

# Hybrid Solar

Hybrid solar is a new type of solar energy collector that can capture both heat and electricity from the sun. Hybrids are made by several companies worldwide: Cogenra (Mountain View, CA), Zenith Solar (Herzlia, Israel), Solergy (Oakland, CA) and Entech Solar (Grapevine, TX).

Cogenra



Solergy



Entech



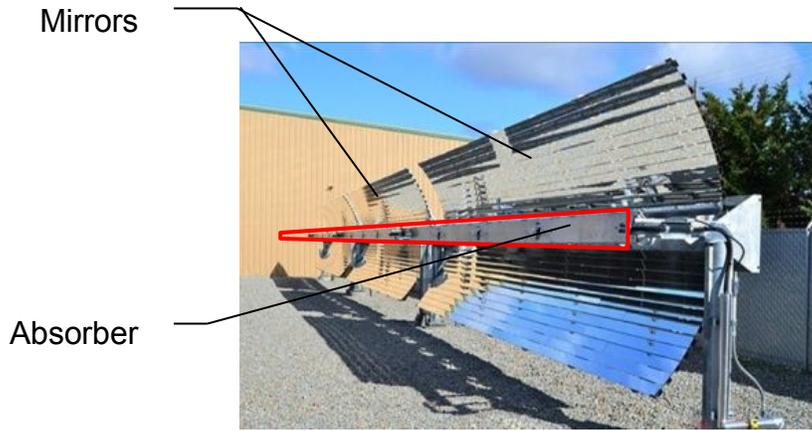
Zenith



Hybrid collectors capture the heat energy from the sun that is otherwise lost by flat plate photovoltaic panels. They do it with mirrors. Mirrors reflect sunlight into an absorber when photovoltaic (PV) cells first convert a portion to electricity. Coolant running through the absorber cools the PV cells and captures the heat portion of the sun's energy as a hot fluid.

The point of a hybrid is to capture the "lost energy" of a flat plate PV panel. The lost energy is heat that leaks from both the front and rear surfaces of a flat plate panel. Indeed, these panels are designed to lose heat since a hot PV cell has lower efficiency than a cool one.

For example, in Cogenra's hybrid system, long flat mirrors reflect sunlight into a long absorber. The absorber has PV cells like those in a flat plate panel that convert sunlight to electricity. Sunlight in a hybrid is concentrated by the mirrors into a much smaller absorber than the size of the mirrors. That small absorber can't radiate heat to the surrounding air as easily as the large area of a flat plate PV panel.



**Cogenra Hybrid**

More important, the PV cells of a hybrid are kept cool by pumping coolant through the absorber. Cool PV cells are more efficient. The coolant fluid – usually water with antifreeze – transfers its heat to an insulated heat storage tank for later use. In some hybrids, the heat is used directly as process heat. In either case, 75% of the sun's energy is captured as electricity or heat compared to less than 20% for flat plate PV panels.