

Solar Power Automobile

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Abstract— This project is mainly designed to build a solar powered automobile which used solar energy as fuel. The solar powered vehicle, one of the oldest alternative energy vehicles, has much application to the emerging electric vehicle market. This project has a strong desire to innovate use local technology and resources. In this when the sun light falls on the solar panel, the solar energy is converted to the electrical energy and this electrical energy is stored in the battery. This paper surveys the history and future of solar and electric vehicles and provides an over view of a typical solar powered automobile.

Key words: Automotive, Electric Vehicle, Powered, Solar Car

I. INTRODUCTION

Now days, the natural resources like fuel, coal etc. are facing a hard time to keep pace with the increasing demand. This paper discuss about the use of solar energy to power up the vehicle. In order to achieve the required voltage, the photo voltaic model may be connected either in parallel or series, but it's costlier. Thus to make it cost effective, power converters and batteries are been used. At one hand, there are more cars or motors vehicles are dominating the transport medium, one the other hand, these automobiles are been dominated by the fuel. As a result, the limited resources are been requested by the producers and dealers to satisfy this need which is leading use to uncertain future with having the scarcity of fuel and minerals. In this when the sun rays strikes the panel then the solar energy is converted into the electrical energy and it is stored in the battery. According to the state of battery, the charging of battery is done, so as to avoid overcharging and deep discharge. The voltage is then boosted up using the boost power converter, ultimately running the BLDC motor which is used as the derive motor for your automobile application. Since petrol and diesel is not required, it use solar energy which is easily available in nature and similarly it regenerates the energy through dynamo and its energy efficient.

II. LITERATURE SURVEY

It's very important to understand solar energy collection and its conversion into electricity, evaluation of electrical performance, and the current efforts being made to improve conversion efficiency. It was also important examine the actual effect of the colour filters on the light input into the panel. The main material used in the modern collection of solar energy is silicon. The semiconductor is part of a panel called a photo voltaic, or solar cell. This cell absorb sunlight and transfers it into electricity. This electricity is stored in the battery.

III. EXISTING METHODE

Solar cars use solar energy that comes from the sunlight. The cars doesnt move directly by sunlight. So it is necessary to convert the solar energy into electrical is needed. When it comes to solar vehicle, specially designed batteries serve as

converter. Solar energy also needs to be stored since sunlight is not available. Silicon based photo voltaic cells are still most common solar collector and storage space where, due to electron movement and interactions, accumulated sunlight moves electrons round.

IV. DEVELOPED METHOD

Sunlight is now- a -days considered to be a source of energy which is implemeneted in various day to day applications. when sunlight falls on the solar energy gets converted in to electrical energy and stored in the battery. Mechanical energy is most common renewable source of energy. The dynamo converts mechanical energy into electrical energy.

V. COMPONENTS USED

- DC Motors
- Solar Panel
- Batteries
- Dynamos
- Solar controller circuit
- Pic Microcontroller 16F877
- Interfacing Circuit
- LCD display

A. DC Motors

A DC motor is any of class of rotary electrical machines that converts direct current electrical energy into mechanical energy.



Fig. 1: DC motor

B. Solar Panel



Fig. 2: Solar Panel

Solar panels absorb the sunlight as a source of energy to generate electricity or heat.

C. Batteries

Batteries are used to store the electrical energy and also deliver the energy when required.



Fig. 3: Battery

D. Dynamos

A dynamo is an electrical generator that produces direct current with the use of a commutator.



Fig. 4: Dynamo motor

E. Pic Micro Controller

Pic 16F877 each one of the most advanced microcontroller from microchip. This controller is widely used for experimental and modern applications because of its low price, wide range of applications, high quality, and hand ease of availability.

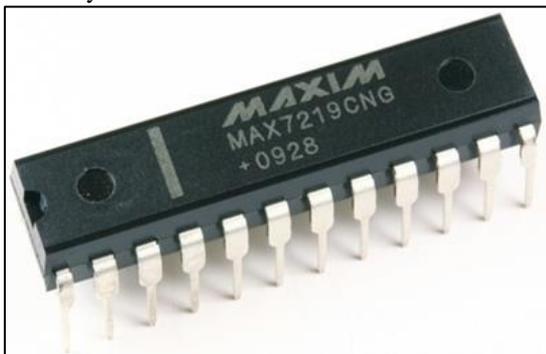


Fig. 5: PIC microcontroller 16F877

F. Solar Control Circuit

Purpose of charge controller circuit is to cutoff the supply from the solar panel when the battery is fully charged to avoid over charging. and to start charging when the battery voltage drop off a certain value in my case the max. Allowed voltage is 11.5 volts and min is 12 volts.

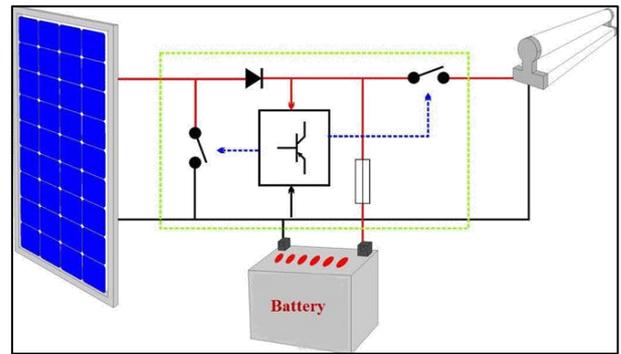


Fig. 6: solar controller circuit

G. LCD Display

The most common type of LCD controller is the Hitachi 44780, which provides a relatively simple interface between a processor and an LCD.

1) Advantages

- Solar power automobile quite.
- A solar power automobile produces no harmful emissions.
- Solar power automobile do not require any expense for running.
- Solar power less noise.
- Unlike regular power automobile, solar energy powered are able to utilize their full power at any speed.

2) Disadvantages

- Solar power automobile don't have speed or power that regular automobile have.
- If there is sunlight.
- Parts used in solar cars are not produced in large quantity so they are expensive.

VI. APPLICATION

- It is uses the dynamo which is used to regenerate electric energy.
- Solar power automobile which completely uses renewable sources of energy.
- This technique using renewable resources which runs completely free of cost can be used for private use.

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