

Investigation of the factors affecting the output from a solar panel

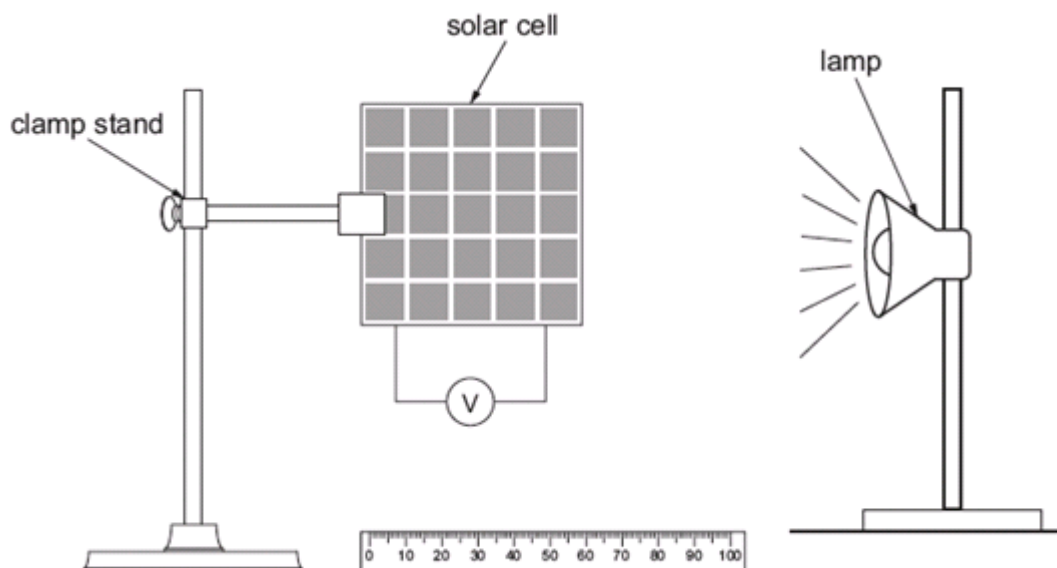
Introduction

Solar photovoltaic cells convert energy received from the sun into electricity. The output from a solar panel varies depending on the intensity of the radiation falling on it. In the UK in winter, the Earth's axis is tilted, reducing the intensity of the radiation reaching us. You can model this effect by moving a light source further away from a solar panel and measuring the voltage produced.

Apparatus

solar panel
 voltmeter $\pm 0.01\text{ V}$
 metre ruler $\pm 1\text{ mm}$
 12V lamp and holder
 12V d.c. power supply
 connecting leads
 clamp stand, boss and clamp

Diagram of Apparatus



Method

1. Carefully clamp the solar panel in the boss.
2. Connect the solar panel to the voltmeter.
3. Place the lamp 20cm from the solar panel.
4. Record the output voltage.
5. Repeat steps 3 to 4 increasing the distance by 20cm each time, up to 100cm.
6. Repeat the experiment twice more.

Analysis

1. Calculate the mean voltage for each distance.
2. Plot a graph of mean voltage against distance.