

Automatic Solar Powered Crop Cutter

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Abstract— This paper represents automatic solar powered crop cutter. Outcome of research in this field gives birth to solar powered automatic crop cutter. Such cutter is been invented because of low cost, high compatibility, use for ruff and tuff. Leaning a crop cutting is long time process and goes through traditional knowledge. This proposed system aimed to make a crop cutter and robot, powered by an electric motor, which perform various task as per requirement. The primary aim was to make design of crop cutter which has high intelligence. In order to do motion the robot automatically turns with help of programmed microcontroller. Making section1, section2 of it's the main problem is overcome by separation of section by team. The idea has potential applications in automated crop cutting without use of fuel. Academically, the project provided a platform to integrate control system theory and microcontroller robot programming.

Key words: Crop cutter, Moving robot

Various algorithms for automatic solar powered crop cutter are as follows:

ALGORITHM

- 1) Charge controller circuit charges the rechargeable battery through solar panel.
- 2) Battery provides voltages to section1 and section2 as per requirement.
- 3) When robot moves cutter blade slow down the speed to save the power.
- 4) When robot stops cutter blade moves at 1000rpm speed to cut the crop
- 5) When robot wheels perform six clockwise rotations (rotations can be programmed in microcontroller) the robot takes a left turn.
- 6) It works until supply is disconnected

I. INTRODUCTION

Now a day's pollution is a major issue for whole world. In case Gasoline crop cutters due to the emission of gases its result gives pollution. Also the price of fuel is raising hence it is not efficient and economical. So the Solar powered crop cutters are introduced. Solar powered crop cutters can be described as the application of solar energy to electric energy converted and applied to motor which revolve a blade which does the cutting of crop. Solar energy is the renewable energy. We are developing such crop cutter which has high intelligence, easy to use; most of the parts are automated. We are going to use solar energy to generate power which is stored in battery. This supply is distributed in all section as per our requirement. The sun provides sustainable amount of the energy used for multiple use in world for environment. The solar powered crop cutter is based on the same principle that other early researches of crop cutters works on. The difference is just the application of the energy source. Using photovoltaic panel generate the energy needed to power the cutter. It is assumed that a crop cutters uses solar as the energy source will address a number problems that the standard internal combustion engine and electric motors lawn mowers do not. A crop cutters with solar energy will be easier to use, it removes down time by sudden trips to gas station for filly ups it's danger associated with gasoline spillage. The dangerous emissions produced by the gasoline spillage in that of the internal combustion engine into the atmosphere are eliminated.

II. RELATED RESEARCH

In this general paper we are going to discuss procedure of automatic solar powered crop cutter with the help of microcontroller, related algorithm, their advantages and disadvantages have been studied.

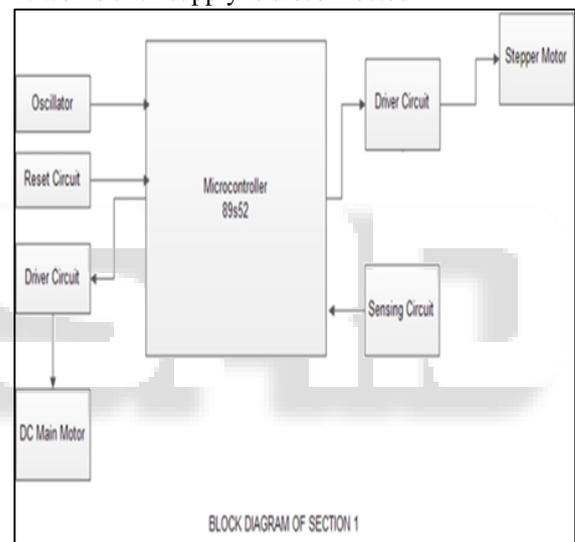


Fig. 1: Block Diagram of Section1

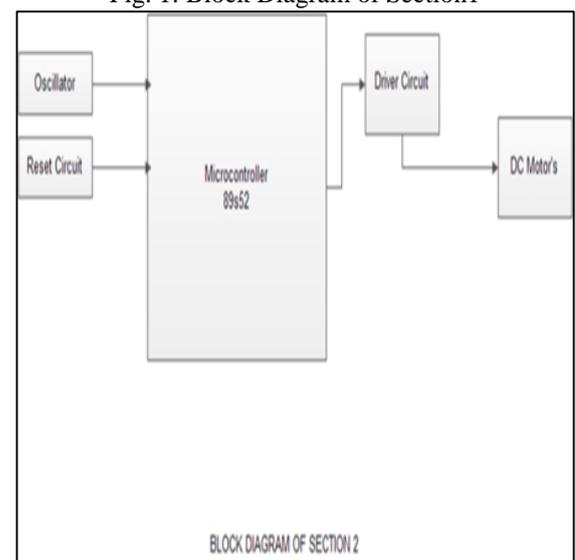


Fig. 2: Block Diagram of Section2

III. WORKING METHODOLOGY

Our project will work with the flowchart given below. At first 12v battery will be charged through solar panel by charge controller circuit. Then the battery will provide the voltage to the section1 and section2 as per need. Here section1 is called cutter assembly part and section2 is called moving robot part. In order to save the power we have programmed the microcontroller AT89S52 in such a way that when robot moves cutter stops and when robot stops cutter starts. Circular cutter with sharp edges is been used in project. When the robot wheels will take six rotations the robot will take the left turn.

The robot will stop when supply will be disconnected.

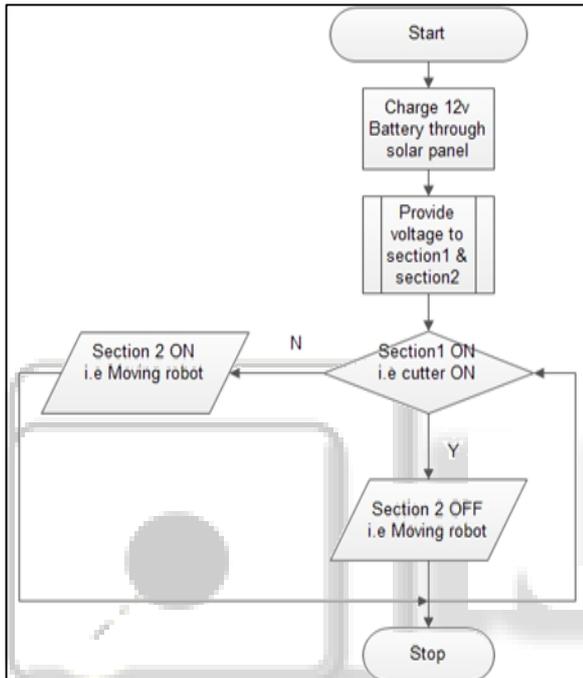


Fig. 3: Flowchart of Crop Cutter

IV. PROJECT MODEL



Fig. 4: Implemented Model of Proposed Crop Cutter

V. CONCLUSION

Thus we have concluded that we were successful in making a prototype of automatic solar powered crop cutter. We are

really happy for what we have done in one year. Our efforts really put worth as we were expecting. As a student of electronics and telecommunication we were not familiar with mechatronics concept but after choosing this project we came across many mechanical terms such as force, torque, displacement and last but not least the fabrication of entire model. We made lot of changes in fabricated body depending upon software requirement. We obtained good results after testing our prototype model. As we were using solar energy the “power” was one of the main drawbacks for us which created problem throughout the project. By testing we came to conclusion that the speed of cutting blade is so less which can be increased by more power configuration of 24 volts.

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