

Imec's industrial-level silicon solar cells exceed 20% efficiency

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At this week's Intersolar Show in San Francisco (July 9-12, 2012), imec presents a 20.04% large-area industrial-level silicon solar cell (certification results from Fraunhofer ISE-Callab). The cell combines a high efficiency with a low-cost industrial process.

Imec's proprietary PERC [process](#) maximizes the conversion efficiency of the cell through structure and material optimizations while maintaining cost effective device concepts and processing. Imec's PERC-cell is compatible with the requirements of industrial photovoltaic production. It is a large-area (125x125mm²) Cz p-type silicon cell with a simple homogeneous emitter and Ag-single screen-printed front side contacts (65µm finger width), two busbars and an adapted Al back-side metallization. This processing simplicity holds the potential for cost

reduction and efficiency increase in an industrial production environment. At the moment the transfer of this process to 156x156 mm² wafers is ongoing.

The cells were processed at imec's newly completed solar cell pre-pilot line. This pre-pilot line is equipped with state-of-the-art industrial equipment for a total value of 10 million euro and is fully capable of processing 156x156mm² size solar cell wafers. The line is operated in a flexible way with the capacity to process up to several 1,000 wafers per week.

“A simple and cost effective PERC cell is imec's answer to short term aspiration of the photovoltaic industry to reduce the cost per Watt peak of silicon [solar cells](#). Our PERC process combines a simple device structure with optimized processing to increase the efficiency,” says Dr. Jef Poortmans, director Photovoltaics research at imec, “We are delighted to have achieved an [efficiency](#) of more than 20% for a standard PERC cell, featuring a large-area, only a homogeneous emitter and Ag-screenprinted contacts. This shows our capability of marrying high performance to simplified processes for crystalline Si solar cells.”

Provided by IMEC

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