

## **Manz Provides Update on CIGSfab at PHOTON's Fourth Thin-Film Conference in San Francisco**

- **The efficiency of CIGS modules from the Manz CIGSfab steadily nearing the laboratory values attained by the ZSW in Stuttgart**
- **Acquisition of the CIGS "innovation line" from Würth Solar in January 2012 accelerating technological development**
- **Manz is expanding its lead over the competition with the most qualified CIGS team in the industry**

**Reutlingen, February 2, 2012.** The high-tech engineering firm Manz presented the latest advances to its integrated production line for the manufacture of CIGS thin-film solar modules, the Manz CIGSfab, at the fourth Thin-Film Conference held by the solar industry magazine PHOTON. This includes achieving the previously attained increases to module efficiency under mass production conditions, cutting the capital expenditures (capex) required for the Manz CIGSfab by nearly one fifth, and reducing the cost of manufacturing modules by 25 percent since 2010. "Efficiency, capital expenditures for the equipment, and ongoing production costs – all three criteria help module manufacturers significantly cut their costs per watt. And in the current market phase, cutting costs is one of the main keys to a company's success", says Dieter Manz, founder and CEO of Manz. Under the CIGSfab brand name the company has offered complete turnkey production lines, which are scalable from an output of 43 MW to over 350 MW, since 2010.

Market analysts are forecasting that the market for CIGS modules will double in the coming three years. CIGS technology, which is based on a semiconductor, made of copper, indium, gallium, and selenide, has the highest potential to cut costs and increase efficiency of all the thin-film technologies. As such, Manz's strategic 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. Manz manufactured the solar panel that currently holds the world record for the highest level of efficiency ever achieved in a mass-produced panel, with an efficiency of 14 percent (15.1% aperture), on the CIGS innovation line that the company acquired in its entirety from Würth Solar at the beginning of this year.

In addition to the complete rights to the technology, Manz also acquired 118 specialists with the CIGS innovation line. “This level of expertise gives us an absolutely unparalleled position in the PV industry and can accelerate technological advancements in the field of CIGS,” explains Dieter Manz. The next upgrade to Manz’s CIGS innovation line installed in Schwäbisch Hall will be a completely new system for co-deposition developed by Manz Coating. This system allows throughput to be increased by 50 percent. When it comes to advancements to its CIGSfab turnkey lines, Manz is also concentrating on cutting materials costs. Since these costs amount to about 50 percent of the costs of manufacturing solar modules, Manz also sees significant potential to help solar power achieve grid parity in this area. In its technology road map, Manz offers module manufacturers a detailed schedule as the industry travels along the path to this goal.



### Photos:

1. Dieter Manz, founder and CEO of Manz AG, offered an update on CIGSfab at PHOTON’s fourth Thin-Film Conference in San Francisco.
2. Diagram of the Manz CIGSfab 10, a fully integrated and automated production line for CIGS thin-film solar modules.

High-resolution photos by Stefan Richter, Storymaker GmbH [s.richter@storymaker.de](mailto:s.richter@storymaker.de), +49-7071-9387-2213

### 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 start of 2012, Manz AG had approximately 2,100 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.

**Public Relations Contact**

Manz AG

**Axel Bartmann**

Phone: +49-7121-9000-395

Fax: +49-7121-9000-99

E-mail: [abartmann@manz.com](mailto:abartmann@manz.com)