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SOLAR POWER INVERTER WITH DUAL AC OUTPUT

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ABSTRACT

Today's world growing energy and depleting of natural resources such as fossil fuels, coal, oil, etc, has a vast impact to our society. To overcome the depletion of natural resources for energy, it is found that Renewable sources of energy such as Solar Energy can be used. Solar Energy is considered to be source of non-combustible and non-polluting energy that meets ever-growing energy needs. We have developed a Solar Power Inverter with Dual Ac output using, solar panel, DC battery, Inverter, solar charger circuit and two Ac load. A solar inverter convert variable DC output of photovoltaic solar panel into utility frequency alternating current that can be fed into commercial electrical grid or used by local, off-grid electrical network. So using this system we can reduce the cost of electricity by installing a solar panel.

Keywords: Solar panel, Dc battery, solar charger circuit, Inverter, Transformer, AC load.

I. INTRODUCTION

The energy received from the sun is renewable source and totally free of cost. So with the help of this sun's energy we are able to produce electricity to run Ac load. A solar inverter play an important role like human body brain. Solar inverter is a type of electrical converter which convert variable DC output of photovoltaic (PV) solar panel into utility frequency alternating current(AC) that can be fed into electrical network. These inverter has some function with PV array like tracking of utmost power point and protection of anti-islanding.

Objective of solar power inverter:

1)Maximization of Energy production

2)Improve grid assistance capabilities

3)It help to reduce to energy cost

II. METHODOLOGY

As we know sun produces solar energy and we used photovoltaic plate (made of silicon semiconductor) aborb sunlight . when the sun ray's interact with solar photovoltaic system, electron begin to flow and produces direct current passes though solar charger circuit consist of ACS712 volatge controller, Diode, led, and potentiometer, which control the voltage and help to store energy in 12V Battery. After storing the energy it is passed through Inverter circuit that help to convert direct current into alternate current with the help of solar power, inverter circuit consists of Capacitor, resistor, Integrated circuit 4047, toggle button and then inverter circuit is connected to transformer(step up transformer) and then connected to circuit holder which glow bulb, and the solar charger circuit is directly connected to inverter holder which operate to glow bulb and socket to charge the mobile.

Methodology of Solar Battery Charger Circuit Design

1)The circuit uses 12v solar panel and an adjustable voltage regulator LM317. Solar panel consist of 1. 2V rated solar cells. Port RV1 is used to set the output voltage to the battery.

For 6v Applications:

- Output voltage: set for 7v

Input voltage:

- Battery discharged(6v):8. 75v@1. 5mA

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- Battery charged (7v):9v min@10mA

III. MODELING AND ANALYSIS

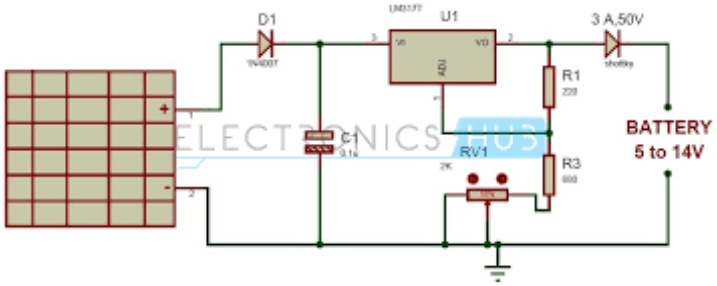


Figure 1: Solar charger circuit diagram

How to Operate this Solar Battery Charger Circuit?

1. Give the connections according to the circuit diagram.
2. Place the solar panel in sunlight.
3. Now set the output voltage by adjusting pot RV1
4. Check the battery voltage using digital multi meter

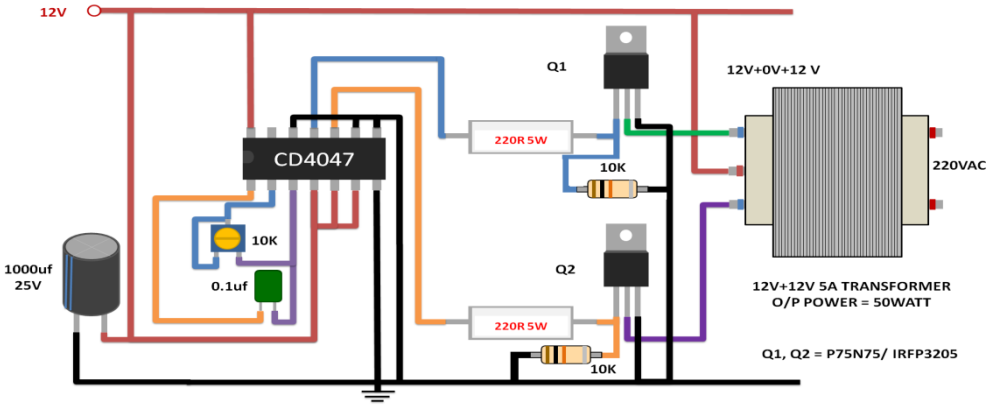
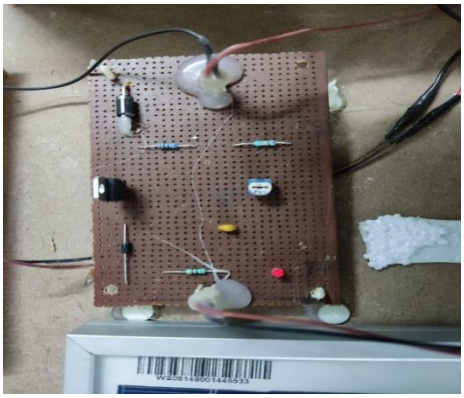


Figure 2: Inverter circuit

IV. RESULTS AND DISCUSSION



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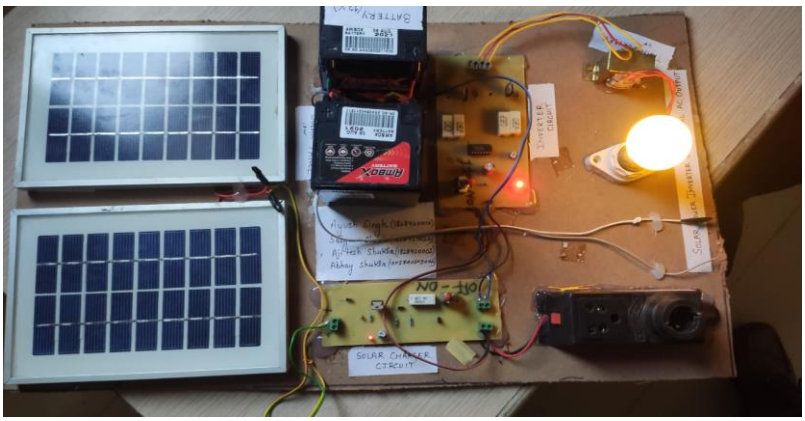

Figure 3: Solar power inverter with Dual AC output

V. CONCLUSION

So at last I want to conclude my project topic by Stating that Solar energy reduces the greenhouse gas emission in the atmosphere because of harnessing the power of sun's energy with little to no gases being released. Hence the main benefit of using solar power to the environment include the provision of inexhaustible supply of sun's energy from the sun. Solar power capture's the sun's energy with no harm to the environment. therefore solar power is easier on health impacts, land use , water and carbon emission than energy generating such as natural gas in fossil fuel and coil energy plants. The main point to solar energy is that solar energy is clean and renewable energy, once a solar panel is installed , solar energy can be produced free of charge. Solar energy will last forever whereas it is estimated that the world oil's reserves for last 30 to 40 years.

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