



SOLAR GRASS CUTTER WITH WATER SPRAYER

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ABSTRACT:

The project aims at designing and fabricating a solar grass cutter with water spraying system using Solar power to reduce man power, pollution and usage of electricity in gardening. Both the grass cutting and the water spraying application can be executed in parallel.

The residing values and affluence of a country range at once with the growth with the usage of power. Worlds electricity requirement is growing at an alarming price because of commercial growth, improved and huge use of electrical gadgets. The high-quality alternative opportunity supply is from the sun energy. In this design the source energy is ambitious from the sun radiation by using PV panels and it is stored in 12V rechargeable DC battery.

The proposed proto-vehicle performs two operations that are controlled using a switch. The first operation is grass cutting, the grass cutting blade is connected with a DC Motor. The second operation is the spreading of water/pesticide, here we use a water pump connected to the spreading nozzle by the means of hoses.

We use solar power to recharge the battery. The grass cutter and vehicle motors are interfaced to a motor driver that controls the working of all the motors. The Node MCU helps in the movement of vehicle in convenient direction.

Then incline fiber plate is kept on a body, then on incline fiber plate solar panel is kept. Which transmit solar energy & then solar energy is converted into electrical energy & electrical energy is converted in to mechanical energy. This electrical energy is transmitted to electric motor.

On the shaft of the electric motor a blade is connected having cutting edge which cut's the grass.

KEYWORDS:

SOLAR PANEL, 12V BATTERY, SMART GARDENING, EASY MAINTANEOUS, WATER SPRAYER, IOT.

INTRODUCTION

Automation is rapidly growing in the present technology. The automation plays a vital role in the Agricultural field which is helpful for the farmers. In the earlier days, the grass cutters used were manually handheld devices. Because of this, there was pollution and loss of energy as they used gas and petrol engines. The old grass litters need to be replaced by automated ones, where the system will work for guidance and obstacle detection using battery as a power source. And it used NODE MCL microcontroller board as the main controller of the system for object detection, a NODE MCU for Wi-Fi connection, a linear blade for cutting the grass, and a motor drive for the wheels of the Robot. This is fully automated and renewable energy-based project. In large size of lawn in the park,

schools, college are maintained manually. The gardener used hand Scissors to cut and maintain lawn regularly which also takes more time. It is not easy and also very difficult to maintain uniform size. Hence this works to make a battery powered automatic grass cutter. The unskilled gardener is enough to operate this grass cutter.

The battery powered grass cutter is easy to operate and it consists of rotary blade, roller etc. The blade removes the extra growth of the lawn and roller gives light pressure to the top surface of lawn. It gives fine look to the lawn and uniform look throughout the lawn. The Project work was very great successful one. It is used to maintain lawn of our college auditorium for lawn maintenance.

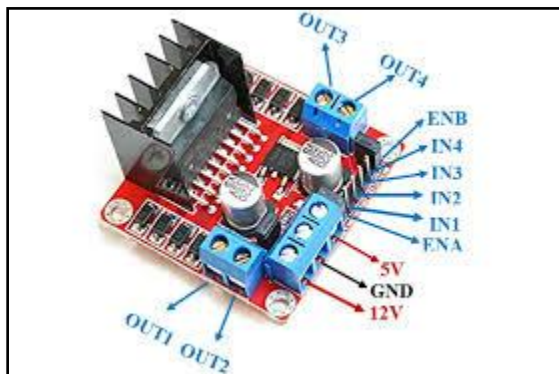
This Project of a battery powered lawn mower will reduce both environmental and noise pollution. This design is meant to be an alternate green option to the popular and environmentally hazardous gas-powered lawn mower. Ultimately, the consumer will be doing more for the environment while doing less work in their daily lives. The hope is to keep working on this project until a suitable design can be implemented and then be ultimately placed on the market. The Node MCU used to object detection and the robot in all possible directions in the environment are robot Forward cutter ON OFF through IOT.

MATERIALS AND METHODS:

The Materials and Methods section should be brief and concise with sufficient technical information. Only new methods should be described in detail. Cite previously published procedures in References.

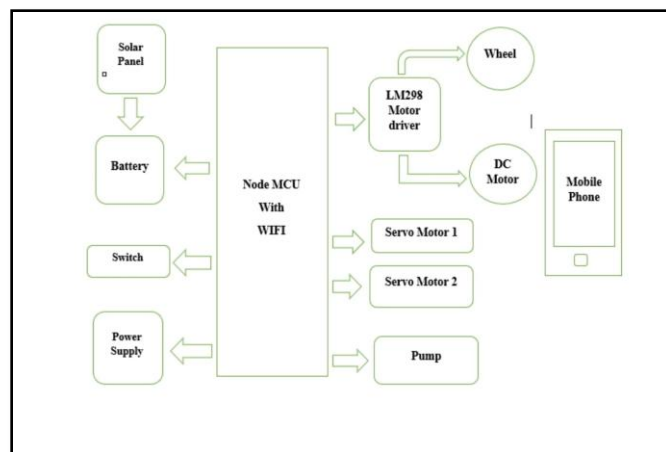
HARDWARE DESCRIPTION

- DC Motor
- Node MCU With Wi-Fi
- Solar Panel
- Pumping Motor
- LM298 Motor driver
- Bo motor
- Servo motor
- Battery
- BMS



A DC motor is an electrical machine that converts electrical energy into mechanical energy. In a DC motor, the input electrical energy is the direct current which is transformed into the mechanical rotation. In this session, let us know what is a DC motor, types of DC motor and their applications.

A DC motor is defined as a class of electrical motors that convert direct current electrical energy into mechanical energy.



RESULTS:

The solar grass cutter success fully work on solar power. The grass cutter operation is well and good. I have tested in my college campus.

DISCUSSION:

This model is more suitable for a common man as it is having much more advantages i.e. no fuel cost, no pollution and lot more. Based on data collected from research papers, we made a few changes to make our design better.

CONCLUSIONS:

The grass cutter is suitable to be used for small application due to the shortest operating time, but it is not suitable for tall height grasses. This model is more suitable for a common man as it is having much more advantages i.e. no fuel cost, no pollution and lot more. Based on data collected from research papers, we made a few changes to make our design better. The cost effectiveness and the ease provided makes the proto-vehicle to be a necessity instead of a luxury. For future work, there are few recommendations can be made to develop a better device. Instead of using polycrystalline solar panel, it is better to used monocrystalline solar panel due to the high efficiency. The motor for the blade should have both high speed and torque. Higher capacity of rechargeable battery can lead to more operating time. Lastly, few types of blades to be considered to cut different types of grasses. Also, in future we can implement lawn cutter by making arrangement to collect the grass that is cut off in order to reduce further manpower. Area covered, efficiency, estimates of time, required can be calculated and sent to the user's phone.

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