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AUTOMATED SOLAR GRASS CUTTER

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Abstract - In today's world, presently diesel operated devices are commonly used for cutting the grass overthe lawn. Because of this causes pollution and requires labour. The old grass cutters need to be replaced by automated one where system will work for guidance using battery as a power source called "**Automated Solar Grass Cutter"**. Solar grass cutter very useful device and simple in construction. It is used to maintain and upkeep lawns in gardens, schools, colleges etc. A solar panel will be attached on the top of the robot which will charge the battery. This project aims at building a prototype of robot which is able to cut the grass in lawn.

Keywords: *Wireless Technology, Battery, DC Motor,Solar Panels.*

1. INTRODUCTION

Due to the continuous increase in the cost of fuel and the effect of emission of gases from the burnt fuel into the atmosphere, this necessitated the use of the abundant solar energy from the sun as a source of power to drive a lawn mower.

A solar powered lawn mower was designed and developed, based on the general principle of mowing. The designed solar powered lawnmower comprises of direct current (D.C) motor, a rechargeable battery, solar panel, a stainless-steel blade andcontrol switch. Mowing is achieved by the

D.C motor which provides the required torque needed to drive the stainless-steel blade which is directly coupled to the shaft of the D.C motor.

2. Working

In this work components used as given below,

1) Wheels: Use two wheels each wheel having diameter of 6 inches.

2) DC GEAR MOTOR: Geared motors tend to reduce the speed of the motor but with a corresponding increase in torque

3) L293D Motor driver : L293D is a typical Motor driver or Motor Driver IC which allows DC motor to drive on either direction. L293D is a 16-pin IC which can control a set of two DC motors simultaneously in any direction.

4) PVC PIPE: Polyvinyl chloride (PVC) is a synthetic plastic polymer thermoplastic used in a broad range of applications.

5) SOLAR PANEL: First the solar cells are joints with the use bus bar and flux. Then according to use of solar panel, series and parallel connection are given to the point Solar panel is used to save the electric energy. It is also use store the energy with the help of battery.

6) BATTERY: Solar power can be store in rechargeable battery and can be future used for the grass cutting to run.

7)Blade: A blade is the portion of a tool, weapon, or machine with an edge that is designed to puncture, chop, materials.

Parameters	Specification
SOLAR PANEL	18V,27WATTS.
BATTERY	12V,1.3AMP.
DC-MOTOR	12V,1.3AMP.

Table -1: Specifications Of Materials

whole system is placed on top of four wheels and pvcboard. The front two wheels are revolving wheel so thatthe cutter can move according to the needed direction.The solar panel is placed at an angle of 45° due south toget the maximum intensity of solar radiation. The chargecontroller connects the battery and the panel and protects the battery from overcharging. The DC motor isconnected with the battery. The blades are attached with the motor with bolt connection. One microcontroller withremote is usedfor automation purpose. The microcontroller is connected with Ultrasonic sensor and temperature sensor. The ultrasonic sensor is used for obstacle detection.

Fig 2: Automatic Grass Cutter

CONCLUSIONS

The solar grass cutter is mainly designed for the campus cleaning in a sustainable and efficient way. Grass cutting is one of the main operations that is carried out in the campus for cleanliness. It is a time consuming and labour-intensive process. In addition, it consumes a lot offuel. The conventional grass cutter that are used in the campus is costly. Therefore, the capital investment and operating cost both is very high. Moreover, one grass cutter is not sufficient campus with large areas such as education institution, playgrounds, garden areas, parks etc. As the cutter burns diesel it creates air pollution to the campus. The noise pollution is also very disturbing for all the residents present in the campus. To rectify all the problems mentioned above the automated grass cutter that we discussed in the paper may be a good solution. The cutter can be used in both day and night time if properly charged. In rainy season due to lesssunshine hours, it will take much time for full charging. which is a drawback for the users

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REFERENCES

1. 1 Sagar. Palve, Kunal Panchal “Solar powered automated Grass cutter Machine” from the international Research Journal of Engineering and Technology (IRJET). Volume 5, April, 2018.
2. Akanksha Vyas, Satyam Chourasia “Arduino based Dry & Wet automatic floor cleaner” from international journal of Engineering Technology and Management Research (IJETMR). Volume 5,2018.
3. Abishek Veghala “Floor Cleaning Robot with mobile app (or) Autonomous” from the report of Indus Publishers. 2015.
4. Shree Vash Ghodke, Neha Chumbalkar “IoT based home security system using Raspberry Pi” from International Journal of Innovative Researchin Science, Engineering and Technology. (IJIRSET). Volume 6 December, 2017.
5. M. Vadivel, M. Poonagadhai “IoT Based home visitor Monitoring System Using Raspberry Pi” from International Research Journal of Engineering and Technology (IRJET). Volume 5, March, 2018.