

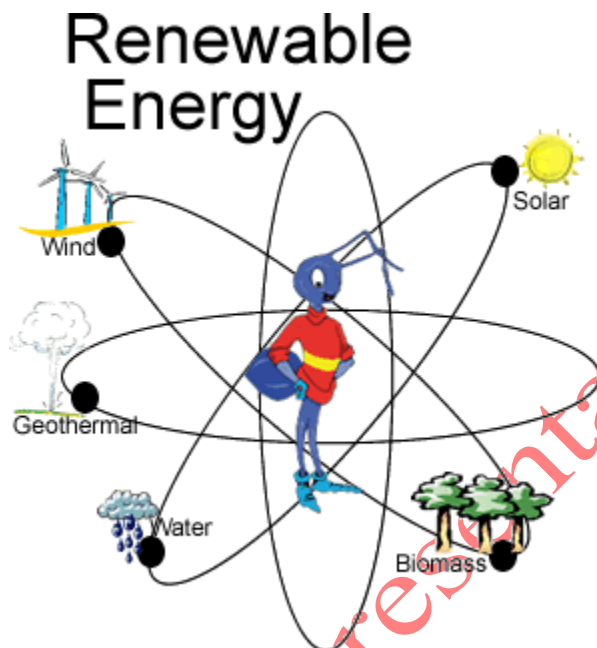
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Sun Sail Tracking Elliptical Path of the Sun

Renewable energy Sources



Renewable energy sources can be replenished in a short period of time. The five renewable sources used most often are:

- biomass
- hydropower
- geothermal
- wind
- solar

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Introduction

We've used the Sun for drying clothes and food for thousands of years, but only recently have we been able to use it for generating power.

The Sun is 150 million kilometres away, and amazingly powerful.

Just the tiny fraction of the Sun's energy that hits the Earth (around a hundredth of a millionth of a percent) is enough to meet all our power needs many times over.

In fact, every minute, enough energy arrives at the Earth to meet our demands for a whole year - if only we could harness it properly.



There are three main ways that we use the Sun's energy:-

1

Solar Cells (really called "photovoltaic" or "photoelectric" cells) that convert light directly into electricity.

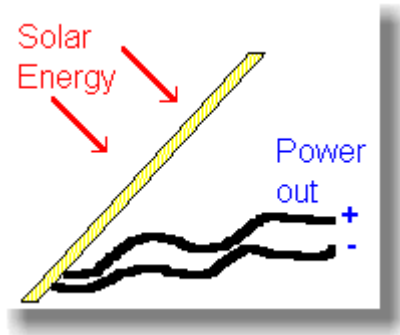
In a sunny climate, you can get enough power to

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run a 100W light bulb from just one square metre of solar panel.

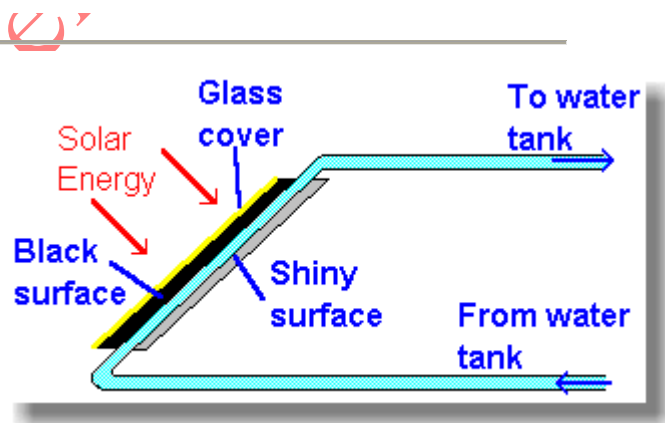


This was originally developed in order to provide electricity for satellites, but these days many of us own calculators powered by solar cells.

2

Solar water heating, where heat from the Sun is used to heat water in glass panels on your roof.

This means you don't need to use so much gas or electricity to heat your water at home.



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Water is pumped through pipes in the panel. The pipes are painted black, so they get hot when the Sun shines on them.

This helps out your central heating system, and cuts your fuel bills. However, in the UK you must remember to drain the water out to stop the panels freezing in the winter.

Solar heating is worthwhile in places like California and Australia, where you get lots of sunshine.

3

Solar Furnaces use a huge array of mirrors to concentrate the Sun's energy into a small space and produce very high temperatures.



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Advantages

- Solar energy is free - it needs no fuel and produces no waste or pollution.
- In sunny countries, solar power can be used where there is no easy way to get electricity to a remote place.
- Handy for low-power uses such as solar powered garden lights and battery chargers

Disadvantages

- Doesn't work at night.
- Very expensive to build solar power stations. Solar cells cost a great deal compared to the amount of electricity they'll produce in their lifetime.
- Can be unreliable unless you're in a very sunny climate. In the United Kingdom, solar power isn't much use except for low-power applications, as you need a very large area of solar panels to get a decent amount of power. However, for these applications it's definitely worthwhile.

Proposed Idea:

Tracking Sun's Path:

Normally solar cells are placed in a ground in one direction only. But sun moves in a elliptical path. So only few hours the sunlight falls into the cell. During the rest of the hours the percentage of Sunlight, which falls into the cell, is very less. Which results in less amount of energy generation.

To overcome this problem we can construct a model where we can place the solar cell in it and which can move in elliptical path .To track the sunlight. This is achieved with the help of light intensity sensors. The sensors are fixed into the

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model in an elliptical path. So depending on the sunlight the sensors output differs. So according position the solar panel, which results in good efficiency. (i.e.) the solar cell can produce energy by tracking the sunlight with the help of sensors and mechanical model. The Movement is controlled by a PIC Microcontroller. Also we have an LCD Display to Show the current Position.

The delivered power of a Solar Panel is used to charge a DC Battery. Which is finally provided to the run a small fan or to provide dc light source. The Battery will be keep on charging using the solar panel.

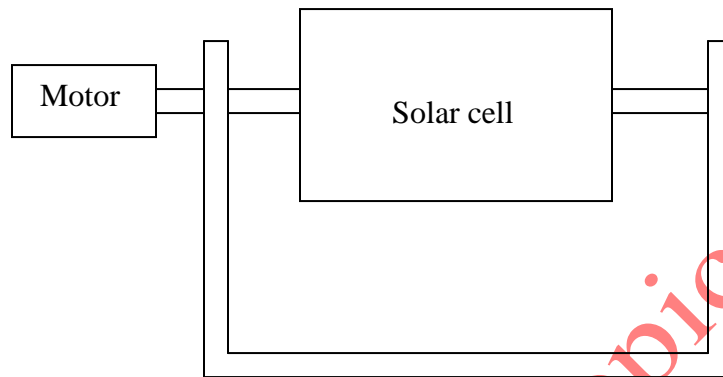
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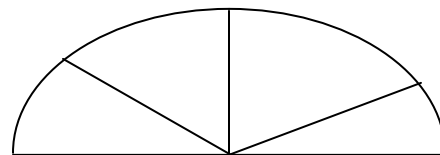
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Mechanical arrangement:



Sensors-2

Sensors-3
Sensors-1



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Block diagram:

