Taking module production costs to tempting new levels

Chris O’Brien, Head of Market Development at Oerlikon Solar, talks to us about the company’s new ThinFab, which reduces the manufacturing cost of thin-film silicon modules to a record-breaking €0.50/Wp, with 10 per cent stabilised efficiency. It all adds-up to a very competitive package...

PES: Thank you for taking the time to speak to us at PES once again. How has business been recently? We note that the big news for you is the launch of ThinFab...

Christopher O’Brien: We’re seeing growing interest in our ThinFab solution, and have most recently announced the first order for a 120 MW turnkey ThinFab line just last month.

ThinFab is our latest generation turnkey manufacturing line for the production of thin-film silicon PV panels using Oerlikon Solar’s high efficiency Micromorph technology. A host of equipment and product improvements have led to dramatic improvements in the competitiveness of ThinFab. The average efficiency produced is 10 per cent, and the estimated production cost is just €0.50/W. This cost is competitive with current and future market prices for PV, and the cost will continue to decrease as a result of Oerlikon Solar’s ongoing investment in further technology improvements.

PES: You’ve reduced the manufacturing cost of thin-film silicon modules to a record-breaking Euro 0.50 Wp by refining a number of processes. But where have you been able to make the biggest savings?

CO’B: Some of the key improvements that contribute to the new cost structure are increased equipment throughput (roughly 2X prior generation), improved product design (e.g. integration of advanced reflector foil to increase efficiency), and reduced
Oerlikon Solar proudly announces the new **THINFAB™** which reduces the manufacturing costs of thin film silicon modules to a record breaking €0.50/Wp, with 10 percent stabilized efficiency and 143 Wp module performance. Beyond that we introduce our new world record breaking cell efficiency of stabilized 11.9 percent on Micromorph® technology. Find out more about our non-toxic, environmentally friendly solar technology at [www.oerlikon.com/solar/thinfab](http://www.oerlikon.com/solar/thinfab)
material costs (as a result of ongoing supply chain negotiations and product design improvements).

PES: How do you think this ‘next generation’ of production will impact upon the industry as a whole?

CO’B: It provides a credible and competitive pathway for companies who are strategically looking beyond the current dominant crystalline technologies.

ThinFab provides a manufacturing solution that is competitive with crystalline PV plants that are 10 times larger or more, and as such, provides a flexible option for new market entrants and for existing PV manufacturers who are looking for ways to strategically broaden their product portfolio.

PES: You’ve made a bold business move – what factors led you to believe that the time was right for such a move?

CO’B: We foresee that as PV costs converge with costs of conventional electricity generation, PV’s share of the broader electricity market will grow rapidly, particularly in emerging markets where electricity demand is growing most rapidly.

Our ThinFab solution is designed and positioned to provide a competitive cost position, and can also be a catalyst for local manufacturing in those emerging market regions.

PES: 2010 was almost a year of maturation for the industry in Europe. Is the continent still one of your prime areas of focus, or are you more attracted by Asian growth?

CO’B: We expect that European end markets will continue to comprise a majority of the total world market for the next few years, though the share is decreasing as markets in the Americas and Asia begin to take off. For manufacturing investments, we’ve seen a shift with strong growth in demand for our manufacturing solution in Asia.

PES: Would it be fair to say that the reduction of Feed-in Tariffs (in Europe) has come at a fair time, given the reduction in production costs?

CO’B: It is fair to say that the reduction in production costs that have resulted from industry scale-up and intense competition have yielded significant benefits by reducing the level of FIT that is necessary to ensure an adequate rate of return for PV system investors.

The coming few years are a critical period of transition, as costs continue to come down, but where FITs continue to be a significant factor in overall market growth. It is most important for policy-makers to act prudently to adjust FIT levels to new levels that still ensure an adequate rate of return, and at the same time, to avoid creating a sense of uncertainty and volatility in FIT programs that will inhibit PV project and manufacturing investments.

PES: The United States is an area which has seen a lot of thin-film growth – how do you see that market developing?

CO’B: Indeed, the US is a significantly different market than the European markets, and the competitiveness of thin film technology in this type of PPA market can be seen by the fact that 44 per cent of total installations in the US used thin-film technology in 2010 (Navigant Consulting), and there have been a number of recent announcements of large new thin-film FABs in the US.

We anticipate that the US PV market will grow very rapidly, from approximately 900MW in 2010 to over 5GW by 2015. Thin-film technology will comprise a large share of this market, and Oerlikon Solar’s ThinFab and Micromorph technologies are very well suited for this region.

PES: Your ThinFab solution is certainly competitive, but is it comparatively sustainable and clean?

CO’B: Oerlikon Solar’s ThinFab solution is a leader in environmental performance and sustainability, with an estimated energy payback time of less than one year, much lower than traditional crystalline PV processes.

Furthermore, Oerlikon Solar’s thin film silicon Micromorph technology does not use any toxic or carcinogenic elements in its design, a significant advantage over competing thin-film PV technologies.

PES: What technical trends are driving the market at the moment?

CO’B: As markets grow and PV’s market share expands, there is an increasing emphasis on technologies that maximise actual energy production (kWh) over each year, a metric that is much more meaningful to PPA and FIT investors than the nameplate rating of the modules.

In this area, Oerlikon Solar’s thin-film silicon Micromorph has a strong advantage because of its comparatively high output under high temperature and low light conditions. Benchmarking field tests at Oerlikon Solar’s Outdoor Test Facility have demonstrated that over a period of 15 months, Oerlikon Solar Micromorph modules produced nine per cent higher electricity generation than comparably-rated crystalline PV modules.

PES: The company’s rightly proud of the ‘Historical Milestones’ that it’s achieved over the years. If you could look into the future, what would you say is going to be the next on the list?

CO’B: A key target for us is our extended technology roadmap, which provides a clear and credible R&D pathway for Oerlikon Solar to further improve its Micromorph technology to reach an average efficiency level of 12 per cent.

This efficiency level has already been demonstrated at a cell-level, and achievement of this milestone will further reduce PV costs and broaden the regions of the world where PV generated energy is competitive with conventional electricity generation.

For more information, please visit: www.oerlikon.com/solar

About the company

Oerlikon Solar offers field proven equipment and turnkey manufacturing lines for the mass production of thin film silicon solar modules. Engineered to reduce manufacturing costs while maximising productivity, Oerlikon Solar turnkey solutions are fully automated with high yield, high uptime, and low maintenance.

The turnkey production lines are complete systems, yet modular and upgradable in both throughput and process technology. As a global leader in thin film technology, the company provides its customers with extensive experience in both amorphous and Micromorph tandem technology.

Oerlikon Solar is headquartered in Trubbach, Switzerland. It has approximately 700 employees in 13 locations worldwide, and maintains sales and service centres globally.

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