International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 10 Special Issue: | Apr 2023 www.irjet.net p-ISSN: 2395-0072

International Conference on Recent Trends in Engineering & Technology- 2023 (ICRTET-3)
Organised by: VSM College of Engineering, Ramachandrapuram

FABRICATION OF REMOTE CONTROL GRASS CUTTER

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ABSTRACT

The design objective is to come up with a mower that is portable, durable, easy to operate and maintain. Electric grass cutter is a machine that uses sliding blades to cut a lawn at an even length. There is no messy dangerous gasoline to deal with Most importantly it eliminates the emissions of an internal combustion mower. Even more sophisticated devices are there in every field. Power consumption becomes essential for future. This machine consists of the DC Two all terrain wheels, Two high speed motors, Two self-motors, controller, Arduino board, Relay board, linear blades, battery. It is an automated system for the purpose of grass cutting. This lawnmower has the advantages of being lightweight, portable, efficient, and needing less manual work. It might be manufactured using locally obtained materials, which would make it more cost-effective. This is can be used domestically and can be modified for heavy usage.

Key points: mover, Gasoline, Emission, Blades, Automated system, Arduino Board, Relay board

INTRODUCTION

Lawn maintenance is the art and vocation of keeping a lawn healthy, clean, safe and attractive, typically in a garden, park, institutional setting or Estate. or Personal lawns, public parks, gardens are a major recreational places but require a lot of maintenance to keep them operational. The major maintenance activity involved here is grass cutting and weed removal. This requires a lot of time and effort on a regular basis to maintain the lawn. A lawn is any area of grass mostly tough grass, which is neatly, cut like in a private garden or a public park. Walk behind mowers are designed to be pushed by the operatorand typically run on gasoline or electricity which emmits emmisions in the form of smoke and CFC's. Our battery electric powered lawn mower cut grass with a dual blade revolving at high speed parallel to the ground. The several agriculture land can be fully covered by grass. Because the very low former can be worked in man equipment used to remove the grass from land It is increase the time of worker. In this method to provide the remote controlled grass cutter for electric lawn mower. The formation of embedded System is focused on remote control. To operate to correct direction guided to device and cut the focused areas from land the machine is controlled via bluethooth by the audrino board present in the lawn mover.

LITERATURE REVIEW

Research on previous work done This chapter gives an extensive review on works and study related to this project, emphasizing on different designs, analysis, areas of application and safety aspects ofview. Below is a description containing related publications with the author. In thestudy of D. Satwik et al design and fabrication of a lever operated Electrical lawn mower, the main objective was to cut grass at different heights. The proposed lawnmower had a spur gear displacement mechanism in which the rotor blade height can be adjusted by using the lever attached to it and that can proportionally change the height of the grass cut of the lawn and required grass cut can be achieved and this process of adjustment will be completed in less than 20 seconds. The components used in machine fabrication include; DC motor, battery, solar panel, spur gears, wheels, ultrasonic sensor, Arduino board and a rotor blade. In this process, an electric brushless motor is taken to drive the rotor blade and solar energy is used to drive the motor. The batteries perform charging and discharging action between the solar panel and the motor. The actual mechanism lies between the rotor and the motor using spur gears for the power transformation. The motor runs 45min continuously until the batteries are depleted. The batteries require 23 hours to recharge completely, 10watt solar panel is used and it takes 4 days considering 6 hours direct sunlight per day to charge complete two batteries. The arduino board is an open-source computer software program used to control the speed of the motor manually. The corresponding required program is written and dumped into board. In front of the machine is an ultrasonic sensor that provides signal to prevent collision between the machine and obstacles during the cutting operation. The sensor provides signal to the arduino board before the time of collision (below 30cm from the obstacle). Buzzer receives a signal from the board and produces alarm

that prevents the collision. Spur gears were used to transmit power between motor and the rotor. equation. In ogiemidia et al lawn mower design, the project work was based on improving the design of a solar operated lawn mower form a locally available sources in Nigeria. It also aimed at improving the cutting efficiency when compared to the conventional fossil fuel powered lawn mower.

WORKING PRINCIPLE

The working principle of the lawn mower is to provide a high speed rotation to the blades, whichaids in cutting the grass. An electric grass cutter with a will be easier to use because there is no messy dangerous gasoline to deal with Most importantly it eliminates the emissions of an internal combustion mower. Wheels, motors, control systems are controlled by using Remotely from a remote place using Mobile using Arduino The technical scheme of the utility model is: a kind of remote control mower comprises fuselage, motor, front vehicle wheel, rear wheel, hay knife, scavenge port, remote controller, receiving system, output device, accumulator and charge port; Said motor is installed on the fuselage; Said hay knife is installed in the preceding lower end of fuselage and is connected with motor; Said scavenge port is installed in the fuselage;Said front vehicle wheel and rear wheel are installed in the fuselage both sides; Said receiving device is installed in the fuselage; Said remote controller is provided with button; Said output device is installed in the remote controller; Said accumulator is installed in the remote controller; Said charge port is installed in the right side of remote controller. An control mower through remote controller, can be through the direction of button control mower, and simple to operation light again, improved very big operating efficiency. The utility model discloses a remote control grasscutting machine, which comprises a machinebody, a motor, a front wheel, a back wheel, agrass cutting knife, a discharge opening, a remote controller, a receiving device, an output device, a storage battery and a charging opening. The grass cutting machine can be controlled through the remote controller, the direction of the grass cutting machine can be controlled through press buttons, the operation is simple, convenient and easy, and the work efficiency is greatly improved.

Components of remote control grass cutter

The major components of remote control grass cutter

- Frame
- Arduino board
- HC05 BT module
- DC motor
- Battery
- Blades
- Bearings
- Chain

FABRICATION PROCESSCUTTING PROCESS

Cutting processes work by causing fracture of the material that is processed. Usually, the portion that is fractured away is in small sized pieces, called chips. Common cutting processes include sawing, shaping (or planning), broaching, drilling, grinding. and milling. Although the actual machines, tools and processes for cutting look very different from each other, the basic mechanism for causing the fracture can be understood by just a simple model called for orthogonal cutting. In all machining processes, the work piece is a shape that can entirely cover the final.

DRILLNG PROCESS

Drilled holes are characterized by their sharp edge on the entrance side and the presence of burrs on the exit side (unless they have been removed). Also, the inside of the hole usually has helical feed marks. Drilling may affect the mechanical properties of the work piece by creating low residual stresses around the hole opening and a very thin layer of highly stressed and disturbed material on the newly formedsurface.

WELDING PROCESS

Introduction to welding process Introduction Welding is a process in which two or more parts are joined permanently at their touching surfaces by a suitable application of heat and/or pressure. Often a filler material is added to facilitate coalescence. The assembled parts that are joined by welding are called a weldment. Welding is primarily used in metal parts and their alloys. Welding processes are classified into two major groups: 1. Fusion welding: In this process, base metal is melted by means of heat.

GRINDING OPERATION

Grinding practice is a large and diverse area of manufacturing and tool making It I can produce very fine finishes and very accurate dimensions; yet in mass production contexts it can also rough out large volumes of metal quite rapidly. It is usually better suited to the machining of very hard materials than is "regular" machining (that is, cutting larger chips with cutting tools such as tool bits or milling cutters), and until recent decades it was the

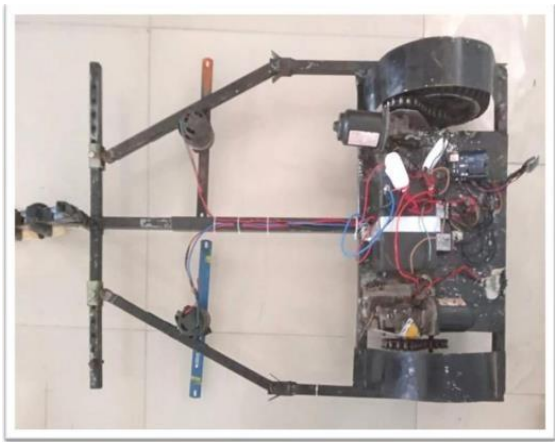
only practical way to machine such materials as hardened steels. Compared to "regular" machining, it is usually better suited to taking very shallow cuts, such as reducing a shaft's diameter by half a thousandth of an inch or 12.7 um.

SOLDERING

Soldering, is a process in which two or more items (usually metal) are joined together by melting and putting a filler metal (solder) into the joint, the filler metal having a lower melting point than the adjoining metal. from welding in that soldering does not involve melting the work pieces. In brazing, the Soldering differs filler metal melts at a higher temperature, but the work piece metal does not melt. In the past, nearly all solders contained lead, but environmental and health concerns have increasingly dictated use of lead-free alloys for electronics and plumbing purposes.

WORKING AND DISCUSSION

As a result of this project, we designed and fabricated a remote control grass cutting machine. The utility model discloses a remote control grass cutting machine, which comprises a machine body, a motor, a front wheel, a back wheel, a grass cutting knife, a discharge opening, a remote controller, a receiving device, an output device, a storage battery and a charging opening. The grasscutting machine can be controlled through the remote controller, the direction of the grass cutting machine can be controlled through press buttons, the operation is simple, convenient and easy, and the work efficiency is greatly improved.



ADVANTAGES

The developed system used for Cutting Grass

- No fuel consumption
- No. of reciprocating parts are less
- Compact size and portable
- Easy to move from one place to another place
- Operating principle is simple. Non-skilledperson also operate this.

LIMITATIONS

- Large time required to remove the grass.
- Remotely operated.
- Difficult to operate in rainyseasons.
- Range
- Cannot be operated in muddy conditions.

CONCLUSION& FUTURE SCOPE

This project work has provided us an excellent opportunity and experience, to use our limited knowledge. We gained a lot of practical knowledge regarding, planning, purchasing, assembling and machining while doing this project work. We feel that the project work is a good solution to bridge the gates between the institution and the industries.

We are proud that we have completed the work with the limited time successfully. The fabrication of remote control grass cutting machineis working with satisfactory conditions. We can able to understand the difficulties in maintaining the tolerances and also the quality. We have done to our ability and skill making maximum use of available facilities.

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