

# Suncone focus of new HYTEC solar tests

## Headline News

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A motorist driving along the Main Hill Road recently might have seen a shiny spacecraft-looking object trundling in or out of high bay doors at East Gate Park and wondered what planet it's bound for. The answer is - planet Earth. And it's not a spacecraft.

The large object glimpsed at the advanced engineering facility of HYTEC Inc. is a Suncone, a new kind of solar collector for harnessing power from the Sun.

It's the brainchild of inventor Melvin Prueitt, a retired scientist from Los Alamos National Laboratory, who has applied for a patent on the technology. The project is under development with funding from Open Energy Corp., an energy company based in Carlsbad, Calif., with an eye on the burgeoning market for alternative sources. Open Energy recently changed its name from Barnubus Energy.

Prueitt's idea grew out of his work in computer graphics.

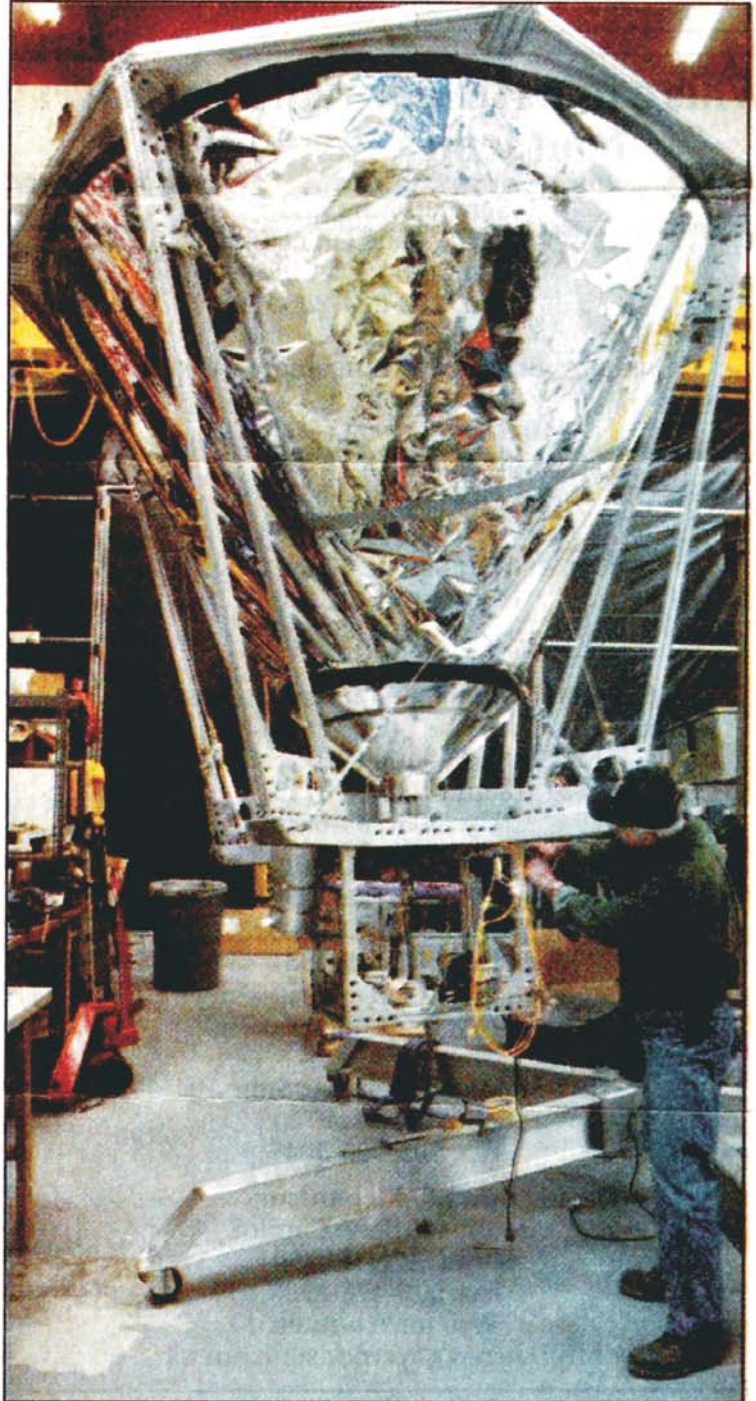
"When I was at LANL, I was a physicist, but on the side, I did graphics, because we needed graphics to illustrate all the numbers we were getting out of the computer in those days," he said.

Using the computer, and particularly a process known as ray-tracing, that can follow the path of individual rays of light, Prueitt came up with an optimal geometric design and concept that he believes will be more efficient and less expensive than the current crop of solar troughs and dishes. "Parabolic dishes can focus down to a small point and achieve high temperatures, but they're very expensive," he said.

Another problem is that the dishes require pinpoint accuracy, getting less than 40 percent of their power if they are as much as half a degree off line; at one degree off, they get nothing, Prueitt said. They're also delicate, requiring substantial maintenance and subject to hailstone damage, as well as fire and blinding risks.

Parabolic trough reflectors are U-shaped sheets of metal, less costly than dishes, but also less efficient.

## LET THE SUN SHINE



GARY WARREN/Monitor

**SOLAR COLLECTOR** Technician Rae Ridlon works on a solar collector under construction at Hytec Inc. The firm is located at East Gate in Los Alamos. Story, page A8.



GARY WARREN/Monitor

The Suncone is trying to solve these limitations - using less expensive material, an inflatable structure with a less critical degree of accuracy for sun tracking, and capturing 90 percent of the sun's rays within one degree and 50 percent within five degrees.

Riney Bennett, Suncone project manager at HYTEC, said the current model is going through a proof of concept evaluation now.

"Then we'll move on to the design of an inflatable model in the next phase," he said.

Robert Kline, HYTEC's executive vice president, said the device would have a number of applications including local power generation and heating and cooling without electrical conversion. Hooked to a kinetic pump, the mini-power-plant could produce fresh water from sea brine without burning fossil fuels.

Suncones may be used in large arrays to produce power for the electricity grid in unobstructed landscapes that get a lot of sun, the developers said.

Prueitt pointed to a major new solar project using solar trough reflectors that just began construction in Boulder City, Nev., a \$220-million-plus 64 megawatt power plant, one of many projects underway or contemplated around the world.

In an e-mail to Open Energy CEO David Saltman this week, Prueitt wrote that the Suncone's lower costs and higher

efficiency could lower the project's solar collector costs by \$50 million.

"The price of the electricity generated is 9-13 cents per kWh (kilowatt hour)," he wrote. "With Suncone, could we get the price down to 6 cents per kWh?"

Tim Thompson, HYTEC's CEO, said the purpose of the high performance engineering process was to lower the production costs enough to make the Suncone an alternative to the other kinds of collectors.

"The country is focused on reducing our dependence on oil," he said. "California and New Mexico are very interested right now in producing alternative sources of power."

Ideally, the Suncone will qualify as a low-cost, high-volume device that can be plugged into the grid, he said. But even if the cost is such that it can't meet that goal, there are a lot of places in the world - like island nations and other remote areas - that need higher value systems that would be competitive.

The Suncones would have a simpler tracking system and would be attached to an oil-fluid-based heat exchange system. They would be scalable, easily transportable and deployable and could drive a variety of energy converters including a steam turbine for producing power.

"We're hoping it evolves into a bigger project," Thompson said. "We would be involved in downstream engineering and manufacturing efforts."

HYTEC, now with about 50 employees, is continuing to grow its portfolio of tools for the dentistry market that began with its radiographic equipment. HYTEC's scanning devices for orthodontic treatments have taken off globally. The latest development is a partnership with Imtec Imaging, called Iluma, that will provide three-dimensional, full-head scanners for dentists and other medical applications.

Thompson insisted that full credit for the company's success go to the engineers at HYTEC.

"I'm very proud of the whole team and what we are able to accomplish," he said. "These people work so hard."