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A REVIEW OF EXPERIMENTAL STUDY OF PV SYSTEM AND PEDAL POWER WITH GRID

Priyanka Suman Verma [1], Dr. A.K.Sharma [2]
[1] Research scholar, Fourth Semester ME (High Voltage Engg.), Jabalpur Engineering College, Jabalpur (M.P) 482011, INDIA
[2] Professor & HOD, Department of Electrical Engineering, Jabalpur Engineering College, Jabalpur (M.P) 482011, INDIA

Abstract:
Through the photovoltaic effect the energy contained in the sunlight can be converted directly into electrical energy. This method of energy conversion presents some advantages, such as: Its modular characteristic offers large flexibility in the design and application of this kind of energy generator. Short time of installation and operation. High reliability, and low maintenance.

Keywords:
Pedal power, photovoltaic cells, energy storage system.

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1. INTRODUCTION

SOLAR CELLS

The photovoltaic cell converts the light energy into electrical energy depending on the irradiation of the sun and temperature in the atmosphere. Basically PVC is a PN junction diode . But in PN junction diode DCI AC source is needed to work, but here light energy is used as a source to produce DC output. PVC is a current control source not a voltage control source.

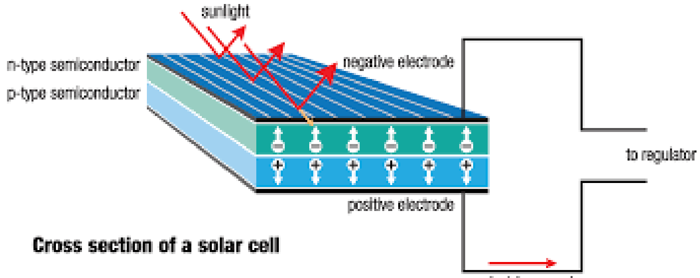

Figure 1: Cross section of a solar cells

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Each individual solar cell is constructed by layering different component materials together. Individually, these components cannot generate electricity. However, when combined in a specific configuration, they generate and conduct electricity from sunlight. Imagine a solar cell as a framed picture. Enclosed in a metal frame and sandwiched in between the clear, protective cover glass and a sturdy backing material would be the picture. Solar cell construction is similar. The difference would be to substitute our picture with the electrical current generating properties of the solar cell core.

Figure 2: solar cells

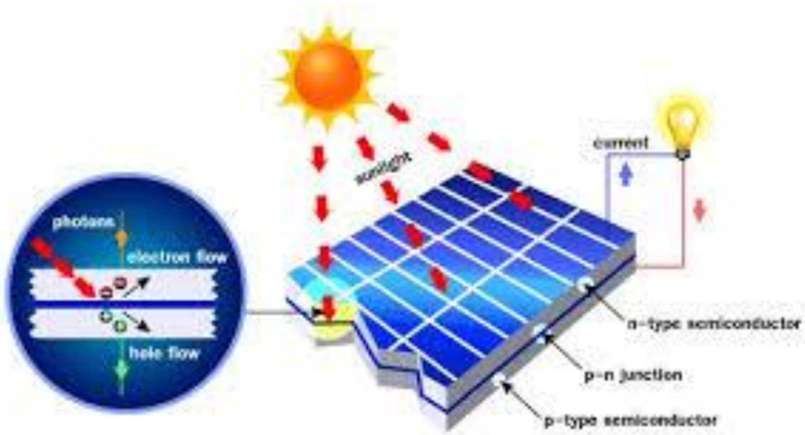

Figure 3: Radiation rays on solar cells

It isn't economical to use this individually designed cell configuration in an active solar power application. In reality, a number of these individual solar cell cores are connected in series to form a solar panel. The panel, containing multiple solar cell cores would be framed in metal and covered with clear glass and a backing support material. Let's dissect the actual components used in a photovoltaic solar cell from top to bottom.

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Antireflective Coatings are used to help avoid the incoming sunlight from being reflected back off the solar cell. Only by capturing and absorbing as much of the incoming sunlight as possible can a solar cell maximize its electricity generating capacity. Since only spectral solar light is processed during the photovoltaic effect, the antireflective coating helps increase absorption over the entire solar spectrum and aides in the absorption of sunlight when the cells aren't oriented to optimum sun angles.

There are two common techniques for applying antireflective coatings to solar cells. One is to cover them with a thin film of silicon monoxide. Another process is to texture or "rough up" the surface of the cell by chemically etching it and forming tiny scratches that resemble cones and pyramids. The cones and pyramids redirect the sunlight down into the cell core instead of allowing it to reflect back off the panel.

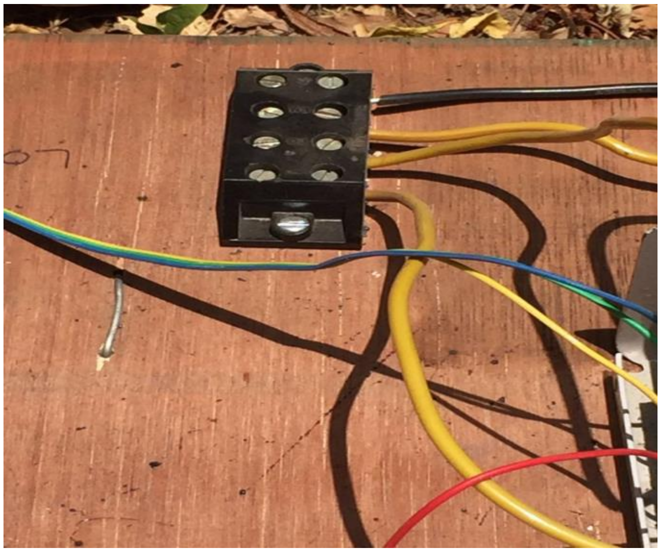

Figure 4: Grid connection

Figure 5: Measurement of Grid connection

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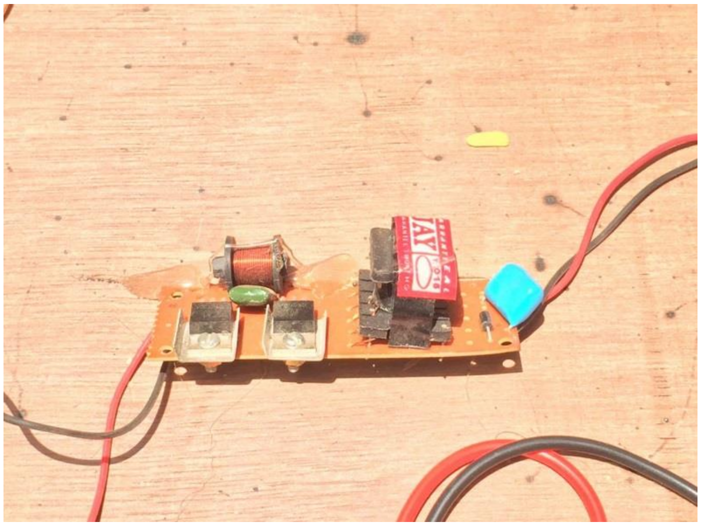

Figure 6: D.C. convertor

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