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## **Fabrication of Solar Grass Cutter**

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### **ABSTRACT**

The Solar Grass Cutter is a mechanical device used for cutting grass with the help of solar energy instead of electricity. First of all its body is made with the help of hollow square bar, then caster wheel is placed below the body of square bar. 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 into 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.

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Keywords: Solar, Grass, Shaft

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### **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 and control 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. The solar powered lawnmower is operated by the switch on the board which closes the circuit and allows the flow of current to the motor which in turn drive 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 sustainable amount of the energy used for various purposes on earth for atmospheric system. The difference is just the application of the energy source. It is assumed that a lawnmower using solar as the energy source will address a number of issues that the standard internal combustion engine and electric motors lawn mowers do not. A lawnmower with solar energy will be easier to use, it eliminates down time 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 of 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.

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### **2.Working process**

Intelligent information appliance is the main direction of development in the appliance control at irrigation fields. We designed a broad and commendable range of Solar Grass Cutter along with solar panel. As the energy conversation is very important in the current scenario and should be done to a maximum extent where ever it is possible. Still, these mowers grass cutting machineries all need the same things to work right -- a motor, a rotating blade, a means of getting around and a way to get rid of the grass clippings. The controlling device of the whole system is provided using switch ON the

DC motor interfaced with grass cutting blades. The entire model consists of two sections one controlling section and another designing section of the model. The controlling section consists of Rechargeable battery, relays switches and Solar panel. The system depending on the charging circuit the motor can be controlled using relay switch. The solar power stores the energy to a battery and then runs the motor through the relay switch..

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### 3. Cutting blade design

In designing the cutting blade, the force required to cut the lawn as well as the force acting on the blade was considered. The force required by any sharp



object to have impact on the grass is less than 10 Newton. It is also dependent on the height, density and the area covered by the object (Atkins, 1984).

Therefore, in designing the blade of the solar powered lawn mower, the force required for effective mowing should be greater than 10 Newton. A stainless steel was used in the construction of the cutting blade because of its strength and weight which can transmit same speed as that of the DC motor or a little less cause of friction.

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### 4. Parts of Solar Grass Cutter

#### 1) 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.



#### 2) Battery

Solar power can be store in the rechargeable battery and can be further used for the grass cutting machine to run.

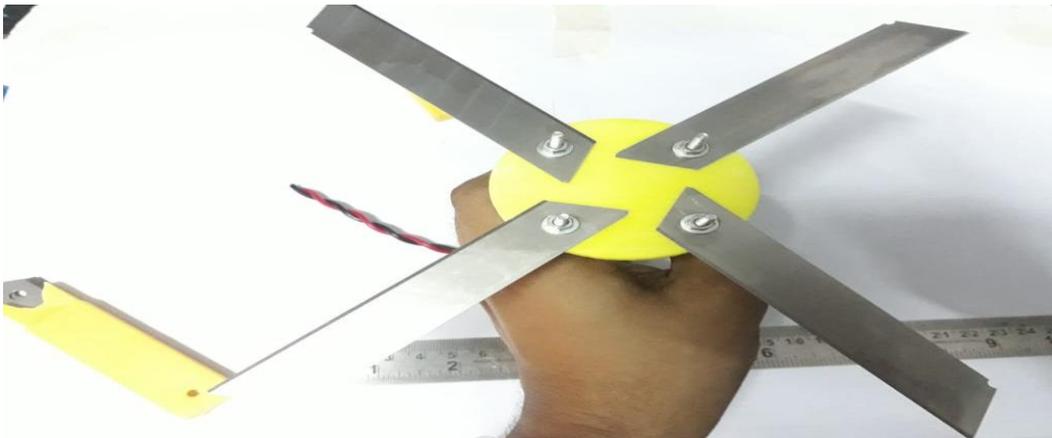


### 3) Motor

This motor is used for the rotating the blade and when the blade is rotated the grass is cut. The motor is rotated at 2000 RPM. → The motor is also used to rotate the wheel which move the body.



### 4) Cutting blade



### 5) Fiber sheet

We have used the fiber to cover the body of the project. And we have used to kept the solar panel.



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## 5. Advantages

- 1) As there is no friction between parts, less maintenance is required.
- 2) It does not cause any environmental pollution.
- 3) As it is working on solar no fuel cost.
- 4) More life of the solar panel.
- 5) As the battery is used for backup it can be run in night also.
- 6) High efficiency.
- 7) We can reduce the wastage of power.
- 8) Very easy to use.
- 9) Low weight and easy to move any were.

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## 6. Applications

- 1) It can be used in garden at home.
- 2) It can be used in Public Park.
- 3) It can be used in college.
- 4) It can be used in party plots.

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## 7. Conclusion

In the world today, all machines are designed with the aim of reducing or eliminating green house gas emissions which is the major causes of climate change. This solar powered grass cutter will meet the challenge of environmental production and low cost of operation since there is no cost for fuelling. A solar powered lawn mower has been developed for the use of residences and establishments that have lawns where tractor driven mowers could not be used. The machine's capacity is adequate for its purpose. The machine has proved to be a possible replacement for the gasoline powered grass cutter. In the presented paper provides the fabricated information about the "Fabrication of Solar grass Cutting Machine" which was designed such that the solar plate generates solar energy and utilizing this energy for running the grass cutter motor. Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced IC's with the help of growing technology, the project has been successfully implemented. Thus the project has been successfully designed and tested

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