From source to socket

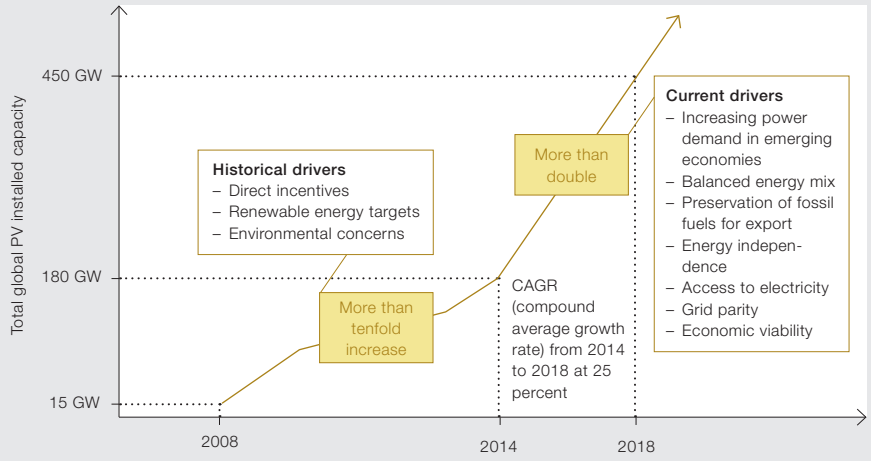
ABB is at the forefront of photovoltaics

ALEX LEVRAN – Over the past 10 years, global photovoltaic capacity has grown at a steady double-digit rate. The worldwide installed base has expanded more than tenfold from approximately 15 GW in 2008 to above 170 GW at the end of 2014. In 2014, total annual investment exceeded $ 83 billion. And this trend is set to continue: ABB expects that in the next three years the world-wide installed base of solar power systems will surpass 400 GW.

Title picture
An ABB field service engineer at the Apex Nevada Solar facility, near Las Vegas, NV, United States.


ABB
ABB

1 The PV market continues to experience solid growth with a shift in drivers.



Sources: IEA, Bloomberg New Energy Finance, European PV Industry Association

In its early years, expansion of the photovoltaic market was fueled by government incentives and subsidies, particularly in Europe where governments set renewable energy targets as a percentage of the total generated energy. The targets were designed to enable non-carbon-emitting sources to displace carbon-emitting generation from the energy supply, thus reducing overall carbon emissions → 1.

Market maturity

With the market now maturing, government incentives will increasingly be displaced by the technology's inherent competitiveness as the prime driver of the sector's continuing growth. Over the past five years, the cost of installed solar power systems has declined by over 70 percent. The leveled cost of energy (LCOE) for solar electric power in many parts of the world has fallen to at least so-called grid parity[1] levels, if not further.

Europe was the first region to witness a large-scale emergence of photovoltaic power, thanks to feed-in tariffs (FIT) combined with subsidies to support the fledgling technology.

In the past few years, markets have grown very quickly in the United States, China, Japan, India and Australia. Industry expectations are that in the near future, market expansion will also occur in emerging countries in the Middle East, Africa and South America. The global solar market is now well established in the domain of residential, commercial roof-top, and utility-scale ground-installed applications.

Although steep price erosion has been adversely impacting profitability, there are clear signs that the industry is migrating toward profitable growth through global expansion.

ABB's commitment to this sector aligns with the vision of its group CEO, Ulrich Spiesshofer: "We need to run the world without consuming the earth."

A complete range

Thanks to the 2013 acquisition of Power-One, the world's second largest inverter manufacturer, ABB now has an installed base of over 18.5 GW of solar energy supplied by over 1.5 million photovoltaic inverters. In addition, the company has installed 66 full power plants delivering more than 1.2 GW of solar power in 14 different countries. ABB has over 350 MW of solar power under full operation and maintenance (O&M) contracts at 55 different sites. With the additional acquisition of Powercorp, the company is delivering leading edge technology for the integration of renewable energy into microgrids.

Over the past five years, the cost of installed solar power systems has declined by over 70 percent.

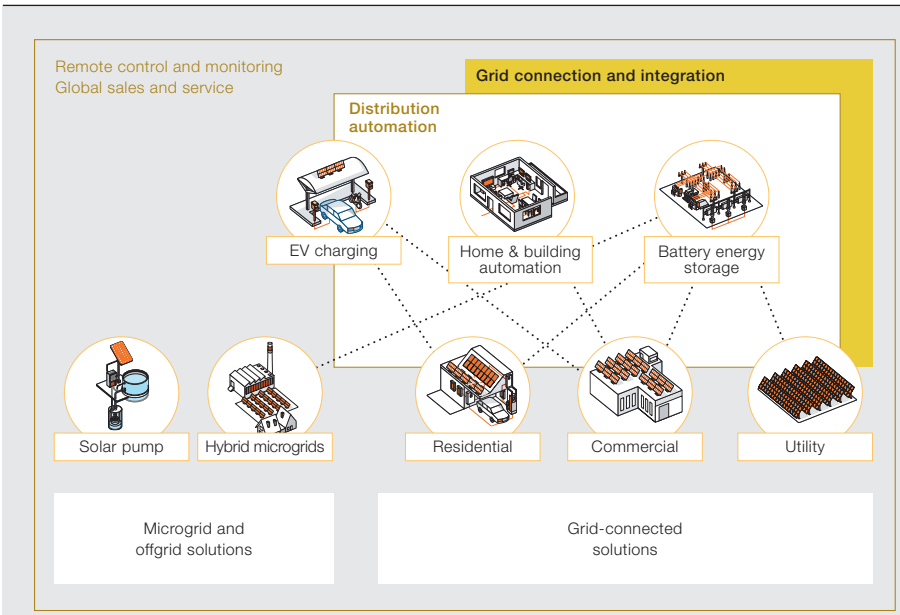
ABB is the only company that provides a complete range of electrical components connecting photovoltaic panels to the grid. The company has a broad portfolio of products, solutions and services that support all three market segments: residential, commercial and utility on a global scale.

For residential and commercial markets, ABB has developed a global low-voltage product portfolio that includes combiner boxes, AC and DC switches and breakers, contactors, fuse disconnects, current sensing, surge protection devices and rapid shutdown, as well as energy meters. The company has a global offering of single-phase and three-phase in-

Footnote

1 Grid parity is understood as the equivalent price per unit of electricity that could be bought from the local utility.

2 ABB offers the most comprehensive value proposition in the solar industry.



verters as well as a wide range of monitoring systems. ABB's portfolio includes storage platforms for the fulfillment of household energy self-sufficiency and independency.

For global utility markets, ABB offers solar inverters; medium- and high-voltage transformers; medium- and high-voltage switchgear with medium-voltage reclosers and vacuum circuit breakers; and substations. The company also offers high-voltage direct current (HVDC) transmission systems for the efficient transmission of power over long distances, and flexible AC transmission systems (FACTS) for reactive power support and active power control. ABB offers a full range of battery energy storage solutions from 25 kW to 70 MW and active voltage regulation devices for medium- and high-voltage applications. In addition to the products and components, the company also delivers full engineering system design, electrical balance of plant and simulation capabilities.

ABB's comprehensive monitoring systems include distribution grid automation, forecasting, load and demand planning solutions. The company offers total life-cycle support at every stage for any solar installation that includes tailored service contracts covering all equipment and solutions. ABB strives to help customers achieve a maximum return on investment through improved capacity, efficiency and reliability.

ABB is also well positioned to address the challenges posed by solar energy as its penetration in energy systems continues to grow. The expanding installed base of distributed generation in the worldwide solar market creates challenges for utilities to maintain stability of the grid. The industry is seeing continued demand to upgrade grid connectivity standards. In addition, improving the stability of grid storage – both at distributed and centralized levels – will become a very important element in the near future.

The company is providing solutions and services that will allow the solar industry to continue to grow and flourish as ABB expands its global reach → 2.

ABB is the only company that provides a complete range of electrical components connecting photovoltaic panels to the grid.

Alex Levran
Solar Industry Segment Initiative
Camarillo, CA, United States
alex.levran@us.abb.com