AUTOMATIC LOAD SHIFTING OF SOLAR INVERTER

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ABSTRACT

A solar inverter works by taking in the variable direct current, or 'DC' output, from your solar panels and transforming it into alternating 120V/240V current, or 'AC' your solar panels and transforming it into alternating 120V/240V current, or 'AC' your solar panels and transforming it into alternating 120V/240V current, which is why the solar inverter must change the DC output that is collected by your solar panels. To be a little more technical, the sun shines down on your solar panels (or photovoltaic (PV) cells), which are made of semiconductor layers of crystalline silicon or gallium arsenide. These layers are a combo of both positive and negative layers, which are connected by a junction.

When the sun shines, the semiconductor layers absorb the light and send the energy to the PV cell. This energy runs around and bumps electrons lose, and they move between the positive and negative layers, producing an electric current known as direct current (DC). Once this energy is produced, it is either stored in a battery for later use or sent directly to an inverter (this depends on the type of system you have).When the energy gets sent to the inverter, it is in DC format but your home requires AC. The inverter grabs the energy and runs it through a transformer, which then spits out an AC output. The inverter, in essence, 'tricks' the transformer into thinking that the DC is actually AC.

Keywords :- *Atmega328p-pu Controller, Charge controller, 12v battery, LCD display, Solar plate 20w, Inverter kit etc.*

1. INTRODUCTION:

Introduction Solar inverter is a critical component in a solar energy system. It converts DC power output into AC current that can be fed into grid and directly influences the efficiency and reliability of a solar energy system. In most occasions, 220VAC and 110VAC are needed for power supply. Because direct output from solar energy is usually 12VDC, 24VDC, or 48VDC, it is necessary to use DC- AC inverter in order to be able to supply power to 220VAC electronic devices. Inverters are generally rated by the amount of AC power they can supply continuously. In general, manufacturers provide 5 second and 1/2 hour surge figures which give an indication of how much power is supplied by inverter.

1. inverters require a high efficiency ratings. Since use of solar cells remains relatively costly, it is paramount to adopt high efficiency inverter to optimize the performance of solar energy system.

2. reliability helps keep maintenance cost low. Since most solar power stations are built in rural areas without any monitoring manpower, it requires that inverters have competent circuit structure, selection of components and protective functions such as internal short circuit protection, overheating protection and overcharge protection.

3. tolerance to DC input current plays an important role since the terminal voltage varies depending on the load and sunlight. Though energy storage batteries are significant in providing consistent power supply, variation in voltage increases as battery's remaining capacity and internal resistance condition changes especially when the battery is ageing, widening its terminal voltage variation range.

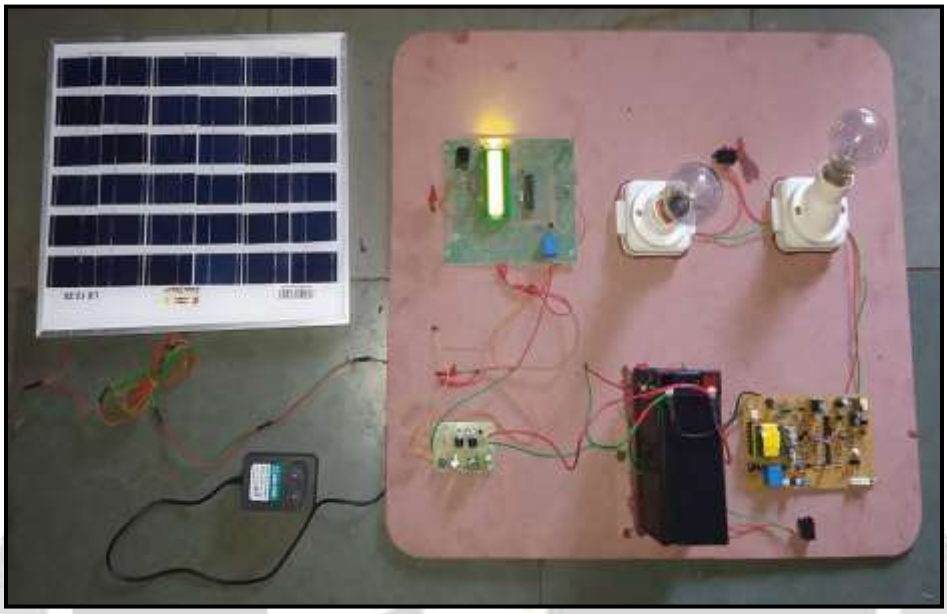

Fig -1: Actual view of project

2. METHODOLOGY:

Phase I: Literature Survey and theoretical study In this phase an extensive literature survey will be carried out. It involves collection of literature from various available resources. The required theoretical background needed to understand working of box shifting mechanism and the technologies going to be used in it will be studied.

Phase II: System Design-Controller design and development of prototype Design and development of electric circuit from battery to motor and also of safety circuits is to be done. Based on the theoretical data and available resources Prototype will be developed and manufactured as per required specification. And the required tests. will be carried out.

Phase III: Design &development of Actual model This task will be carried out successful working of the prototype with the prototype development. Block diagram will be made for the product. Also the Rating of component will be justified. The real product, that is material handling robot will be manufactured and assembled which will be ready to work in college.

Phase IV: Final tests and performance Different types of tests like working function, working hours on one discharge, cycle will be tested.

3. CONNECTION DIAGRAM:

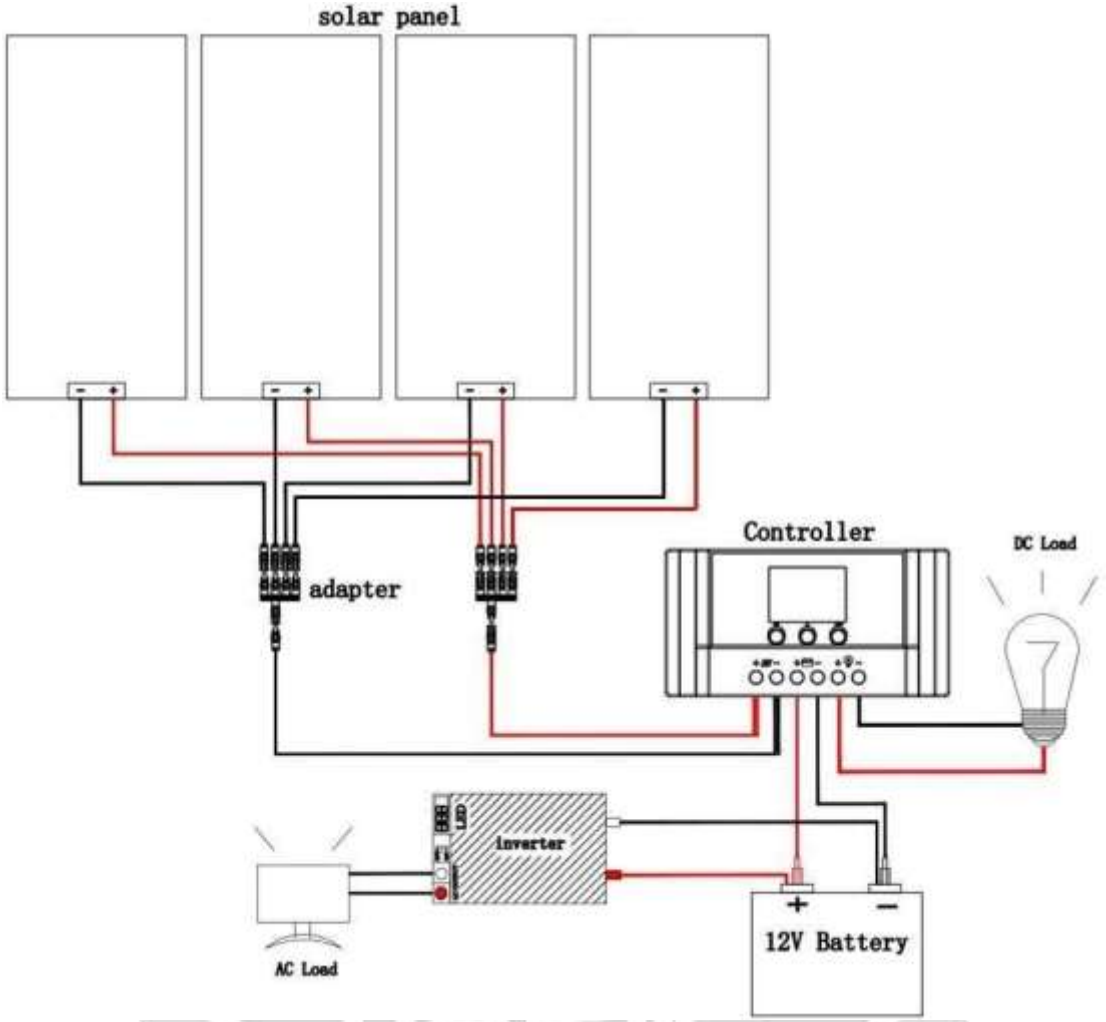

Fig -2: Connection diagram

3.1 WORKING:

Here In this Project we are going to make Solar inverter system. Charge from solar plate is collected in battery through solar charge controller. From Battery it is feed to inverter kit where it converts it to dc to 230as as well as same time provide same external Dc load connection to. From inverter output we can we load as per we require. Here we are going to use AT mega 328p-pu controller Which compare voltage of solar plate with rated voltage fixed and automatically shift the load on ac mains as per condition. Resister circuit is used for voltage divider to input to controller. Controller compares and take action as per Instruction provided by us.

3.2 ADVANTAGES:

1) Renewable energy source
2) Reduce electricity bill
3) Diverse application
4) Low cost
5) Low maintenance

3.3 APPLICATIONS:

1) Used in Hospital area
2) Used in school area
3) Used in hotel area
4) Military base where electricity problem arises

4. CONCLUSIONS:

From this project we observed that this solar inverter is producing electricity free of cost by using solar energy so, its eco- friendly, pollution free and can be used for domestic appliances as well as for industrial purpose on three phase. Solar power is an immense source of directly useable energy and ultimately creates other energy resources: biomass, wind, hydropower and wave energy.

5. ACKNOWLEDGEMENT:

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