

Manz AG: Orders amounting to EUR 263 million for turnkey lines and strategic cooperation mark breakthrough in CIGS thin-film solar business

- *Bulk orders for two turnkey CIGS production lines totaling 350 MW capacity by far the largest orders in the company's history ever*
- *Manz enters strategic cooperation including solar joint ventures with two leading companies in China's energy sector to commercialize CIGS thin-film technology*
- *Cooperation lays foundation for sustainable profitable corporate development of Manz AG and opens up immense revenue potential for the future*

Reutlingen, January 23, 2017 – Manz AG (ISIN: DE000A0JQ5U3) has entered into a strategic cooperation with Shanghai Electric Group Co., Ltd. and Shenhua Group Co., Ltd. in the field of CIGS thin-film technology. In the course of that, Manz AG received two bulk orders, one for a CIGS production line with a capacity of 306 MW and another one for a CIGS R&D line with 44 MW capacity. The order for the R&D line has been placed by a newly established R&D Joint Venture, the order for the CIGS turnkey mass production line (CIGSfab) by a newly established module joint venture of affiliated subsidiaries of Shenhua Group and Shanghai Electric. This CIGSfab, which will be the largest CIGS production line in China and the second largest worldwide, will be built in Chongqing. The installation will start in 2017 and will be finished in the following year 2018. Considering the immense potential worldwide this order, however, is considered only as a first step. The order volume totals EUR 263 million and will affect revenues and earnings during the financial years 2017 and 2018. Due to corresponding down payment agreements, these orders will be realized cash flow positive. Both, the cooperation as well as the orders received, form the basis for a profitable corporate development of Manz AG and prove the technological and cost leadership of CIGS thin-film technology.

Dieter Manz, CEO and founder of Manz AG, is pleased: "This cooperation is absolutely outstanding in the solar industry worldwide. We were always convinced of the superiority and potential of our CIGS thin-film technology since CIGS modules from Manz already offer the lowest electricity generation costs in comparison to the crystalline silicon technology. Today's agreements mark the breakthrough in our solar business. Our confidence in our excellent engineering know-how will now pay off."

In order to further commercialize and develop Manz CIGS thin-film technology, the three partners – Shenhua, Shanghai Electric and Manz – agreed combining their strengths in the area of power generation, large-scale equipment manufacturing and world-leading technology. Shenhua Group, the largest coal enterprise in China and the largest coal supplier in the world, teamed up with Shanghai Electric, anchor investor of Manz AG and leading equipment supplier in China for power generation, to cover know-how through the entire value chain of renewable power generation from CIGS solar modules. Manz AG has exclusive access to the world record for CIGS thin-film solar cell efficiency on glass at 22.6%

thanks to its longstanding and exclusive collaboration with the Center for Solar Energy and Hydrogen Research of Baden-Wuerttemberg (ZSW). Moreover, Manz already runs one of the largest and most experienced R&D teams in the field of CIGS worldwide at its location in Schwaebisch Hall.

R&D Joint Venture: Unique alliance for development of CIGS thin-film technology

With today's signing, the companies laid the foundation for a unique R&D Joint Venture that will become the world-leading research company dedicated to the CIGS thin-film technology. The R&D Joint Venture will leverage the potential of CIGS for further efficiency increase and reduction of manufacturing costs. With the objective to further accelerate the R&D process, a R&D line will be installed in Beijing in addition to the existing one of Manz in Schwaebisch Hall. Therefore, Manz AG will deliver a 44 MW line to the joint venture. The current R&D entity for CIGS from Manz AG, the Manz CIGS Technology GmbH, will be acquired by the new R&D JV for EUR 50 million. In return, Manz becomes shareholder of the Joint Venture with 15 % for an amount of EUR 25 million. The remaining shares are held by affiliated subsidiaries of Shenhua Group, Shanghai Electric, and Beijing Future Science Park Development Group.

The involved parties also agreed to guarantee the site and jobs in Schwaebisch Hall for the next five years. "By establishing this world class R&D Joint Venture with our financially strong strategic partners we will further expand the cost leadership of the CIGS technology. In addition annual negative earnings effects in our P&L of EUR 15-20 million from running the site in Schwaebisch Hall will cease with this agreement. This, together with the order pipeline of 350 MW and the further immense potential form the basis for a profitable development of Manz AG," Dieter Manz explains.

Equipment Joint Venture: Cooperation agreements open up big revenue potential in the upcoming years

To push forward the realization of this immense potential in a sustainable way, Shanghai Electric, Shenhua Group and Manz will also establish an Equipment Joint Venture which will exclusively start sales activities for the CIGSfab in China, realize the engineering services during upcoming projects and support the ramp-up. Whereas the above mentioned bulk orders for the R&D line as well as the 306 MW production line have been placed at Manz AG directly, potential orders from China may follow and will be placed at the Equipment Joint Venture. Major shareholder in this Joint Venture is Manz AG with 56% and therefore will fully consolidate future revenues and earnings. Shanghai Electric and Shenhua Group hold the remaining shares in the joint venture. In the rest of the world CIGSfabs will be sold solely by Manz AG. Within the further commercialization, the Equipment Joint Venture will also have access to the future research results of the R&D Joint Venture as well as from the collaboration with the ZSW through exclusive license rights agreements.

Dieter Manz: "Today is a great day for our company and the entire solar industry. We have been working hard towards this day and finally our longstanding perseverance as well as the high investments in the further development of our CIGS technology are paying off. The past years have not always been easy, neither for our employees nor for our shareholders. But it was worth it! Manz now takes over a leading role with its fully integrated turnkey production line CIGS*fab* regarding the technological change from the labor- and material-intensive crystalline solar technology towards the resource-saving and efficient thin-film solar technology. This makes us all very proud."

Further information:

You can find further information on the importance of the strategic cooperation for the further development of CIGS thin-film solar technology as well as its meaning for Manz AG here: <https://www.manz.com/ecomaXL/files/Manz-CIGS-Background.pdf>

Current pictures and videos to CIGS can be downloaded here:

Pictures: <https://www.manz.com/media/downloads/pictures/?category=60>

Video: <https://www.manz.com/media/downloads/videos/tfs-prozessschritte-26/>

Company profiles:

Manz AG – passion for efficiency

As a globally active high-tech equipment manufacturer, Manz AG, based in Reutlingen, Germany, is a pioneer for innovative products in fast-growing markets. Founded in 1987, the company has expertise in seven technology sectors: Automation, laser processing, vacuum coating, screen printing, metrology, wet chemical and roll-to-roll processing. Manz deploys and continuously develops these technologies in three strategic business segments: Electronics, Solar and Energy Storage.

The company is led by founder Dieter Manz and has been listed on the stock exchange in Germany since 2006. It currently develops and produces in Germany, China, Taiwan, Slovakia, Hungary and Italy. It also has sales and service branches in the United States and India. Manz's claim "passion for efficiency" offers the promise of production systems of the highest efficiency and innovation to its customers in dynamic, future-oriented segments. With its comprehensive expertise in developing new production technologies and related machines, the company contributes substantially to reducing production costs for end products, making them accessible to large groups of buyers the world over.

Shanghai Electric Group Co., Ltd.

Shanghai Electric Group Co. Ltd. is one of the largest and most comprehensive equipment manufacturing conglomerates in China, possessing four main businesses with regard to high efficiency & clean energy, new energy, industrial equipment, and modern services. Its Products cover more than ten industries. In 2015 revenue amounted to RMB 78.0 bn (EUR 10.6 bn).

The group will pay more effort to the improvement of its competitiveness through the execution of following three major strategies: core business concentration, high technology innovation, global source integration. Meanwhile, the group is developing “Shanghai Electric” as a universal brand, so that it will have the fundamentals to develop the group into one of the largest and most competitive equipment manufacturers in the world with a top position in the China market. Shanghai Electric is listed on the Hong Kong Stock Exchange and the Shanghai Stock Exchange.

Shenhua Group Corporation Ltd.

The Shenhua Group Corporation Ltd. was set up in October 1995 and is the largest and most modern coal enterprise in China and the largest coal supplier in the world. As a multinational company, the Shenhua Group is engaged in power generation, railway and port transportation, shipping, coal-to-liquid and coal chemicals with integrated production, transportation and sales operations.

In 2015, Shenhua Group is ranked 196th among the global Fortune 500. Headquartered in Beijing, China Shenhua Energy Company Ltd., created by Shenhua Group, is listed on the Hong Kong Stock Exchange and the Shanghai Stock Exchange. By the end of 2015, Shenhua Group had 21 wholly owned subsidiaries, had invested in 54 coal mines and power plants and had a total installed electricity production capacity of 78.51 million kilowatts. The group’s total assets were worth RMB 931.4 billion at the end of that year with a registered staff of 208,000.

In 2015, Shenhua Group actively adapted to the Chinese strategic focus on clean energy development and has made remarkable achievements in production and operation since then.

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