How do we get power from the sun? – I

Solar power is a reliable source of sustainable energy generated from the light of the sun. It requires no fossil fuels, produces no noise and little pollution, and once installed, it requires no maintenance.

How does solar power work?

Light energy from the sun is collected in *solar panels*. Each panel contains a number of special cells called *photovoltaic (PV) cells*.

Solar panels are always located where they will receive the maximum amount of sunlight.

Power is harnessed from the light of the sun, not from the heat. As such, the cells work well in winter even when the heat is less intense.

Less electricity is produced by solar panels in winter because there are fewer hours of daylight and there is more chance of cloudy skies, which reduce the intensity of the sun's rays.

The output of power from solar panels is measured in *sun hours*. One sun hour is equivalent to the amount of power that would be generated in one hour of strong midday sun.

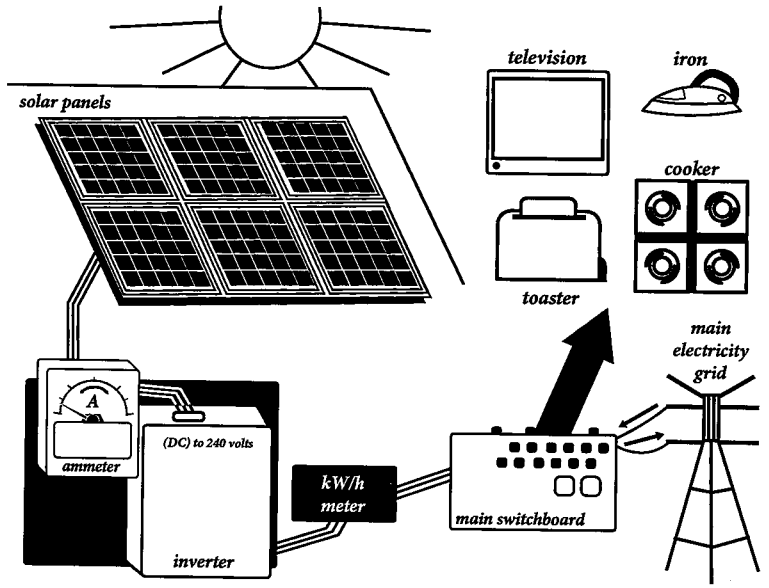
On a cloudy day, it may take a few hours for a panel to produce one sun hour of power.

As sunlight strikes a solar panel, some of its energy is transferred to each PV cell. The construction of the cells allows them to instantly convert the light energy into electricity.

This is called the *photovoltaic effect*, which means 'electricity from light'.

The electricity passes through the cells in each solar panel and then among the panels, along insulated cables, into an *ammeter*. This measures the magnitude (amount) of an electric current at any given moment.

If a dark cloud hides the sun for a short while, the reading on the meter drops and then rises again when the cloud moves away.



When the solar panels do not produce enough electricity for all appliances being used, electricity is supplied by the main electricity grid.

When the solar panels produce more electricity than is needed, the excess is transported to the main *electricity grid*.

The electricity passes through the *main switchboard*, which supplies the energy for all household appliances.

The *kilowatt per hour meter* records the total amount of solar energy produced by the solar panels.

The type of electricity produced by PV cells is called *direct current* (DC). The type we use in our homes is called *alternating current* (AC).

An *inverter* transforms the electrical current from the solar panels into the type needed for electrical appliances in the home, such as lighting, cookers, computers and televisions.