

Weathering The Storm: Inverter Manufacturers Ride Out Supply Gluts, New Competition

Earlier this year, photovoltaic inverters were in oversupply, but product manufacturers and installers have developed new coping strategies.

■ Nora Caley

Residential and small commercial inverter manufacturers have endured supply-chain ups and downs over the past few months. But following reports of inventory backlogs and declining shipments, manufacturers say they have now remedied those issues and are focused on the development of new products.

Bates Marshall, senior manager for strategic marketing at Rocklin, Calif.-based inverter manufacturer SMA America, says the end of 2010 saw a race for installers to secure inverters. In December, President Barack Obama signed the tax bill that included a one-year extension of the U.S. Department of Treasury's Section 1603 cash-grant program, which gave renewable energy developers payments in lieu of tax credits.

"For solar projects to receive funding under this program, they needed to show that their projects were under way, with some monies committed prior to the expiration," Marshall explains. "This drove fourth-quarter inverter shipments artificially higher, pulling in inverter demand from the first couple of quarters of 2011."

In the first quarter of this year, the inverter industry suffered from excess inventory in the supply chain. Marshall adds that SMA, however, uses just-in-time manufacturing and does not keep an inventory of its Sunny Boy product or its other inverters.

"Most manufacturers are building and putting products in inventory," he says. "You have to have accurate forecasts [in order to plan for] what happens when you have discontinuity, like we did from the fourth quarter to first quarter."

Other factors also contributed to the inverter inventory issues, says Phil Vyhanek, president of Lawrence, Mass.-headquartered inverter manufacturer Solectria Renewables. Although the first quarter of 2011 showed year-over-year growth, the residential segment's growth was slower than forecast, and inventory built up as a result.

"The inverter is the last piece of the PV system that has to be installed before turning it on," Vyhanek says. "People watch and wait for module prices to decline."

While they wait, inventory can grow, especially among residential and small commercial inverters. "The smallest inverters are the ones most easily stocked," Vyhanek says. "Typically, as you get to a larger inverter, that product is ordered for the job."

Bill Rossi, chief marketing officer at Petaluma, Calif.-based micro-inverter manufacturer Enphase Energy, says the overstock situation was worse in Europe than in the U.S., mostly due to changes in feed-in-tariff (FIT) levels.

"With Germany's solar deployments, [installations] are still increasing, but not at the rate they were previously, so a lot of European suppliers faced inverter gluts," Rossi says. "We haven't seen any of that, because our products ship predominantly in North America."

Meanwhile, H. Clinton Porter, director of marketing for KACO new energy in San Francisco, says the company is still selling most of its inverters in European markets, with an uptick in Canadian markets and some growth in the U.S. for KACO's blueplanet line of inverters.

Installers have also developed strategies for weathering the in-

verter supply-chain problems. Scott Wiater, president of Standard Solar, says the Rockville, Md.-based company works closely with distributors and manufacturers and keeps an eight-week inventory of inverters.

Ben Tarbell, vice president of products for San Mateo, Calif.-based SolarCity, says the installer developed software that helps the company forecast demand.

"It's not blindly looking at things that happened in the past but trying to understand leading indicators, for example, rebates and other variables," he explains. "As time goes on, you can make very educated guesses."

The micro-inverter factor

As the inverter industry's supply-chain problems resolve themselves, the other major force shaping this market is the increasing interest in micro-inverters, which are typically rated about 200 W and work on a single module.

Enphase launched its first micro-inverter in 2008, and the company says it has shipped 750,000 so far. "When we entered the market, it was largely for residential deployments, for complex shaded environments," Rossi says.

According to Wiater, Standard Solar's residential and small commercial installations have been evenly split between centralized and micro-inverters. The micro-inverters have been useful on houses with chimneys, for example.

"You have shadow on one panel for a couple hours, so the micro-inverter converts electricity from DC to AC at the panel level, so you only lose that single panel affected by the shade," Wiater notes. "A string inverter will only perform

as well as its lowest denominator, so one panel will drag the system down."

However, because micro-inverters are more expensive, SolarCity uses them more sparingly. "We evaluate technologies more than anything on a dollars-per-kilowatt basis," Tarbell says. "In most cases, the micro-inverters in the market don't help with that equation, but in some situations they can, and in those situations we recommend them to customers."

Bradley Hibberd, director of technology at Borrego Solar in Berkeley, Calif., says the installer/integrator was a beta test partner for Enphase and installed hundreds of micro-inverters in dozens of sites in 2008.

Since then, Borrego has sold its residential installation business, but Hibberd says micro-inverters could work well on commercial installations too. "The micro-inverters' cost tends to be higher, so it's a harder sell in commercial spaces," he says. "But there are clear advantages because commercial roofs have HVAC equipment, which we call rooftop furniture, that causes shade."

In June, Enphase launched its 215 Series of micro-inverters. Other companies - such as Siemens Industry Inc. and Power-One - recently jumped into the market and introduced micro-inverters. Earlier this year, SMA announced it is developing a micro-inverter, but it has not announced a launch date.

Other inverter companies are watching - but not making announcements. "We believe there is a limited segment of the market where micro-inverters make sense," Vyhanek says. "Some very small or multiple-orientation deployments that require module-level maximum power point tracking are examples of these niche markets."

Similarly, KACO says it is continuing to launch new products, but not a micro-inverter. "We really want to focus on string inverters at a more cost-competitive level," Porter says. ■

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