Automated Solar Grass Cutter

Prachi Pawar, Pratima Pawar, Jagruti Sonawane, Abhijeet Darode, Yogesh Patani

BE, Student, Dept. of Electrical Engg, MET BKC IOE, Nashik, Maharashtra, India

***Abstract*:-Pollutions, power cut problem are the problems we are facing now a day. So there is a need to develop a device which will overcome these problems. The source for these is by using the renewable source of energy like solar energy, wind energy. In order to design the project, the idea is to develop the grass cutter which wil use the solar energy as its source. The benefit of using the solar energy is reduction in its cost and it is pollution free. This project works even in the power shortage condition. As it is using a solar energy as its source, the solar panels are introducing. The solar panel is connected to the battery; after battery it is connected to the inverter. The main function of the inverter is to convert the DC current into the AC current. The AC current helps to run the AC motor. This motor is coupled to the blade shaft by the help of the belt drive. This will rotate the blade in high speed. The high speed rotation of the blade lead to the cutting of the grass.**

I. INTRODUCTION

Edwin Budding first invented lawn mower in 1830 in Thrupp, just outside Stroud, in Gloucestershire, England. It was designed primarily to cut the grass on sports grounds and extensive gardens. It was a superior alternative to the scythe. Radio frequency emissions are used to find charging station for mower. It was found by following a boundary wire, or by following an optional guide wire. This eliminates the wear patterns in the lawn which is caused by the mower only being able to follow one wire back to the station.

To cut lawn grass A robotic lawn mower is an autonomous robotis used and are capable of maintaining 20,000m of grass. Human interactions are nearly eliminated completely in an automated solar grass cutter. Second largest category of domestic robots were robotic lawn movers. In 2012, the growth of robotic lawn mower sales was 15 times that of the traditional styles.

II. OBJECTIVE

Automated solar grass cutter is a fully automated grass cutting robotic vehicle. It is powered by solar energy. This avoids obstacles and is capable of fully automated grass cutting. It doesn't require any human interaction. 12V batteries are used to power the vehicle. A solar panel is used to charge the battery. As the solar panels are used to charge the batteries no external charging is required. The grass cutter and vehicle motors are interfaced to an 8051 microcontroller. The microcontroller used controls the working of all the motors. The microcontroller is coded with an embedded C programming language. It is also interfaced to an ultrasonic sensor for object detection. The microcontroller moves the vehicle motors in forward direction in case no obstacles. On obstacle detection by ultrasonic sensor, monitors it and the microcontroller thus stops the grass cuter motor. This avoid any damage to the object/human/animal. Microcontroller then turns the robotic vehicle off until it gets clear of the object and then moves the grass cutter in forward direction again.

Fig Conventional grass cutter

III. COMPONENTS OF SETUP

The main components of the solar powered grass cutter are,

1. Solar panels
2. Batteries
3. DC motor
4. Solar charger
5. Mechanism used
6. Circuitry
7. Blades

IV. WORKING OF SOLAR POWERED GRASS CUTTER

1) It has panels mountedat an angle of 45 degrees in such a way that it can receive solar radiation with high intensity.
2) Solar panels convert solar energy into electrical energy.
3) This electrical energy is stored in batteries by using a solar charger.
4) Solar charger increases the current from the panels while batteries are chargingit also disconnects the

solar panels from the batteries when they are fully charged and also connects to the panels when the charging in batteries is low.

5) Connecting wires are used to connect motors and batteries.
6) Motor driver is also provided between the motors.
7) The main function of the motor driver is to start the operation and stop the operation of the motor.

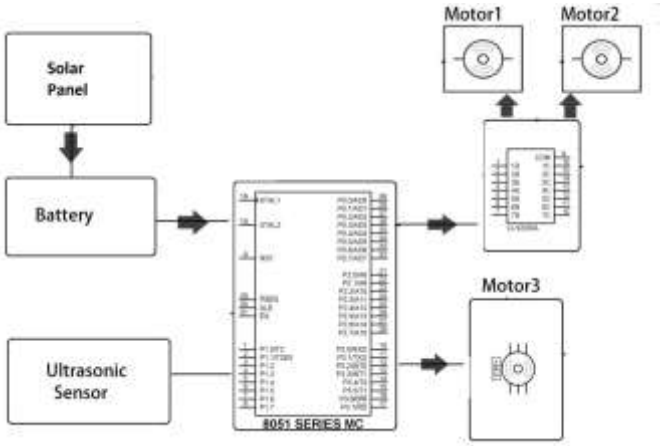

Fig Block Diagram

V. APPLICATIONS

1. For cricket ground.
2. The football ground.
3. All garden All Playground

VI. ADVANTAGES

1. Compact size and portable.
2. Easy to move from one place to another place
3. Operating principle is simple
4. Non-skilled person also operates this machine

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