

Neuchâtel (Switzerland), March 13, 2003

PRESS RELEASE

Photovoltaics: Major Industrial venture announced in Neuchâtel

Lifting photovoltaic solar energy to the mass production level: This and no less is the goal of the new partnership announced today in Neuchâtel, Switzerland, in the field of solar cell technology, by the Institute of Microtechnology (IMT) of the University of Neuchâtel and the firm Unaxis AG. A new Industrial laboratory, Unaxis Solar, will be created: its aim is the development of a production technology for large-scale production of photovoltaic solar modules, in large dimensions and for a variety of applications, while achieving the best possible cost-performance ratio. It represents a copybook example of mutually beneficial collaboration between University research and Industrial Application. So far, financial support has been mainly provided by the Swiss Federal Office of Energy (SFOE) under its research programme for renewable energies.

For 18 years, a team of researchers and engineers has been working at the Institute of Microtechnology (IMT) with the aim of reducing production costs for solar photovoltaic modules. A promising approach has been selected - thin-film silicon deposited by low temperature plasma. A series of technological break-throughs has been made:

- increase in production rate using VHF plasma
- introduction of the "micromorph" tandem cell to make better use of the solar spectrum
- transparent zinc oxide contacts improved with regard to optical properties and simplicity of production
- a new solar cell fabrication process using just one plasma chamber instead of three different chambers.

In the process of this research work, the Centre for Research on Plasma Physics (CRPP) of EPFL has provided very valuable scientific support, thanks to its in-depth understanding of plasma processes and plasma-assisted fabrication techniques.

In order to make this new high-performance technology available to photovoltaic module manufacturers throughout the world, a collaboration agreement is now being signed between IMT and Unaxis AG.

Unaxis has more than a decade's experience in amorphous silicon manufacturing technology, as used for the production of flat panel displays. The aim of the new venture is to combine the advanced solar cell know-how developed at IMT with Unaxis' mature production tools, and, thus, provide future cost-effective thin film solar cell manufacturing equipment. In this way, Unaxis intends to become the leading supplier of advanced production equipment and processes for silicon-based thin-film solar cell modules.

The Swiss Federal Office of Energy has, through its Energy Research programme, provided essential financial support to bring the development at IMT to the present stage and to enable, thus, together with the Swiss Federal Commission for Technology and Innovation, such a promising collaboration between University Research and Industrial Applications. The SFOE warmly welcomes the partnership herewith set-up as well as the perspectives it opens for future sustainable development.

An important contribution to the region

The State Council and the Economic Development office of the Canton of Neuchâtel (DEN) are pleased to announce the creation of a new industrial laboratory "Unaxis Solar" in Neuchâtel in early spring 2003. "Unaxis Solar" is an excellent example of partnering between the area's research and industrial sectors and it consistent with the region's principles for sustainable development.

The creation of this new laboratory without question is a significant reinforcement of the research and innovation capabilities of the Canton of Neuchâtel and will have a world-wide impact as a result of Unaxis' global production and sales network.

For more information, please contact:

IMT – Institute of microtechnology
Rue A.-L. Breguet 2
CH-2000 Neuchâtel
Arvind Shah
Phone: +41-32 718 33 30
arvind.shah@unine.ch

Unaxis Balzers AG
Displays Division
FL-9496 Balzers
Christine Algate
Phone: +423 388 50 05
christine.algate@unaxis.com

Swiss Federal Office of Energy SFOE
Worblentalstrasse 32
CH-3063 Ittigen
Stefan Nowak
Phone: +41-26 494 00 30
Mobile +41-79 229 32 56
stefan.nowak.net@bluewin.ch

Economic Development
Canton of Neuchâtel (DEN)
Collégiale 3
CH-2001 Neuchâtel
Francis Sermet
Phone: +41-32 889 68 23
francis.sermet@ne.ch

Photos: www-micromorph.unine.ch/event.htm



Media Release

making IT possible

Unaxis Solar – a new venture within Unaxis

Trübbach SG, March 13th, 2003 – Unaxis enters collaboration agreement with the University of Neuchâtel for Solar.

Unaxis and the University of Neuchatel are collaborating on the licensing and research of thin film photovoltaics and fast industrialization of newly developed Intellectual Property for the manufacture of silicon-based solar cells.

Unaxis has more than a decade's experience in amorphous silicon solar cell technology. For the last three years, Unaxis has been part of a Swiss government sponsored (CTI) project together with the University of Neuchatel and EPFL, Lausanne to determine the viability of latest generation PECVD production systems for thin film solar cell manufacturing. A new type of thin film silicon solar cell, patented and simply called "micromorph" solar cell has been developed by Dr Meier and Dr Kroll of University of Neuchâtel. With these promising results of the CTI project, Unaxis will acquire licenses on key patents owned by the university in this field as the basis of this new venture.

Unaxis intends to become the leading supplier of advanced production equipment and processes for silicon-based thin film solar cell manufacturing. The aim of the venture is a merger of the advanced solar cell know-how developed at the Institute of Microtechnology (IMT, University of Neuchatel) using the mature Unaxis production tools for stable and cost-effective thin film solar cell manufacturing in the future.

About solar

The solar cell market has been growing at a rapid pace in the past few years (>20%) and continued long-term growth is predicted by industry analysts. Today, the vast majority of solar cells are manufactured using wafer-based crystalline Silicon. The production of thin film solar cells is far less-energy intensive and potentially much more cost-effective in the future. In the past, thin film solar cell manufacturing lacked advanced production technology for commercial realization on a larger scale.

About Unaxis

Unaxis Displays is a global manufacturer of cost-efficient mass production systems for the flat panel display industry. The focus of its technology is in Plasma Enhanced Chemical Vapor Deposition (PECVD) and Physical Vapor Deposition (PVD), two technologies used in the production process of flat panel displays used in monitors, laptops, televisions amongst others.

Unaxis Displays is a Division of Unaxis, a leading global provider of technologies, manufacturing systems, components and services for selected Information Technology, Surface Technology and Components and Special Systems markets.

The information contained in this press release is believed to be correct at the time of publication. Unforeseeable risks and influences may lead to discrepancies with statements portrayed here.

For further information, please contact:

Unaxis Balzers AG

Marketing Communications

Christine Algate

Tel. +423 388 5005

Fax +423 388 5421

E-mail: christine.algate@unaxis.com

March 13, 2003