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Europe's solar/PV sector is starting to show the green shoots of recovery – read our exclusive PES investigation inside. PLUS, meet one of the industry's leading experts on ground-mounted PV

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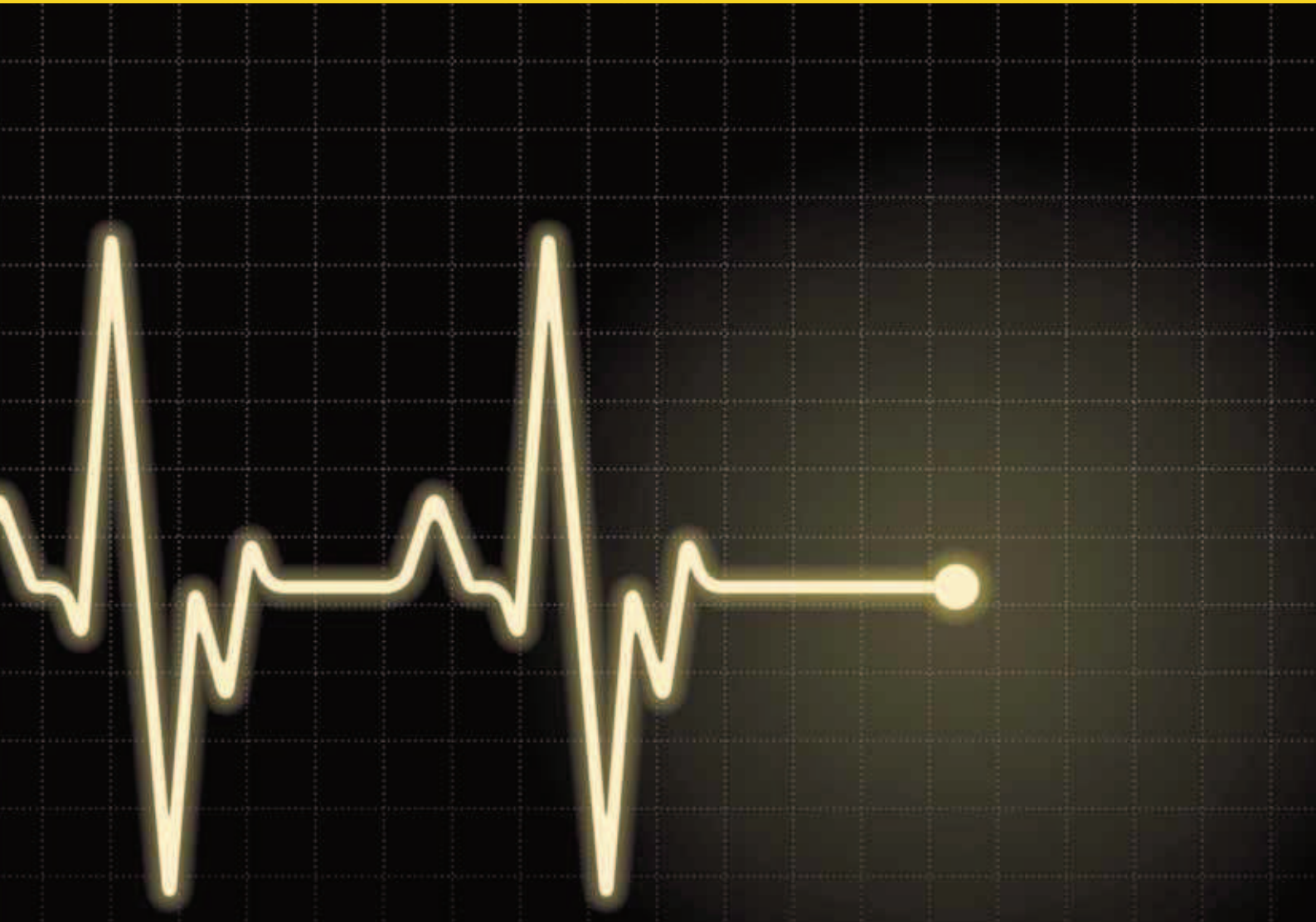


VITAL SIGNS

Thought Europe's PV sector was on its knees? Think again

PV: driving the machine manufacturing sector

The worldwide stop on production capacity extension for solar modules is proving to be a heavy burden for the solar machine manufacturers. Nevertheless, no company wants to quit the PV sector, because the solar energy market is already set to pick up again in the medium term. Until this happens, equipment suppliers are strengthening other sources of sales and income. We take a look at the situation in Germany, a litmus for the rest of Europe...

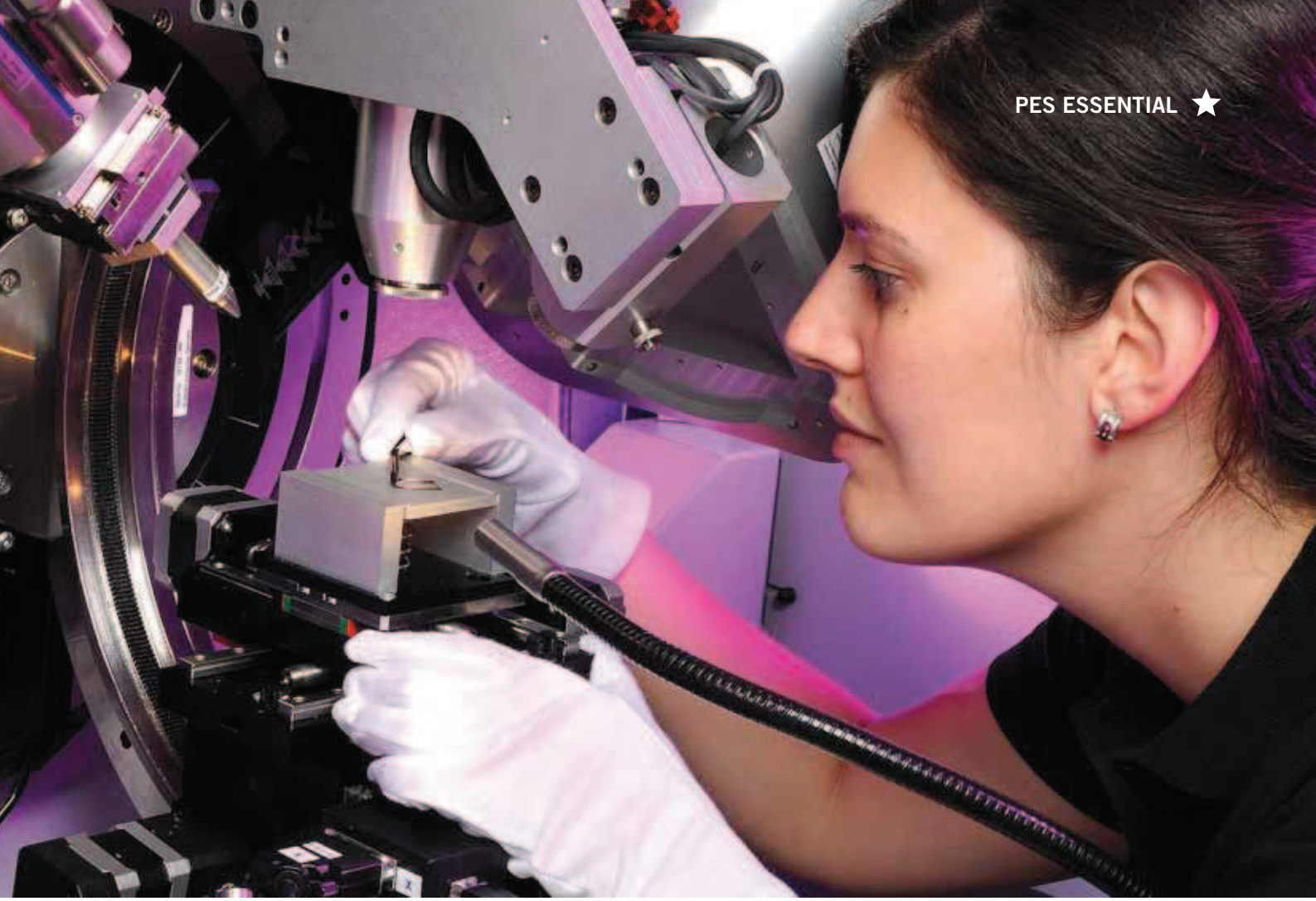
It sounds like hard times. For 83 per cent of the photovoltaics (PV) suppliers in Germany the order situation has worsened compared to the previous year. That is why the companies are expecting an average sales decline of over 20 per cent in 2012. This in turn is having a negative effect on employment. Almost two thirds of companies are making use of short-time working. The current business climate survey conducted by the German Engineering Federation (Verband Deutscher Maschinen- und Anlagenbau - VDMA) leaves us in no doubt: in just a few months solar machine manufacturing has gone from order boom to sales crisis.

“The investment readiness of the cell and module manufacturers has noticeably declined”, explains Eric Maiser, Executive Director of the Photovoltaic Production Aids platform within the VDMA. On the one hand the manufacturers have developed clear surplus production capacities and analysts estimate that in 2012 around 30 gigawatts (GW) of PV output will be installed worldwide – in the context of global production capacity of 50 gigawatts.

On the other, the trend in key PV installation markets is uncertain. Many countries with solar energy feed-in charges have in some cases drastically reduced their subsidy tariffs because the installations were getting out of control. For the world’s largest solar market, Italy, for example, the experts are this year expecting expansions of only two gigawatts – that would correspond to a market decline of three quarters compared to 2011.

On top of this, there is the fact that China, the main sales market for European suppliers, is gradually establishing its own powerful solar machine manufacturing market. For that reason the Europeans can no longer do business there as easily as previously. “The technological independence of foreign companies should be reduced to a minimum in China”, explains management consultant and China

Versatile applications: it is now impossible to imagine solar production without lasers. The latest technology handles several process cycles within the shortest time. (Jenoptik)



A new source of income: solar electricity must be stored for intelligent energy supply. Machine manufacturers have therefore also been recently researching into batteries. (Photo: DLR)

expert Frank Haugwitz. Within the framework of the current 12th five-year plan (2011 to 2015) implemented by the Chinese government, photovoltaics is right at the top of the political agenda. “Therefore considerable financial funds are being made available for solar energy, especially for plant construction and new cell types”, says Haugwitz.

Less demand in China

Despite the current problems, the machine manufacturers are remaining optimistic. Solar crisis or not – in two to three years the PV market will pick up once again, believes Jürgen Weiss, head of Marketing at German special machine manufacturer Gerold. “The prices of solar modules are falling dramatically, so that photovoltaics is approaching competitiveness in many parts of the world”, says Weiss. Growth will no longer be mainly a feature just in Europe, which is becoming less significant due to the subsidy cuts, but in new markets in Asia and the USA.

Gerold builds material-handling systems and process facilities for the production of crystalline silicon and thin-layer modules, these include stations for panel framing, edge sealing and trimming. In 2011 the company from the Lower Rhine generated three quarters of its turnover in the solar technology sector. This share will probably shrink to half this year, estimates Weiß.

Gerold reflects the mood of most solar machine manufacturers: they clearly feel the slump, but are continuing to bank on PV. In recent years, in each case, the German supplier Primus Centrotherm for example generated more than 80 percent of its sales in the Far East and is suffering badly from the factory construction stop in China. In 2011 the company had to contend with an operating loss of 19.8 million Euro.

Nevertheless, head of technology, Peter Fath, believes in a positive turn-around. We are working flat out on solutions, which make photovoltaics competitive with conventional energy sources”, says Fath. In this connection he said that Centrotherm was focusing both on innovative machine and production concepts as well as on compliance with the highest quality and environmental standards.

The East German company Firma Jenoptik Automatisierungstechnik, a specialist in the manufacture of laser machines for the production of thin-layer modules, also believes there will be a quick end to the consolidation phase in the PV market. “The growth rates in the area of CdTe and CIGS technology are putting us in a confident mood”, says Jenoptik-Product Manager Gabriele Eberhardt. CdTe and CIGS stand for thin-film modules on the basis of semi-conductor cadmium-telluride along with copper, indium, gallium and selenium.

Jenoptik is offering two laser facilities aimed at further efficiency improvements and cost reductions: “Jenoptik Votan Solas” enables us to strip the coating from the edge of modules in all sizes and cut it to length, “Jenoptik-Votan Multi Solas” can even be used for all structuring processes in the CIGS sector. In the production of thin-film modules conductive and photoactive layers are gradually being applied to synthetic material or glass. After each individual coating, the surface is structured. This process leads to the creation of individual cells and their relay in the transformation to modules. From 23.10.2012 to 26.10.2012 in Düsseldorf, at the International Trade Fair for Solar Production Equipment, solarpeq, and the parallel event glasstec, leading world fair in the glass sector, manufacturers can obtain an exact impression of the innovations presented by the suppliers as well as PV in architectural applications.

Solar energy storage – new source of income

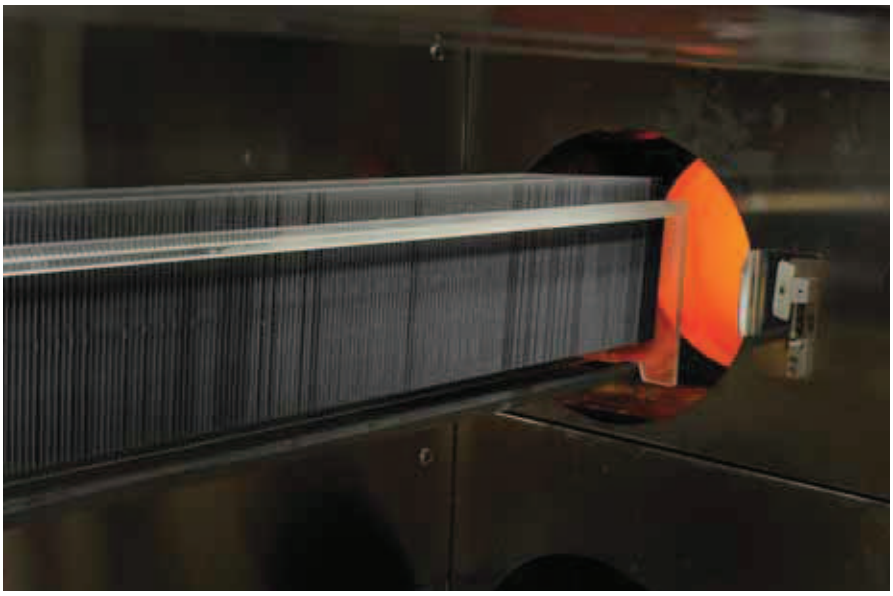
“No one wants to shut down the solar energy sector”, as is also emphasized by VDMA expert Eric Maiser. “We assume that the international markets will pick up once again and also that the retrofitting business will become increasingly significant”, says Maiser. Moreover, in order to get through the crisis, the companies could also build

on other sectors. “Only a few companies exclusively manufacture machines and components for the solar industry”, explains Maiser.

Gerold for example is once again focusing increased intention on its core business, equipping the automobile industry with glass machines. The major market-leading, solar energy suppliers such as Italian glass specialist Bottero, Centrotherm or Meyer Burger from Switzerland are relying on tried-and-tested sectors. At Centrotherm the semi-conductor and micro-electronics sectors, which led to the creation of the company in the first place, are helping to reduce the company’s dependence on solar energy.

Saw specialist Meyer Burger in turn is compensating for cuts in its solar energy business in particular through the expansion of its opto-electronics business, in other words separation technologies, which for example process glass for manufacture into prisms.

Jenoptik in turn is also opening up new theme areas. Since the end of last year, the company in Jena has been offering laser systems for the manufacture of high-tech glass for energy-saving “smart windows”. These windows can be electronically adjusted to the external lighting conditions. As a result, the users can regulate light incidence and the room temperature themselves thus controlling their own energy consumption. As the production of the high-tech glass is similar to that of the thin-film manufacturing process, Jenoptik can offer the same laser technology for this process.



Key process: using phosphorous diffusion, the insertion of phosphor atoms in the semi-conductor, the solar cell becomes electrically conductive. The furnaces for this process mainly come from Germany. (Photo: Solarworld)

Maiser recognises a further trend among the suppliers. “An increasing number of our members are entering the storage technology business.” The companies have developed their own storage solutions for solar energy and the appropriate production machines for this purpose, such as for example the southern German equipper Schmid. According to its spokesman, Christoph Kübler, the company is conducting research into liquid fluid storage capacities facilities for various areas of application such as PV, electro-mobility and the health service.

At the Energy Storage conference, which Messe Düsseldorf staged in cooperation with the Berlin know-how provider Solarpraxis in spring 2012, one thing already become clear: energy storage units are absolutely the theme of the future. Germany has rounded off the energy turnaround with an increased share of renewable energies. To ensure that solar and wind power is not fed uncontrolled into the sensitive electricity networks on very sunny or windy days, the surplus eco energy must be stored in the interim for periods of high demand. This is made possible among others by using large pump storage units, the conversion of eco-electricity in hydrogen and methane using electrolysis and methanization as well as batteries. “Anyone who is placing their faith in storage technology, definitely has positive prospects”, says Maiser. ■

Spectators only: thanks to rapid technical advances by the solar machine manufacturers, the production process for solar cells is today a fully automatic one for many manufacturers. (Photo: Centrosolar)

PES would like to thank Solarpeq for their assistance with this article.
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