

Corporate News

centrotherm wins the Solar + Power Award 2016 for its PERC solar cell production solution

- **Award in the PV Tool Innovation category**
- **Presentation to an international expert audience at EU PVSEC**
- **Production solution operational in Asia**

Blaubeuren, June 27, 2016 – On the occasion of Intersolar Europe, the Solar + Power Award 2016 was conferred on centrotherm for its PECVD c.PLASMA AIOx system for the manufacturing of PERC solar cells. The leading technology and equipment supplier impressed the jury with its product in the PV Tool Innovation category. This prize is awarded for developments that make a significant contribution to raising efficiency in solar cell production.

The performance capacity of the centrotherm production solution for highly efficient PERC solar cells was also the topic of a scientific presentation at EU PVSEC 2016, the world's largest and most important photovoltaic conference held in Munich. Under the title of "*40 kHz PECVD of AIOx/SiNx Stacks Demonstrated in Industrial High Efficiency PERC Production*", centrotherm presented the results of its PECVD process for aluminum oxide/silicon nitride coating to an international expert audience. The outstanding results were achieved through cooperation in a project with a leading Taiwanese customer. Production evaluations with other prestigious solar cell manufacturers show that this process is best suited to manufacture multi- or mono-crystalline PERC solar cells with efficiencies of over 19.5 % (mc-Si) and over 21.5 % (Cz-Si) in mass production, irrespective of the quality of the emitter and wafer material.

The centrotherm PERC production solution is based on the PECVD batch system that has been installed more than 1,000 times all over the world and is considered industry standard in the photovoltaic sector. The c.PLASMA AIOx batch system features significant advantages compared with the in-line systems available in the market. This is particularly applicable to the high equipment uptime that exceeds 98% and the process flexibility. Cleaning the process chambers once a week, which is necessary with in-line systems, is dispensed with through direct plasma deposition. Deposition takes place almost exclusively on the wafers, as well as on the graphite boats, and does not contaminate the process chambers. The centrotherm direct plasma process excels through outstanding surface passivation properties in the process of passivation through AIOx/SiNx stacked layers on the rear side of PERC solar cells. The centrotherm PECVD system c.PLASMA AIOx offers improved process flexibility through the possibility of deposition of further dielectric layers, such as

SiONx or SiOx. Rather than modifying the system, this only requires adjustments to the recipes. In addition, the centrotherm system concept with four redundant process chambers also enables process optimizations during running production. New recipes can be transmitted to other process chambers or systems without interrupting production.

Dr. Josef Haase, Senior Vice President Technology Photovoltaics of centrotherm photovoltaics AG, received the prize last week in Munich and sees the award of centrotherm's chosen solution as confirmation of the centrotherm team's competence: "centrotherm has been offering its customers reliable process solutions and system concepts for efficient solar cell production for more than 40 years. The centrotherm brand stands for highest overall performance, quality and safety in the photovoltaic industry. With our PECVD AlOx process and our c.PLASMA system platform, we currently offer the best production solution for the mass production of PERC solar cells. The award conferred by the solar community affirms this conclusion. Mass production using c.PLASMA AlOx is currently being evaluated and applied by Asian customers, with the performance level of in-line systems being achieved within a short time window. In other words, further optimizations will deliver proof of the centrotherm technology's superiority, similar to silicon nitride deposition. We discussed the use of our PERC production solution with other customers at Intersolar Europe."

About centrotherm photovoltaics AG

centrotherm has been developing and realizing innovative thermal solutions for over 50 years. As a leading and globally operating technology group, we offer production solutions for the photovoltaic, semiconductor and microelectronic industries.

The continuous further development of our successful solutions in thermal processing and coating, such as for manufacturing crystalline solar cells and power semiconductors, form the basis for our successful partnerships with industry, research and development.

Our customers worldwide appreciate our production systems' process stability, scalability and availability in mass production. Above and beyond this, our work is distinguished by the fact that we create high-end process technology solutions which are specific for our customers and tailored to their requirements, and the fact that we are outstanding in system building.

We jointly confront the daily challenges of setting new trends, maximizing the efficiency of producing, for example, solar cells and semiconductors, and, coupled with our long machine durations, of securing investments.

In this way, we generate valuable competitive advantages for our customers through targeted innovations to processes and production solutions.

Our around 700 staff worldwide are committed to the further development of high-tech solutions for key markets.

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