

Silicon wafer costs have bigger impact on solar apps, Semico reports

By Ann Steffora Mutschler, Senior Editor -- 2/15/2008

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Pressure is mounting for semiconductor silicon wafer manufacturers that have been struggling for the past several years due to the large investments that were required to install new 300-mm capacity.

According to Phoenix, Ariz.-based market research company **Semico Research**, these companies have also experienced increased pressure from semiconductor manufacturers to decrease costs during a time when silicon wafer demand for semiconductor production is expected to grow at a compounded annual growth rate of 13% over the next five years.

Compounding the pressure on wafer makers is the competition from the photovoltaic industry for those silicon wafers alongside the semiconductor industry, as the increased demand for solar panels has introduced a new customer base for polysilicon and silicon wafer manufacturers, the company noted.

"Most major silicon wafer suppliers were not focused on the photovoltaic market. Silicon wafers used for solar applications do not have the same stringent requirements for flatness and consistency that a semiconductor wafer requires," Joanne Itow, managing director and manufacturing analyst for Semico, explained in a statement.

"When the demand for solar wafers was small, wafer manufacturers were able to sell the lower quality pieces at essentially scrap wafer prices to the solar industry. However, as solar cell demand increased, the wafer manufacturers had to step up production that was actually targeted at solar panel manufacturers," she added.

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Another dynamic impacting the market is the fact that although a semiconductor wafer sells for a higher price than a solar wafer, the silicon wafer amounts to a small percent of the total cost of a semiconductor chip, but the silicon wafer approaches half the cost of a solar cell. Therefore a 5% increase in a semiconductor wafer has less impact on the semiconductor manufacturer than a 5% increase in a solar grade wafer to a solar panel manufacturer.

In the past, the top five or six polysilicon suppliers have controlled more than 80% of the polysilicon supply and have announced plans that would increase polysilicon supply by as much as 65% by the end of this year to be supplemented by several new entrants into the market, Semico concluded.

For more on this topic, see "[There's lots of silicon in photovoltaic cells, but is there any gold for the electronics industry?](#)"