Look into the Future with This 'Crystal Ball' Spherical Sun Power Generator

Crystal balls have been telling fortunes in fairgrounds for many years, but this Spherical Sun Power Generator could be the future of solar energy.

A German Architect has designed an innovative form of a solar power generator. Unlike being flat or thin like other PV panels, this one is a giant transparent sphere!

Now that really is thinking outside of the box!

Using the geometry and optical properties of a giant see-through ball, this solution acts like a giant magnifying glass to make power. According to their claim, it can reach efficiency level of **57%** when compared to conventional PV systems.

It's also not bad looking.

Combining tech and design, this solar power generator might just be the very literal definition of "state-of-the-art". To borrow the designers catchphrase, "the future is not green it's transparent".

What is a Spherical Sun Power Generator?

The Spherical Sun Power Generator is a solar energy capture device designed by German Architect Andre Broessel. Called the beta.ey, he believes his invention is a solution capable of squeezing "more juice out of the sun".

The actual development of the beta.ey has been conducted by Andre and Rawlemon Limited. They are a high technology company who develop and market next-generation mass concentrating photovoltaics (CPV) and concentrating thermal (CSP) modules.

The design, so the Architect claims, should also enable the generator to harvest energy, day or night.

“The beta.ey comes with a hybrid collector to convert daily electricity and thermal energy at the same time. While reducing the silicon cell area to 25% with the equivalent power output by using our ultra transmission Ball Lens point focusing concentrator, it operates at efficiency levels of nearly 57% in hybrid mode. At nighttime, the Ball Lens can transform into a high-power lamp to illuminate your location, simply by using a few LEDs. The station is designed for off-grid conditions as well as to supplement buildings’ consumption of electricity and thermal circuits like hot water.” - Rawlemon.

The technology can also integrate a hybrid collector that can harvest thermal and solar energy simultaneously.

At night the device can also be used as a high-power lamp using LED lights. It can also, like conventional solar panels, be used to supplement building energy consumption and, potentially, be used as an electric vehicle recharging station.

Another interesting proposal is to use this technology like solar energy harvesting windows. If possible, this would dramatically increase their financial viability, if conventional windows are not needed - though the upside-down view of the outside world might take some getting used to.

They could also be miniaturized to provide portable solar generators for smart devices or other electronics.

How does it work?

The Spherical Solar Power Generator works by using a large transparent sphere to focus diffused sunlight onto a small surface area of mini-solar panels. Because the solar panels used on the device are so small, its relative efficiency is increased.

It is, in effect, an innovative form of other concentrated photovoltaic technologies (CPVs). Existing examples tend to make use of mirrors and lenses to focus solar energy onto a solar cell collector.

Conventional CPVs tend to also be dual axis systems that are able to track the passage of the sun throughout the day. CPVs and beta.ey, being able to track the sun, maximize energy capture compared to fixed panel systems.

You can liken this to holding a moving a magnifying transparent to burn your name into a piece of wood. Except less of a fire hazard.

Other CPVs also make use of miniaturized solar panels that make it easier to modulate their movement to cut down on overheating and degradation. Some labs have even been able to make some as small as **1 mm2**.

They can even generate more power than larger panels 'pound for pound'.

Using the same principles during the daytime, the beta.ey's creators also claim it can be used to harvest energy from moonlight. Albeit at a much-reduced efficacy than sunlight.

CPVs, like beta.ey, offer a promising solution to the future of renewables around the world. The United States Department of Energy's Advanced Research Projects Agency seems to agree.

In 2015, under the previous US Administration, announced the creation of a program called MOSAIC. This will invest more than **$24 million** into CPV solar tech development over the following few years.

How is it better than conventional PV?

beta.ey combines the geometry of a large transparent sphere with a dual axis tracking system and collector that, in theory, produces twice the yield of a conventional solar panel. Like other CPVs, this innovation is automatically more efficient than PV simply by virtue of its ability to collect as much solar energy as possible.

This is because for PV panels to reach close to their maximum potential they need to be as close to perpendicular to the light source as possible. This is only realistically achievable by being able to move the panel in two axes throughout the day.

Large commercial flat plate solar panel systems tend to have an efficiency of around **16 to 20%**. CPV systems tend to be able to top out at around **25 to 30%** by contrast.

Though some have been able to reach just over **40%**.

If the figures quoted by Rawlemon are to be believed, its system could provide an incredible **57%+** (in hybrid mode).

beta.ey is also more economical when it comes to materials used during its construction. Smaller solar cells mean less precious metals, like silver, and other consumables.

It is also more efficient when it comes to real-estate. The small size of the solar panel collectors reduces the amount of space needed for deployment.

Moveable solar panels are also large and cumbersome things. They require a lot of moving mechanical parts to both support the panels and move them throughout the day. Non-building mounted solar panels are also very susceptible to high winds which can often damage PV installations.

The Spherical Solar Power Generator only need to move a very small PV panel around the outside of the transparent sphere.

The Spherical Solar Power Generator may also have an edge on its CPV competitors. Whilst CPVs are awesome at collecting and concentrating direct sunlight, they are less effective at capturing diffuse rays like light diffracted by clouds or the atmosphere.

CPVs also tend to be fairly costly to manufacture, this has held back their mass production for some years.

Sounds great, but what's the catch?

Whilst this tech might sound like the perfect alternative to conventional PV, it's not perfect.

Since its main collector is a giant transparent sphere, its efficiency is only as good as the sphere is clean. Environmental contamination like bird droppings, for example, will require it to be constantly maintained.

Unless they can make the sphere self-cleaning, of course.

Its design is also less than inconspicuous. The push to make conventional solar panels less of an eye-sore over the last few years had led to some interesting designs.

Many panels are now ultra-thin, and companies like Tesla have produced roofing tile camouflaged cells. Some are even wafer thin.

Whilst the prototype design is certainly a work of art, of a kind, it will stand out more than conventional PV panels. Though it could easily pass as a piece of modern-sculpture in many an art gallery around the world.

Whatever the future for this piece of tech is, is anyone's guess but it a push in the right direction. Unless, of course, you are not a fan of its ultra-futuristic design.