



Renewable Energy: Solar Energy



A huge amount of energy from the sun hits the surface of the earth every day.

Throughout history the sun's heat has been used as a form of energy. In the beginning it was used to cook food.

Then we learnt to collect the sun's energy and use it - in the form of heat or solar thermal energy.

It can also be converted directly into electricity using devices called photovoltaic cells (PVs). Most PVs are usually made up of an element called silicon.

Modern technology can use solar energy to produce hot water, heating and electric power for homes, businesses and factories, etc.

Today solar collectors can gather solar energy in almost any climate.

Solar energy technology is sometimes used in multi-megawatt electricity generating stations.

A watt is a measurement of power, or the rate of energy flow (for example, a 60 watt light bulb requires 60 watts just to be lit) - and not the time it takes to use 1 watt of electricity.

A watt hour is an amount of energy. It is defined as one watt of power sustained for one hour. For example, a 13-watt lamp operating for 6 hours would consume $(13 \text{ W}) \times (6 \text{ hrs}) = 78 \text{ watt hours}$.

A kilowatt is 1,000 watts and a megawatt is 1,000,000 watts.

Small plate collectors capture heat from the sun, while solar thermal power plants use various concentrating equipment to focus sunlight and achieve the high temperatures necessary to produce steam for power.

Solar energy facts:

* A Swiss scientist called Horace de Saussure invented the world's first solar collector, or 'hot box' in 1767.

* In 5 billion years the Sun will run out of fuel and turn into a Red Giant.



* The famous astronomer Sir John Herschel used 'hot boxes' to cook his food when on an expedition to South Africa in the 1830s.

* We can produce laser light a million times brighter than sunshine.

* A lightning bolt is hotter than the surface of the Sun.

* It takes 8 minutes 17 seconds for light to travel from the Sun's surface to the Earth.

Information supplied by the Young Peoples Trust for the Environment

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