



Friday, July 25, 2008

The Next Generation of Alternative Energy

Venture capitalists flirt with solar thermal, algae, and wave power

By *Katy Marquardt*

Posted July 25, 2008

Now that alternative energy is the new darling of Silicon Valley, investors are pumping cash into a raft of obscure technologies, from wave power to algae fuel. Despite the sluggish economy, alternative-energy start-ups received a record \$2 billion in venture capital funding in the second quarter of 2008, a 58 percent increase from a year earlier, according to Cleantech Group, a market research firm. Today, clean technology—which includes alternative energy producers—accounts for 20 percent of all venture capital funding, up from just 1 percent in 2001, says John Balbach, a Cleantech managing partner. "Silicon Valley is going through yet another transformation," he says. Here are three technologies attracting interest:



FPL Group's concentrated solar generation station in California's Mojave Desert. (Hank Morgan/Rainbow/Getty Images)

Solar thermal. Think of solar thermal as the "other" solar power. Unlike photovoltaic cells, which convert sunlight directly into energy, this technology—also called concentrated solar power—uses mirrors to focus the sun's rays on a liquid that turns to steam and powers a turbine. This relatively simple process holds major advantages over silicon cells, which produce energy only when the sun is shining. Using molten salt and other materials, solar-thermal plants can store energy for several hours after sundown. Plants can also burn other fuels, such as natural gas, when it's dark or cloudy. In

the Mojave Desert, FPL Group operates the world's largest concentrated solar generation station, which was built more than 20 years ago. Driven by state mandates requiring utilities to produce a portion of electricity from renewable sources, a new generation of solar-thermal plants is on the way. In the second quarter, solar-thermal companies raised a record \$371 million in financing, according to Cleantech. Mainstream adoption of solar thermal may not be far off: Cambridge, Mass., consultant Emerging Energy Research calls it "the fastest-growing, utility-scale renewable energy alternative after wind power" and

estimates that \$20 billion will be spent on projects through 2013.

Pond scum power. The hunt is on for renewable fuels that won't compete with food crops. A promising contender is algae, which are rich in oil and can double their mass several times a day. These curious organisms are capable of producing 30 to 100 times as much oil per acre as traditional feedstocks. Algae could generate more oil in an area the size of a two-car garage than could a football field of soybeans, according to Fort Collins, Colo., start-up Solix Biofuels. And algae can grow almost anywhere, including in waste water and on land unsuitable for conventional agriculture.

How about algae-powered jets? Airbus and Honeywell recently announced that they're developing a jet fuel using vegetation- and algae-based oils that could power a third of commercial aircraft by 2030. Other heavyweights, including Boeing, Virgin Atlantic, Chevron, and Royal Dutch Shell, are exploring algae's potential. The key challenge, says Ed Guinness of the Guinness Atkinson Alternative Energy fund, is slashing the cost of production. "You've got to grow it at a low enough cost so that you can take advantage of the high yield," he says. He says it will probably be eight to 10 years before algae go commercial.

Ocean energy. The challenge of harnessing energy from heaving waves and fast-flowing tides is daunting: Severe weather, crushing currents, and the corrosive power of salt water can all do a number on equipment. But entrepreneurs are planning dozens of tidal- and wave-energy projects, from turbines anchored in Florida's Gulf Stream to a wave farm off the coast of Portugal. Methods for capturing the kinetic energy of tides include placing turbines in dams and tethering them to the seabed. Researchers at Florida Atlantic University believe tapping power from the Gulf Stream could someday supply a third of that state's energy.

Wave-power generation, which captures the sea's energy using buoys and other floating devices, is also attracting interest. This year, the world's first commercial wave farm is set to launch off the coast of Portugal. Projects are also in the works for Oregon, Washington, and California. But Frank Bevc, head of the emerging technology group at Siemens, estimates that large-scale adoption of wave-power technology is more than a decade away.

Tags: [technology](#) | [energy](#) | [renewable energy](#)

Add your thoughts

Subject:

* Type your comments here: (3000 characters left)

Your name:

* Your E-mail address:

* State:

Choose State

Submit

*All comments are moderated and generally will be posted if they are on-topic and not abusive.
For more information, please see our [Comments FAQ](#).*

Copyright © 2008 U.S. News & World Report, L.P. All rights reserved.