

# Lightning start for new PV technology



Skyline installed the first HGS system with a nominal capacity of 27 kW next to the bus garage of the Californian transport company VTA. Photos (3): Jörn Iken

**It is said that the Americans always act pragmatically and swiftly. At least in the case of high-gain solar installations, this is true.**

**Due to the reflectors, the cells receive light of different intensities, but the inhomogeneous irradiation has no effect on efficiency, says Skyline CEO Bob MacDonald.**

**O**ne difference between the American and European solar markets is that the Americans have a relaxed attitude towards the various technical approaches. Ideas are quickly transformed into commercial products. This year, the company Skyline Solar has provided a good example. The Californian company was founded only two years ago. Using a new technology, it has now realized its first large-scale project. On the premises of the Santa Clara Transport Authority (VTA), it has installed a 27 kW system. It is a low-concentration PV system which tracks the sun – at first glance not unlike a solar thermal power plant.



But upon closer examination, the system, which is marketed under the name “High Gain Solar” (HGS), turns out to be a classical PV system, because it generates electricity from monocrystalline cells. The special feature, however, is the metallic reflectors. These are sheets with a single fold in them, arranged in long arrays – hence the association with solar thermal power plants. These reflectors concentrate the light and direct it onto a line of monocrystalline cells at the upper edge of the sheets. Of course, they follow the principle “incident angle equals emergent angle”, and therefore they need to track the sun’s position continuously, albeit only on a single axis. In order to carry off the heat, the mounting surface of the solar cells merges into a number of cooling fins at the back of the sheets.

## Competitive due to conventional materials

The company says that in sunny regions HGS is capable of generating ten times as much electricity per gram of silicon used in comparison with conventional flat modules. Skyline Solar advertises its system by claiming that it achieves the efficiency of silicon cells at the price of thin-film technology. So far, however, the company has failed to produce any concrete figures. “We do not comment on that yet”, CEO Bob MacDonald replies to the corresponding inquiries, but he insists that they are “very competitive” with the HGS technology.

According to the company, this is made possible by using conventional materials, primarily aluminum, standard silicon cells and easily available components from other industries. The reflectors can also be produced cheaply – they consist of polished sheet steel. What is convincing indeed is the simple structure of the entire system. It requires only a third of the parts needed by a conventional sun-tracking system, the company says.

This special technology has already passed its first test in terms of raising the start-up capital. For this purpose, the company managed to secure support from the American Department of Energy, which co-funded the project with US\$ 3 million from the budget of the Solar America Initiative, and is well known for its high requirements. The selection procedure for the funds of approximately US\$ 18 million that the department was willing to spend on HGS from Skyline and on five other projects was correspondingly tough. “These projects will help promote the development of a diverse set of photovoltaic technologies and ensure that the US is a world leader in next generation, cost-effective solar cells”, said Acting Assistant Secretary for Energy Efficiency and Renewable Energy John Mizroch recently. “These solar photovoltaic incubator awards will help accelerate the time it takes for innovative start-up companies to get their technologies to market.”

Skyline’s CEO MacDonald was concise in summarizing his goal: “We want to offer solar electricity at the lowest costs in the entire sector.” *Jörn Iken*

**Further information:**  
[www.skyline-solar.com](http://www.skyline-solar.com)



The purpose of the cooling fins at the back is to improve the temperature behaviour of the monocrystalline cells.

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