

## “High-Tech Engineering is the Key to Solar Manufacturers’ Survival During the Coming Consolidation”

**Reutlingen, December 1, 2011.** On November 15, 2011, Manz signed a letter of intent to acquire the innovative production line for CIGS solar modules from Würth Solar, headquartered in Schwäbisch Hall. Dieter Manz, founder and CEO of Manz AG, provides five important answers about the upcoming deal.

1. **The Big Picture:** What was the state of the industry when Manz acquired the Innovation Line of Würth Solar in Schwäbisch Hall in the middle of November?

Political instability in Western industrialized nations, particularly in Germany, concerning the further development of feed-in tariffs led to considerable worldwide overcapacities at solar module manufacturers and, as a result, a rapid decline in prices for end products. This trend, which is painful for manufacturers, did have a positive effect on the industry as a whole, however – at current prices, photovoltaics (PV) is becoming increasingly interesting for large markets with lots of sun, such as the United States, India, and China. In these markets, solar power will soon be viable without large subsidies. That’s why I expect the current sales crisis to end in approximately nine to twelve months. Until that time, module manufacturers need to cut their costs in order to maintain their market position, since the prices for modules are definitely not going to go up.

2. **The Technology:** Manz has collaborated with Würth Solar in the field of CIGS thin-film technology for the past year and a half. Why this technology exactly?

CIGS (based on a semiconductor made of copper, indium, gallium, and selenide) has the greatest potential to cut costs and increase efficiency of all the thin-film technologies. Our partner ZSW, the Center for Solar Energy and Hydrogen Research Baden-Württemberg, located in Stuttgart, Germany, has already achieved efficiencies of over 20 percent in a laboratory setting. That is the world record and almost as good as the top efficiency of polycrystalline silicon cells. At the same time, CIGS modules can be produced extremely affordably, and not just compared to crystalline silicon technology. We believe CIGS thin-film technology is the last step toward solar power being able to compete with other sources of energy without subsidies. This is called *grid parity*, and it has already been reached in individual markets, such as California, and will soon be reached in Germany as well.

3. **The Timing:** Why did Manz acquire the production line from Würth Solar now?

Würth Solar decided not to invest in expanding its production, and in the future wants to focus on the sale of solar modules – after all, based on its strategy, Würth is a commercial enterprise and not a manufacturer. Together with Würth Solar, in the past one and a half years, we have developed CIGS into a record-breaking technology when it comes to the

efficiency of thin-film modules – in Schwäbisch Hall, we achieved a module efficiency of 14 percent in a mass-produced panel.

Now we are converting Würth Solar's production line with a capacity of 30 MW into an "innovation line" with a capacity of 6 MW. In the future, we will use this line to test new machines, new materials, and new processes. Such process optimization shouldn't only be carried out in a lab, what we need is an environment similar to a mass production setting. Due to the long-term growth of the photovoltaic industry and *grid parity* being achieved in large markets, global players such as electronics companies will soon enter the PV market. And we want to be ready when that happens – with a technically mature complete package.

4. **The Customer Benefit:** What added value can potential customers gain from your acquisition of the Würth Solar Innovation Line?

We have cut the CIGSfab's production costs by 25 percent since the beginning of our partnership with Würth Solar in July of 2010. And we can go much further, as our technology road map shows. Our goal is to develop CIGS thin-film technology into the most affordable solar technology.

In order to achieve this goal, we are acquiring a mature technology from Würth Solar as well as 118 CIGS specialists. As a result, we have the largest team dedicated to this technology in the entire industry. We can help potential customers quickly begin production in their new factories and minimize their investment risk. This combination is one-of-a-kind in the engineering sector and will secure Manz's lead over the competition in the future as well. As an engineering firm, with CIGSfab we have an important key to solar module manufacturers' survival during the upcoming consolidation. Most solar manufacturers do not have any other choice – either they give up or invest in a new future technology such as the CIGSfab. Business as usual in the solar industry is not an option.

5. **The By-Product:** Will Manz now become a module manufacturer itself and be forced to sell solar panels?

That's a legitimate question, but we are reducing production capacity in Schwäbisch Hall to a fifth of its original size, which will hardly make us a serious module manufacturer. Our focus is on innovation, not production. The modules produced in Schwäbisch Hall will either be sold through Würth Solar or to potential buyers of our CIGSfab. For the latter, this is an ideal way to prepare for their own market entry with identical modules, so they are ready when their own line begins operation.

**An audio interview with Dieter Manz regarding the CIGSfab can be found [here](#) (in German).**



**High-resolution photos of Manz's CIGSfab taken by Stefan Richter, Storymaker GmbH**  
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### **About Manz**

Manz AG, headquartered in Reutlingen, Germany, is one of the world's leading high-tech engineering firms. Founded in 1987, in recent years the company has grown from an automation specialist into a supplier of integrated production lines for crystalline solar cells and thin-film solar modules as well as lines for manufacturing flat panel displays. One of its newest areas of business is the development and manufacture of production systems for lithium-ion batteries. The company, led by founder Dieter Manz, has been listed on the stock exchange in Germany since 2006, and currently operates production facilities in Germany, China, Taiwan, Slovakia, and Hungary. At the end of the third quarter, Manz AG had approximately 1,950 employees, 950 of which work in Asia. With its slogan, "Passion for Efficiency," Manz's engineers are making a promise to offer its customers – all companies active in important future markets – increasingly efficient production equipment.

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