

SMART SOLAR WEED CUTTER AND PESTICIDE SPRAYER

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ABSTRACT

This paper shows the design of solar based weed cutter and pesticide sprayer. Agriculture is demographically the broadest economic sector and plays a significant role in the overall economy of India. For the growth of Indian economy, mechanization is necessary. The main purpose of mechanization in agriculture is to improve the overall productivity and production. This paper attains to design such a flexible sprayer and weed cutter. This paper suggest a model of manually operated multi nozzle sprayer with cutter according to crop which will gives optimum results in less time.

Keywords : solar energy, solar panel, weed cutter, pesticide sprayer.

INTRODUCTION

Agricultural sector is changing the socio-economic environment of the population due to liberalization and globalization. About 75% people are living in the rural area and are still dependent on agriculture. Agriculture has been the backbone of the Indian economy. Spraying of pesticides is an important task in agriculture for protecting the crops from insects. Farmers mainly use hand operated or fuel operated spray pump for this task. This conventional sprayer causes user fatigue due to excessive bulky and heavy construction. This motivated us to design and fabricate a model that is basically trolley based solar powered Grass Cutter, Pesticide Sprayer & Lighting System in a single unit. Due to use of Solar energy for operating pump & grass cutter, there will be elimination of engine of fuel operated spray pump & cutter by which there will be reduction in vibrations and noise. The elimination of fuel will make our spraying system eco-friendly. Solar powered system can give less tariff or price in effective spraying, grass cutting & Lighting operation. Solar energy is absorbed by the solar panel which contains photovoltaic cells. The conversion of the solar energy into electrical energy is done by these cells. This converted energy utilizes to store the voltage in the DC battery which used to functions whole unit.

METHODOLOGY

A sprayer is a device used to spray a liquid material. In agriculture, a sprayer is a piece of equipment that sprays to apply herbicides, pesticides, and fertilizers to agricultural crops. Sprayer ranges in size from man-portable units (typically backpacks with spray guns), with boom mounts of 60–151 feet in length and weed remover. This equipment is a type of agricultural weed operated with the utilization of solar power. The drive mechanism of this machine includes one solar panel, two electrical dc motors, two batteries, rotary blades and attached to shaft. One electrical dc motor is connected to the wheels of the machine with the help of shaft. These mechanisms transmit the power from the motor to the shafts of the wheels and weed cutter. In this machine J-type rotary blades are used. This shape of blades mainly used for tilling hard soils such as dry lands. These rotary blades are attached to the rear end at the roots of weeds and are driven by another electric dc motor. The two motors are connected to the two batteries individually in series. Batteries are connected to the solar panel. The solar radiation immersed on solar panel. By this process the generated solar energy is converted into electrical energy. This energy is stored in batteries. This stored energy is supplied to the dc motors when they needed through which the wheels and weed cutter are rotated. The motor speed is varied by altering the operated voltage output through the speed control.

TRANSMITTER

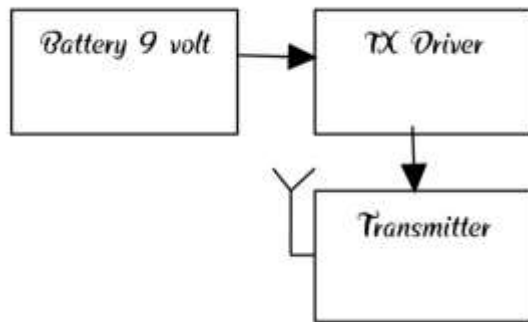


Fig1: Block diagram of transmitter

RECEIVER

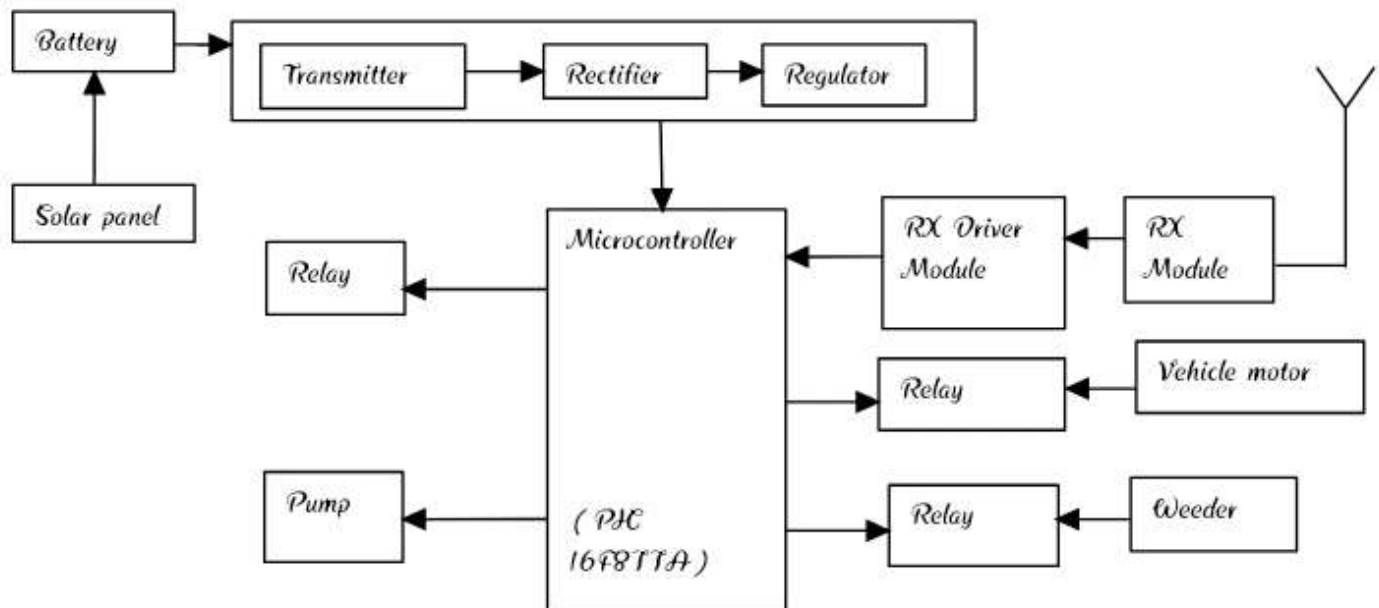


Fig2: Block diagram of receiver

CONCLUSION

Proposed model made it possible using simple and effective principle of storing solar sun energy in battery through constant supply of voltage from solar charge controller and then with the use of selected pump and nozzle, spraying operation can be carried out. Fatigue and stress that usually generates during working condition for the farmers has been reduced considerably after adopting ergonomic techniques during designing. Hence analyzing the function v/s cost with the presently available equipment is more efficient with comparatively lesser cost.

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DISCUSSION

Solar powered automatic lawn mower lawn buddy. This design contains a microcontroller, multiple sensors, and a solar charging system. Adding these elements together, they get their robotic lawn mower. Grass cutting machine by using photovoltaic source. It is an automated system for the purpose of grass cutting. The Source is drive from the solar energy by using photovoltaic panels from the photovoltaic panel and to store the dc voltage in a battery. Autonomous Pesticide Spraying Robot for use in a Greenhouse.

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