



Main types of solar energy

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Solar energy is changing the way in which we look at how we source the energy we need. Given how fast technology has marched on in line with our search for cleaner energy, let's take a look at the different types of solar energy available.

Traditionally, our electricity comes via the grid, whereby we generate it by burning coal or natural gas. Despite this, our reliance on electricity generated from fossil fuels cannot continue. Thankfully, our quest to go green is helping us in our journey to find less polluting alternatives¹.

Solar energy is a type of renewable energy that is better for the environment, so what is there to not love about it? Of course, like any technology, solar comes with its own pros and cons. Whether it is commercial systems or residential systems², the various types of solar demonstrate the range of benefits we can expect from renewable energy.

Photovoltaic solar systems are one of the most popular types of solar power systems available. Typically a number of solar cells make up a photovoltaic panel, producing a direct current that converters turn into alternating current. A group of solar PV panels connected with the required kit to turn sunlight into electrical energy is known as a solar cell system.

Today we can see some of the largest countries in the world, including China, the United States, and the European Union rolling out large-scale solar farms to increase solar capacity. As of 2018, these countries had a total solar capacity of 175,018MW, 62,200MW, and 115,234MW respectively. Meanwhile, developing countries are moving to seek freely available energy harvested from solar radiation as populations expand.

In 2018, Asia was striding ahead in terms of solar panel installations⁴. The region made up 75% of global solar power installations, proving that PV panels generating power from sunlight look to be one of the most popular forms of solar energy.

Domestically, the price of installing photovoltaic solar power cells has dropped dramatically as a result of government incentives and rebates. As a result, busting the expense myth, more and more homes now benefit from clean usable energy derived from the sun.

As far as efficiency goes, a photovoltaic solar panel system will produce around 200kWh under normal test conditions. This is based on a solar panel that has an efficiency of 20% and an area of 1m².

As the technology has advanced, thin film solar cells have become more versatile, and thinner. As a result, we can now see solar energy technology used for roof tiles and in other more innovative applications such as building exteriors.

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Concentrated solar has an interesting history that many believe dates back to Archimedes and his burning glass. This form of energy uses mirrors and lenses to concentrate a large area of sunlight onto a receiver.

The first system was deployed in 1984 and by the end of that year, the number of systems had reached 14. By 2019, installations globally had reached a total of 6,451. Modern installations use thousands of mirrors, concentrating the sun's energy into a small area that gets very hot. The heat then drives a steam turbine to generate electricity.

The very first thermal solar power plant was located in Maadi, Egypt. However, it wasn't until the 1920s that flat plate collectors were used for solar water heating in Florida and Southern California.

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