

Focused solar energy, pooled expertise

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Evonik Industries now offers primary and secondary lenses for concentrating photovoltaics

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Renewable energy sources such as wind, water, and sunlight are becoming increasingly important and all signs point to renewables for the power generation of the future. Intensive work is therefore under way to improve the efficiency of the corresponding technologies. Among the most efficient methods for converting solar energy into electricity is concentrating photovoltaics (CPV). An important feature of this technology is the use of lenses for greater efficiency. The primary lenses focus the light and direct it through secondary lenses that are in direct contact with the solar cells and further increase the yield. Although still in its infancy, CPV is a rapidly growing and highly promising market of the future.

Evonik Industries now offers two products as innovative solutions for applications of CPV technology in large-scale such as power plants: primary lenses of PLEXIGLAS® and secondary lenses of SAVOSIL™. These concentrate solar energy in two different ways. First, structured Fresnel lenses made from PLEXIGLAS® are interposed as primary lenses in the path of the incident light; their micro to macro structures enable them to concentrate sunlight by a factor of up to 1000. Light that would otherwise be dispersed over several square meters is thus confined to a fraction of this surface area and converted into electricity with high efficiency. Secondary lenses of SAVOSIL™ are attached directly to the solar cells, behind the primary lenses. Produced from silica glass using the novel SiVARA™ sol-gel technology, these further increase the concentration of the solar energy. This brings photovoltaic industry an important step forward toward higher cost efficiency.

Since 2010, Evonik Industries has been offering these two important components for high-efficiency solar technology and is thus positioning itself on the market for solar lenses. But the Group is far from being a new player in the field: Under the umbrella of the PLEXIGLAS® Solar product group, PLEXIGLAS® products have been serving the solar market since early 2009 with starting materials such as sheeting, molding compounds, films, and tubes. And lenses made from the ultrapure silica

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glass SAVOSIL™ are already being very successfully used in light diodes (LEDs).

“Evonik now offers both from a single source: Primary and secondary lenses come to our customers with the pooled expertise of two business units,” says Dr. Daniele Fregonese, Marketing Director Technology Solutions, who is responsible for the marketing of SAVOSIL™ lenses. “As system suppliers we will in the future provide customers with comprehensive support for both components.” And PLEXIGLAS® expert Dr. Andreas Hoff, head of the global market segment Solar in the Acrylic Polymers Business Line, adds: “In primary and secondary optics for concentrating photovoltaics, we're developing a number of synergies from which the customer will ultimately benefit. Because in this way solar power is gradually becoming more cost effective and competitive.”

The primary lenses are produced by Evonik in collaboration with the US company 10X Technology. In February 2010 the two companies formed a manufacturing alliance to launch high-precision microstructured materials. The secondary lenses are produced by the joint venture Evonik Cristal Materials Corporation in Taiwan, established in October 2009, in which Evonik Industries has a 52 percent stake.

Further information is available at www.savosil.com and www.plexiglas-polymers.com.

About Evonik

Evonik Industries is the creative industrial group from Germany. In our core business of specialty chemicals, we are a global leader. In addition, Evonik is an expert in power generation from hard coal and renewable energies, and one of the largest private residential real estate companies in Germany. Our company's performance is shaped by creativity, specialization, continuous self-renewal, and reliability.

Evonik is active in over 100 countries around the world. In its fiscal year 2009 about 39,000 employees generated sales of about €13.1 billion and an operating profit (EBITDA) of about €2.0 billion.

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