Solar Power

The sun is the single greatest power source on Earth by a long way. There are multiple ways of generating electricity from sunlight, from direct conversion (photovoltaic) techniques, and to concentrating and gathering the heat from sunlight.

Using physics to heat and move water without needing a pump

These heaters use the sun to heat water, and the thermal expansion of water and steam to move that water to where it's needed.

Mirrored tubes guide direct sunlight into your home

Another way to let sunlight into your home without being exposed to the elements!

Solar water heating in batches

This website has multiple designs for solar water heaters that heat set amounts of water at a time.

Direct sunlight without windows

This system uses lenses to concentrate sunlight, and fibre optical cables to transmit that light to places that don't get sunlight.

Solar medicine

This team has developed a portable, solar-powered autoclave that can sterilize surgical tools (and any other tools) without needing electricity or the large, immobile autoclaves that exist in most hospitals (PDF).

Using Sun to prevent pipes from freezing

These designs are for solar water heating systems that are designed to prevent your water pipes from freezing.

Solar thermal power

Port Augusta, Australia is working towards replacing their coal-fire power plant with a stand-alone solar thermal plant. This is both an advance in solar power, and a new example of a community taking action on climate change!

Solar roadways

Solar Roadways is a company that is using solar power, engineering, and programming to create a new kind of road that could work for transportation, power generation, power transmission, internet, and emergency lighting all rolled into one!

Increased photovoltaic efficiency from tree leaf patterns

A 13 year old took inspiration from the way trees are able to get enough sunlight to grow even in a forest, and used it to develop a new layout of small photovoltaic cells that increased the efficiency of existing technology.

Solar cells from plants

This technique to create photovoltaic cells can even use grass clippings to make solar cells.

Solar hybrid technology for 24/7 power generation

Using solar power to heat air drives hot air turbines to produce electricity during the day, using no water, and methane produced by cows produces electricity at night. Learn More

Crystal balls to concentrate sunlight

This architect has designed a system that uses a huge, water-filled glass sphere to concentrate sunlight on a photovoltaic cell, increasing its efficiency by 35%.

Scalable ball lens technology

In case there was any question, ball lenses can be used at any size—this one concentrates sunlight on a photovoltaic panel one centimeter square.

Robot solar panel cleaners

A clean solar panel is an efficient solar panel. A solar field in Israel now has robots that clean their panels without using water—a precious resource in the desert!

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