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Underground Solar Arrays Way Outside the Box

A revolutionary invention could be a game changer in how energy is generated from the sun's rays.

EarthSure, a small renewable energy company based in New Jersey, announced a patent pending project that uses subterranean solar panels to create solar power.

The SubSolar system installs a compact optical rooftop device that captures and magnifies the sun's rays and then uses this device to transfer sunlight through fiber-optic lines to an underground chamber of solar panels.

The panels are buried in a sealed chamber three to four feet underground, which EarthSure says produces the ultimate atmosphere for light absorption, as it protects the solar panels from the elements and contamination, aiding in better electrical output and making the modules essentially maintenance free.

SubSolar's optical eye also follows the sun, gathering direct sunlight throughout the day.

EarthSure founder and Chief Executive Raymond Saluccio told *Natural Gas Week* that one of the system's best features is the one people don't see, as the small optical device placed on rooftops and the solar panels buried underground do not create the unsightly appearance that conventional rooftop solar panels can.

For example, Saluccio noted that homeowners associations often reject applications for rooftop solar installations for not being aesthetically cohesive with surrounding homes.

And Santa Monica, California, recently passed a city ordinance that requires solar equipment to be installed in a location that is least visible from the street, with the provision that the cost of the solar equipment is not significantly increased or the energy performance is not significantly reduced compared to a location that is more visible from the street.

"As more codes come out, I think we will be pushed to put solar arrays underground." Saluccio said, "People may love solar, but do not enjoy that they have to look at these installations."

Solar companies have been trying to bypass the negative view of rooftop solar installations by developing ways to blend arrays into the building's general appearance.

Solyndra, a California-based solar power company that recently received a $535 million government loan, has developed solar arrays made of thin-film solar cells wrapped into a cylindrical shape and encased in glass, which lay flat on rooftops collecting light from all angles.

OkSolar, a solar power product manufacturer, is one of several companies to develop photovoltaic (PV) shingles made of amorphous silicon. Once installed, they resemble the appearance of ordinary rooftop shingles, but they generate electricity.

"The large government loan that Solyndra received is a good way to show how funding can create huge growth for the solar industry," Saluccio said. "But the conventional thinking here remains the same, let's put solar panels on roofs, and I see many future problems with roof-top installations."

The two biggest problems: Insurance coverage for weather damage and rooftop access for workers.

And, while PV shingles do have a nicer appearance than solar panels, they would still be subjected to all of the adverse effects of normal rooftop shingles, such as severe weather and pollution.

EarthSure is seeking funding to bring the SubSolar project to commercialization, with several corporations and investment firms having expressed interest, he said. The company has already started to work on its first prototype, with a first model contingent on funding.

EarthSure is also pushing up SubSolar's research and development phases into early 2010.

"You are starting to see the first phase of technology get reevaluated. That's what will take renewable energy to the next step, this unique thinking, and not the conventional thinking of windmills in oceans, and rooftop solar panels, " Saluccio said.

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