

Research Paper

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SOLAR BICYCLE

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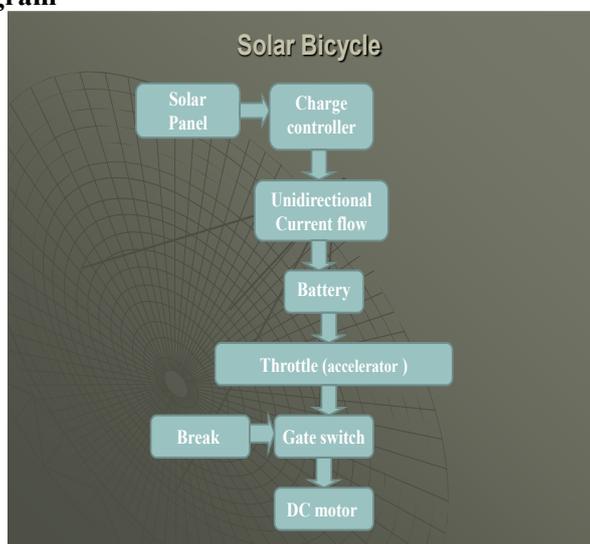
Abstract: This paper explains the implementation of “Development of Self charging Dynamo and Solar Powered based Electric Scooter” using Solar panel, charging circuit, and also hub motor. An embedded system is a combination of software and hardware to perform a dedicated task. Some of the main devices used in embedded products are Microprocessors and Microcontrollers. The project “Development of Self charging Dynamo and Solar Powered based Electric Scooter ” using solar panel which is used to recharge the battery for running the hub motor, freely available source of energy “solar energy”.

Keywords – Embedded System, Solar power, Dynamo

1. INTRODUCTION

Power supply is a supply of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others. A power supply may include a power distribution system as well as primary or secondary sources of energy such as Conversion of one form of electrical power to another desired form and voltage, typically involving converting AC line voltage to a well-regulated lower-voltage DC for electronic devices. Low voltage, low power DC power supply units are commonly integrated with the devices they supply, such as computers and household electronics.

2. Block diagram



The main blocks of this project are:

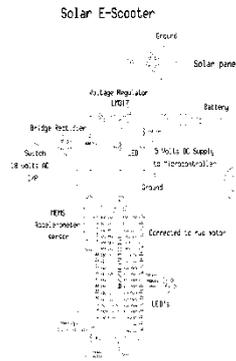
1. DC Motor
2. Solar cell/plate
3. Charging circuit
4. Brake
5. Microcontroller

Project Description

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Microcontroller

The microcontroller used in this project is PIC16F877A. The PIC families of microcontrollers are developed by Microchip Technology Inc. Currently they are some of the most popular microcontrollers, selling over 120 million devices each year.

Solar Panel Setup:

The use of batteries requires the installation of another component called a **charge controller**. Batteries last a lot longer if they aren't overcharged or drained too much. That's what a charge controller does. Once the batteries are fully charged, the charge controller doesn't let current from the PV modules continue to flow into them. Similarly, once the batteries have been drained to a certain predetermined level, controlled by measuring battery voltage, many charge controllers will not allow more current to be drained from the batteries until they have been recharged. The use of a charge controller is essential for long battery life.

Advantages:

1. Conservation of Non Renewable energy sources.
2. Maximum output can be obtained.
3. It does not cause any environmental pollution like the fossil fuels and nuclear power.
4. Solar cells last a longer time and have low running costs
5. Low power consumption.

Disadvantages:

1. Periodic Monitoring and Maintenance is required.
2. A drastic environmental change cannot be tolerated by the equipment.
3. The entire process of manufacture is still very expensive as silver is used for interconnection of these cells in the panel, which is a very expensive metal.

Applications:

1. This energy can be utilized practically for automobiles.

3. RESULT AND CONCLUSION:

Result:

The project **"Solar Powered E-Scooter with dynamos"** was designed to fabricate a develop an e-scooter with self charging dynamo and batteries. The system also uses renewable energy source solar.

Conclusion:

Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced IC's with the help of growing technology, the project has been successfully implemented. Thus the project has been successfully designed and tested.

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