

Solar Power Automatic Lawn Grass Cutter

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Abstract: Now day's Automatic solar lawn grass cutter is mainly used for cutting grass of the lawn or ground which will mainly operated on solar power energy for that we are using solar panel. This system will also operates on a battery that will also be charged through solar energy rather than using any external power. In this ultrasonic sensors are also used to detect any object/human /or animal while cutting the grass so to avoid them. The main objective of this automatic solar lawn grass cutter is that the user can specify the area that is to be mown and also the height of grass as per there requirement by using the keypad.

Keywords: Lawn Mower, accelerometer, ultrasonic sensor, dc motor, LCD display, keypad.

I. INTRODUCTION

The main purpose of this project is to cut the grass of lawn, playground etc. automatically using blades. The initial lawn mower was introduced by Edwin Budding in 1830 in Thrupp, just outward Stroud, in Gloucestershire, England. That lawn mower was Gas powered lawn mower. Due to the emission of gases it was responsible for air pollution. Pollution was also one of the major factor taken under consideration in solar mower comparatively to that mower. Also the cost of fuel is increasing rapidly, it is not so efficient. The solar power lawn mower is comparatively much better than that of conventional grass cutter. It can also be introduced as the application of solar energy to power an electric motor which also rotates a blade which does the cutting of grass in the lawn. Also this solar lawn mower consists of a battery. So this Solar lawn mower uses the rechargeable battery which is economically helpful for user. By using this solar lawn mower user can the cut the grass of the required area by giving input through keypad. Also the height of grass can be specified by adjusting the height of blades. The main objective of this lawn mower is that the grass in the lawn must be mown with less effort. Also to cut the grass of particular area as per user requirement. Sensors play a major role to differentiate between a grass and concrete while monitoring its surrounding continuously. Also we will need a Ultrasonic detector to detect an object, if the lawn mower is heading into that object. Safety is also one of the main concern while designing the Solar lawn mower. As it has blades we wanted our lawn mower not to be in operating mode if it was being held in the air by the user. If the user holds the lawn mower in hand we need a sensor to detect that situation as it is not safe. To overcome that situation, we are using accelerometer so that it will not operate when user hold it. An automatic solar lawn mower will replace the consumer from mowing their lawns and will reduce both environmental and noise pollution

II. LITERATURE SURVEY

[1] Automated solar grass cutter' published by Ms. Yadav Rutuja A., Ms. Chavan Nayana V., Ms. Patil Monika B., Mr. V. A. Mane in February 2017 that a Swedish constructor, Husqvarna, presently bringing its own Automated grass cutter to the U. S. market that came into 1830(it has been sold out in Russia for around two years). It works exactly like the Robomow with a border wire inserted at the extremity of his lawn. The Husqvarna model, still, handle to itself. While, it has to be departed and build up and minded by the holder, the Husqvarna Automated solar grass cutter living exteriorised, cut down the grass when it has automated to cut the grass and automatically backs to its position for charging again. The undertaking also decides next year to launch a sun-powered model to the Russia market. Husqvarna Auto grass cutter and Solar grass trimmer works separately..

[2] 'Solar Powered Fully Automated Grass Cutting Machine' published by Bincy Abraham1 , Darsana P S ,Isabella Sebastian ,Sisy N Joseph Prof. George John P in April 2017. From these paper the data which is taken under consideration is that the type of automated solar grass cutter is named as the lawn ranger presented by Rafaels and advanced through practical Solutions of Frederick, Md. And this was published in 2017, Also this diagram utilizes an outboard computer to discipline the grass trimmer then interplay with sensors that guiding the bionic person. The bionic person has two types of activity :remote mode in which separately guiding the grass cutter around the extreme area of a person's garden and throughout any objects in its way. The author was looking for producing the model at a charge of \$1000 with the aim of bringing larger models for the next generation.

[3] "In smart lawn mower for grass trimming", Published by Sujendran .S1, Vanitha .P2 in March 2014 ,In these paper the concept used is most of same rather than using IR sensor we are using UV sensor. As UV is much better than IR and have more advantages than IR. Also Direction sensor is used when obstacle is detected to take an path. In these battery is charging from external supply.

III. PROPOSED WORK

An Automated solar grass cutter is a fully automated grass trimming robotic machine powered by sun energy. It ignores objects and it can cut the grass without any human interconnection. Non skilled person can also cut the grass. It uses 12V cells to power the machine movement drivers as well as the grass trimmer driver. We are going to use solar panel cells to charge the batteries so that no need of charging it externally.

Working principle of automatic solar grass cutter is that it has panels positioned in a particular arrangement in just like that it can accept sum energy from the sun with high intensity easily. These connected solar panels changes sun energy into electrifying energy. This electrifying energy is collected in cell by using a solar cell. The principal use of the solar cell is to collect the current from the panels while cells are in charging, it detaches the solar panels from the cells when they are getting absolutely charged and also connected to the panels when the batteries are very low. The motors are also linked to the batteries for the power. The batteries controls the power supply and the operating of the motor. From this motor, the power transfers to the fixed blade and it forces blades to cut the grass. The ultrasonic sensors are used for obstacle detection. when sensor detects the obstacles it stops the robot and turn left or right and move forward to prevent any damage to the robot.

IV. BLOCK DIAGRAM

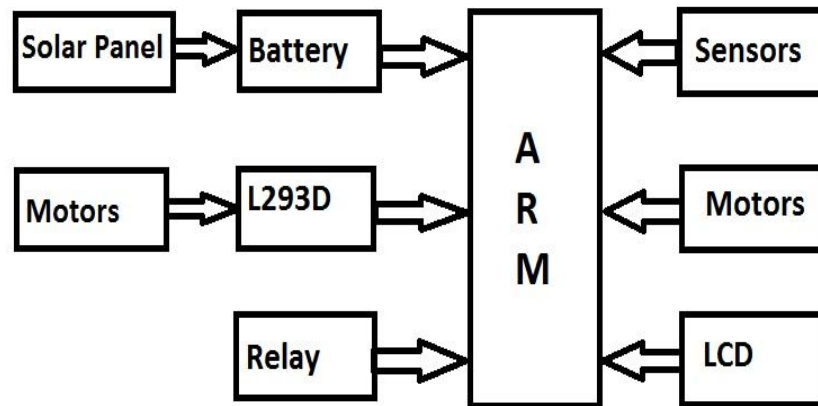


Fig. 1 Block Diagram

V. CONCLUSION

By using this system we can conserve the nonrenewable sources of energy such as petrol, gasoline etc. We can also decrease various forms of pollutions such as air pollution and noise pollution. Electricity is saved as we use solar energy that is renewable source of energy and is present in affluence

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