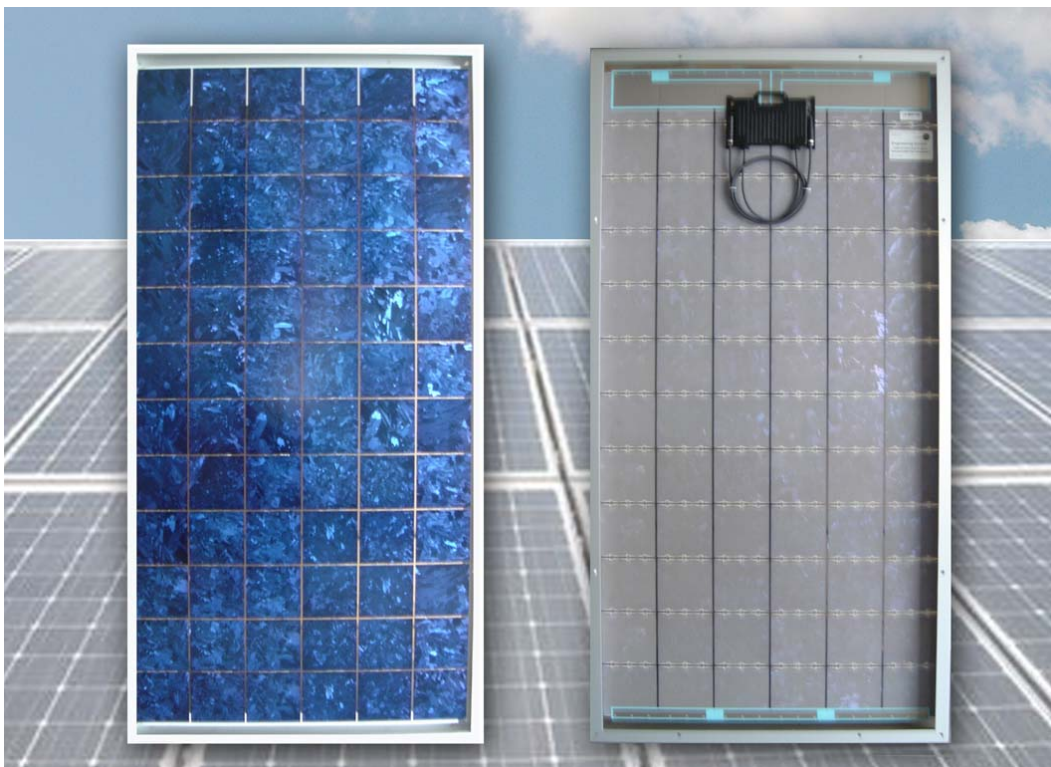


Société d’Energie Solaire on the Huber+Suhner stand 3.1.88 at Intersolar,
Freiburg/Breisgau, 21-23 June 2007

Société d’energie solaire develops new process to speed PV module assembly



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Photo: DuPont

A PV module equipped with back connection technology from SES, and the new junction box from Huber+Suhner, saves space and greatly enhances its overall aesthetic appeal, while demonstrating the advantage of SES/DuPont film technology.

This image can be downloaded as a hi-resolution file at:
<http://uk.news.dupont.com>
under the category **Sectors & Markets / Photovoltaic**

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Freiburg, June 2007. A patented new process by Société d’Energie Solaire (SES) of Geneva, Switzerland, allows simple, fast and reliable electrical connections between PV strings and junction boxes. To be shown for the first time at Intersolar (21-23 June 2007, Freiburg/Breisgau), the development offers numerous advantages through material savings, enables automated manufacture and offers high efficiencies to panel manufacturers and installers.

In the SES process the strings, instead of being soldered to the peripheral end-ribbon, are folded over the back of the cells, where they are soldered with a simple machine onto a flexible circuit. The circuit substrate is a DuPont™ Tedlar® PVF film laminated with DuPont Teijin Films™ Mylar® PET polyester film; the circuit has special contacts for attachment to the junction box and also serves to insulate the strings from the cells. After lamination, a special junction box, made by Huber & Suhner, is simply placed over the circuit and the connections are soldered.

The junction box is then filled, with reduced use of silicone, sealed and the lid fitted. The box is designed to allow ventilation between itself and the backsheet, so as to prevent heat build-up. SES tried numerous films and film combinations for this printed circuit, says M. Philippe Crisafulli, project manager at SES. “The substrate for this application has to meet many requirements. It must:

- be flexible,
- have good dimensional stability,
- offer high UV resistance
- accept the usual printed circuit processes without deformation
- withstand oven curing at 150 °C,
- be a good electrical insulator, and
- have a guaranteed service life of at least 25 years.

“After many false starts, we found that only a combination of the new Tedlar® PV2111, which has improved dimensional stability, together with Mylar® met all these requirements at an acceptable cost. Moreover, each film has to have a certain thickness in

the combination. The fact that both of these DuPont films have been proven over the past 25 years in the PV industry also played a role in our choice. DuPont helped us with expert advice during the two years it took to develop our process.”

M. Jean-Christophe Hadorn, SES president, adds: “Our innovation, which can be applied to any type of PV cell, is a significant improvement in panel assembly. With our innovation, the electrical connections are simpler and faster to make. The manufacturing steps are reduced, so throughput is increased. Use of simple robots instead of manual labour increases capital productivity and the reliability of connections. Less silicone encapsulant is needed. Elimination of the peripheral end-ribbon allows a 2 % to 5 % reduction in module area and better aesthetics.”

SES has also developed a patented process, also based on a flexible circuit, to string back-contact cells. The process allows high-speed non-contact soldering with a simple soldering machine to make a string with electrical connections integrated as above. The mechanical strength provided by the flexible circuit allows thin cells to be used without breakage. The process uses lead-free RoHS solder.

SES plans to licence both processes, as well as use them in its own manufacturing facilities for standard modules and the Swisstile™ PV integrated roof-slate.

DuPont Photovoltaic Solutions provides the broadest offering of products in the industry, delivering eight essential materials to provide sustainable solutions from DuPont Fluoroproducts, DuPont Electronic Technologies, DuPont Packaging & Industrial Polymers and DuPont Teijin films. The DuPont portfolio includes films, encapsulants, and conductive inks, all designed to improve the lifecycle of photovoltaic modules and reduce the cost per watt of photovoltaic electricity. More information is available at dupont.com/photovoltaics.

DuPont is a science-based products and services company. Founded in 1802, DuPont puts science to work by creating sustainable solutions essential to a better, safer, healthier life for people everywhere. Operating in more than 70 countries, DuPont offers a wide range of innovative products and services for markets including agriculture and food; building and construction; communications; and transportation.

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Note to editor: Both new processes will be shown on Stand 3.1.88 (Huber & Suhner) at Intersolar, Freiburg/Breisgau, 21-23 June 2007.

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