

Optimizing Car Port Designs with Both Barrels



Described as the Largest Dealership Carport Canopy structure in the United States, this 335kWdc system used 1,240x SolarWorld 270W monocrystalline modules, 14x SE20k SolarEdge inverters and 620x P600 2:1 power optimizers;

“With canopy installations, dimensions need to be rectangular. We would prefer to build them to architectural requirements instead of electrical requirements. With traditional inverters, you often find you have to make a compromise in the number of rows or columns of modules due to all of the electrical restrictions on the design. With SolarEdge, you don’t have that. You can change the string length in the design and can even have string lengths of different module counts connected in parallel!”

> Alan R. Frasz, President, Dovetail Solar and Wind



While inverters only represent about 10% of the total cost of a PV system, they are one of the most important choices for installers, as they are responsible for 100% of a system’s energy production. SolarEdge’s Optimized Inverter architecture represents a differentiated approach to inverter design resulting in a best of both worlds solution: the design flexibility and energy boost of MLPE (Module Level Power Electronics) combined with the cost effectiveness and simplicity of a string inverter.



The Challenge of Being Beautiful

Motorcars Honda wanted to install a carport canopy that would protect its valuable fleet of automobiles but also drive customers to the dealership. At first, they looked at a design using traditional PV inverters with traditional PV approaches. The result, a flat rooftop with a single pitch aimed at an optimal direction toward the sun, was not what they wanted. Instead, Dovetail Solar and Wind – the EPC responsible for building the structure, came up with a novel “double barrel” design that used a curved canopy architecture to cover the area. This design succeeded in keeping the snow and rain off of the automobiles but also broke the mold on tradition.

But how could the installer make this structure without compromising on PV production? “We decided on SolarEdge basically as soon as the design was made,” commented Al Frasz, president of Dovetail Solar and Wind. “With SolarEdge technology, we could build a design for the canopy that met all of the customer’s aesthetic goals and minimized the impact on PV production.” In fact, with SolarEdge, the automotive dealership was able to retain their array of flags that lined the southern side of the array without worrying about reduced array output.

“We’re the largest single structure solar installation in country for automotive dealerships. That’s why this is so unique.”

> Trevor Gile, Motorcars General Manager

5 Star Safety Rating

In Ohio, the adoption of the new 2014 National Electric Code has already begun. To comply, new PV systems need to meet rapid shutdown requirements where the PV will drop its

voltage to less than 30 Volts within 10 seconds of activation. “We have seen about 40% of the districts in Ohio already move to NEC 2014 and rapid shutdown for commercial arrays,” said Al Frasz. “SolarEdge enabled us to go ahead and install with Rapid Shutdown and meet those new requirements.”

In addition, the site features 1,240 modules on the top of the canopy with no easy to access for troubleshooting or diagnostics. Being able to monitor those modules remotely keeps Dovetail Solar up to date on system health without requiring onsite work. There was no need to IV-trace the modules during commissioning and no need to IV-trace to track system health. This results in less work on the canopy structure rooftop.



Some cool facts on the canopy design:

- More than eighty percent of the steel used for the structural beams came from recycled cars.
- The canopy will cover nearly 24,000 square feet and generate an estimated 50 to 75 percent of the facility’s energy.
- In May 2015, Honda Motorcars was named Ohio Business of the Year by Green Energy of Ohio.