

Solar Power Turns a Corner

ABB Sees Significant Market Potential Moving Forward

Matthew Jaster, Senior Editor

According to GTM Research and the Solar Energy Industries Association (SEIA), photovoltaic (PV) installations increased 41 percent from 2012 to 2013. Additionally, 410 MW of concentrated solar power came online in 2013. Solar was the second-largest source of new electricity generating capacity in the United States, exceeded only by natural gas. By the end of the year, there were more than 440,000 operating solar electric systems in this country.

"Perhaps more important than numbers, 2013 offered the U.S. solar market the first real glimpse of its path toward mainstream status," said Shayle Kann, senior vice president at GTM Research. "The combination of rapid customer adoption, grassroots support for solar, improved financing terms and public market successes displayed clear gains for solar in the eyes of both the general population and the investment community."

"Solar is the fastest growing source of renewable energy in America, generating enough clean, reliable and affordable electricity to power more than 2.2 million homes," said SEIA president and CEO Rhone Resch. "We're just beginning to scratch the surface of our industry's enormous potential."

"The impact of the solar market on ABB's success in 2014 will be quite significant," said Bob Stojanovic, director of Solar Power North America at ABB. "The role of the solar market in current and future growth is so important that ABB made a \$1B investment in Power-One. The investment was made in order to fully participate and capitalize on the long term global growth of the PV market. We expect that ABB's growth in solar for 2014 will significantly exceed the market growth levels."

Power-One is one of the largest providers of solar inverters in the world. The company, based in Camarillo,



California, supports every step in the refinement of utility-grade AC into the various DC voltages required to power high-availability infrastructure systems at the site, system, and semiconductor levels. Late last year, ABB completed the acquisition of Power-One, a move that made sense according to ABB CEO Joe Hogan. "The acquisition of Power-One expands our renewable businesses and provides substantial opportunities to create value for our customers, employees and shareholders. The combination of Power-One and ABB is fully in line with our 2015 strategy and creates a global player with the scale to compete successfully."

In recent years, economic strife has made it difficult to gage where U.S. renewable energy's strength and market future stands (just ask those that invested significantly in wind, solar, hydro or geothermal power around 2008 or 2009). "There will be short-term volatility in various regional markets as incentives change or phase out, however over the long term solar will grow at a rate that is far superior to the general economy," said Stojanovic. "The transition period during the phase out of the 30 percent Solar Investment Tax Credit (ITC) will certainly have an impact;

however I expect that the market will recover from the expected dip in 2017 installations. Solar power has a lot of things going for it that will ensure its growth for a long time to come. Aside from the fact that solar PV has demonstrated a steady history of cost reduction, it is predictable, flexible, scalable, available everywhere, and it has an overwhelmingly positive perception by the general public. That cannot be said about many other forms of energy production."

The U.S. solar market has been a source of reassurance for the global players, while the European markets have endured periods of extreme volatility as a result of very generous Feed In Tariff (FIT) policies, according to Stojanovic. "The fact that utility scale developers have to compete for power purchase agreements (PPAs) ensures market level pricing, whereas a FIT as implemented in other markets establishes an artificial market rate on a first come, first served basis which does nothing to ensure that rate payers are not overpaying for solar power. The steady long term growth of the U.S. market has allowed companies to create longer term product roadmaps and business strategies necessary in order

to further reduce costs and increase efficiencies to make the business sustainable."

The Solar Investment Tax Credit will not go away completely, but is being reduced from 30 to 10 percent after December 31, 2016. Adds Stojanovic, "The reason the 30 percent ITC was implemented was to draw private tax equity to the solar power market during a time of extreme economic uncertainty when cash and credit were very tight as a result of the great recession."

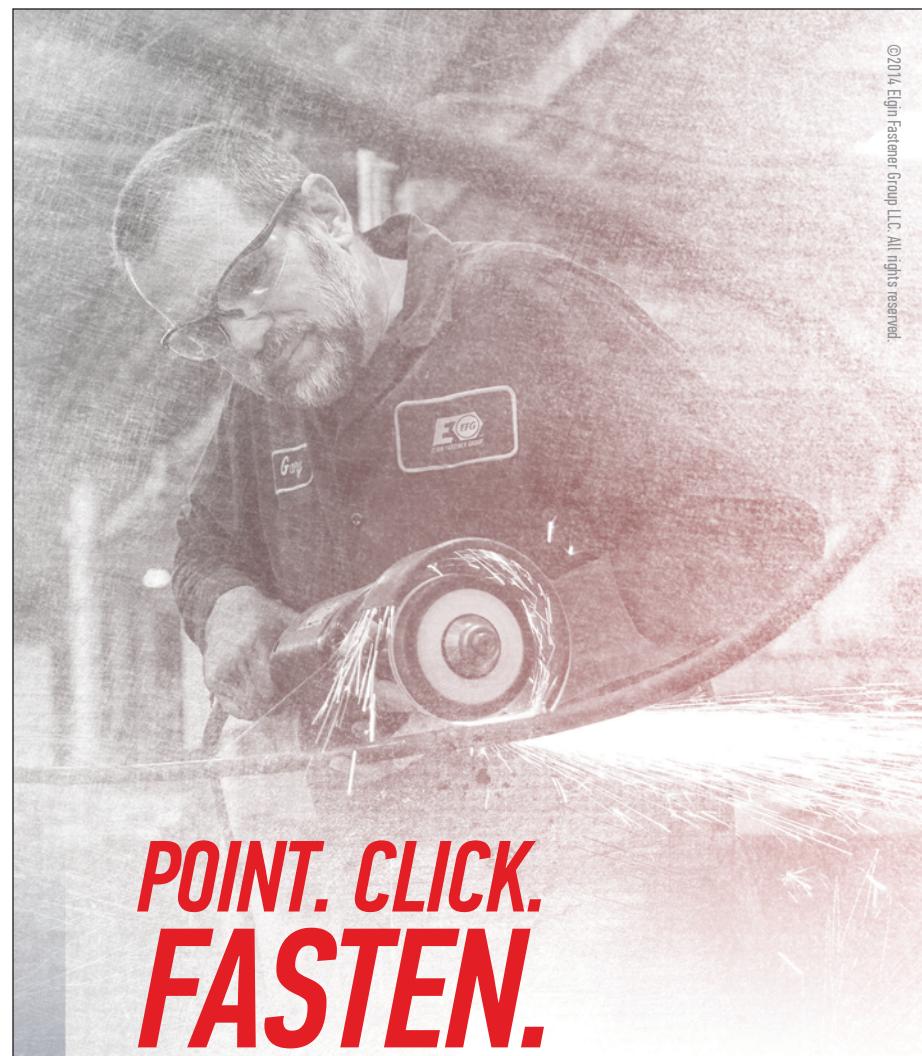
A tax credit reduction will reduce investment in solar power short-term, but long-term growth will most likely continue. "While the ITC is an incentive to get cash off the sidelines for larger projects, it is not the primary market mechanism that drives utility scale solar development. Utility scale solar power development is primarily driven by legislation at the state level to fulfill renewable portfolio standard goals set by the state."

Stojanovic continues, "Very recently a few developers have been signing long-term PPAs at historically low rates (5-6 cents/kWh). These facts, combined with the necessary scale in the market and the advancements in technology and efficiencies, leads me to believe that by the end of 2016 Solar Power will be competitive without the 30 percent ITC."

Still, renewables here in the United States seem to have a harder time gaining ground in the market for a variety of reasons. "The greatest challenge for solar power today in the United States is addressing the soft costs (government regulations, local, state and federal). The latest studies illustrate how far behind the U.S. is, compared to other major solar markets in soft costs. Soon soft costs can be as much as 50 percent of the cost of a solar installation if we don't change the way we do things."

Stojanovic believes by the end of 2016 rooftop PV will be competitive with retail utility rates in most of the high population density centers in the United States, especially if the issue of soft costs is addressed.

"This means that it has a definite place in our future energy mix. Solar power is a unique source of power that has the ability to allow anyone to



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be energy independent as long as the sun shines in that local geography. It has its own unique set of advantages and limitations. It is generally available everywhere on the globe and very predictable; however its output is variable. The constant drive toward lower costs and higher efficiencies will ensure its place in the energy mix, thus it will allow the efforts on energy storage to continue. The question really goes beyond solar, and really becomes an overall energy resource and delivery planning strategy discussion." **PTE**

For more information:

ABB
Phone: (919) 856-2360
www.abb.com

Power-One
Phone: (805) 987-8741
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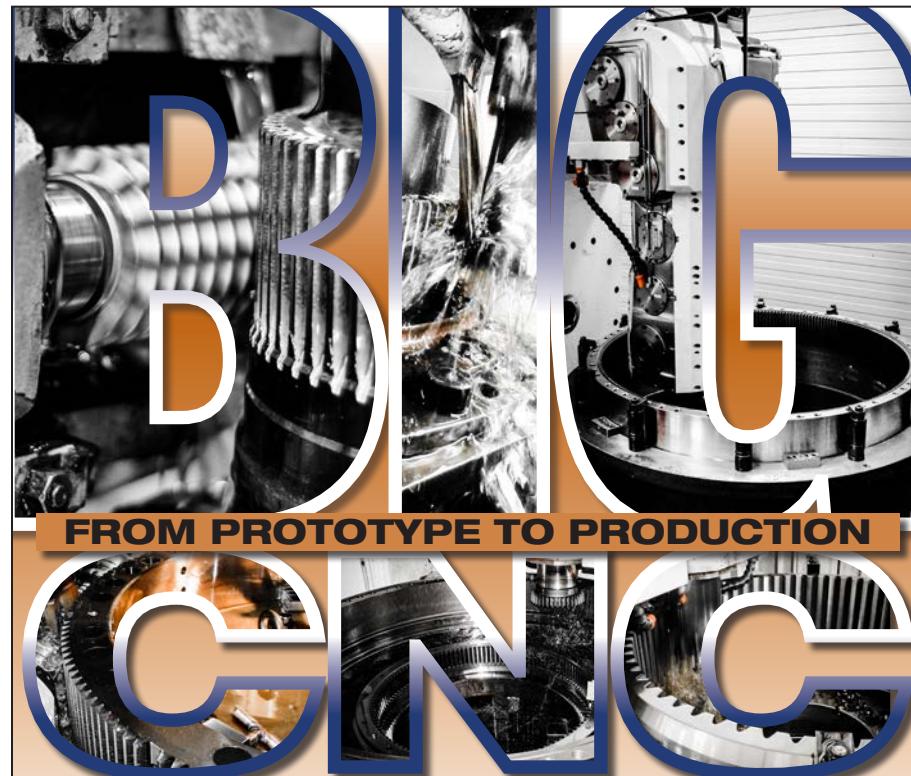
With a promising future for solar power, *Power Transmission Engineering* takes a look at wind, hydro and geothermal developments in 2014.

Wind Energy

American wind energy generation has outpaced the growth in new wind power capacity thanks to innovative technological advancements. Over the past five years, U.S. wind energy capacity grew from 25,000 megawatts (MW) to over 61,000 MW, a 140 percent growth rate, yet electricity generated from these wind turbines grew at a rate of 200 percent, exceeding capacity growth and making wind energy cheaper than ever. Operational improvements have also contributed to increased production. More informed operations and maintenance strategies have led to the highest performance levels ever seen in the U.S. wind industry. The entire wind industry will gather in Las Vegas, Nevada for AWEA Windpower 2014 Conference & Exhibition on May 5-8, to discuss technology improvements and unveil the next fleet of wind turbines.

Hydropower

Linda Church Ciocci, executive director of the National Hydropower Association (NHA) recently made a statement following President Barack Obama's 2015 fiscal budget plan. "Hydropower is the nation's most affordable and reliable renewable electricity resource and NHA applauds President



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Barack Obama's FY 2015 budget proposal for recognizing the crucial role that expanding hydropower will play in the country's diverse energy future," Ciocci said. "The budget continues and improves vital investments in water power research and development. We also applaud the president for his commitment to grow hydropower and other renewable energy generation by recognizing the need to provide long term financial certainty to developers through permanent tax incentives."

Geothermal

Representatives from 24 countries came together with Washington leaders for the GEA International Geothermal Showcase in Washington D.C. in April. The Showcase examined the outlook for the geothermal market and the policies driving geothermal development. The Geothermal Energy Association released the results of its new annual U.S. and International Market Update exclusively to attendees. The event was hosted by the Geothermal Energy Association and made possible by Green level sponsor Power Engineers/Galena Advisors. "This Showcase is an opportunity to bring global geothermal leaders from government and industry together to review accomplishments, expand collaboration and discover new opportunities," said GEA executive director Karl Gawell. "Much of the world is rapidly expanding efforts to harness the Earth's energy and they continue to see America as

world geothermal power leader with strong technological know-how."

Countries represented at the event included the Philippines, Nicaragua, India, Belgium, Germany, Nigeria, Colombia, Fiji, Iceland, Commonwealth of Dominica, Tanzania, Japan, Switzerland, Uganda, Kenya, Taiwan, New Zealand, Ethiopia, Indonesia, Romania, Turkey, Italy, United States and Slovakia. Additional country participation is anticipated. GEA's new U.S.

and International Market Update reported that the international geothermal power market is booming, with nearly 700 geothermal projects under development in 76 countries. And after a recent lull in production, the United States is poised to experience significant growth from new initiatives in Nevada, California and Oregon.



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