

A Sunny Forecast for Hot Water

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It's a solar power concept that was popular around the time Calvin Coolidge was president--but now it's poised for a comeback.

Solar thermal water heaters, which use solar energy rather than gas or electricity as a power source, could grow in popularity over the next few years, according to analysts and panel installation companies. While the idea has already caught fire in China, it's barely registered a blip in the U.S.

"The idea that we don't have solar thermal is crazy," said Bill Green, a partner at VantagePoint Venture Partners who specializes in clean technology.

Interest, nonetheless, is beginning to percolate, said Alex Winch, president of Mondial Energy. Mondial installs solar thermal systems in large buildings and then makes its money by reselling the heat generated by them back to the building owner. The Toronto-based company has put systems in 100-unit senior living centers in Canada, and it recently signed letters of intent for installations in a couple of U.S. hotels.

Solar thermal systems can offset gas consumption even in places not known for sunshine, Winch noted. His first project was the Beach Solar Laundromat in Toronto. It's snowy in that city right now, but the system at Beach Solar has generated 382 kilowatts in the past week, according to its online energy meter.

"I'm in my office, and I'm literally looking at a snow bank that is four feet thick," Winch said. "The gas boiler gets water that is 10 to 20 degrees warmer than it ordinarily would be."

Solar hot water will likely be one of the topics discussed at the Cleantech Forum taking place in San Francisco in this week. The mushrooming conference serves as a launch pad for clean tech start-ups.

Partly driving the interest--besides global warming and rising energy costs--is the fact that the systems work quite well. It is far easier to extract heat from the sun than electricity, according to Gary Gerber, CEO of Sun Light and Power, which installs solar systems. Solar thermal heaters ultimately use about half of the heat that hits them; that makes them two to three times more efficient than the solar panels that turn sunlight into electricity. Solar thermal what?

Solar thermal water heaters use a different technology than solar thermal electric (STE).

In STE, massive arrays of mirrors in the desert focus solar heat onto liquid-filled tubes. The liquid turns to steam, which spins a turbine to create electricity for distant metropolises.

They also aren't nearly as ugly as you might think. Although rooftop water tanks are used in some parts of the world, most homeowners tend to opt for systems where the tank stays downstairs. Metal and glass panels measuring 4 x 10 feet on the roof collect the heat. Rheem, Apricus and a variety of companies make the components that installers like Sun Light or Poco Solar subsequently install.

"We can usually provide 60 to 80 percent of a home's hot water with one or two 4-by-10-(foot) panels and a storage tank," Gerber said. A typical solar thermal system with a 120-gallon tank costs around \$7,000 to \$10,000, before a \$2,000 federal rebate. The breakeven point for homeowners comes in 10 years or less.

Same old solar?

If solar thermal water heaters do make a comeback, it will be an example of history repeating itself. From around 1900 through the 1920s, solar thermal heaters were popular in places like Florida, Los Angeles and Berkeley.

Utility companies, however, persuaded consumers to switch to gas, even offering to swap out their solar heaters with free gas ones, according to Chris Beekhuis, chief technology officer at Fat Spaniel, a Mondial partner that provides

monitors for the performance of solar electrical and thermal systems in homes and businesses. Solar largely disappeared over the next two decades, Beekhuis said.

Conspiracy theorists may point to history as another example of oil companies' underhandedness. Natural gas, however, was fairly cheap back then.

"No one was motivated to offset the price of gas," Beekhuis said. "Now it is an environmental issue and a cost issue."

In the vast majority of cases, property owners never completely divorce themselves from gas pipes. Solar heaters can't collect heat at night, after all. Winch, though, said the economic case can be made in more instances than one would think. Nunavut, in far Northern Canada, only gets 75 percent of the heat from the sun that Toronto gets. Yet gas there costs eight times as much, so solar thermal makes sense.

In sunnier areas, solar thermal can insulate large property owners from fluctuating gas bills. Under its contracts, Mondial agrees to sell its heat for a fixed rate for a 10-year period, and that rate is below the current cost of gas, Winch said.

China has already embraced the solar thermal concept. Approximately 80 percent of the capacity for solar thermal was installed in China in 2005, according to David Edwards, an analyst with investment bank ThinkEquity Partners. Overall, 60 percent of the world's solar thermal hot water capacity is in that country.

And in Israel, apartment buildings or condos with eight or fewer units must have solar thermal heaters. In cities like Jerusalem, you see a lot of the older rooftop tank systems.

Michael Eckhart, president of the American Council on Renewable Energy, added that the momentum in China could stunt any opportunities for U.S. companies to get into the market. Last year, China produced \$3 billion worth of solar thermal products.

"When we were there (recently) manufacturers were asking whether they should export," he said. "The solar water industry is coming this way fast."