

Vela Solaris Tackles the Solar Puzzle

The Swiss startup licenses software for designing solar thermal heating and cooling or electric systems. Expect more software developers to jump into the solar market.

The startup is a puzzle solver. No, not the kind of puzzle you do to while away time. [Vela Solaris](#)'s software system tackles the complicated puzzle that involves using the sun to heat water or generate electricity.

The Switzerland-based startup has developed a line of software branded Polysun for designing a solar energy system that can determine its potential savings over time.

It's not just for making sure the right components come together, it is also a sales tool to show customers what they will be getting for their money, said Simon Geissshusler, director of marketing at Vela Solaris, during Solar Power International (SPI) in Anaheim last week.

The two-year-old company, a spin-off from the Institute for Solar Technology SPF at the University of Applied Science Rapperswil, also sells software for consumers who want to calculate their energy savings and emissions reductions.

Solar companies spend a lot of time talking about making solar installations simple, though they tend to focus on the hardware. But the growing solar market presents some good opportunities for software creators.

Already, some home energy management software developers that were initially focused on monitoring in-home appliances' power consumption are moving to include solar energy systems in the mix. Tendril Networks is one of them (see [The Solar Home that Powers Itself Down](#) and [Tendril Wants to Link to Solar Panels](#)).

National Semiconductor, which began selling electronic device for boosting a solar panel's power production earlier this year, recently acquired an energy monitoring software developer (see [National Semi Buys Energy Recommerce](#)).

Vela Solaris's technology was initially developed at the university in 1992, and meant for verifying the performance of solar thermal heating systems.

Software for solar-panel installations was added when those systems began to sprout up in European countries such as Germany, where government incentives have driven much of the market demand.

Vela Solaris not only targets solar heating and cooling and electric companies, it also offers software for installing heat pumps that run on geothermal power.

The startup's tools provide analyses on both the configuration of a system and the financial investments and paybacks.

Databases for weather and solar irradiance help users to select suitable equipment for installations in different parts of the United States. For designing a solar electric system, users get to play with the tilt of the solar panels and select from a menu of solar panel and inverter manufacturers and their commercial products.

Polysun also calculates energy losses when using different cables and inverters in order to find the best mix, Geisshusler said.

"Some people use larger inverters than necessary to make sure there is no problem, but they actually lose a lot of electricity in the process," he added.

After gathering all those ingredients, the software cooks up bathes of analyses to simulate the chosen system's power output by hours, days and months.

"It's important to show the performance by hours because people want to tune into the different electricity prices during the day," Geisshusler said.

The analysis takes into consideration the purchase price of the system, government incentives and even inflation, and shows investment payback time and carbon footprint reduction.

The software is good for residential and commercial systems.

The company's key customers are mostly solar thermal equipment suppliers. This is not so surprising, given the popularity of those systems compared with solar panels, as well as Vela Solaris' roots.

Solar water heater installations in the United States grew 50 percent in 2008 to reach 139 megawatts, [said the Solar Energy Industries Association](#). Those systems are even more widely used in China – about one in 10 homes has one.

Vela Solaris' customers include Jomar, Evosolar and Heliodyne in the United States and Sonnenkraft in Germany, Geisshusler said. The software developer, which grew from three employees two years ago to 20 now, has sold 20,000 licenses, he added.

Zach Axelrod, CEO of a developer of solar thermal water heating systems called Skyline Innovations, stopped by Vela Solaris' booth during SPI to buy software.

"We need a tool to build our financial models," Axelrod said. "We want to know which projects are profitable."

Vela Solaris faces more competition in the solar-panel installation market, Geissshusler said. Many solar panel makers provide software to its customers, for example. Then there is RETScreen – free software courtesy of the Canadian government – that also proves irresistible.

He maintains that those software offerings aren't as sophisticated or accurate at modeling and analyzing a system's performance.

Polysun isn't as suitable for utility-scale projects. SunPower, which designs and builds commercial and utility-scale power plants, uses [SolidWorks](#) by Dessoault Systems and [AutoCAD](#) by Autodesk.

Vela Solaris charges customers licensing fees per computer. There is a one-time licensing fee, which ranges from \$159 to \$4,100, depending on the features offered. Then there is an annual fee to receive database updates.