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Solar Based Pesticide Sprayer Using Bluetooth Control

R.Sarath[1], S. Arun Kumar[2], Manish Kumar[3], R. Balaram Sai[4]

[123]U.G. Student, [4]Assistant professor

Dept of EEE, Kuppam Engineering College, Chittoor, A.P.

Abstract: A proto type was designed to overcome the problems in conventional spraying system, so that manpower is reduce and also health issues to farmers due to pesticides are prevented. In this project a proto type for spraying pesticide is designed, which can be controlled by Bluetooth using android mobile. Prototype is powered by a solar panel fixed on the top to charge batteries. The position of the sprayer can be varied from top to bottom according to plant height.

Keywords- Arduino, Bluetooth device, solar panel, battery, DC motors.

1. INTRODUCTION

Agriculture is a profession of many tedious processes and practices, one of which is spraying of insecticides in the farm fields. Sprayers are mechanical devices that are specifically designed to spray liquids quickly and easily. They come in a number of different varieties. In this prototype a solar operated sprayer is presented. A sprayer of this type is a great way to use solar energy. Solar based pesticide sprayer are the ultimate cost effective solution at the locations where spraying is difficult. This solar based pesticide sprayer system uses solar energy as source. Solar energy is first used to charge a storage battery. The solar energy stored in the battery is utilized to operate motor which functions as pump. In this paper we are trying to make a prototype model for farmers and cultivators for whom spraying of insecticides is harmful and hazardous. The proposed system of Pesticide Sprayer which is expected to achieve better results compared to the previous methods without using human assistance. This would be an mechanical model that would work automatically powered by solar energy and reduce drudgery and also protect the farmers and cultivators from harmful pesticides and chemicals. The main objective of this system is to implement prototype pesticides spray motor using Bluetooth through android mobile, Solar panel is used for battery charging.

2. DESIGN AND DEVELOPMENT OF SYSTEM

A .Transmitter section

FIG: A shown transmitter section

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B. Receiver Section

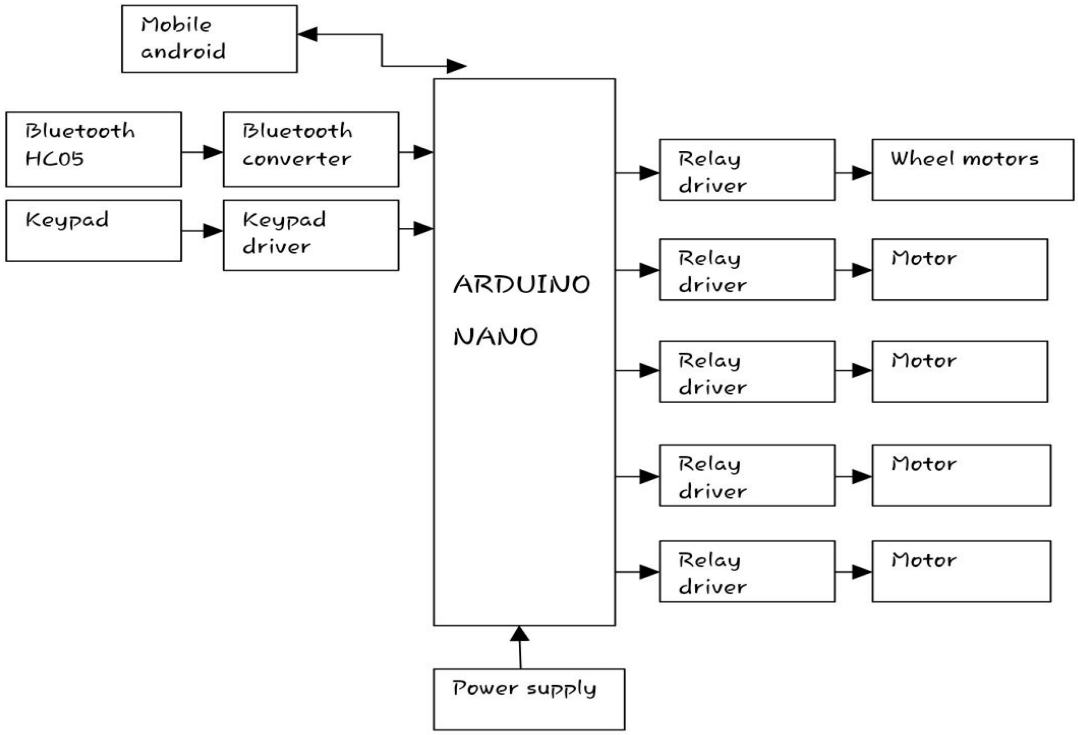

FIG: B Shown Receiver Section

3. WORKING AND ITS OPERATION

Arduino is the brain of the desired system, it consists of two section one is transmitter and receiver section. In transmitter side it consists of Bluetooth device, solar panel and battery which work as input. In receiver side it consists of Arduino Nano, LCD, DC gear motor, and submersible motor, relay which are works as output.

The sun light is collected by solar panel, which converts solar energy into electrical energy and it is store the battery. By using Bluetooth we send commands to the Arduino unit. The operation takes place in the Arduino unit to display commands on LCD display therefore we can operate the complete operation such as DC gear motor, submersible motor for movement of the prototype.

4. METHODOLOHY

In our present life we are using manual sprayers which are fuel consumption and harmful to the humans life. With the help of the above proposed system we can overcome those problems. the solar panel produce electrical energy and to store to battery, by using the Bluetooth device we send instructions to the receiver section, where is displays the instructions on the LCD display and operation of the prototype takes plays. It consists of relays which are used to operate gear motor and another submersible motor for spraying.

5. HARDWARE COMPONENTS

1. ARDUINO NANO
2. BLUETOOTH HC05
3. LCD DISPLAY
4. RELAY
5. BATTERY
6. SOLAR
7. SUBMERSIBLE MOTOR
8. DC GEAR MOTOR

6. SOFTWARE

Arduino IDE compiler

7. ADVANTAGES

1. Reduce fuel cost.
2. Does not create any pollution, as it is noiseless.
3. Easy to use.
4. Here using auto power supply.
5. Improved public safety.

CONCLUSION

In this project we overcame the actual problems in conventional pesticide spraying by using a solar based pesticide sprayer through Bluetooth control, to reduce chemical effect to human and reduce man power. The designed prototype reduces the time and effort for spraying. Sprayer nozzles can be adjusted up and down position to spray by Bluetooth communication, this project can be efficiently executed in all the agriculture fields. As the prototype here is employed solar panel to recharge batteries, the fuel cost is reduced and also supports green energy. The design is robust and easy to control and can be controlled by using a smart phone.

FUTURE SCOPE

1. Extending the range of Bluetooth for communication in large farm.
2. Battery capacity can be increased in the future depending upon the requirements.

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