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Development of Tariff and Power Management System for Solar Panel Instalation for Residential Application

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ABSTRACT: Solar power system is one of the best renewable energy technology which is not only cost effective but environment friendly as well .For my research. I have suggested methodologies that may be applicable to other off grid applications. I will be explaining design methodology using an example of an off-grid bus shelter. Off-grid or standalone systems can be defined as independent systems that are not connected to any electrical grid. These come in different sizes and are mostly used in location where there is little access to grid infrastructure.

KEYWORDS: Solar Panel, Solar Battery, Solar Invertor

I. INTRODUCTION

Solar power panel are implemented to make electricity using sunlight. which is known as solar power. Solar power is the conversion of from sunlight into electricity. Either directly using photovoltaic's (PV). Indirectly using concentrated solar power or a combination. Concentrated solar power systems use lenses or mirrors and tracking systems to focus a large area of sunlight into a small beam. Photovoltaic cells convert light into an electric current using the photovoltaic effect. Using solar power plant to make electricity is completely environment friendly there are no harmful effect of using them because solar power is a renewable source of energy

II. EXPERIMENTAL SETUP

2.1 Home Load Calculation

Using Home load calculation, you can decide to choose the best inverter battery with solar panel solution for your home, hospital, shop, factory, school, etc. An inverter is the central component of power backup solution. It cannot be upgrade or downgrade in any situation after purchasing.

To simply this complexity, Solar has developed home load calculator, so you can easily estimate your power backup solution.

2.2 Time Load Calculation

Time load calculation is a calculate by a number of time running power by using battery or panel was calculate the time by running the home load.

2.3 Tariff Calculation

The amount of money frame by the supplier for the supply of electrical energy to various types of consumers in known as an electricity tariff. In other words, the tariff is the methods of charging a consumer for consuming electric power. The tariff covers the total cost of producing and supplying electric energy plus a reasonable cost.

3. Experimental procedure

In the introduction of solar photovoltaic (PV) clusters for private, commercial, or agricultural operations; a crucial idea is to determine the merits of the site. Identifying the place and position of the panels is a crucial step in designing a PV system as the later components will be streamlined to this step. A few concepts and tips one must keep in mind while performing the site assessment .

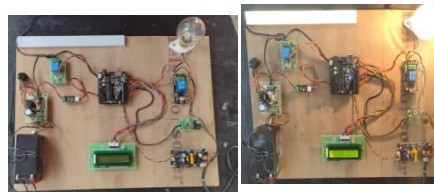
III. PROTOTYPE

A Prototype design of the photovoltaic system using power management system. The major properties of the power management system are three characteristics, [1].the PV panel generates the electricity through photovoltaic effects using solar radiation by using low priority load, [2].power management system control the priority, [3].electric board by using high priority load.

3.1Prototype Components

- Arduino UNO
- 5A AC Current sensor
- 12V battery
- Voltage Sensor
- 16x2 LCD Module
- Regulated Power supply
- 12V SMPS Module
- 12V Solar Panel
- 1 Channel Relay-2

3.2Photographic view of Power management system (Prototype)



IV. RESULTS AND DISCUSSION

Solar power is immense source of directly useable energy and ultimately creates other energy resources. The aim of our project is to minimize the power consumption. Consider a house having dual power supply both from EB and solar panels. Power supplies for devices with low frequencies (such as LED, light bulbs, etc.,) are supplied from solar panels whereas heavy load appliances (such as washing machine, air conditioners, etc.,) runs with energy supplied from EB. When the consumption of EB power to the heavy load appliances exceeds 10 units, then no more power will be supplied to those appliances and it will come to halt. When there is a drop in frequency below the threshold from the solar power, equipments will be switched to EB power.

When using our solar power management system to avoid the minimum power was reduced in the battery automatic the battery power turn off to the electric board .electric board the maximum load was select in the device .when the load was reached electric city was reached electric city was shut off .then the low priority was turn on. It will reduce the electric bill usually paying was reduced by more than half of the electric bill was reduced by using the power management system it is very economically and it was reach many people and more effective it was very cheap and best system of a solar and save the electric bill it was renewable and no affected by human .now a day most of the people was change to solar photovoltaic system .it become the green India and reduce the pollution from the environmental.

Materials added with still and reflecting mirror fitted with the still improved the performance. To what extent the Modifications improved the productivity of the modified.

V. CONCLUSION

We are using two priority of current, one is low priority and another is high priority current. The low priority current was produced by solar panel. The high priority current was supply from the EB. In high priority limited load is setted. When the current cross the limited load, current supplied in high priority is cut off. At that time, low priority current is working. When the solar battery is drain, again EB current is used. In this condition, solar battery was



charged by EB current. Again Solar battery is working at the time of solar battery was fully charged. To reduce the usage of electricity for the reduction of EB bill.

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