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Improving solar efficiency by coating cells

Posted by [Hanna Sistik](#)
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Xerocoat CEO Tom Hood says less than 5 percent of the photovoltaic industry uses antireflective coating today.

(Credit: Hanna Sistik/CNET News)

Australian solar energy start-up [Xerocoat](#) has invented new antireflective coating that it says can improve power output across all solar energy technologies, from traditional silicon wafers to thin film and solar thermal.

The idea is simple: most solar cells are covered by glass and glass reflects light. Reflected light reduces the light available to make electricity.

By coating the solar cells, the glass reflection decreases by 3 percent at noon, and by 6 percent mornings and afternoons, according to the company. This increases the light absorption by the cell, and thus power output by 3 percent on a peak watt basis, and 4 percent on kilowatt hour basis, Xerocoat says.

That would be equivalent to increasing the cell efficiency by 0.5 percent to 0.75 percent. On a 100-megawatt solar thermal plant this might hike annual profits by \$4.5 million to \$8.5 million (not counting the cost of the coating, that is), according to the company.

Xerocoat was founded by Australian Michael Harvey, a Ph.D. in materials and optics for lasers, who one day stumbled across the antireflective optical effect in the lab. After more research, funding from the University of Brisbane, and eventually VC backing in 2007 by NTH Power and Southerncross venture partners, Harvey opened up Xerocoat's office in Redwood City, Calif., in April.

The antireflective coating is made by single-layer porous silicon oxide, less than 100

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nanometers thick. It meets the industry standard durability test IEC 61215 for crystalline silicon modules, according to the company.

The initial venture capital of \$6.8 million allowed Xerocoat to build a pilot line, which it says it will use for its first, undisclosed customer in August. Right now, it is raising a B-round of funding of about \$50 million--money that will be used for building a production line. Xerocoat hopes to start large-scale manufacturing by the end of 2009.

CEO Tom Hood admits he isn't alone in the coating space, among the at least five competitors is Germany's [Centrosolar](#) and Danish [Sunarc Technologies](#).

But Hood points out that less than 5 percent of the photovoltaic industry uses antireflective coating today, in a market he estimates will be worth \$1 billion in five years.

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