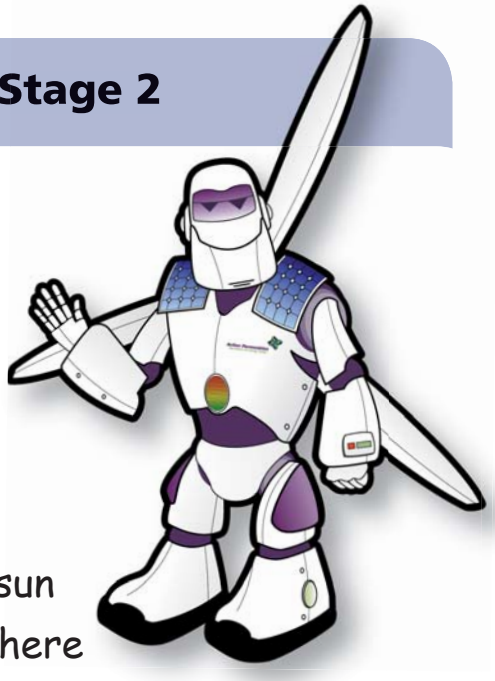

Solar Energy

How can the sun be used as energy?

Renewable Robbie has discovered that the sun is amazing! Without it, none of us would be here and there would be no life on earth. The sun is really, really big - a million times bigger than the earth! The sun is actually the closest star to the earth, 93 million miles away!

Solar energy just means energy (light or heat) that comes from the sun. Solar energy makes you feel hot when you are sunbathing on a summer day, it makes cars feel hot when they are parked in the sun, it makes plants grow.... and so on and so on! Without the sun, all life on earth would die!

How can solar energy be trapped and used?

1. One way is called **passive** solar heating. Have you noticed buildings or cars become very hot on a sunny day? This is because a lot of the energy from the sun passes through the glass in the windows. The glass heats the room because it stops some of the heat from escaping. The sun also warms the walls and roof. Look at the picture below. You can see the glass which will attract the sun's rays:

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2. Another way energy from the sun can be used is through **active** solar heating. This is when a thin flat box called a solar collector is fitted onto the roof of a house that faces the sun at midday.

The pipes are filled with water that gets hot from the sun and is stored in a tank ready to be used.

The outer layer of the solar collector is clear which lets the sun's rays pass into the collector.

Do you ever feel warm if you wear black clothes on a hot day? Black absorbs heat from the sun. The bottom of the solar collector is painted black which allows the solar collector to absorb as much heat as possible.

Active solar heating gives us hot water!

3. The other main active way energy from the sun is used is to make electricity. Sunlight can be changed into electricity through **photovoltaic (PV) cells**. Photovoltaic is a complicated word but it simply means 'light electricity.' PV panels are usually put on the roof of a building to capture the sun's rays:

Small PV cells are used to power calculators. Large PV cells can power computers, TV's, lights and so on!

Solar energy has a lot of **advantages**:

- It is renewable
- It provides energy where it is used so there is no need for large cables
- It can work in remote places and can be used in a large or small scale.
- It is silent, doesn't harm wildlife and causes no pollution.

There are some possible **disadvantages**:

- Solar power cannot work at night
- PV cells are expensive at the moment

Examples of Solar Energy

Solar Power can be used in Northern Ireland. Renewable Robbie went to see some of the places that already use solar power. He thought that it would be too cold in Northern Ireland to use solar energy but he was wrong. The sun doesn't need to be warm as long as it is bright so even on a cold winters day, as long as the sun as shining, it can provide you with heat and electricity!

This picture below was taken at Camphill Community in Holywood, County Down. The centre provides a way of life where children, young people and adults with a learning disability can live together with people who work with them. It is amazing because solar energy is estimated to provide about 60% of the hot water demand which saves them a lot of money on oil!

Renewable Robbie wanted to see somewhere where photovoltaics were used to provide electricity. He went to the Share Holiday Village in Lisnaskea, County Fermanagh.

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Renewable Robbie saw that the Chalets here have roof mounted solar water heaters and photovoltaic cells to provide heat and energy! He was very impressed!

Renewable Robbie has learnt a lot about solar energy. Join him to complete the Activity Sheet to see how much you can remember!