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## FULLY SOLAR BASED GRASS CUTTER

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**Abstract:** :- Now a days we are facing the problem like pollution power cut problem etc., in order to avoid or overcome this problem we have plane to make a device which does not face such problem so we have thought about the device which can be performing its function without causing any problem so we have decided to making the project on grass cutting this project uses the renewable energy sources because of power storage for its operation here using solar energy the aim of our project to develop portable fully automated solar based grass cutter. Solar panel is connected to the battery then by connecting the 8051 microcontroller are (we are using Atmel 8051 microcontroller). It will be provide the supply for DC motor have a cutting blades of its shaft during ON condition of motor shaft will be rotate due to this grass will cut with the help of blades connected to the shaft . this project will help in building eco-friendly system current technology commonly used for cutting the grass is by the manually handled device, in this project we are using digital technology so in this project we are trying to make robot vehicle which is able to cut the grass cutter in lawn and small farm etc. the all over system will have fully automated work for guidance and other obstacle detection obstacle will have detect by the help of ultrasonic sensor

**Keywords:** Solar panel, ultrasonic sensor, ATMEL 8051 microcontroller, motor, blade.

### I INTRODUCTION

Grass cutting machine have become very popular today most of the time a grass cutter machine are used for soft grass furnishing. The past technology of grass cutting is manually operated by the use of hand devices like scissor, this results into more human efforts and more time required to accomplishing the work and old method of grass cutting have lack uniformity of remaining grass and oldest technology have also the manmade pollution and due to the use of engine power machine have lot of noise and pollution and also required time to time maintenance

So avoiding that kind of problem we are making the project the objective of our project to design to work automatic lawn mover, which operates on solar energy and avoid the drawback of old lawn mover the purpose of our project is avoid energy crises ,human efforts, pollution maintenance cost etc. Also solar based grass cutter keep the environment clean and healthy .it is use for cutting different type of grass and various application the whole machine operated on solar energy store in battery the ultrasonic sensor

is use for obstacle detection to avoid any damage of human objects and animal also we are using the relay to control motor connected blades.

### II METHODOLOGY

The project of grass cutter work on solar energy. Energy produced by solar panel the energy from the sun is a photovoltaic modules is converted into electrical energy this energy stored in a 12v battery (rechargeable) it can be charged directly from the solar energy

This battery is then connected to RF modules, RF module having a function to provide supply of electricity to motor by using relay RF module receive signal from controller the system is control is done by P89V51RD2 microcontroller and the automation for the object detection is achieved by using 38kHz IR sensor and microcontroller

Toggle switch is used to select mode of operation and DPDT switch for moment of operate and we have using wheel chain with 26 links on both sides are attached to a platform which support whole of model wheels moves .When two motors of 45rpm are driven and the cutting action of the blades is provided by a motor of 180 RPM .

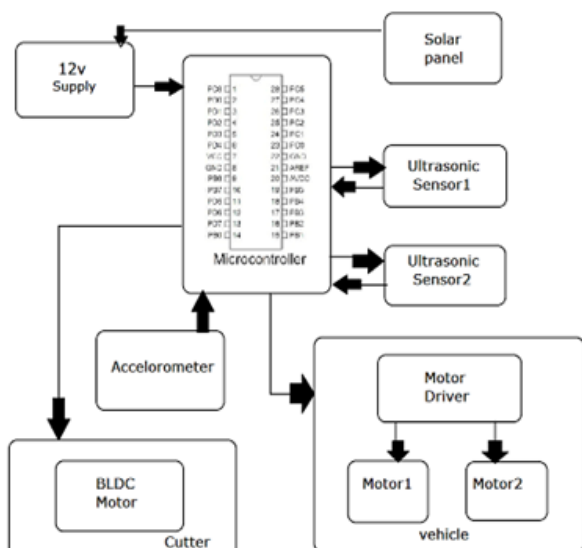


Figure 1: Block Diagram of Fully Automated Solar Based Grass Cutter

III COMPONENTS

1) SOLAR PANEL

The solar panel are used to generate electrical power. The photo voltaic effect can be observed in nature the variety of material that have shown that the best performance instant light is the semiconductor as stated above when photon from the sun are absorbed in a semiconductor that create free electron with higher energy

2) BATTERY

The energy from the solar panel stored in batteries. The battery are used as a storage device for solar energy, Solar cell modules produce electricity only when the sun is shining they do not store energy it is necessary to store some of energy produced the most obvious solution is used batteries which chemically store electrical energy.

3) BLADES

A Blade is the portion of a tool weapons or machine with an edge that is designed to cut and or puncture, stab, Slash, Chop, Slice, Thrust, or Scrape Surfaces or Material. A blade may be made from a flacking stone, Such as Flint, Metal, Ceramic, or other material.

4) DC MOTOR

The motor is connected to the batteries through connecting wires between this two motors driver is provided it starts and stops the working of motor from this motor the power transmit to the mechanism and this makes the blade to rotate with high speed, cut the grass.

5) ULTRASONIC SENSOR

- a) It is used to sense abnormal motion to run of the grass cutter machine.
- b) It is used to detect overload current.
- c) It is detects obstacle. The ultrasonic sensor provides precise, Non-Contact distance measurement from above 2cm to 3m. It is very easy to connect to microcontroller.

6) MICROCONTROLLER

We are using AT mega 328P microcontroller. It is a product of Atmel and most advanced chip, it is a 8 bit microcontroller based on CMOS technology it has 32kbytes of flash memory 1K EEPROM, 2K of internal SRAM. DC motor, Ultrasonic sensor, Blade Speed, Obstacle detection controlled by microcontroller.

ADVANTAGES

- a) Compact size and portable.
- b) Manmade pollution.
- c) Robotic operation.
- d) Automatic obstacle detection.
- e) Operating principle.
- f) Is simple.
- g) No wear and tear losses.
- h) No maintenance cost.
- i) No skilled persons are required.

APPLICATION

- i) For cricket ground.
- ii) For football ground.
- iii) Lawn mover.
- iv) Small farm.

IV CONCLUSION

Our project entitled manufacturing of fully automated solar powered grass cutter which runs on solar energy, the output obtained by it satisfactory ,it will be the advantageous for the people who has lawn, also this project is suitable for common man as it having more advantages no fuel cost, maintenance cost, and it free from man-pollution. The most important advantage of our project, it has no need to handle any qualified person.

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