

The Future of the Photovoltaic Market

A utility PV system generates electricity which is supplemented by the energy provided by the existing utility grid. A PV system requires neither battery storage nor an emergency back-up system since it is connected directly to the utility grid, which is used as the storage medium. Systems that are not connected to the utility grid use batteries to store energy for use when the sun is not shining.

A well-designed and properly installed PV system with a consistent maintenance schedule will operate for more than 20 years. The PV module, which has no moving parts, has an expected lifetime of more than 30 years.

In the past 30 years, the photovoltaic industry maintained a growth rate of 20 percent on the average. In the last five years the average annual growth rate has reached 35 percent. As of 2007, the global PV power installed capacity was 9.1 million kilowatts, and growth rate up to 33 percent. Since 2007, an additional capacity of 2.2 million kilowatts was installed, and the growth rate has been 40%.

While [solar inverter](#) research is on-going, there are different opinions as to the industry's future direction.

The optimistic view is that in the next 30 years, the photovoltaic industry will maintain a growth rate of more than 25 percent. The optimistic faction believes that as the technological progress and industrial expansion increases, solar panel power generation costs will be quickly reduced, and the process will run through the entire century.

The pessimistic view is that that PV growth will not increase. This due to the high cost of investment required. In the Western developed countries, many PV production companies are maintained by financial subsidies to support the development of the industry, such as in the United States, which offer advanced photovoltaic projects financial and tax incentives. Without this financial support, many advances in the field of PV would not be possible.

Still, the majority opinion is that, with future technological innovations focusing on reducing the cost of solar modules, photovoltaic systems will reach a level of cost advantage. The U.S. Environmental Co-op non-profit organization predicts that the cost of solar power will soon be equal to those of the traditional fossil energy sources. With the decline of the cost for solar power, and coal, natural gas and of nuclear power costs rising, the United States is expected to reach an equal cost level of solar/fossil/nuclear energies as soon as 2015. Predictions are that the photovoltaic industry will have a high growth period and its costs will continue to drop.

A recent breakthrough from researchers at The Lawrence Berkeley National Laboratory in California could brighten the future for photovoltaic technology. The researchers have found a new mechanism by which the photovoltaic effect can take place in semiconductor thin-films. This new route to energy production overcomes the bandgap voltage limitation that continues to plague conventional solid-state solar cells.

Working with bismuth ferrite, a ceramic made from bismuth, iron and oxygen that is multiferroic, the researchers discovered that the photovoltaic effect can spontaneously arise at the nano-scale as a result of the ceramic's rhombohedrally distorted crystal structure. Furthermore, they demonstrated that the application of an electric field makes it possible to manipulate this crystal structure and thereby control photovoltaic properties. The researchers were also able to use a 200 volt electric pulse to either reverse the polarity of the photovoltaic effect or turn it off altogether. Such control ability of the photovoltaic effect has never been reported in conventional photovoltaic systems, and it paves the way for new applications in nano-optics and nano-electronics.

While practical testing has not yet been conducted, the researchers at Berkeley are optimistic that this breakthrough could have a vital impact of the future of the PV industry.

The European Union (EU) runs The Photovoltaic Technology Platform, an initiative which aims at mobilizing all the parties sharing a long-term European vision for photovoltaic energy development; realizing the European Strategic Research Agenda for PV for the next decade(s) and give recommendations for implementation; ensuring that Europe maintains industrial leadership in this field.

The next General Assembly of the European Photovoltaic Technology Platform will take place on 18 June 2010 in Toledo, Spain. The goals of the Assembly are:

- To contribute to a rapid development of a world-class cost competitive European PV for a sustainable electricity production.
- To involve stakeholders in the formulation of research programs.
- To ensure strong links and coordination between industry, research and market.
- To implement a strategic plan.

Newer technological advances and support from various government energy agencies around the world should continue to brighten the future for the

PV Market.

About the Author

SolarEdge's Solar PV [Power Optimizer](#) system, including power optimizers, [PV inverters](#) and monitoring software allows module manufacturers, integrators and installers to benefit from constraint-free site design, full site space utilization, reduced installation time and maintenance cost, module-level monitoring, improved safety, theft prevention and more.

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