Will 12V solar disappear in 2013?

Jon Gabay, Mouser Electronics

The established solar architecture based on 12V photovoltaic panels, batteries, charge controllers, and inverters will continue to give way to grid-tied inverter architectures. This approach to harvesting solar energy brings with it a lot of key benefits.

Grid-tied systems can lower electric bills by delivering power on demand when solar power is available. Using a shifting phase angle, solar energy can be injected back into AC power lines, letting your power meter run in reverse.

The key factors driving the increasing market share of grid-tied versus 12V DC systems is lower installation and maintenance costs. Large and expensive lead acid battery banks are eliminated. Also gone are the thick copper cables needed to transfer high currents at low voltages around the building.

Solar Technology

Expect to see more activity and innovative product offerings with batteryless grid-tied inverter-based systems, especially as smart meters and Smart Grid standards become more widely adopted.

Homeowners also like the “gee wiz” factor of the grid-tied approach. Thanks to the deployment of low-cost Wi-Fi and IPv6, the enhanced use of the cloud, and the philosophy of the ‘internet of things’, it is not uncommon to be able to log into your solar system from anywhere in the world and monitor every panel’s output and performance.

Meter manufacturers are aware of this and will continue to add more functionality to

their meters. Gone are the days of mechanical flywheel meters. Microcontrollers, power line and wireless communications, and non-volatile data and event logging will be incorporated in all next-generation power meters. Utilities will now be able to monitor phase angles, power transfer directions, peak demand load spikes, and time of day variations for costs for the same electricity.

But do not discount isolated off grid 12V-only systems. Remote transceivers, pump stations, signaling devices, beacons, and security sensors will not have access to the grid. Here 12V, 24V, and 36V systems will continue to thrive.

Expect to see some inroads with newer battery technologies for these applications, too. While lead acid and gel cell batteries will still do the heavy lifting, expect to see some inroads for Li-Ion as temperature and cost issues are addressed.

With the cost of copper at an all time high and good batteries several times more expensive than they used to be, grid-tied solar systems will continue to grow at a fast clip.

Jon Gabay is a design engineer, a writer, and a Gizmologist. As a consultant he designs, builds, tests, and develops new technologies for startups as well as established companies that can use outside-the-box ideas and thinking. While his passion is alternative energy, energy management, and automation, he also researches and writes about embedded systems, mixed-signal designs, RF technology, sensors, design automation, and more. He refers to himself as a mad scientist with no hostility.

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