

Solar initiative in Africa has rotating dishes to follow the sun

May 17 2015, by Nancy Owano



Credit: Ripasso

Writers in *Inhabitat* and *The Guardian* are both looking at a solar system and asking the same question: Could this be the world's most efficient solar system? They are talking about a solar electric project in South Africa, located in the Kalahari Desert. Colin Payne, in *Inhabitat*, said the intense South African sun is made use of by the Swedish company, Ripasso Energy.

The company is using what Payne described as a "small-scale solar concentrator [system](#)." That system converts 34 percent of the sun energy into electricity, going straight into the grid, said Payne. He said that is twice as much as traditional solar systems.

Jeffrey Barbee of *The Guardian* also touched on that point, noting how 34 percent of the sun's energy hitting the mirrors was converted directly to grid-available electric power, in contrast to about half that for standard [solar panels](#). "Traditional photovoltaic panels are able to turn about 23 percent of the [solar energy](#) that strikes them into electricity, but this is cut to around 15 percent before it is usable by the grid."

The test site is in the Northern Cape province, [said](#) *The Guardian*.

The system design involves massive dishes that rotate to follow the sun. Interestingly, they constantly adjust themselves to capture the maximum amount of solar energy possible. They rotate slowly; Barbee described "light clicks and taps" filling the still desert air as they make their adjustments.

The Guardian said, "Independent tests by IT Power in the UK confirm that a single Ripasso dish can generate 75 to 85 megawatt hours of electricity a year - enough to power 24 typical UK homes." The same amount of electricity made by burning coal, the report added, would mean the release of roughly 81 metric tons of CO₂ into the atmosphere. (In 2014, IT Power was commissioned by Ripasso to conduct an independent performance assessment of their solar energy system.)

Matthew Humphries, senior editor for *Geek.com*, [described](#) how the CSP system works: A parabolic mirror is combined with a Stirling engine. The mirror dish, he said, looks like a typical satellite dish, but its job is to focus the sun's energy on a "tiny hot point" which drives the Stirling

engine.

The hot point powers the engine, and electricity is produced. The project is modeled on this Stirling engine, which is noted for high efficiency compared to steam engines, quiet operation, and its ability to use almost any heat source. Humphries said the Stirling engine is a closed-cycle regenerative heat engine. The engine uses an enclosed gas to drive pistons and turn a flywheel.

It is named after a Scottish minister Robert Stirling, who worked on the invention as an alternative to the steam engine.

This electricity-generating system, which uses no water to produce the [electricity](#), is being tested; *The Guardian* reported that Ripasso is "on the verge of building its first commercial installation."

More information: www.ripassoenergy.com/

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