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PVcomB sets sputter system from Leybold Optics in operation

Berlin competence centre for photovoltaics commences full operation with small modules

The Berlin Competence Centre for Thin Film and Nanotechnology for Photovoltaics (PVcomB) – an initiative of the Helmholtz Centre Berlin for Materials and Energy and the Technical University of Berlin – has set two thin-film solar-module production tools in operation together with Leybold Optics GmbH from Germany. With these inline sputter systems, PVcomB has closed the final gaps in its two research lines for thin-film silicon and CIGS solar modules, and has now commenced full operation with modules measuring 30 x 30 centimetres.

"Continuous thin-film technology developments in the laboratory which must be implemented on an industrial level as quickly as possible," says Dr. Rutger Schlatmann, head of PVcomB, summing up the mission of the competence centre. Scientists and technicians work at two research lines, focussing on the needs of industry, with the aim of solving problems related to industrial production. At the same time, alternatives arising out of basic research are developed and tested at each process and analysis stage.

The sputter systems manufactured by Leybold Optics were finally commissioned in May 2012 thus completing PVcomB's research lines for thin-film silicon and copper-indium-gallium-selenide (CIGS). The competence centre is now able to perform the entire module production process, from cleaning the glass panels all the way to module encapsulation, for a glass panel size of 30 x 30 centimetres.

The first A600V7 sputter system from Leybold Optics is part of the reference line for thin-film silicon (a-Si/ μ c-Si), enabling PVcomB now to produce its own layers for front and back contact systems. "This has finally allowed us to close the final gap in our research line," adds Dr. Schlatmann.

The second A600V7 plays a decisive role in the reference line for CIGS. Back contacts made of molybdenum and, above all, the layers comprising copper, gallium and indium are deposited for the so-called "sequential process". In the subsequent steps of the process, these are transformed into CIGS solar modules.



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The sophisticated technology of the A600V7 inline sputter system, together with Leybold Optics' profound experience in coating solutions for photovoltaic applications, were decisive factors for PVcomB, when it came to modifying its research lines for the technically complex sputter processes. Moreover, the Leybold Optics systems are characterised by their great flexibility, allowing for the subsequent integration of additional components and system extensions. The use of carrier stackers for changing substrates and the ability to coat two substrates simultaneously means that automated processes can be run with a high throughput and high level of reproducibility.

"Our inline sputter systems enable us to fulfil PVcomB's stringent requirements of producing, CIGS and thin-film silicon solar modules in a state-of-the-art environment. At the same time, this cooperation has afforded us a wonderful opportunity to learn from the experience of the PVcomB research team. The resulting findings flow into our ongoing development process for the next system generation," says Patrick Binkowska, manager of the Glass & Solar Division at Leybold Optics, commenting on the commencement of the sputter system's operation by PVcomB.

Caption:

PVcomB sets sputter systems from Leybold Optics in operation
From right to left: Dr. Bernd Stannowski and Dr. Sven Ring, PVcomB, Berlin

Source:

Helmholtz Centre Berlin for Materials and Energy (HZB)/PVcomB, Berlin/Germany

Leybold Optics GmbH

Leybold Optics GmbH is one of the world's leading suppliers of vacuum technology. It also develops processes and manufactures complex high-end coatings. This reputed thin film specialist sets milestones in the fields of sputtering, PEVCD, plasma assisted evaporation, automation and software. It is organised into two divisions: Optics and Glass & Solar. The Glass & Solar division portfolio comprises vacuum systems for the photovoltaic industry and machines that are used to coat architectural glass, displays and other large-area applications. The Optics division markets deposition systems for precision optics, ophthalmic lens coating, the automotive and the electronics industry.

The foundation stone of its success was laid over 160 years ago by the founders and inventors Ernst Leybold and Wilhelm Carl Heraeus. Their pioneering spirit and dedication to research and the development of new production procedures is reflected in the market standards that have gained worldwide recognition since the company was founded. Today, Leybold Optics, which is traditionally committed to innovation and quality, is a global company that has more than 600 employees across the world. Since 2012, Leybold Optics is owned by the Swiss industrial group Bühler.



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PVcomB

The Competence Centre for Thin Film and Nanotechnology for Photovoltaic (PVcomB) is a joint initiative by the Helmholtz Centre Berlin for Materials and Energy (HZB) and the Technical University Berlin. PVcomB is a 100% subsidiary of the Helmholtz Centre Berlin for Materials and Energy (HZB). PVcomB is currently focussing on the operation of two industrial research lines for solar modules in the format 30 cm x 30 cm based on thin film silicon and CIS/CIGSe. PVcomB offers the industry R&D cooperations and services such as analyses and further training. These services are based on the results of the excellent basic research work by the Helmholtz Centre Berlin and the TU Berlin in the thin film photovoltaic field. PVcomB's goal is to continuously expand the limits of what is industrially feasible.

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