

High-efficiency solar power that floats in water

April 25 2011, By Jim Motavalli

Sometimes you encounter an idea so seemingly brilliant you wonder why you didn't think of it yourself. OK, here goes: Utility-grade "concentrating" solar power ... in water. You're not applauding - what's going on?

I know it doesn't sound all that incredible at first, but think about it. Solar is only important if it gets big. Right now, it's still a pitiful percentage of the energy mix. If we're ever going to be able to comfortably answer the questions about [electric cars](#) charging up from a dirty grid, we have to start injecting more renewable energy into the mix, and that's what's so great about concentrating solar, which through the use of focusing mirrors and other tech substantially increases the electron yield of a photovoltaic array.

Most concentrating [solar installations](#) also swivel to track the sun during the day, which is far more effective than a fixed array. In Pyron Solar's small 20-kilowatt test installation in San Diego, the [solar panels](#) sit in what looks like a big above-ground swimming pool, and because they're floating, the water acts as a bearing and they can be moved very easily on a ring - with a tiny 12-volt electric motor of less than one horsepower.

Installations like this aren't intended for the [open ocean](#), of course, as Pyron President Stephanie Rosenthal explained to me, but for placid rivers, ponds and man-made pools. There's no reason systems like this can't be installed in wastewater, or in reservoirs or even in the water hazards on golf courses. The water host also means they can be mounted

low to the ground, kept cool on hot days and easily withstand weather events that could topple a tall solar tower. The system avoids the problem of panels shading each other, and it also has a very small "footprint" - with three acres, you can install a megawatt of solar.

Pyron's Joe Bentley, the chief technology officer, pushed down on one of the connected panels with his finger, and it gave way but didn't lose its relationship with the sun. As he did that, I could see, down in the pool, the mosquito-eating fish that Pyron had installed to help keep the water clean. (There were supposed to be tiny sharks, too, but I didn't see them.)

Pyron uses an acrylic concentrating lens, which focuses the equivalent of the light from 6,500 suns on a small optical device, which then spreads it across the surface of the solar cell. The system was originally developed by a German scientist in 1986, and Pyron's test version represents something of a dream fulfilled. It's installed at San Diego Gas & Electric's Mission Controls/Skills Training Center (formidable security!), which is an indication of the utility's interest in the technology. (SDG&E is a major investor in concentrating solar.)

The installation I saw was test-sized - 50 of them would equal a [megawatt](#). Electricity from Pyron Solar's arrays "should be below 10 cents per kilowatt-hour," Rosenthal told me. "That's a very attractive proposition." Pyron isn't quite ready for commercialization, but the team is working on its third-generation technology, which is the version that will go on sale.

More information: India signs on to floating solar energy power plant (w/ video): [www.physorg.com/news/2011-03-i ... rgy-power-video.html](http://www.physorg.com/news/2011-03-india-signs-on-to-floating-solar-energy-power-plant-w-video)

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