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EXPERIMENTAL STUDY AND ANALYSIS OF PHOTOVOLTAIC ENERGY STORAGES SYSTEM WITH D.C.

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Abstract:

Photovoltaic cells power generations are increased, because of lack of electrical power. Using of uniform solar irradiation in the photovoltaic cells, power-voltage characteristics must be unique and the maximum power is generated from PV cells. The MPPT Device is an essential part for photovoltaic power generation system. Because of nonlinearity behavior of irradiation and temperature in atmosphere.

Keywords:

photovoltaic cells, energy storage system, D.C. convertor.

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1. INTRODUCTION

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.

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. 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.

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2. EXPERIMENTAL PROCESS

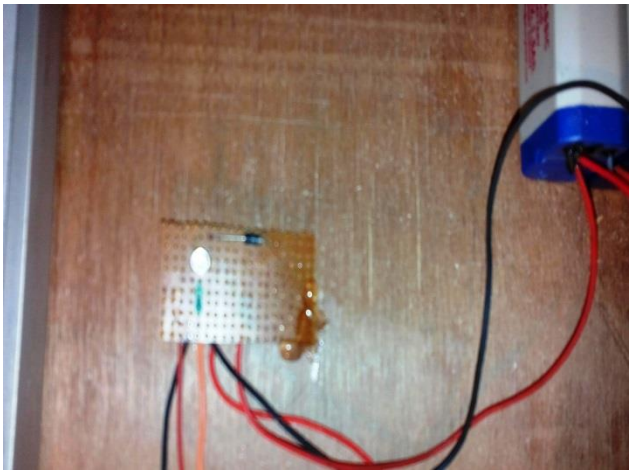

Figure 1: Battery with LED

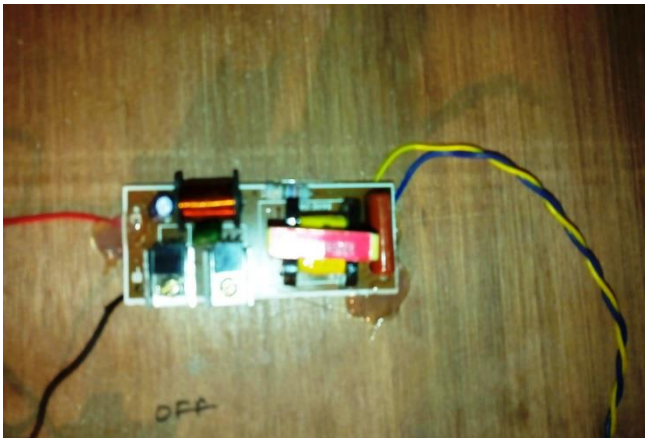

Figure 2: D.C. Convertor

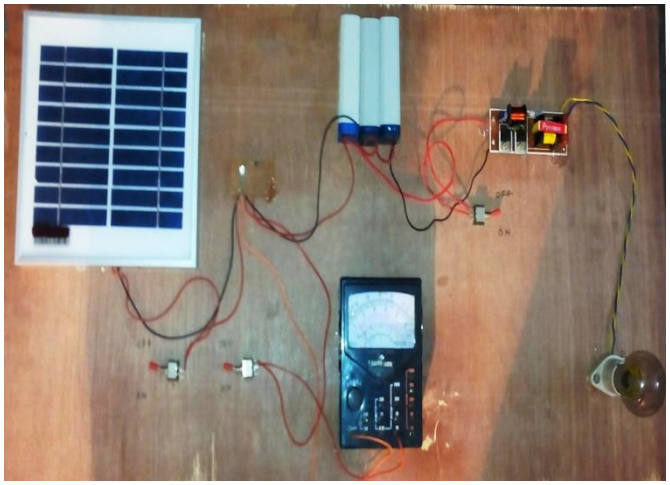

Figure 3: Experimental Setup

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3. PERFORMANCE TESTING

Table 1: Voltage with respect to time

Sr.No.	Time	Voltage
1	10:00	7
2	11:00	11
3	12:00	13
4	13:00	18
5	14:00	16
6	15:00	12
7	16:00	10

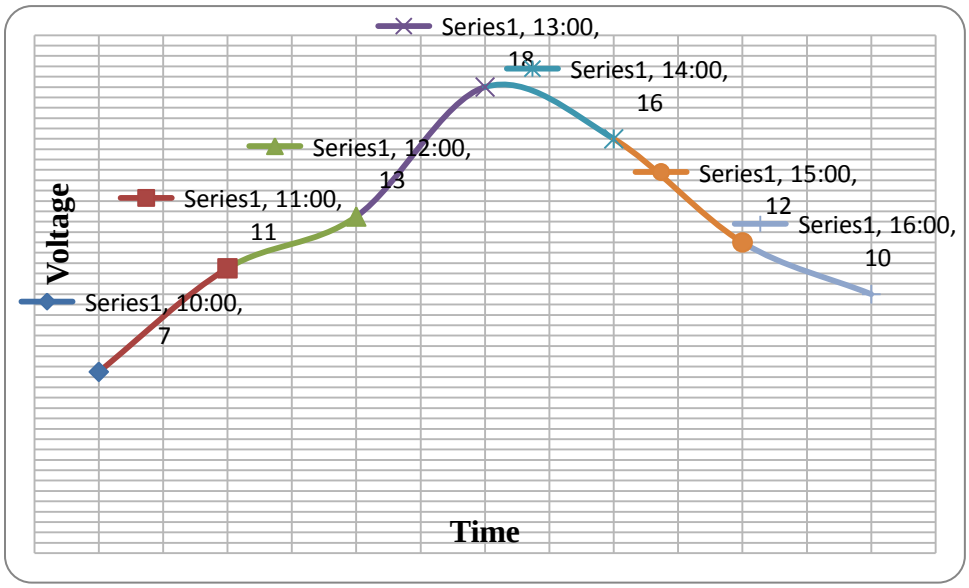

Figure 4: Voltage with respect to time

Table2: Voltage with respect to time using of Maximum Power Point tracking system

Sr.No.	Time	Voltage
1	10:00	10
2	11:00	13
3	12:00	14
4	13:00	20
5	14:00	15
6	15:00	11
7	16:00	9

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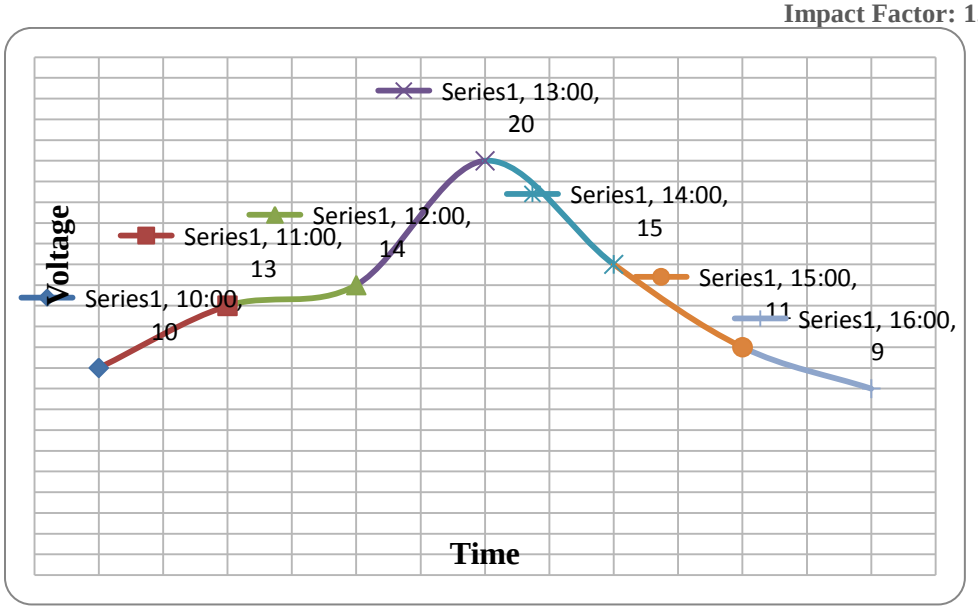

Figure 5: Voltage with respect to time using of Maximum Power Point tracking system

4. CONCLUSION

In this paper, a Maximum Power Point tracking system based Experimental setup are designed and constructed by experimental process. We are find out the D.C. power by photovoltaic cells, the Maximum output voltage are 20 V. D.C. At the time 13:00, which are shown in Table.2. , output voltages are used for other devices. Solar cells voltages are change during various time periods due the change of insolation levels and temperature.

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