

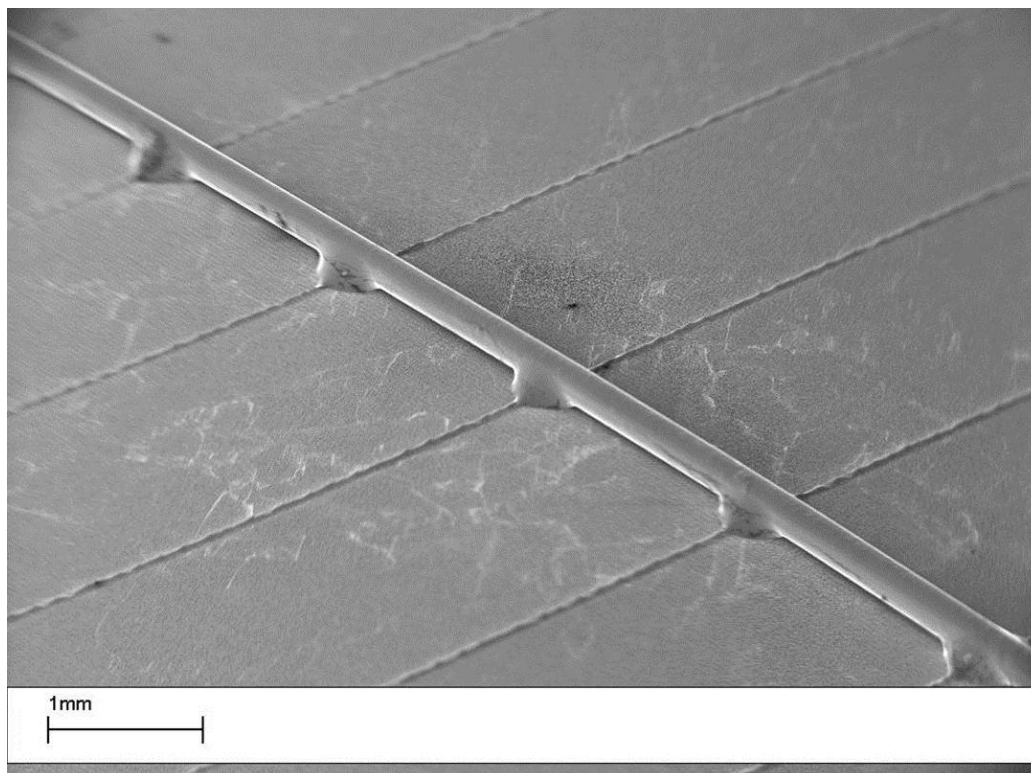
2012-09-18

## Press Information | Business Unit Module

### SCHMID Presents Multi Busbar Connector Prototype at PVSEC

- Innovative cell structure promises 0.6%<sub>abs</sub> gain of efficiency compared to 3-busbar cells
- Lower series resistance provides higher fill factor of up to 0.3%
- Reduction of silver consumption on the front and back side of approx. 75% compared to a 3-busbar screen printed cell
- Finish of the last project phase with production-ready machine in 2013

SCHMID presents the prototype of its **Multi Busbar Connector** and a Multi Busbar Module at PVSEC, booth B06 in hall A.03. The sales launch of the production-ready machine is planned for 2013.



**Figure 1: multi busbar cell under the scanning electron microscope**

The multi busbar technology is based on an innovative cell structure which completely manages without the well-known wide silver busbars. The consumption of the expensive material on the front and back side compared to a conventional cell is thereby reduced by 75%. Less shadowing promises an efficiency increase of 0.6%<sub>abs</sub>.

The multi busbar technology obtains the best results with SCHMID processes and

equipment for the production of a cell with a selective emitter (inline selective emitter technology InSecT) and approx. 40 µm wide plated contact fingers (contact-free high-efficiency metallization technology HiMeT). The key processes for this cell manufacturing technology are the contact-free inkjet printing as well as wet bench etching processes and plating technology. The cell back side is 100 percent silver-free thanks to SCHMID's TinPad technology.

The **Multi Busbar Connector** subsequently attaches 15 wire busbars to the front side of these basic cells using contact-free infrared soldering and at the same time joins multiple cells into a string. The smaller distances between the wires reduce the series resistance of the cells and thus increase the fill factor by up to 0.3%.

The result is a high efficiency multi busbar module. It combines all resource-saving and efficiency increasing technologies SCHMID has developed for the front side in the last years. Therefore the technology leader is providing urgently needed solutions for reducing the costs in photovoltaic production.

## About SCHMID Group

SCHMID Group provides highly efficient system and process solutions for the entire solar wafers, cells and modules supply chain – starting with the single machine right up to the turnkey factory, including guaranteed performance parameters, such as production capacity and degree of efficiency. Innovative process technologies are developed in own technology centers in partnership with universities and research facilities and are made ready for the market.

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2012-09-18

新闻报道 | 组件部分

**SCHMID 在德国光伏能源展将展出多主栅原型**

- 有别于传统电池的三主栅线设计，创新性的电池结构可以将电池效率提高  $0.6\%_{\text{abs}}$ 。
- 电池串联电阻更低，填充因子可以提高  $0.3\%$ 。
- 正背面的银浆损耗量可减少约  $75\%$ （与三主栅电池相比较）。
- 该技术将完成最后阶段，量产设备将于 2013 年应用于生产。

SCHMID 将在德国光伏展(A.03 厅，B06 展位)展示多主栅组件原型。预计 2013 年该设备将正式销售。

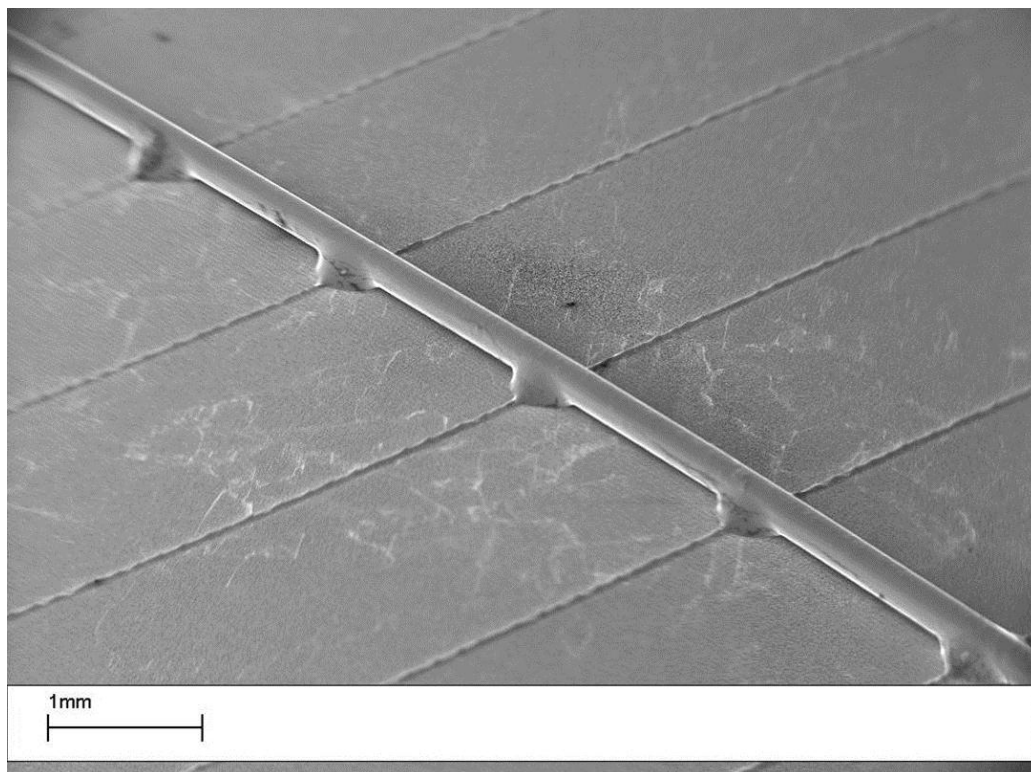


图 1：电子显微镜下扫描的多主栅电池

多主栅技术基于创新性的电池结构，其无需常用的银栅线，正背面可减少  $75\%$  的正银消耗（相比较于常规电池），由于主栅间距的减少，可增加  $0.6\%_{\text{abs}}$  的效率。

SCHMID 多主栅工艺与其选择性发射极工艺设备 (InSecT) 和 40  $\mu\text{m}$  副栅线制作技术 (HiMeT) 配合使用可以取得最好的效果。生产这种结构的太阳能电池。其主要工艺是无接触喷印，湿法刻蚀工艺和镀膜技术。SCHMID 集团的 TinPad 技术能够实现电池背部 100% 的无银化。

随后，多主栅工艺采用红外线焊接结束，将 15 根导线连接到临近电池的背面，并同时把多个电池串联起来。同时由于主栅间距减少后，电池串联电阻降低，填充因子可提高 0.3%。

高效的多主栅组件源于 SCHMID 集团近些年致力于以客户为导向的“高效率，低成本”技术，因而作为技术领军者，SCHMID 集团为降低电池生产成本提供切实可行的技术方案。

## 关于 SCHMID 集团

SCHMID 集团为整个太阳能硅片、电池片、组件产业链提供高效系统和工艺解决方案。从提供单个设备到交付整个交钥匙系统，均可保证例如产能、转化率等技术指标。各种革命性的工艺技术正在其技术中心与各大学、研究机构合作进行开发并且已经可以推向市场。

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