Media release

Less power consumption, less floor space, higher uptime

Advanced Nanotech system SOLARIS revolutionizes production of crystalline solar cells

Balzers, 28th May 2009 – Today, Oerlikon Systems demonstrates for the first time SOLARIS, a revolutionary production solution that simplifies the manufacturing of crystalline solar cells. "The trick was to combine our vast experience on highly productive optical disc deposition equipment (CD/DVD/Blu-ray) as well as our leading nanocoating technology." states Andreas Dill, Head of the Business Unit Oerlikon Systems. This resulted in the first single substrate Nanotech Machine designed for mass production. The crystalline solar business is now the first market Oerlikon Systems is targeting with SOLARIS.

Production costs of solar energy do not only depend on cell efficiency but also on the productivity of the manufacturing process. "If we want to significantly reduce costs for solar power to grid parity, we not only have to improve the cell itself but must rethink production", states Oerlikon Systems head Dill. The existing standard fabrication method for coating crystalline solar cells is based on complex processes with high demands made on cleaning and manual maintenance.

In contrast to these traditional procedures, the SOLARIS system is based on advanced nanotechnology. In solar cell or photovoltaic production with SOLARIS, very thin layers of silicon nitride are applied on the front of the cells. However, the flexibility of SOLARIS also allows coating of the backside with various materials. Each wafer is handled and coated separately. With six coating chambers, a special carrier transport mechanism and a wide range of potential layer material, SOLARIS is not only highly flexible but at the same time enjoys unmatched productivity. The machine is able to treat standard wafer formats from 125mm^2 to 156mm^2 , with an average amounting up to 1,200 wafers per hour. Changing substrate formats, layer materials or processes takes less than an hour. A new system at a customer site can be ramped up in less than one week.

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"With SOLARIS, we for the first time apply advanced nanotechnology in the production of crystalline solar cells", explains Andreas Dill, Head of Oerlikon Systems – "with enormous advantages for solar cell manufacturing. Firstly, with a size of 2.0 x 3.3 meters, SOLARIS requires 80 % less floor space than competitive solutions. Secondly, the fully automated solution requires minimal maintenance. Thirdly, SOLARIS needs significantly less power (minus 50 percent). Last, but not least, lower maintenance requirements result in a significantly higher uptime.
The benefits of SOLARIS are quite obvious. It's a revolutionary concept for solar cell manufacturing – the first of many 'clean technologies' possible with this new system", says Dill.

The first solar cell customer, one of the leading solar cell manufacturers, is currently running production tests with SOLARIS. But the Oerlikon development teams have further, specific applications in mind:

- **Touch panels:** These devices are being integrated in a wide range of applications from smart phones to PCs and refrigerators. SOLARIS applies a key conductive layer and anti-reflective coatings on the touch screen panels.
- **Thermoelectrics:** These "green energy" devices generate electricity when heated. The thin film layers applied by SOLARIS are efficient at conducting electricity, but not heat, which keeps the device running.
- **Energy storage:** Actually a family of applications that includes highly efficient (smaller and lighter) thin film batteries and advanced super capacitors for energy storage; SOLARIS provides thin film processes for all of these.

For Oerlikon Systems, SOLARIS opens up a whole new world of advanced nanotechnology applications. "Entering the market of crystalline solar cells is just the beginning", says Andreas Dill.

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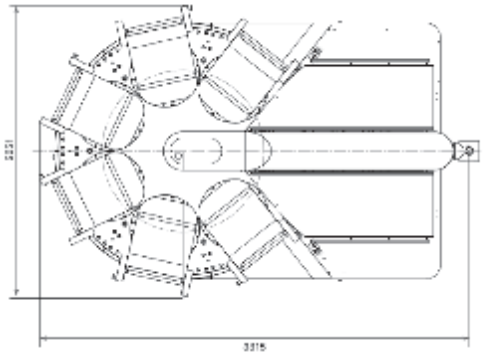

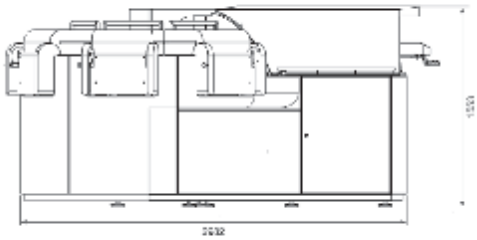

For further information see www.oerlikon.com/systems/solaris

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About Oerlikon – Enabling High Technology

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 18,000 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.

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