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For Immediate Press Release

New world record for mass produced conventional silicon solar cell - 19.2 percent efficiency

Sunrise Global Solar Energy has set a new world efficiency record for mass produced conventional solar cells. A peak efficiency rate of up to 19.2 percent has been reached for the first time in standard volume production by combining Sunrise's unique processing know-how and the selective emitter technology from Schmid, one of its technology partners.

Sunrise Global Solar Energy Co Ltd (Sunrise), a world-leading manufacturer of solar cells in Taiwan, has achieved a conventionally processed cell conversion efficiency of 19.2 percent for the first time in industrial mass production. Sunrise achieved this result through its cooperation with Schmid GmbH + Co (Schmid), a worldwide technology market leader and supplier of system and process solutions, for the production of solar wafers, cells and modules. The measurements were confirmed by the University of Konstanz and the Fraunhofer Institute for Solar Energy Systems, verifying the claims of the two companies.

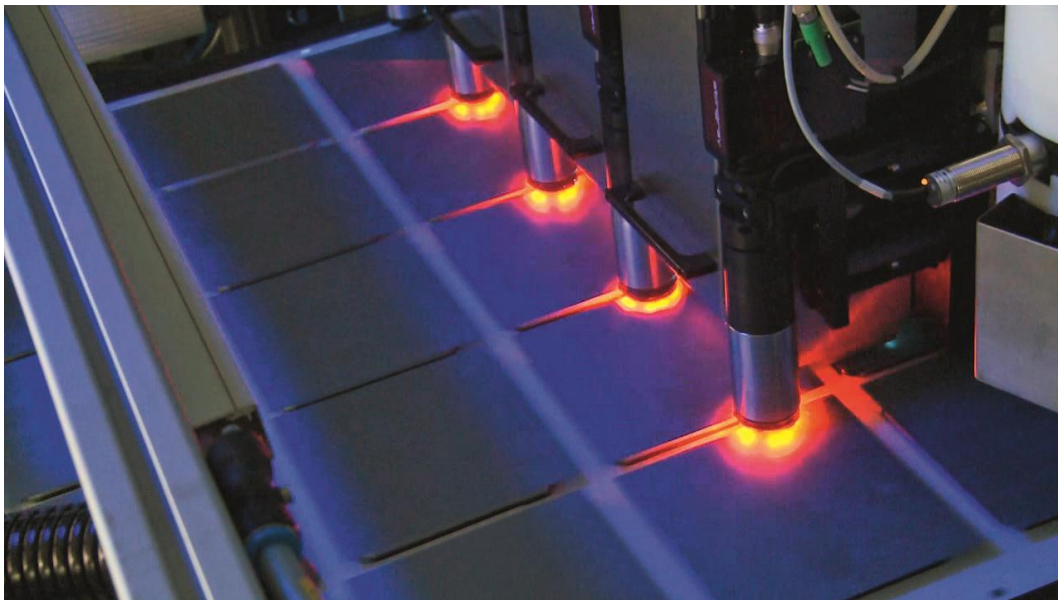
Alongside the selective emitter technology from Schmid and advanced processing steps optimized by Sunrise, the cell efficiency record was otherwise achieved in a standard single-sided screen-printed solar cell structure – thereby setting a new global standard for conventional solar cells. The production runs of record solar cells which achieve a peak rate of 19.2 percent are based on industrial grade 6” mono-crystalline wafer material (Czochralski drawing) with conventional screen printed aluminum backside.

The increased rate of efficiency reached by Sunrise was made possible by the use of the selective emitter technology developed internally by the Schmid Group and combined with the highly optimized fabrication steps by the Sunrise team, which has a track record of pushing the boundaries of solar cell efficiencies. Technically speaking on the selective emitter process, Dr. Christian Buchner, Vice President of Schmid's Cell Business Unit, says, “In Schmid's combined printing and etching process, the high phosphorous doping layer on the cell is selectively etched and only remains in those places where contacts are subsequently printed - for this purpose a wax mask is applied by an inkjet-type printer. The utilization concept of the selective emitter increases the efficiency of the solar cell by up to 0.6 percent absolute”. Mr. Buchner also comments on the reliability and competitiveness of the end product “The digital inkjet printing technology and the optical characterization techniques utilized create an outstanding level of precision and process stability. Moreover, with the extremely low investment requirement and with a view to minimizing the running costs involved, this technology is well positioned to withstand the continually rising cost pressure in solar cell production - the technology capabilities of the Schmid Group have once again been proven.”

Sunrise CEO, Hsu Kuei-Chang commented, “We are thrilled that out of our many technological development programs that the Schmid selective emitter process has developed so quickly into mass production”. The executive also mentioned customer response to the product, “Module makers are consistently seeking differentiating characteristics, as a result of our continued leadership in high efficiency cells, our customer partners are ecstatic that we can supply them world beating efficiencies on a mass produced and cost competitive level”.

Picture caption: Schmid_SE-JET_digital_printing.jpg

„Digital printing of etch masks on solar cells.”



About Sunrise:

Sunrise designs, manufactures and markets high-performance solar cells worldwide for residential, commercial and utility-scale power plant customers. Sunrise high-efficiency solar cells generate significantly more power than conventional solar technologies. Sunrise, founded in 2007 by a team of solar technology pioneers, focuses on manufacturing premium cell products, and will have fully ramped capacity of its first high efficiency cell factory of 330 MW annualized within the next two months.

About the Schmid Group:


Schmid Group is a worldwide technological market leader and supplier of system and process solutions, inter alia for the production of solar wafers, cells and modules. Their product portfolio ranges from individual equipments to turnkey production lines with guaranteed output parameters such as production capacity and efficiency in the wafer, cell and module sectors.

The systems easily integrated by Schmid for the production of cells using the selective emitter are already successfully in operation. By the end of 2011 the Schmid Group anticipates an installed capacity of 6 GW of their equipment worldwide which makes this by far the most successful selective emitter technology established on the market.

The total process consists of the SE-Jet, a highly precise inkjet printer which applies the wax mask for the selective emitter contact-free at a precision of ± 7 micrometers. Subsequent inline wet processes for back-etching the emitter and stripping the wax mask were integrated at a low-cost level in the one-sided wet-chemical edge insulation and the phosphorous glass etching system and brought to production maturity by the Schmid Group.

The advantages of this combined printing and etching process are the gentle treatment of the cells, high accuracy and process stability as well as low investment and running costs.

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