried about five years ago with solar power, installing panels on the truck cab to extend the amount of time electric auxiliary power units could operate. The aerodynamic penalty was too great, so he abandoned that particular effort. However, he discovered that the batteries on those trucks were lasting far longer.

Today, newer, thinner, flexible solar panels have solved the aerodynamic problem, so the Texas-based truckload fleet now has several hundred of its Navistar trucks running with eNow's auxiliary solar system. This has resulted in less idling, longer battery and alternator life, and increased driver satisfaction.

And that's not the only way fleets are using the power of the sun to save money on fuel, improve driver comfort, reduce maintenance costs, and improve uptime.

### **Driver comfort**



Mesilla Valley Transportation is using eNow's eCharge auxiliary solar system as part of its fuel efficiency spec. *Photo: Mesilla Valley Transportation*

“The big savings for me is getting more hours on your APU,” Jones says, as the solar panels provide four to six more hours of cooling time. “It’s hard to figure the ROI, because it’s not an exact science. But if you save two jump-starts a year, that’s \$600. If your driver comfort is better, how do you put a price on that? And we used to replace all eight batteries every year, but the trucks with the solar panels have had them for four years.”

Another proponent of solar panels for trucks is Montreal-based Groupe Robert, one of Canada’s largest trucking companies. Solar panels help it keep drivers comfortable without idling, keep batteries charged in cold weather, and keep batteries charged on methane detectors on trucks powered by liquefied natural gas.

In its idle reduction efforts, Robert found that electric APUs were preferable to diesel ones — except the battery life was limited to about six hours. In 2012, it tested a single solar panel mounted on the roof fairing and found it upped that to about eight hours, explains Daniel St-Germain, vice president, material resources. But he found that for a

little bit more, the carrier could install six flexible solar panels on the roof fairing and the hood (600 watts total) with four deep-cycle batteries, giving drivers a full 10-hour rest period of noiseless sleep. It now has those on more than 150 units. The expected return on investment, based on fuel savings, is 3.5 years. One disadvantage, of course, is that there's less solar energy available in overcast, rainy weather — thus the deep-cycle batteries to store reserve power.

K&J Trucking, Sioux Falls, South Dakota, uses diesel-powered APUs, but it has found another driver comfort application for its ThermoLite solar panels from Thermo King. It's testing a solar panel on the cab to charge the refrigerator in the sleeper when the driver's off the truck for extended periods. The normal policy if a driver is going to be gone for more than 24 hours is to empty the refrigerator and turn it off. With the solar panels, they don't have to, making it that much easier for drivers to keep healthy options handy.



Carrier Transicold's Thin Film Flexible Solar Panels are specifically designed to maintain the refrigeration unit's battery charge, even if it's cloudy. *Photo: Carrier Transicold*

## Trailers

Driver comfort in the cab isn't the only arena where solar power can be a big help.

"In addition to charging the batteries to power the in-cab HVAC and hotel loads, fleets are using our technology for truck and trailer liftgate applications, for truck and trailer refrigeration, and for safety lights and HVAC for emergency vehicles," explains eNow President and CEO Jeff Flath. "The system mounts on either the tractor or trailer, or both, so it can power any battery system."

Solar panels on trailers can help keep batteries charged for refrigeration units, liftgates, pallet jack chargers, and trailer tracking and telematics

For instance, Thermo King's ThermoLite solar panel solution was developed to provide an alternative power source to both refrigerated and dry van fleets and offset battery drain from parasitic loads. It allows Thermo King's TrackKing or other telematics systems to monitor assets over long periods of time, even when the refrigeration unit is off and the trailer's untethered from the tractor.

K&J Trucking started testing the Thermo King solar panels four years ago on five trailers. After two years, they liked the results well enough to spec them on a new trailer order replacing half the trailer fleet. Although the solar panels cost more, by that point the return on investment was clear, according to K&J Maintenance Manager Lou Charette.

"The solar option works well for us on the reefer end because trailers get into places [where they shouldn't], and with tracking devices they tend to drain batteries in a two-to three-week period. A trailer shouldn't sit that long, but they do, it's as simple as that. With this, the battery is constantly ready." In addition, he says, battery life has been significantly extended.

"It makes it so we can spot the trailer at any time, because if the battery goes dead, the GPS tracking goes out." It also eliminates middle-of-the-night service calls for jump-starting.

Similarly, Carrier Transicold offers a solar power solution with its Thin Film Flexible Solar Panels, specifically designed to maintain the refrigeration unit's battery charge. They can be installed on the roofs of trailers and truck bodies chilled by Carrier Transicold or other systems.



Carrier says the solar panels can offset the draw from accessory electrical devices, reducing callout charges related to the battery. Solar panels can also help save fuel by minimizing the need to run the reefer engine to charge the battery.

“One of the things that sets Carrier Transicold’s solar panels apart from many other solar-powered solutions is that they do not require direct sunlight,” explains Jason Forman, sales and marketing manager. “Their amorphous silicon solar cell technology performs reliably even in low- and indirect-lighting conditions. As long as there is daylight, they will generate a charge, and that includes on cloudy days.”

Purkeys has a product called Solar Bolt. Installed on the roof of a trailer, it provides a constant charge to electrical accessories such as liftgate batteries and reefers. Depending on the type of liftgate, the Solar Bolt can produce enough charge to power 10 to 100 additional lifts every day, according to the company.



The fuel-efficiency SuperTruck concept truck from Navistar used solar panels extensively. Volvo’s SuperTruck used them as well. Photo: eNow

Spireon and Skybitz both introduced solar-powered trailer and asset tracking and telematics solutions in the latter part of 2016, and both are announcing updates to those products.

In addition, Truck-Lite is using solar-powered wireless sensors and a solar-powered control unit for its new Road Ready trailer telematics announced earlier this year.

Spireon's FleetLocate Solar is a trailer-mounted all-in-one solar panel and telematics unit. Trailers can gather telematics information without power from an external battery.

Solar power for trailer tracking is something customers asked for, says Roni Taylor, vice president of industry relations for Spireon. "So now the industry has come to a point where solar panels are small enough and strong enough to conveniently harness the energy from the sun." Using the same polycrystalline technology used in traffic lights and streetlights, she says, the solar panels constantly provide a trickle charge to the rechargeable lithium-ion batteries — even on overcast days. And it doesn't cost any more than the non-solar version.

"We add a secondary level of recharge so you can tie into the tractor power as well," she explains.

The solar option "is particularly good for fleets who drop trailers for an extended period of time and for leasing companies," Taylor says, noting that customer Premier Trailer Leasing is switching to Spireon's solar tracking product.

While details were not available at press time, Taylor said Spireon is getting ready to add another solar unit to its lineup, a line extension of one of its more popular products. "I think you're going to see the whole industry switch to solar."

Exceptions, she says, would be flatbed operators and those using covert devices that are mounted underneath trailers where a solar panel would not work.

In late 2016, Skybitz introduced the Falcon GXT5000 solar-powered GPS asset tracking system. The popularity of the device has prompted Skybitz to take it a step further, says SkyBitz President Henry Popplewell. The next-generation Falcon GXT5002C, available this month, features an integrated cargo design with built-in cargo sensors, service life lasting the longevity of the asset, LTE network coverage, and the option to install on a full load.

"Bottom line," Popplewell says, "Solar power is the future of asset management."

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