

# Fabrication of Solar Powered Grass Cutting Machine

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**Abstract-** *The project aims of fabricating a grass cutting machine system which the grass cutter -based motor running through solar energy power plays a great role whenever man lives and work. the living standards and prosperity of nation very directly with the increase in the use of power. The best alternative source is solar energy this project describe the solar powered grass cutting machine through solar energy .as we know the important of electricity that why we trying to save the electricity in this project with the help of solar panel .the proposed system design reduce the human effort in grass cutting field as know*

**Keywords-** Solar plate, Relay, DC engine, Blades, Comparator, Temperature sensor, Battery

## I. INTRODUCTION

Grass cutter machine have become very popular today and our project is solar powered grass cutting machine. The old version of grass cutter which is used to attached the handlebar operates by itself in behind the grass cutter and pushes to make it forward. handlebar versions have a transfer that turns the wheels using the power of the motor.so the reduces the electric power introduce the solar powered grass cutting machine that which save the electricity and uses the renewable energy. The main parts of the grass cutting machine are DC motor of .75 HP capacity.we are using relay switch to control motor battery for charging with the help of solar panel..it is board in appropriate machine structure the engine have 1800 rpm and it is associated through the electric stockpile by the utilization of a move wire the engine rpm increment by the assistance of apparatuses the tempered edges are at liquor in this machine the crude materials for the most part utilized are GI sheet, engine ,switch ,wheel, wire ,aluminium sheet, square pipe, paint, protecting material and other standard thing like nuts fasteners and returns working guideline of grass shaper is giving a rapid pivot to the sharp edge which need to cut the grass edge will get dynamic vitality while increment the rpm. electric grass machine is much easier to be use in garden loan grass fields we all known that the time is not so far when all the sources will be exhausted so alternative source should be used to avoid energy crisis in the nearby future

## II. LITERATURE REVIEW

[1]Shreyas P.Zopate et al [2018],In today's climate of growing energy needs of increasing environment concern ,alternatives to the use of non-renewable and polluting fossil fuels are not good for environment because of year an after are going bad .one such elective is sun-oriented vitality. the present innovation normally utilized for cutting the grass is by utilizing the physically handle gadget. so we have utilized the sun based worked machine for cutting the grass By the use of solar energy instead of electricity and fossil fuels the main part of the machine is a battery powered DC motor and the cutter of the machine is connected to the dc motor and the cutter is adjustable as per as our need provide the perfect shape and of lawn mower or our garden

[2]. Davidge E D [2018], The sound created by machine is making noise pollution. We research on sound created by the machine and giving the results how to improve the sound while cutting the grass of lawn or ground .as looking to the petrol engine it makes air pollution to environment so from recommendation it should be implement on solar operated lawn mower .not only is it better for environment , it also increase the productivity ,

[3]. PrafulP. Ulhe et al [2016], Asun-based shaper is machine that utilizations sliding sharp edges to cut a garden at an even length. Much progressively propelled contraptions are there in each field control utilization gets fundamental for future. Sun oriented grass shaper is extremely valuable gadget which is straightforward in development .it is utilized to keep up and upkeep yards in gardens school montage and so forward snappy improvement Of distinctive high - tech devices and hardware's make our activity done agreeable and sophisticated the undertakings targets creating a grass cutting machine framework which makes the grass shaper base engine going through sunlight based vitality.

[4]. Ms. Lanka Priyanka [2015], In this paper they have fabricated grass cutting machine machine with tempered blades are attached to this grass cutter is manually operated as well as automatic operated. The materials commonly used GI sheet, motor, wheel, Al sheet, switch, wire, square pipe and insulating materials.

[5]. Vicky Jain et al [2018], They have prepared wireless grass cutter. They have used solar panel so it is not required to charged battery externally and battery is continuously charged at constant voltage when grass cutter is in working. The battery is getting charged by using day light and we can use it as per our convince. because of DC motor both forward and backward motion of grass cutter can simultaneously possible

### III. OBJECTIVE

The goal of this project solar powered charged lawn mowers /grass cutter is to design lawn mowers which

1. Is a sun based controlled charged yard cutter which is agreeable to our condition.
2. To help human deal with the day.
3. To investigate ways of controlling the lawn mower during moment, charging and to combine our knowledge in microcontroller.
4. Reduce rate of accident
5. Nowadays lot of energy wasted for grass cutting in different areas so we can save the energy through the solar power energy.
6. The grass cutting machine takes lots of human effort for the work so the solar power grass cutting machine work the lesser human effort.
7. The principle point of the task sunlight based controlled grass shaper framework which cuts the in various structure

### IV. WORKING PRINCIPLE

The working rule of sun-controlled grass shaper is it has sheets mounted in a particular game-plan at a so it can get sun fuelled radiation with high force from the sun these sun-oriented boards convert sun powered vitality into electrical vitality. This electrical imperativeness is taken care of in batteries by using a daylight based charger. The principle capacity of the sunlight-based charger is to build the current from the boards while batteries are charging. It likewise disengages the sun-based boards from the batteries at the point when they are totally empowered and besides interfaces with the sheets when the charging in batteries is low. The engine is associated with the batteries through interfacing wires. Between these two mechanical electrical switch switches is given. It starts and stops the working of the motor. From this engine, the power transmits to the instrument and this makes the edge to slide on the fixed cutting edge and this makes to cut the grass. The designed solar powered lawnmower comprises of direct current (D.C) motor, a rechargeable battery, solar panel, a stainless-steel blade and control switch Cutting is practiced by the D.C motor which gives the

essential torque expected to drive the solidified steel edge which is authentically coupled to the post of the D.C motor. The sun based fuelled lawnmower is worked by the switch on the board which shuts the circuit and enables the progression of current to the engine which thus drive the cutting edge utilized for moving. The battery recharges through the solar charging controller. Execution assessment of the created machine was completed with various kinds of grasses. The sun powered board can be utilized as a segment of a bigger photovoltaic framework to create and supply power in business and private applications. Every module is evaluated by its DC yield control under standard test conditions (STC), and commonly runs from 100 to 320 watts. The productivity of a module decides the region of a module given the equivalent appraised yield - a 8% effective 230-watt module will have double the region of a 16% productive 230-watt module. A solitary sunlight-based module can create just a constrained measure of intensity; most establishments contain numerous modules A photovoltaic framework conventionally consolidates a board or an assortment of sun-controlled modules, an inverter, and to a great extent a battery and furthermore sun-based tracker and interconnection wiring.

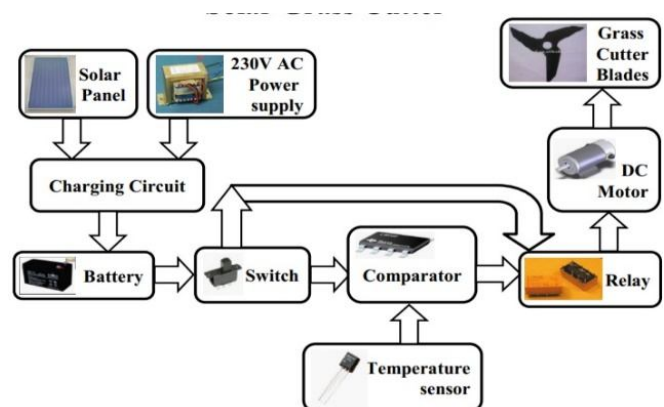


Figure-1. image of block diagram of proposed model  
(source:<https://pdfs.semanticscholar.org/8f0d/508674aec64ebd29ca2bae741ad7c24cdc04.pdf>)

**V. COMPARISON**

**Table 1. comparison between solar and IC engine cutter**

Sr.no	Particular	Solar based grass cutter	IC Engine grass cutter
1	Pollution	No	Pollution is great factor
2	Fuel	No fuel consumption	Fuel is major factor
3	Friction	Greatly reduced	High
4	Cost	Low	High
5	Maintenance	Low	High
6	Load carrying capacity	Low	High

**VI. PROPOSED METHODOLOGY**

It is extra plated from existing technology that in order to achieve and end product that is better than the currently available at a lower cost the overall design of the system described in the present report would have to operate with the following consideration the system would be required to made such that it follows a certain path and more efficient cutting pattern.

It starts and stops the working of the motor. from these engines the power transmits to the system and this make the cutting edges to turned with rapid and this make to cut the grass in various size as indicated by our necessity. the sharp edge will entryway active vitality while expanding the rpm the front line are extremely smooth and preciseThe working of hybrid grass cutter is it has solar panel mountain on inclined rod of the body with h adjustable arrangement so as to direct the solar panel towards sun an angle of 60-80 degree in such a way that it can receive solar radiation with high intensity easily from the sun these solar panel convert solar energy into electrical energy is stored in battery by using a solar charger the main function of solar charger is to disconnect the solar panel from the battery when they are fully charged and also connect to the panel when the charging in the battery is low. The motor is connected to the battery through charger controller. Between these a motor driver is provided. It starts and stops the working of the motor. from these engines the power transmits to the system and this make the cutting edges to turned with rapid and this make to cut the grass in various size as indicated by our necessity. the sharp edge will entryway active vitality while expanding the rpm the front line are extremely smooth and precise



Figure.2 image of proposed model with assembled components

(Source: <https://images.app.goo.gl/Wc4wxHut7wNLU4iJ8>)



Figure.3 Grass Cutter Machine 3d Cad Model

(Source: <https://grabcad.com/library/grass-cutter-machine-1>)

**VII. FUTURE SCOPE**

We finished our task effectively with the accessible sources. But the results and modification are not up to the expectations. This can be further improving by incorporating the following modification to obtain better results. The mechanism which we used is scotch yoke mechanism does not give expected efficiency. This productivity can be expanded by utilizing some other component and speed of engine is lessen in light of the fact that we have utilized overwhelming material and this material can supplanted by utilizing light weight material. Also, structure of cutting edges of sharp edges ought to be finished by dependent on sorts of grass is utilized to cut The venture which we have done surly arrives at the normal families in light of the fact that the grass can cut with least cost and with least time .at last this undertaking may give a motivation to the edge who can adjust and can acquire better outcomes.

### VIII. CONCLUSION

In the introduced paper gives the manufactured data about the "Creation of Solar grass Cutting Machine" which was planned with the end goal that the sun-based plate produces sun-oriented vitality and using this vitality for running the grass shaper engine. Incorporating highlights of all the equipment segments utilized have been created in it. Nearness of each module has been contemplated out and put cautiously, therefore adding to the best working of the unit. The presented paper provides the fabricated information to the common man as it is having much more advantages i.e smooth grass cutting operation with an adjustable arrangement provided no fuel cost, no pollution, cost effective, less bear and tear because of less no of moving components. Also non skilled person can also handle it easy

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