



PRESS RELEASE

November 7th, 2011
Press Release 8/11
1/3

Next Energy scientists research with technology of Leybold Optics

Phoebus R&D system ordered

The independent EWE Research Centre for Energy Technology, Next Energy, Oldenburg, commissioned Leybold Optics GmbH, Germany, to supply a Phoebus lab tool for research and development tasks (R&D) involving silicon thin film solar cells by the start of 2012. This future-oriented system by Leybold Optics, a leading manufacturer of vacuum equipment, is a state-of-the-art technology that satisfies the strict requirements of high-tech coatings.

Next Energy is already working on energy supply solutions for tomorrow. Primarily, the institute concentrates on silicon thin film technology within its specialist field of photovoltaic. The team of scientists has set itself the objective of significantly increasing the efficiency of the cells thus contributing to reducing the cost of the technology, thereby achieving the required grid parity to conventional power. Together with the industry, Next Energy undertakes comprehensive research and development work and stands out thanks to its interdisciplinary and targeted approach.

A major part of the success of the thin-layer technology in the photovoltaic field is the rapid implementation of relevant laboratory developments for industrial production. The Phoebus lab tool by Leybold Optics means that research and development departments can test new concepts without delay and transfer these to industrial production processes extremely quickly thanks to the high throughput. In contrast to similar systems, the Phoebus lab tool is able to coat substrate with up to 5 millimetres thickness and a surface of up to 300 x 300 millimetres or alternatively, any other small substrate in different shapes. The lab tool has the same properties as the industrially used coating system Phoebus by Leybold Optics; in particular, this includes the EAE technology (electrical-asymmetry effect/dual frequency) and the in-situ cleaning.

The system works with the PECVD (= Plasma Enhanced Chemical Vapour Deposition). This means that this sturdy laboratory version not only has the same scalable process chamber design, it also delivers excellent coating results. Required material grades of the amorphous and microcrystalline silicon are achieved with a high level of layer homogeneity whilst keeping the production costs low. This also applies to the simple thin film cells (a-Si or μ c-Si), to multiple solar cells such as



PRESS RELEASE

November 7th, 2011
Press Release 8/11
2/3

tandem cells (a-Si/ μ c-Si or a-Si/a-Si), to thin film solar cells with triple-junction cells and to individual layers (inter-reflective, buffer, etc.).

The individual vapour deposition in the separate process chambers (p-chamber, i-chamber, n-chamber) avoids any cross-contamination between the process chambers. Throughout the entire process and the transport, the glass substrates are kept in an uninterrupted vacuum and at a constant and stable temperature. The extremely flexible lab tool offers an almost infinite number of process configuration options. All processes can be freely programmed. Simple access to each process chamber facilitates smooth maintenance and servicing.

According to Dr. Karsten von Maydell, head of the photovoltaic division at Next Energy, the state-of-the-art technology of Leybold Optics is very promising: "The flexible Phoebus lab tool offers Next Energy an ideal base for accelerating its research and development work in the photovoltaic and silicon thin film technology field. We will also use the scalable possibilities of the system to further optimise tandem solar cells and will use innovative silicon alloys to further the development of triple-junction solar cells".

Image caption:

Phoebus lab tool

Image source:

Leybold Optics GmbH, Alzenau/Germany



LEYBOLD OPTICS

PRESS RELEASE

November 7th, 2011
Press Release 8/11
3/3

Leybold Optics

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 500 employees across the world.

Company contact:

Leybold Optics GmbH
Jörg Hahn
Manager Sales and Marketing Glass & Solar
Siemensstraße 88
63755 Alzenau
Germany
Phone +49 (0)6023 500-0 or -188
Fax +49 (0)6023 500-9188
joerg.hahn@leyboldoptics.com
www.leyboldoptics.com

Press contact:

Benson GmbH,
Agentur für angewandte Kommunikation
Gisela Benson
Brucker Straße 4
82266 Inning am Ammersee
Germany
Phone +49 (0)8143 44 4473
Fax +49 (0)8143 44 4761
info@agentur-benson.de
www.agentur-benson.de

Next Energy

The EWE Research Centre for Energy Technology Next Energy is an independent research institution. It was founded to develop solutions to make the energy supply of the future efficient and environmentally friendly. Next Energy focuses its research on photovoltaics, fuel cells and energy storage devices. Next Energy carries out application-oriented and interdisciplinary work, ranging from materials research to systems development, in close collaboration with partners from both scientific and industrial sectors. Next Energy is an independent institute located on the natural sciences campus of the Carl von Ossietzky University in Oldenburg, Germany. The recently established research centre now employs over 60 people. The institute is organised under the umbrella of the non-profit association, the „EWE Forschungsinstitut für Energietechnologie e. V.“. Members of the association include EWE AG, which is the primary sponsor, as well as the University of Oldenburg and the state of Lower Saxony.

Contact:

Next Energy
Head of the Photovoltaics Department
Dr. Karsten von Maydell
Phone +49 (0)441 99906-210
karsten.von.maydell@next-energy.de
www.next-energy.de

Press contact:

Next Energy
Public Relations
Heinke Meinen
Phone +49 (0)441 99906-104
heinke.meinen@next-energy.de
www.next-energy.de

Please send references to publications, links and documents to the Benson agency.