

Comparative Study on Replacing Solar Panel with Recycled Material

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Abstract: Because of increase in demand on energy, development in renewable energy is increasing worldwide. In these recent years, growth in solar energy is increased: now a day's air conditioning system is every building sector for decreasing indoor temperature. We tried to re-use material taken from scrap to replace solar panel's material to generate energy.

Keywords: Solar energy, Replacing solar panel's material, Testing of solar panel made from recycled waste.

INTRODUCTION

Now a day's the primary and most universal measure of all kinds of work done by human and nature is nothing but Energy. It is crucial input in the process of economic, social and industrial development. But now rate of energy consumption is increased. To fulfill this demand work in generating solar energy is on peak.

According to law of conservation of energy "energy can neither be created nor be destroyed but can be transfer from one form to another form." Based on this law we try to generate solar energy with the help of material taken from scrap.

OBJECTIVES

To find substitute material for replacing solar panel component obtained from recyclable waste.

METHODOLOGY

With the help of collected data, we understood the working of solar power air conditioning system. With the help of that information we tried to replace solar panel component with suitable replacement taken from scrap.

Basically solar panel works on photovoltaic reaction which is triggered due to heat coming from sun's radiations. Heat is generated in solar panel; due to that heat photovoltaic cells react with negative charged cells and with the help of inverter electric net are produce which helps to generate energy.

First we tried to generate energy with the help of CD & copper wire. We took CD from scrap, a small diameter copper wire is glued on around shiner portion of CD.

Basically a normal CD is made up of polycarbonate plastic and a thin layer of aluminum. In order to determine the behavior of aluminum and copper, we understand the potentials of each of the elements separately. The individual reduction and oxidation are called half-reactions. In the aluminum half-reaction, the aluminum ion has a charge of positive three. When it reduced, it gain three electrons volts. In the copper half-reaction, the copper ion has a charge of positive two. When it is reduces, it gains two electrons. The potential for this half-reaction is 0.34 electron volts. If aluminum is oxidized, the potential is -0.34 electron volts. Therefore, for reaction with negative potential, aluminum must be reduced and copper must be oxidized. The potential for this reaction is -2.00 electron volts.

We tried to perform this reaction by rounding a thin copper wire around the surface of CD, with the help of heat came from sun's radiation we assume that this reaction could take place.

Fig. no. 1 shows the binding of copper wire and CD



Fig. no. 1 : Bonding between CD & copper wire

Another experiment is tested to generate energy from recycled material with the help of sun's radiation.

We have placed this device in sun's exposure about 4 hrs, and with the help of FALCON DMM-10 device we try to measure energy generated from device.

Theory suggests that, there should be some form of energy generation; based on that theory this experimentation is executed.



Fig no. 2 : Testing of material used

RESULT

With the help of FALCON DMM-10 device, after each 1 hour interval of time, we have taken readings of device.

The result for this device is plotted in following graph:

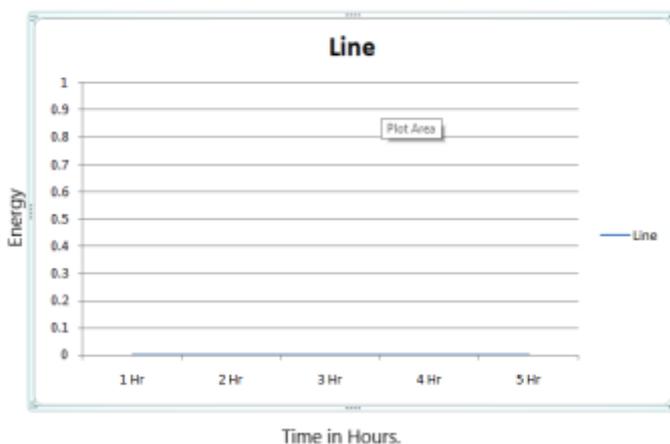


Fig. no. 3 : Graph on Energy Generation.

This graph is plotted Time in Hours on X-axis & Energy generation in mV on Y-axis. Based on these readings, result for this instrument doesn't show any form of energy generation. Output from the model was not as per expectation. Observation was carried out for total 5 hours in bright sunlight. Checking was done at an interval of 1 hour. Output of the FALCON DMM-10 remained unchanged i.e. 0 amp/ 0 volts.

CONCLUSION

On the basis of result got from FALCON DMM-10 device & graph we conclude that energy generation from this is instrument is not possible. So we conclude that from this experiment energy generation from aluminum and copper is not possible.

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