

## **Oerlikon Solar Receives Micromorph<sup>®</sup> Master Certificate**

Oerlikon Solar's Micromorph<sup>®</sup> technology now IEC certified by TÜV Rheinland

- Assured lifetime & module performance
- Significantly reduced certification time for customers
- Established thin-film PV solution offers low cost, record efficiencies and high power performance

**SNEC Shanghai, 6 May 2009. – Today [Oerlikon Solar](#) announced that it passed all tests required for its Micromorph<sup>®</sup> thin-film silicon solar PV modules to receive [TÜV Rheinland's](#) IEC certification. The TÜV master certificate enables Oerlikon Solar's customers to accelerate their own IEC certification process, reducing time-to-market for certified high-performance modules from six months to less than six weeks. The certification is valid worldwide and is just one part of the established portfolio of solutions Oerlikon Solar offers its customers to enable rapid ramp-ups to mass production of thin-film solar PV modules.**

"Oerlikon Solar enables its customers to significantly reduce their time to market for IEC certified modules, and guarantees leading module performance with the highest levels of reliability and cost-effective processes," said Jeannine Sargent, CEO of Oerlikon Solar.

Oerlikon successfully completed both IEC 61646 (Module Performance Test) and IEC 61730 (Module Safety Test). TÜV Rheinland, recognized globally for its module certification, put the modules through months of rigorous testing before issuing the IEC master certificate. Accelerated life tests for climate (changing of climates, coldness, warmth, humidity) and UV exposure were conducted in addition to mechanical impact tests (hail, wind suction, wind pressure, snow). All tests were passed successfully.

"We believe Oerlikon Solar is one of the premier equipment and module technology providers in the thin-film silicon solar PV market. They have proven their ability to scale a world-class technology and process to mass production, and passed all of our tests," states Willi Vaassen, Head of Renewable Energy division, TÜV Rheinland.



Page 2 **Leading Efficiency and Power Output**

Oerlikon's tandem-junction Micromorph<sup>®</sup> process improves solar cell efficiency by up to 50 percent and increases overall module power, offering a key competitive advantage for solar PV manufacturers. The Micromorph<sup>®</sup> process significantly boosts solar cell efficiency by adding a second microcrystalline absorber to the amorphous silicon (a-Si) layer. This layer converts the energy of the red- and near-infrared spectrum, yielding efficiency gains of up to 50 percent. The Micromorph<sup>®</sup> technology also bolsters overall module power, enabling customers to produce high-performance thin-film silicon solar PV modules at competitive cost.

**Unsurpassed Time-to-Market**

In early 2008 Oerlikon Solar implemented the world's first Micromorph<sup>®</sup> production line at its customer [Inventux](#) in Berlin, Germany, and rapidly brought it to full production. "We were extremely impressed at how quickly and professionally Oerlikon Solar's expert team was able to ready our factory for mass production and further enhance module performance," said Volko Loewenstein, chairman of Inventux.

Oerlikon Solar is currently in the process of ramping four additional Micromorph<sup>®</sup> factories (Auria Solar, Chint, Heliosphera, Pramac), as well as two factories using its Amorph technology (Tianwei, Gadir). The combined 2009 ramp projects represent a production capacity of over 240 MWp globally bringing the cumulative shipped capacity of Oerlikon Solar to 600 MWp in the last two years.

**Record Performance & IEC Certification**

Just recently, Inventux announced record efficiencies achieved in real-time mass production. All panels were produced with Oerlikon Solar's proprietary Micromorph<sup>®</sup> tandem junction technology. The 1.4 square-meter modules exceeded 9 percent stabilized efficiency during the course of high-volume production and reached over 120 watt power output. On April 27, 2009, Inventux successfully passed all tests required for certification to IEC 61646 by TÜV Rheinland. This achievement reflects the first for a European based manufacturer of tandem thin film silicon modules.



Page 3 **Expanding Customer and Partner Relationships**

A growing number of global customers are ramping up Oerlikon Solar's leading thin-film solar PV technology. Recent sales to customers include Tianwei and Chint (Mainland China), Sun Well Solar and Auria Solar Co. Ltd. (Taiwan), Inventux, ersol Thin Film GmbH, SCHOTT Solar AG (Germany), Pramac SpA (Italy), Gadir Solar (Spain) and Heliosphera (Greece).

Oerlikon Solar has significant partnerships with leading industrial partners such as Tokyo Electron (sales and customer service) and Flextronics (manufacturing) to guarantee comprehensive customer service and support and rapid scalability throughout different geographies.

*"Just one more milestone in Oerlikon Solar's mission to make solar power economically viable."*

For further information, please contact:

<p>Michael M. Schmidt Head of Public Relations Oerlikon Solar Ltd., Trubbach</p> <p>Tel. +41 81 784 6439 Fax +41 81 784 6544 michael.m.schmidt@oerlikon.com</p>	<p>Burkhard Böndel Head of Corporate Communications OC Oerlikon Management AG</p> <p>Tel. +41 58 360 96 02 Fax +41 58 360 91 93 pr@oerlikon.com</p>
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Page 4 **About Oerlikon Solar**

[Oerlikon Solar](#) offers field proven equipment and end-to-end manufacturing lines for the mass production of thin-film silicon solar modules. Engineered to reduce device cost and maximize productivity, its end-to-end solutions are fully automated, high yield, high uptime, and low maintenance.

The production lines are complete systems, yet modular and upgradeable in both throughput and process technology. As a global leader in thin-film PV technology, the company provides its customers with extensive experience in both amorphous and high-efficiency Micromorph<sup>®</sup> tandem technology.

Oerlikon Solar is headquartered in Trubbach, has around 800 employees in 13 locations world wide and maintains sales and service centres in the USA, Europe, China, Korea, Taiwan and Japan.

**About Oerlikon**

[Oerlikon](#) (SIX: OERL) is one of the world's leading international high-tech industrial groups specializing in machine and plant engineering. The company is a leader in the field of industrial solutions and innovative technologies for textile manufacture, thin-film solar and thin-film coating, drive, precision and vacuum systems. With roots in Switzerland and a long tradition stretching back 100 years, Oerlikon is a global player with a workforce of almost 18, 500 at 180 locations in 37 different countries. The company's sales amounted to CHF 4.8 billion in 2008 and it ranks either first or second in the respective global markets.