

ARDUINO BASED SOLAR GRASS CUTTING MACHINE

K.Lahari, I.Neha, K.Anitha, B.Satya Mounika. Students, Dept. of Electrical and Electronics Engineering, Vignan's Institute of Engineering for Women, Visakhapatnam.

Dr.K.Durga Syam Prasad, Professor, Dept. of Electrical and Electronics Engineering, Vignan's Institute of Engineering for Women, Visakhapatnam.

Ms. K. Sravanthi, Asst. Prof Dept. of Electrical and Electronics Engineering, Vignan's Institute of Information Technology, Visakhapatnam, A.P.-530047.

E-Mail: vieweeehod@gmail.com

ABSTRACT

A Solar grass cutter is a machine that utilizes sliding edges to cut a yard, that assist human with cutting grass consequently. Significantly more refined gadgets are there in every field. Because of fast turn of events, numerous robots have transformed into an independent robot. Power utilization becomes fundamental for the future. The development or the way of the Solar grass cutter depends on a way of arranging method. Sun-powered grass cutter is an extremely valuable gadget which is exceptionally basic in development. It is utilized to keep up with and upkeep yards in gardens, schools, school's and so on.

In our venture, we are utilizing Arduino UNO, Bluetooth module, DC engine, sunlight-powered charger. For this grass cutter, Arduino UNO microcontroller is used as the microcontroller. We have rolled out improvements in the current machine to make its application more straightforward at a diminished cost. Our fundamental point in contamination control is achieved through this. Untalented activity can work effectively and keep up with the grass exceptionally fine and uniform surface look. Each activity of the grass cutter is checked by the ARDUINO UNO with the assistance of the sensors and Bluetooth module. In our project,—Solar grass cutter is utilized to cut the various grasses for the different application.

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 grass cutter. A solar-powered lawn mower was designed and developed, based on the general principle of a cutter. The designed solar-powered grass cutter comprises of direct current (D.C) motor, a rechargeable battery, solar panel, a stainless steel blade and control switch. The cutter 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. The solar-powered grass cutter is operated by the switch on the board which closes the circuit and allows the flow of current to the motor which in turn drives the blade used for mowing. The battery recharges through the solar charging controller. Performance evaluation of the developed machine was carried out with different types of grasses.

The sun provides a sustainable amount of the energy used for various purposes on earth for the atmospheric system. The difference is just the application of the energy source. It is assumed that a grass cutter using solar as the energy source will address a number of issues that the standard internal combustion engine and electric motors grass cutter do not. A grass cutter with solar energy will be easier to use, it eliminates downtime by frequent trips to the gas station for fill-ups and danger associated with gasoline spillage. The dangerous emissions generated by the gasoline spillage and that the internal combustion engine into the

atmosphere are eliminated. The solar powered lawnmower will help to reduce air pollution. Thus solar grass cutter is used.

LITERATURE SURVEY

SunBased Grass Cutter: A Review "Ms.Bhagyashri R. Patil, Mr.Sagar S. Patil" , in the paper named "Sun Based Grass Cutter : A Review " states that regular grass shaper consumes non-sustainable wellsprings of energy. So to be another green grass shaper can be controlled by utilizing sun oriented energy.

Sensor Based Multipurpose Agricultural Cutter " Prof.J.P.Wagh, AishwaryaChaudhary", in the paper named " Sensor Based Multipurpose Agricultural Cutter " states that, the rotational trimmer can turn about an upward pivot with the edge turning at fast and this will in general bring about a more unpleasant cut and shreds the grass leaf without any problem.

Sun based Grass Cutter with MPPT Tracking Panel " Ms.GuravSayali, Ms. Desai Pritam ", in the paper named "Savvy Solar based Grass Cutter with MPPT Tracking Panel " states that, adding a communicating of programmed power bank to charge the battery in a flash can help the grass cutter run for long time. utilization of sun based energy to run the electric engine utilized for cutting grass. Bhosale and Khadake have introduced the execution of shrewd sunlight based grass shaper. This framework is driven by the sun based energy by utilizing sunlight powered charger and battery. This grass cutting machine was programmable for motor speed control.

Golden and Ghate have planned a grass shaper which works on sun based energy. Henceforth it saves the power and lessens labor supply. Amrutesh et al. have proposed brilliant sun based grass shaper framework which utilizations of sliding cutting edges to cut a yard at an even length. The relative investigation of advantages and disadvantages of sunlight based controlled programmed grass shaper and ordinary grass shaper is introduced in

To plan a Smart Solar Grass Cutter, a few boundaries should be thought of as, for example, the parts to be utilized in the task, the place of the parts, the construction of the principle body, the benefits and disservices of the plan and the wellbeing factors.

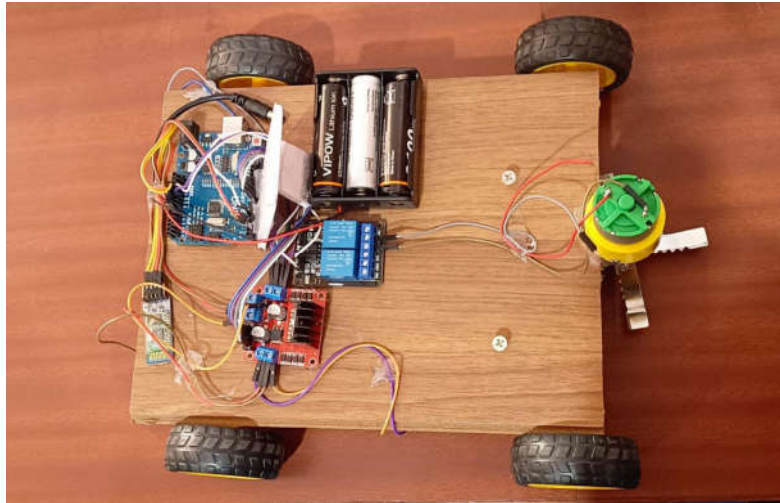
The Smart Solar Grass Cutter can work independently or non-independently. Other than that, the significant element is the proficiency. The materials and parts choices including the positions are pivotal to accomplish a superior productivity. This Smart Solar Grass Cutter is a basic plan which is upgrading the use of materials. The general aspects are relying upon the size or the elements of the sunlight powered charger. Three engines are utilized for back tires and the cutting edge.

PROPOSED SYSTEM

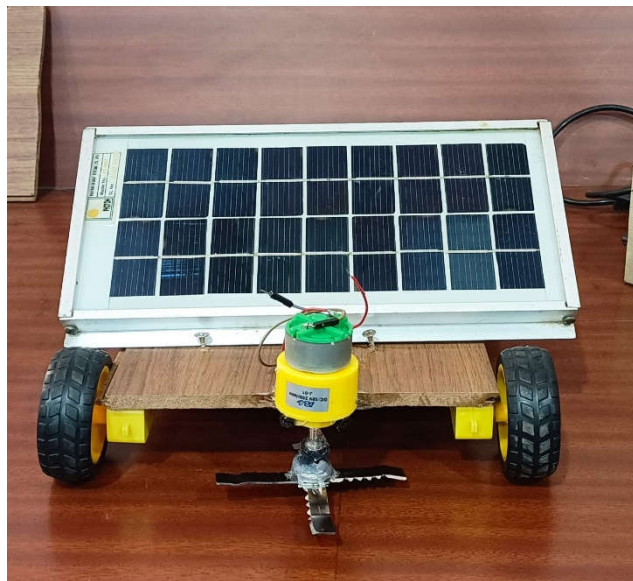
The solar grass cutting machine is a fully automated machine power-driven by solar energy. It also detects the obstacles in the path based on that changes the movement direction. It does not require any human interaction. The motors i.e vehicle and grass cutter motors are interfaced to a microcontroller.

Bluetooth control grass cutter consists of a motor, gear arrangement of a cutting tool. For this system the power get from the solar panel with respective battery. By using Bluetooth module, forward and reverse direction can be controlled. Forward and reverse program already prewritten in the microcontroller. From the PIC controller it is fed from the relay if any fault occurring in the electronic switches it will rectify by using a relay operation in it. Finally the dc shunt motor is connected to the cutting tool and it starts working.

RESULTS AND DISCUSSIONS



HARDWARE CONNECTION



ARDUINO BASED SOLAR GRASS CUTTING MACHINE HARDWARE CONNECTION

CONCLUSION

In conclusion, this project had a good feedback from the community as we can see from the survey that we had conducted. Most of the grass cutters and also normal housewives were really impressed with our project. Even we had lots of issues in the beginning of the project, at the end we had upgraded and corrected our mistakes to give the best output. These types of project will need along duration of time to satisfy all the criteria needed. With all the support that we had from our supervisor, lecturer's, and friends, this project was finally done with an excellent job.

After all the investigations and findings that we have carried out, we came to know that the use of this Grass Cutter have successfully helped the house hold people and the grass cutters at the same time it gave a huge

positive impact to the young entrepreneurs. It gives a good amount of sales and income as well. In a nutshell, this project had met all the criteria and objective as stated since the starting of the project because it helps to cut the grass efficiently without causing any sort of pollution and completing the task in a shorter time range. The Arduino UNO system has also helped in the movement of the machine and proved it is a worthy one.

FUTURESCOPE

Thus, depending upon the arrangement of the sun, the panel will be slanting, such that the sun rays are incident normally to the solar panel. With this the device would be constant capable of trapping the solar energy at times when the strength of the sun light is less. If panel used of high watt, then the machine can be used during night time for garden lighting or room lighting, because we can accumulate more power. And at night time however you keep it apart. So the power in the battery can be used for this intention. By using one valve in the pipe we can also use it for gardening i.e. pouring water for plants. By connecting one box type transporter we can use it to transport files, books or other stuffs from one place to other in office or any other place. Grass cutting can be made more proficiently used after modifying for small rice harvesting.

REFERENCES

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