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At PV Japan, Upsolar's booth and staff stood out in professional outfits and this attention to quality and serving the end-user has given Upsolar valuable branding in the industry.

## “Made in China”

**China:** Massive production overcapacities continue to buffet the Chinese PV industry. At Solarcon China 2012 in Shanghai on March 22nd, Ewout Vandamme, Business Development Manager for sawing wire supplier NV Bekaert SA, mentioned a staggering 37 percent production utilization among Chinese wafer manufacturers in the last quarter of 2011.

In the same week at Asia Solar, China Sunergy's CEO Stephen Cai predicted a further decline in Chinese crystalline module prices from €0.65 in the first quarter of 2012 to €0.55 per Watt by the end of the year. This comes after module prices plummeted by fifty percent in 2011. At these price levels, Chinese manufacturers are hard pressed to make profits producing cells and modules. How can they survive in such a harsh environment? Surprisingly, some manufacturers are not only surviving, but adapting

their business models to become more profitable than before. Other suppliers are even more fortunate, having adopted business models from the beginning that make them less vulnerable to conditions of over- and under-supply in the market. This article explores these more resilient business models and what sets these manufacturers apart from the competition.

### Upsolar's unique business model

Upsolar is one module supplier who has taken a different track than most module

suppliers. When other suppliers in China were investing heavily in production facilities, it chose to position its business closer to the customer and outsource production of cells and modules to qualified production partners. In an exclusive interview with **pv magazine** at Upsolar's headquarters in Shanghai on March, 9, Zhe Jiang, Upsolar's founder and CEO, revealed the benefits of his business model. By outsourcing the production of its modules to qualified manufacturers in China and overseas, the company

Photo: Upsolar



Zhe Jiang, Upsolar's founder and CEO, revealed the benefits of his business model.

can achieve the following benefits. First, there is no need to invest heavily in production facilities and the large workforce that requires.

Second, by not being tied to a specific production approach and technology, Upsolar is more flexible in reacting to innovation in the industry and changing demand patterns. Third, by being the “customer” of its module production partners, Upsolar can actually implement changes more easily than competitors who have to negotiate internally when the sales side of the company wants to push through changes on the production side of the company. And as an added bonus for Upsolar, the steady increase in trade barriers, be it localization requirements or anti-subsidy and anti-dumping tariffs as in the case of the current Sino-U.S. trade dispute, is less of an obstacle since it is already seasoned in outsourcing its production to locations closer to the customer and therefore less prone to the protectionist measures of major solar demand centers.

The Upsolar approach is very different from the model adopted by many leading Chinese panel manufacturers: namely, vertical integration in a quest to capture margins in the wafer, cell and module production steps. While companies who went vertical were able to boost their profitability and secure production capacities and materials in times of heavy demand, these times have been replaced in 2011 with a situation of overca-

capacity, where production facilities could not be fully utilized and capital expenditure (CAPEX) returns were not where they should be to warrant the heavy investments in production lines and related facilities. For Upsolar, the current situation of overcapacity is actually a good thing, since it can drive hard bargains with its production partners hungry to utilize their production facilities and employ their workforce. As a further benefit, Upsolar can select best-of-breed manufacturing partners for specific products such as monocrystalline, polycrystalline or quasi-mono panels.

#### Vertical integration at GigaSolar

Critics of this business model will say that suppliers like Upsolar are dependent on the manufacturers they buy their modules from and that these original equipment manufacturers (OEM) will not share their latest technology with such customers.

Take GigaSolar, a photovoltaic manufacturer we reported on in last year's July issue of *pv magazine* (pp. 84 to 88). GigaSolar has the complete opposite business model to Upsolar and has been somewhat slow in realizing the ambitions it had last summer to become one of China's leading solar brands.

Part of this had to do with delayed certifications of its modules in key overseas markets, but the company had one of the largest booths at Asia Solar (and certainly the largest LED screen at any booth) and

seems poised to deliver on its promise to join the vanguard of China's solar industry.

According to Luciano Giangiordano, GigaSolar's Head of Sales, GigaSolar will have put in place four GW of solar cell and two GW of solar module production capacity by the end of this year with the company upgrading to fourth generation technology by that time. All of this production capacity will be distributed over nine manufacturing locations, including a production base for polysilicon ingots and bricks in Baotou in Inner Mongolia. Leading the way when it comes to vertical integration, the company also manufactures most of the production equipment to make its cells and modules. According to Giangiordano, this gives it the ability to quickly implement new technologies such as the metal wrap through (MWT) technology used in its fourth generation solar cells.

GigaSolar also has big ambitions on the downstream project front, the other side of the PV value chain. According to Giangiordano, in just 59 days in the last quarter of 2011, it managed to construct a 30 megawatt (MW) solar farm in Jiangsu province, thereby securing the lucrative RMB 1.15 per kilowatt hour (kWh) (US\$0.18/kWh) national feed-in tariff (FIT) for PV installations in China. Even though the national FIT has declined to RMB 1 per kWh (US\$0.16) in 2012, GigaSolar is building a further 60 MW of solar farm capacity this year, again in Jiangsu province on China's eastern seaboard.

Overall 150 MW of such projects are planned in China and South Korea this year with a pipeline of 240 MW overall in Asia. As Giangiordano puts it, “There's still fat there,” meaning that with module prices approaching €0.50 per watt, there is little money, if any, to be made on the module front, but still margins to be had in the downstream project business.

#### Commoditization and branding

However, this also points to the strategic strength of Upsolar, which has resisted the temptation to go vertical and instead mined the profits on the customer-facing side of the PV business. This is, after all, where the “fat” is and where a company like Upsolar can add value by creating a powerful brand customers recognize and appreciate. At PV Japan in December, Upsolar's booth and staff stood out as one of the best looking in professional



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outfits and this attention to quality and serving the end-user has given Upsolar a valuable brand in the industry. As Jiang observes, "The more the solar panel becomes a commodity, the more branding becomes important." And this applies especially in the current situation of overcapacity, where there is plenty of products, but not the steady flow of customers as in previous years.

During those times, when customers were eager to secure product and suppliers' inventories were low, even "no name" vendors could sell their output. Not so in a situation of oversupply. Now a familiar brand like Upsolar, which resonates quality and customer service in various markets around the world, can charge a premium for their brand in the sea of modules confronting the customer.

Using social media

But Upsolar doesn't stop there. With a seasoned international marketing team, the company is embracing social media and the phenomenon of "crowd sourcing" to generate its corporate slogan and advertisement for 2012. Once again, this illustrates Upsolar's closeness to the customer and the fact that it knows how to engage the customer in the internet age. Ironically, it is using Facebook to promote this campaign, even though it is a Chinese company and access to Facebook is banned in China.

CSUN's recipe for success in 2012

Upsolar's initiative on the social media and brand building front exemplifies the broad-based holistic approach advocated by China Sunergy (CSUN), said Stephen Cai in his presentation at Asia Solar. To survive in today's highly competitive market module manufacturers have to do much more than manufacture high quality modules. For Cai, the successful module maker will be active on four fronts in 2012: first, lowering the cost per watt of its modules, especially by improving module efficiency; second, cultivating diversified channels, for example emerging PV markets and a variety of market segments; third, becoming truly global in its operation; and finally, investing in the downstream part of the PV business. The last three are particularly challenging for Chinese suppliers who have focused mainly on their domestic production base and exporting their output to a handful of overseas markets

like Germany and Italy. They now need to think and act internationally, embracing new emerging markets and getting involved in downstream projects in far-away places.

Tapping into emerging markets

Despite these differences, all of these companies are "going from the sand to the sun" to use Giangiordano's apt description of this shift away from being purely a PV manufacturer. All of them are getting into the project development and power generation business. In Upsolar's case this also includes its home country China, which has suddenly morphed into a sizable PV market with up to five GW in installations expected this year. Jiang is reluctant to reveal details of their China pipeline, but describes it as a "big pipeline" with some prominent reference projects in Shanghai in the mix. The initial set of projects with a combined capacity of 20 MW are seen as "proof of concept" projects to evaluate the business case of downstream projects in China and how lucrative this line of business could be. Given the marketing and branding savvy of Upsolar, it would not be surprising if these initial projects included some landmark projects in Shanghai to further boost Upsolar's image both at home and abroad.

CSUN's Cai also singles out China as one of the three most important "emerging markets" in 2012. The other two are India and Japan and all three have targets in the twenty to thirty GW range within the next decade. China stands to exceed its goal of 20 GW by 2020 and India and Japan might do the same with their respective targets of 22 GW (2022) and 28 GW (2020). Other emerging markets singled out by Cai include Australia, Southeast Asia, Africa and South America. Like Upsolar and GigaSolar, CSUN covers all three main segments, being active in utility-scale, commercial and residential PV.

Innovation close to the customer

A listed company like CSUN clearly has benefits when it comes to bankability for large-scale projects and this is one key reason a relative newcomer like GigaSolar has to take more risk on the PV development front or think creatively about how to promote solar on the small-scale front. Fortunately for GigaSolar, this weakness is partly compensated by the shift away



Photo: CSUN



Photo: CSUN

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For Stephan Cai, China Sunergy will be active on four fronts in 2012.

from large-scale solar in key PV markets like Germany and Italy, where subsidies for large-scale solar have recently been reduced or even eliminated. In Italy, GigaSolar is cooperating with an Italian bank to make rooftop solar easily available (and affordable) for the residential sector. There is even the vision of setting up a "supermercato solare" (solar supermarket) to offer a wide range of affordable solar products to Italian consumers.

Innovation on the application side is also fundamental to Upsolar's strategy. Given their closeness to the customer, this is a logical move. One initiative on this front comprises "smart" modules. These can be easily monitored and react automatically to problems. They are cooperating with technology vendors Tigo Energy (power optimizers) and Enphase (microinverters) to integrate these technologies into Upsolar smart modules. Here too the company sees itself as a first mover in the industry and plans to announce certified products incorporating these technologies in the second and third quarters of this year.

### Clean production

"Smart modules" also fit nicely to the smart and innovative image Upsolar is trying to convey in its brand. Just as important is the value of contributing to the development of clean energy and a greener planet.

The Upsolar management team is fully aware of the challenge it faces in being perceived as "clean" and "green" when its products bear the label "made in

China." Environmental pollution problems among Chinese module manufacturers in 2011 only worsened the image of Chinese producers and Upsolar realized it had to act to keep its brand from being compromised by such developments.

It acted in a very proactive way, much like Apple did when it recently allowed third-party inspection of the working conditions at its Chinese production partners. Although it has yet to announce specifics, Upsolar will be launching life cycle assessment programs covering its production partners later this year with the goal of measuring the carbon footprint during the production of its modules and adopting measures to compensate this footprint. Part of this is just a response to so-called "environmental trade barriers", which according to Upsolar's Director of Marketing and Branding Noémie Bourdin are on the rise especially in European markets, where tenders increasingly require environmental assurances from module suppliers. However, the driving force for pioneering such "green" production is the company's value system and the importance it attaches to truly being a contributor to clean energy and environmental protection.

The "Apple business model" does seem to resonate with Jiang and Bourdin and despite the fact that Apple outsources its production to qualified manufacturers in the Greater China region (mainland China, Hong Kong and Taiwan) it obviously does incredibly well on the design and innovation front. It has a very close

relationship with its manufacturing partners, as the recent inspection of working conditions illustrates. Similarly, Upsolar can tie its manufacturers into its upcoming life cycle analysis programs. It also sends Upsolar quality control teams to monitor production at its OEM suppliers.

And its research and development center in the Baoshan District in Shanghai can push the envelope on the product innovation and design front and then pass this know-how on to its production partners.

At the end of the day it's all about priorities. For Upsolar the priority is innovation at the edge, close to the end-user of its products.

For other module manufacturers innovation can span the entire spectrum from cell and module production equipment to solar supermarkets in overseas markets. Chinese PV manufacturers certainly exhibit a wide range of business models and it can be debated whether the model of vertical integration adopted by many manufacturers is better than the "Apple model" applied to solar. Much also depends on the people behind the company (as in Apple's case with the very gifted Steve Jobs) and Jiang of Upsolar, Cai of CSUN, and Liang Xin Sun of GigaSolar; all hard-driven CEOs with a mission to improve the economics of solar. The chances are high that they will all prevail and succeed with their own individual business models and become household names in the solar supermarkets of tomorrow. ♦

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