

Design of Full-body Disinfection Chamber for Installation in Public Places

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1 Introduction

Covid-19 is a serious pandemic which the entire world is facing at present. As a measure of prevention from the deadly virus whose vaccine is not yet available, WHO recommends application of alcohol based sanitizers (60% alcohol content) to parts which are expose to the virus. People are using hand sanitizers to wash hands frequently which have been proved effective till date. Since sanitizers are effective in preventing covid-19, it would be a good idea to sanitize the whole body.

In this research, development of a short tunnel which sprays sanitizers when people pass through it, is designed. The details of the components and raw materials required for the development is discussed in the following section II.

2 Project plan

As mentioned earlier, there is dire need for effective process to prevent the outbreak of covid-19 in our country before it is too late. As a part of the effective preventive measure, a short tunnel which sprays sanitizers when people pass through it, can be installed in public places. Without further delay, we would like to discuss about the components and raw materials require to realize the project.

2.1 Details of project requirement

The required functional units in details are described below.

1. Obstacle detector circuit using Arduino Board and US Range sensor
2. One liquid sprayer pump (800L=hr)
3. Relay (normally closed)
4. Sanitizer tank
5. Mechanical structure building materials
6. Sanitizer level indicator (optional)
7. Fine nozzles used for misting

2.2 Working of the system

Obstacle detector circuit is used to detect whether or not a human is present inside the tunnel. If human is present, it must spray sanitizer from various nozzles connected to the liquid sprayer pump. It stops spraying as soon as the tunnel is empty. The block diagram of the system is shown in Figure 1.

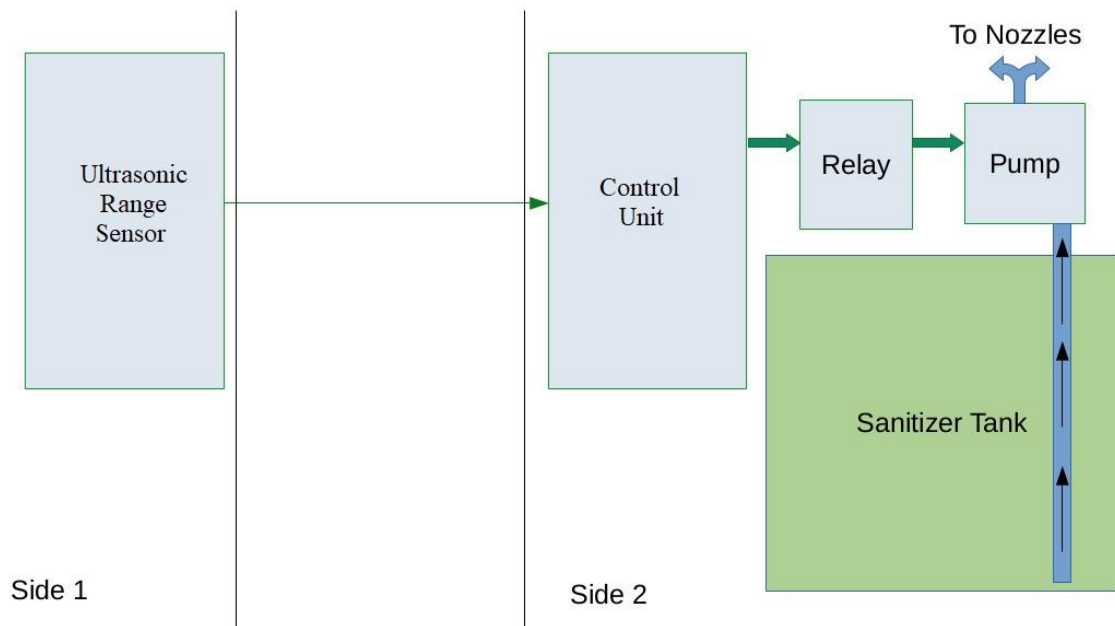


Figure 1: Block diagram of full body sanitizer

2.3 Obstacle detector circuit

Obstacle detection can be realized by using ultrasonic range sensor. The module is compatible with Arduino Uno board. This sensor will be installed at the entrance of the disinfection chamber.

A relay is connected to the pump. Electronic circuit is going to control automatically the liquid sprayer pump through the relay. It sprays sanitizers automatically to person inside the tunnel structure. In addition to these, a mechanical structure of the tunnel is required. A suitable tank is also required for the storage of sanitizer.

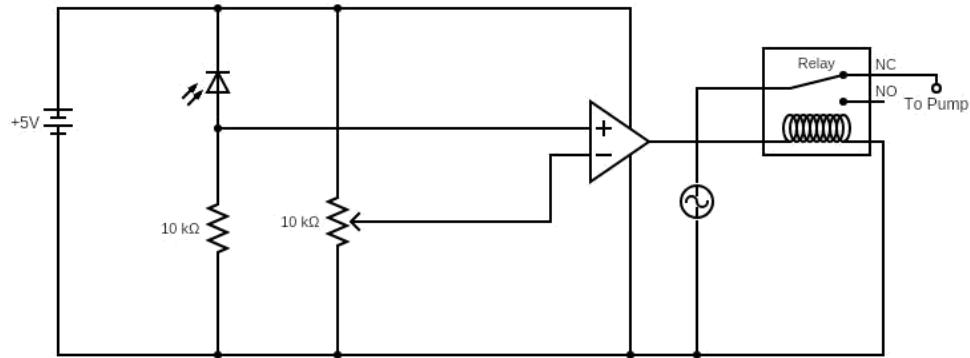


Figure 3: IR Receiver circuit

3 Conclusion

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It is our pleasure that we contribute to the country by working on this the project which will significantly help in preventing the further spread of the dangerous covid-19 in the country. Overall one unit of the full body sanitizer tunnel will be very cost effective and its cost is of Rs. 20000 only.