

SOLAR GRASS CUTTER

¹G.KARTHIK REDDY, ²K.SATHISH, ³P.MAHESH BABU, ⁴VINUTHA SRI,
⁵PRANEETH

¹Assistant Professor, ECE Department, CMR College of Engineering & Technology

²Assistant Professor, ECE Department, CMR College of Engineering & Technology

³Assistant Professor, MECH Department, CMR College of Engineering & Technology

⁴⁻⁵B-TECH, Dept. of MECH, CMR COLLEGE OF ENGINEERING & TECHNOLOGY

Abstract

In this project we are introducing A solar Grass cutter is a machine that uses revolving blades to cut a grass at an even length. Even more sophisticated devices are there in every field. Power consumption becomes essential for future. Grass cutter is a very useful device which is very simple in construction. It is used to maintain and upkeep land s in gardens, schools, college's part etc. We have made some changes in the existing machine to make its application easier at reduced cost. Our main aim in pollution control is attained through this. Unskilled operation can operate easily and maintain the land very fine and uniform surface look. In our project, "solar grass cutter" is used to cut the different grasses or different grass for the different application.

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.

2. RELATED WORK

Lawn mowers are used to cut the grass evenly and efficiently and the lawn mowers uses the fuel or electrical energy power as an input. The lawn mowers uses the fuels causes the pollution to the environment and to the surroundings and the electric lawn mowers uses the electricity which may get the electric shock when the garden is wet.

1. The lawn mowers cuts the grass evenly and efficiently.
2. Uses less time to cut the grass.
3. Pollutes the environment.
4. May have a chance to get the shock.

Solar powered grass cutter, it has panels mounted in a particular arrangement at an angle of 45 degree in such way that it can receive solar radiation with high intensity easily from the sun. These solar panels convert solar energy into electrical energy

is stored in batteries by using a solar panel. The main function of the solar charger is to increase the current from the panels while batteries are charging, it also disconnect the solar panel from the batteries when they are fully charged and also connects to the panels when the charging in batteries is low. The motor is connected to the batteries through connecting wires. Between these two mechanical circuit breaker switches is provided. It starts and stops the working of the motor. From this motor, the power transmits to the mechanism and this makes the blade to slide on the fixed blade and this makes to cut the grass.

- They are not tied to a power supply so are 'free to roam' and can be used for lawns that are not immediately near a power supply.
- You do not have to run the risk of cutting through a power cable as you would with an electric mower. The convenience of this will be appreciated by those who spend half their time checking where the cable lies when using an electric mower.
- Petrol mowers tend to have more power than electric or hand driven mowers and so can make mowing the lawn an easier experience.
- Running costs can be high when compared to other types of mower, especially with the rising cost of petrol.

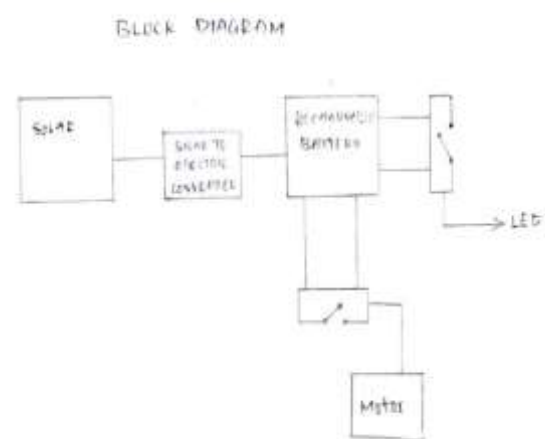
Maintenance plans / costs can be higher than electric models.

- Initial cost of mower is generally more than electric models
- Due to their heavier weight they can be harder to manoeuvre around corners and require more strength to push around the whole lawn area.
- Petrol mowers are a good deal noisier than other types of mower

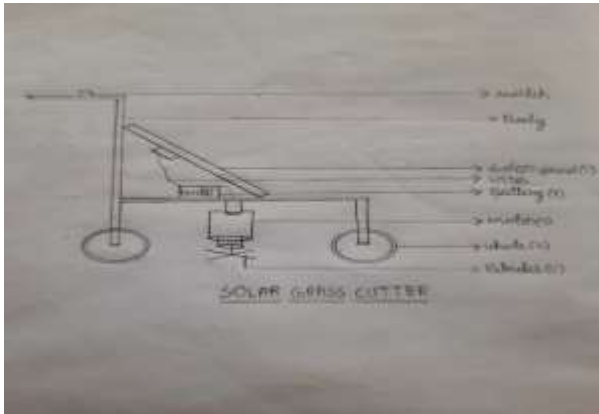
3. IMPLEMENTATION

On behalf of community visit, we have visited a village near to our college. There we have identified many problems like sanitation problems, mosquitoes, security problems, no proper streetlights, problem faced by the people while fixing the lights, grass cutting etc., Out of all these problems we have decided and chose to make a solar grass cutter. We usually see the grass cutter machine was used at the housing park and residence bungalow the commercial are like industry area, we usually see the manually and conventional method was used grass cutter machine was used the fuel as source of power. The cost of fuels which are being used for cutters are also increasing. Thus our aim is to study alternative source of power like solar energy. In addition to this modification will be done to the blade to use different material and non hazardous to the operator. Thus providing user friendly and pollution free lawn mowers. The 17 watts

solar panel is used to charge the batteries which are rechargeable. the solar panel gives maximum 17v and 580mA current .we need charging circuit between solar panel and battery .The charging circuit has voltage regulator which regulates voltage to 15v and one transistor to amplify the maximum current to circuit and diode is used .we use 12 voltage battery for entire circuit and another 12v volts for cutting blade. The solar panel is mounted on the top of the grass cutter so the sun rays fall on the solar panel perpendicularly so that energy absorption by the solar panel will be maximum. The solar energy is then converted to electrical energy and stored the stored electrical energy is converted to mechanical energy and it is used to cut the grass at an even length.



4. EXPERIMENTAL RESULTS



5. CONCLUSION

In this project we are introducing A solar Grass cutter is a machine that uses revolving blades to cut a grass at an even length. Even more sophisticated devices are there in every field. Power consumption becomes essential for future. Grass cutter is a very useful device which is very simple in construction. It is used to maintain and upkeep land s in gardens, schools, college's part etc. We have made some changes in the existing machine to make its application easier at reduced cost. Our main aim in pollution control is attained through this. Unskilled operation can operate easily and maintain the land

very fine and uniform surface look. In our project, "solar grass cutter" is used to cut the different grasses or different grass for the different application.

6. REFERENCE

1. Kumar, S., Ansari, M.D., Gunjan, V.K., Solanki, V.K., "On Classification of BMD Images Using Machine Learning (ANN) Algorithm", Lecture Notes in Electrical Engineering, 2020, Vol. 601-Issue, PP-1590-1599.
2. Merugu, S., Jain, K., Mittal, A., Raman, B., "Sub-scene Target Detection and Recognition Using Deep Learning Convolution Neural Networks", Lecture Notes in Electrical Engineering, 2020, Vol. 601-Issue, PP-1082-1101.
3. Pulimamidi, A., Shankar Rao, C.H., Sanjeev, D., "Power quality improvement of DFIG based hybrid energy conversion system by sliding mode control", Journal of Advanced Research in Dynamical and Control Systems, 2020, Vol. 12-Issue 4, PP-796-805.
4. Vyshnavi, B., Srinivasa Rao, G., "Back-to-back switch connected npc multilevel inverter FED im drive", Journal of Advanced Research in Dynamical and Control Systems, 2020, Vol. 12-Issue 4, PP-787-795.
5. Venkateshwarlu, M., Merugu, S., "Fuzzy inference system based assessment of pollution aspects in hyderabad", Lecture Notes in Electrical Engineering, 2020, Vol. 643-Issue, PP-579-587.
6. Koppula, V.K., Sai Soumya, D., Merugu, S., "Nurse alarming device for bedridden patients using hand gesture recognition system", Lecture Notes in Electrical Engineering, 2020, Vol. 643-Issue, PP-377-385.
7. Kumar, S., Ansari, M.D., Naik, M.V., Solanki, V.K., Gunjan, V.K., "A

- comparative case study on machine learning based multi-biometric systems”, Lecture Notes in Electrical Engineering, 2020, Vol. 643-Issue, PP-353-365.
8. Shilpa, T., Mouli, D.V.V.V.C., Praveen, K., “Analysis of three phase seven level inverter fed PMSM Drive Using Fuzzy Logic Controller based on Field Oriented Control (FOC)”, Journal of Advanced Research in Dynamical and Control Systems, 2020, Vol. 12- Issue, PP.
 9. Naik, M.V., Anasari, M.D., Gunjan, V.K., Kumar, S., “A comprehensive study of sentiment analysis in big data applications”, Lecture Notes in Electrical Engineering, 2020, Vol. 643-Issue, PP-333-351.
 10. Syed, A.T., Merugu, S., Kumar, V., “Augmented reality on sudoku puzzle using computer vision and deep learning”, Lecture Notes in Electrical Engineering, 2020, Vol. 643-Issue, PP-567-578.
 11. The solar entrepreneur’s handbook, Wise publications
 12. A project report on —solar tracking system using hydraulic damperll (MeRITS)
 13. Non Conventional Energy sources by G.D.RAI, Khanna Publishers