

How one U.S.-based solar inverter manufacturer stays strong in a tough market

In the cutthroat solar inverter market, manufacturers need to stand out from competitors to survive. A Wood Mackenzie report found total revenue for the Top 5 global inverter vendors declined 10% last year due to price pressure and fierce competition. In 2019 alone there have been numerous acquisitions and exits: ABB has paid Fimer to take over its inverter business, Schneider Electric exited the utility-scale inverter business and KACO sold its string and central inverter businesses to Siemens and OCI Power, respectively. U.S.-headquartered inverter manufacturer Yaskawa Solectria Solar thinks it has the local customer service and forward-thinking leadership it takes to stay in the market.

Solectria is one of only three major solar power electronic companies that solely manufactures in the United States. The others include microinverter manufacturer Chilicon Power, power optimizer maker Alencon Systems and hybrid inverter vendor Pika Energy (which was recently acquired by another U.S. company, Generac). Solectria uses some global parts in its inverters but assembles its products in the United States. Its new inverters are made at Yaskawa America facilities in Buffalo Grove, Illinois, while combiners and older inverter models are made in Oak Creek, Wisconsin.

The company was the brainchild of MIT graduate James Worden, who decided to enter the rapidly growing solar industry in 2005.

“Things grew out of a small shop into a slightly larger shop and he never gave consideration to doing anything other than building it with his own hands and under his own watchful eye,” said Miles Russell, director of product management at Solectria.

In 2014, that slightly larger shop was not big enough to keep up with the pace of technological advancements



Solectria inverters have been used on a wide array of projects, including ground-mounts and carports. *Solectria*

the industry was experiencing. So a deal was made for Yaskawa America (which is wholly owned by Yaskawa Electric of Japan) to acquire Solectria and form the new brand.

“Really what they’ve brought to this homegrown entity here in Massachusetts was world-class manufacturing and absolute focus on high-quality engineering talent that they have infused in the engineering teams here,” Russell said.

Solectria’s engineering team works with solar site designers early in the process to ensure projects built using the company’s inverters are optimized.

Maryland-based EDF Renewables Distributed Solutions develops many 5-MW_{AC} or smaller projects throughout New England generally sited on land that’s broken up by wetlands instead of traditional, flat rectangle parcels. Jamie Resor, CEO of Distributed Solutions, said string inverters like Solectria’s make a lot of sense for these types of projects. Resor said EDF has worked with Solectria for about a decade and consults with the company during the conceptual design process to ensure the inverters are compatible with utility cybersecurity and data requirements.

“With all the turmoil in our industry, it’s nice to be able to work with partners that are pretty stable,” he said.

Resor is comforted by the fact that Solectria has the backing of a global company like Yaskawa.

“They’ve got the big balance sheet behind them and it appears that they’re committed to the inverter market that they’re serving,” Resor said.

EDF looks to partner with inverter vendors that will have stability for at least five to 10 years. Resor said Solectria checks that box.

“We want reliable product quality, continuity that they’re going to be there, because we’re building these plants for 35-year useful lives and we want equipment that’s going to last,” Resor

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INVERTER TECHNOLOGY

said. “Ideally, we want the vendor to be there if a problem arises.”

Although Solectria stands by the engineering of its inverters, problems are bound to arise for the most hardworking components of solar arrays. The company feels it’s a step above the competition when it comes time to service inverters, partly because it is based in the United States.

“We are able to serve customers and projects more promptly, more efficiently, I think, than others who are distributed in their resources around the globe,” Russell said.

Large-scale solar developer Ameresco can attest to this. The company is headquartered in Framingham, Massachusetts, and tries to use Solectria inverters on solar projects designed for string inverters, said Luis Alegria, director of solar PV development engineering for Ameresco.

“We prefer to buy from [Solectria] even if we have to pay a little more because they are here and the service is right here,” Alegria said. “You have a problem with an inverter, we call them right away and they usually respond either the same day or the next day. That’s why being so close and local is a big advantage.”

EDF’s Resor appreciates that Solectria is based stateside, but said that’s not the most important factor in choosing a manufacturer.

“If they’re making part of the products in the U.S., that can have some advantages — your lead times can be shorter, it’s easier to see the plant. But at the end of day, we’re really looking for quality, reliability and competitive price,” he said.

Solectria’s U.S. roots may also assuage some fears that are building around inverter cybersecurity. Rather than focusing on niche markets to maintain an edge on the market, Solectria has sought to position itself as a leader on cybersecurity efforts. Russell, representing Solectria, is part of a team working with NREL and Sandia Labs on optimizing communication encryption for distributed energy resources.



String inverters are assembled at Yaskawa America facilities in Buffalo. Solectria



“We’re on top of what’s important about this technology and how best we can go forward to ensure that we can continue to deploy solar on the grid safely and have a stable and resilient grid, and be confident that these resources can be called upon when needed and not taken down easily by those who would want to harm it,” Russell said.

Solectria aims to be on the leading edge of inverter security as well as inverter design. The company’s latest product release, the utility-scale XGI 1500, puts flexibility first.

The inverter comes with two options for combiner boxes — one remote version where developers can distribute combiners around the array and route the power back to a central cluster of string inverters, and the other version that attaches to the inverter itself if developers want to distribute both the string inverters and combiners throughout the project instead of centrally locating them. Additionally, Solectria is putting together a 1-MW_{AC} rack solution that uses six of its XGI inverters.

By staying on the leading edge of technological and cybersecurity advancements, Solectria hopes to remain strong as a Made-in-USA option for installers near New England and beyond. **SPW**

