

Automatic Solar Grass Cutter Robot

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1. ABSTRACT

Nowadays grass cutter machines are becoming very popular today. Pollution is manmade, which we can be seen in our daily life. In old model of grass cutter IC engine was used and hence because of its environmental impact pollution level rises IC engine driven cutter is more costly. Maintenance of such conventional machine is more. To avoid these drawbacks we plan to build new type of grass cutter which runs on solar energy and this model is also economical. The aim of our project is to make the grass cutter which operates on solar energy hence save the electricity and reduces manpower. In our project we use microcontroller for controlling various operation of grass cutter. Also, the grass cutter has obstacle sensor for obstacle detection. Grass cutter operates automatically hence it does not require skill person to operate.

2. INTRODUCTION

Grass cutter or lawn mowing with a standard motor powered lawn mower is an inconvenience, and no one takes pleasure in it. Cutting grass cannot be easily accomplished by elderly, younger, or disabled people. Motor powered push lawn mowers and riding lawn mowers create noise pollution due to the loud engine, and local air pollution due to the combustion in the engine. Also, a motor powered engine requires periodic maintenance such as changing the engine oil. Even though electric lawn mowers are environmentally friendly, they too can be an inconvenience. Along with motor powered lawn mowers, electric lawn mowers are also hazardous and cannot be easily used by all. Also, if the electric lawn mower is corded, mowing could prove to be problematic and dangerous. The selfpropelling electric remote control lawn mower is a lawn mower that has remote control capability. This prototype is robotic user friendly, cost efficient, safe to use, efficient to use, and environmentally friendly. It can save significantly on labor costs. Hence we design to make a grass cutter without any power source due to reduce the power consumption. Design a solar powered domestic lawnmower that utilizes solar power as an energy source is meant to address a number of issues that standard internal combustion engine mowers do not. An electric lawnmower with a solar charger will be easier to use. It will eliminate those unnecessary trips to the gas station for fill-ups. The unskilled gardener is enough to operate the grass cutter. Most importantly it eliminates the emissions of an internal combustion mower which are mostly responsible for environmental pollution and causes the green house gases effect believed to be responsible for the worsening global warming of our planet. This is so because solar energy is green/renewable energy.

3. LITERATURE SURVEY

For the manufacturing of a solar grass cutter we referred various literature, papers etc. The review of previous method used given below: In this lawn mower uses an solar based energy source, which is easier to use, more advantageous comparing to other energy source especially for gas based source of power. But our lawn cutter is based on solar because this energy is a renewable energy source and it is easy to work. So, we made solar powered lawnmower. In today's climate of growing energy needs and increasing environmental concern, alternatives to the use of non-renewable and polluting fossil fuels have to be investigated. One such alternative is solar energy. In this solar based lawn mower, the advantage of powering a lawn mower by solar rather than by gasoline is mainly ecological. We manufactured this lawn cutter because it is very easy method and many overcome produced from this type lawn cutter.

The self powered objective is to come up with a mower that is portable, durable, easy to operate and maintain. It also aims to design a self powered mower of electrical source; a cordless electric lawn mower. The heart of the machine is a battery powered dc electric motor. It is also useful method for our lawn mower. It is similar to our lawn cutter using display and keypad. The present technology commonly used for trimming the grass is by using the manually handle device. In this project we have automated the machine for trimming the grass. The device consists of linear blade which is operated with the help of the motor the power supply for the motor is by using battery. The battery can be charge by using power supply and solar panel.

4. PROPOSED METHODOLOGY

Brushless DC motor is defined as a permanent synchronous machine with the rotor position feedback. It is generally controlled using a 3-phase power bridge semi-conductor. This motor requires rotor position sensors which helps for starting and providing the commutation sequence. This leads to turn on the power devices in the inverter bridges. The power devices are commutated sequentially every 600, based on the rotor position. Due to this the problem associated with the brush and commutator is eliminated for example sparking. This makes BLDC motor more rugged as compared to a dc motor. The BLDC consists of four main components as Power converter, permanent magnet-synchronous machine sensor, and control algorithm. The role of power converter is to transform the power from source to the permanent magnet-synchronous machine sensor. The structure of control algorithm depends on the type of brush less dc motor, there are two classes voltage source based drives and current source based drives. Speed control of BLDC motor is essential for making the motor work at desired rate. Speed of a brushless dc motor can be controlled by controlling the input dc voltage / current.

5. CONCLUSION

Our project entitled Fabrication of solar powered grass cutter is successfully completed and the results obtained are satisfactory. It will be easier for the people who are going to take the project for the further modifications. This project is more suitable for a common man as it is having much more advantages i.e, no fuel cost, no pollution and no fuel residue, less wear and tear because of less number of moving components and this can be operated by using solar energy. This will give much more physical exercise to the people and can be easily handled. A solar powered lawn mover has been developed for the use of residences and establishments that have lawns where tractor driven mowers could not be used.. 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. 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.

6. REFERENCES

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