

PHOTOVOLTAIC PANELS

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Intro

A large part of the demand for energy is covered by fossil fuels. We need to explore the possibilities of renewable energy resources in cities by building photovoltaic panels, which will be more or less efficient, depending on environmental factors or construction aspects.

Objectives

- Encourage the use of solar energy in our everyday life by using efficient photovoltaic panels.

Materials

- Photovoltaic panel made from 5W polycrystalline silicon (e.g. RS. Click [here](#))
- Digital multimeter
- Compass (mobile phone app)
- Flour
- Glass, with the dimensions of a photovoltaic panel

Steps to follow

1. CONNECT the photovoltaic panel with the multimeter in ammeter mode (electric current measurer).
2. STUDY the efficiency of the panel's solar energy conversion according to the orientation and with the help of the compass.
3. POSITION the panel in different directions, such as the four points of the compass, up or down, flat or at an angle, etc.
4. WRITE DOWN the current indicated on the multimeter in ammeter mode for each orientation.
5. LIMIT the solar irradiation of the photovoltaic panel, by setting the most efficient orientation and creating shade, placing a piece of glass over the top or dusting it with flour.
6. MEASURE and WRITE DOWN the values obtained for each limiting action taken.
7. CALCULATE the percentage of loss in each case.
8. If possible, PLACE the photovoltaic panel where the solar furnace is concentrating the solar rays (see the corresponding solution).

Form

GPS / DD/MM/YYYY / electric current in amps / orientation (W, E, S, N, NW, NE, SE, SW) / sunny, cloudy, partially cloudy

Data collection. Data is taken for the current generated in key orientations, and after limiting the irradiation with shade, dirt or a piece of glass. Send us your current values and the day that you took the measurement, so that we can compare experiments carried out on sunny and clout days.

Determine how long it would take to charge a standard mobile phone with the help of the table.