

Solar Kettle

Investigate how effectively you can harness solar energy to heat water

12+

Energy Sources & Sustainability



A great way to **investigate** the **renewable energy** source of solar power and understand how it can be harnessed.

The solar kettle design has similarities with solar panel design. Solar panels comprise a series of photovoltaic (PV) cells which are made from layers of semi-conducting material, usually silicon. Photovoltaic simply means the cells convert photons of sunlight into electricity.

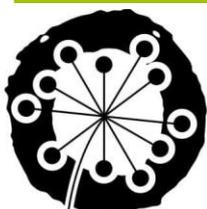
In addition to the PV cells, a solar panel has a glass casing that offers durability and protection. Under the glass, the panel has an additional glass layer for insulation and a protective, reflective back sheet, which protects against heat dissipation and humidity inside the panel. The exterior surface has an anti-reflective coating to maximise sunlight absorption by the PV cells.

Equipment

- Tall and medium assorted plastic bottles and smaller glass, metal or plastic containers that will fit inside the taller bottles.
- Aluminium foil
- Short length of hose or inner tube
- Tape, scissors, paint and blue tack.
- Stop clock and thermometer
- Sunshine!

Activity

1. Select a small dark coloured container or paint a small bottle black.
2. Insert a tube or piece of hose into the black bottle
3. Cut the bottom off a medium plastic bottle and ensure that it is stable when standing on the ground.
4. Make sure it is tall enough to sit over the small black bottle.
5. Next cut the base off a large plastic bottle ensuring it is tall and wide enough to cover the medium plastic bottle.
6. Cover half of the inner surface of the large bottle with aluminium foil.
7. Stack the medium and then large bottle over the top. Ensure the hose is poking through the top bottle.
8. Replace the large bottle's base and use tape or blue tack to hold it in place.
9. Fill the inner black bottle via the tube/hose.
10. Position the solar kettle in a sunny sheltered position with the foil surface furthest from the sun so it reflects the heat inwards.
11. Measure the temperature of the water via the tube/hose at regular intervals.



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