

SMART SOLAR GRASS CUTTER MACHINE

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Abstract – The sun has been the major source of energy for life on earth. Solar energy is almost unbounded, So we make a smart solar grass cutter machine. Solar plate is used to provide the source to the battery charging. It is an automated system for the purpose of grass cutting on small plants in lawns and gardens. The system control is done by the microcontroller. Wheels and cutting operations are done using dc motors. The whole supply is provided through the battery while electric motor rotates which in turn rotates a blade which does the mowing of a grass.

the electricity. [3]. Vicky Jain, Sagar Patil, Prashant Bagane, Prof. Mrs. S. S. Patil describes the aim of project is to make solar based wireless grass cutter. Hence reduces manpower. In this project we use microcontroller for controlling various operation of grass cutter. [4].

Key Words: Blade, Solar Panel, DC Motors, Bluetooth Module, Microcontroller.

1. INTRODUCTION

Now a days, grass cutter machines have become very popular. The present technology commonly used for cutting the grass is by using the manually handle device. In this project we are using wireless technology with the help of Bluetooth module and control the operations through android app for cutting the grass. The device consists of blade which is operated with help of the motor. The power supply of the motor is by using battery. The battery can be charge by using power supply and solar panel.

Our new design for an old and outdated habit will help both customer and environment. This project of a smart solar grass cutter will relieve the consumer from mowing their own lawns because we are a grass gripping system which is placed below the grass cutter while grass cutter cuts the grass easily and will reduce both environmental and noise pollution.

2. LITERATURE SURVEY

G. Rahul describes the application of solar energy to power an electric motor which is turn rotates a blade which does the cutting of grass. [1]. Smart grass cutting machine by using photovoltaic source and motor speed control. It is a smart system for the purpose of grass cutting. The source is drive from the solar energy by using photovoltaic panel and store the DC voltage in a battery. [2]. Ms. Yogita D. Ambekar, Mr. Abhishek U. Ghate describes the aim of project is to make the grass cutter which operates on solar energy. Hence save

3. METHODOLOGY

I. Block Diagram

Block diagram consist of following components:

1. Microcontroller
2. Battery
3. Solar panel
4. D.C Motors
5. Blade motor
6. Bluetooth module

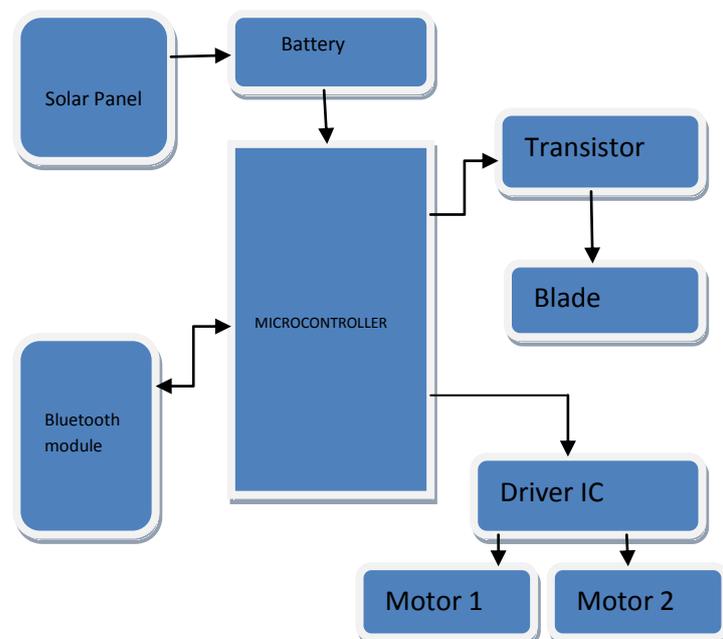


Figure 1- Block Diagram of Smart Solar Grass Cutter.

II. Block Diagram Description

1. Microcontroller

It is advanced controller with more features. System control is done by using controller ATME8051. It is heart of the system. It controls all the operations. Controller requires +5v for function properly. It provides 500mA current.

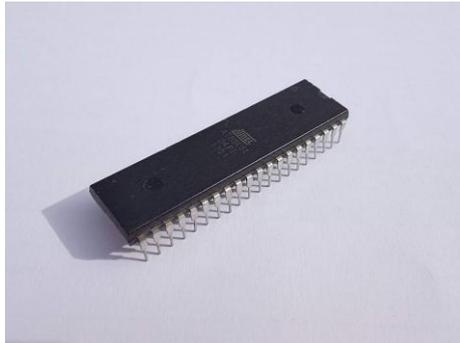


Figure 2- MICROCONROLLER ATME8051

2. Solar panel

A solar panel is a set of solar photovoltaic modules electrically connected. The source is driven from the solar energy using solar panel which receives energy and converts it into electric energy. Solar panel generates energy up to 12v.



Figure 3- Solar panel

3. BATTERY

Solar cell module produces electricity only when the sun is shining. They do not store energy; it is necessary to store some of the energy generated by the solar panel. It is also used for the powering operation system. The battery is of 12v DC.



Figure 4- Battery

4. DC Motors

There are 2 DC motors used for movement of the wheel. These motors are driven by driver IC L293D. The speed of the motor is 60rpm.

Motors require more current for work properly, so this IC is used. It increases current up to 600mA.



Figure 5- DC Motor

5. BLADE MOTOR

Blade motor is used for cutting operation of the grass. These motors have more speed than the 2 motors. These motors have a speed of about 2000rpm. Blades are the cutting components of lawn mowers. These blades are very sharp. We use rotating blades for this system.



Figure 6- Blade

6. BLUETOOTH MODULE

Bluetooth wireless technology has become very popular. Bluetooth is interface with the microcontroller. Bluetooth module can receive and transmits the data from a host system with the help of the host controller interface. The output range of the Bluetooth module which is used in our system is about the 2.5mW and the distance of two Bluetooth devices are about the 10 meters.



Figure 7- Bluetooth Module

5. CONCLUSIONS

By doing this project we conclude that, we can reduce the human efforts and in this project we are used a grass gripping system which is placed below the grass cutter while grass cutter cuts the grass very easily. Our project is having facility of charging the battery while the solar powered grass cutter is in motion. The same thing can be operated in night time also, as there is a facility to charge the battery in day light. So it is the best application that does not affects on environment.



Figure 8- Front view of smart solar grass cutter

III. SOFTWARE DESCRIPTION

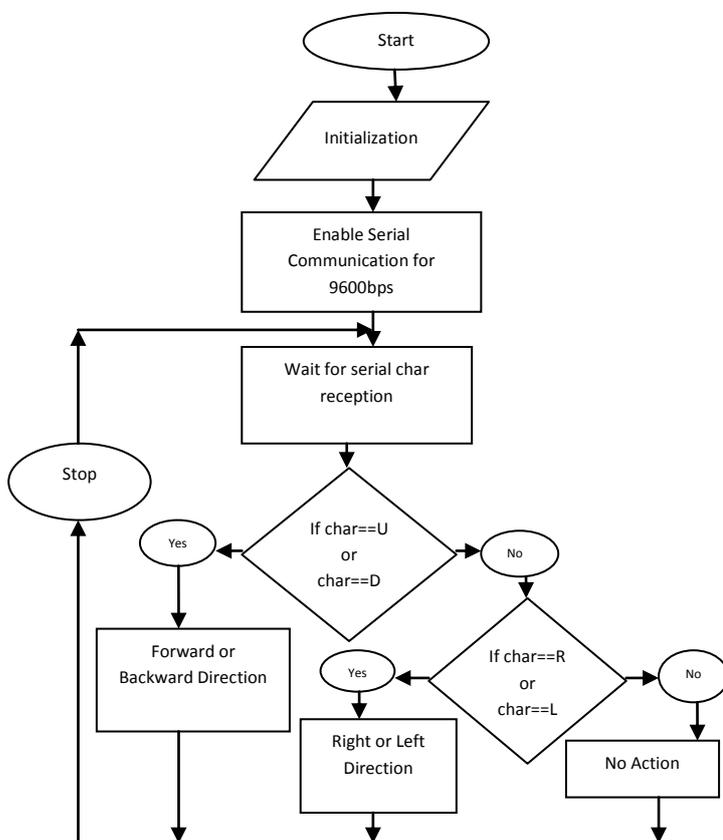


Figure 9- Side view of smart solar grass cutter

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