

AUTOMATIC MULTIPURPOSE SANITIZING BOOTH

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Abstract - An automatic multipurpose sanitizing booth is an automated, noncontact, alcohol-based sanitizing station, which finds it's used in hospitals, work, places, offices, schools, and much more. It serves multiple purposes of sanitizing not only the human body but all of the components they are carrying. Alcohol is a solvent, and also a very good disinfectant when compared to liquid soap or solid soap, also it does not need water to wash off since it is volatile and vaporizes instantly after application to hands. It is also proven that a concentration of >70% of alcohol can kill Coronavirus in the hands. Here, an ultrasonic sensor senses the people entering.it contains a special chamber for sanitizing components (eg. Bags, mobile phones, etc)by use of UV lights

Key Words: Covid19 · Disinfection tunnel · Disinfectant spray · Far-UVC radiations · Automated tunnel.

1.INTRODUCTION

The corona pandemic hit the educational system very badly. Still, after 8 months schools are unable to reopen the online system of education is not appealing to students as well as teachers as the presence of the teacher is most important for the learning process. To reopen the educational institutes, we need a strong sanitizing machine for sanitizing 1000s of the student entering premises. No such machine or arrangement is available at the Institute which sanitizes not the only person and its equipment but also marks its attendance with a face reading application. We believe in delivering sanitization services to the community with the utmost safety and cost efficiency to reach hygiene expectations. We strive to provide people with preventive and curative methods keeping in mind the environmental challenges that come across. To give

sanitization service to complete body, mobile phones, wallets, bags, and other essential things. Commercial Areas like schools, Offices, Restaurants, etc need to be clean and disinfect effectively, as they can increase in numbers within a fraction period Strict regulations imposed by govt. Easy maintenance and easy to use

2. LITERATURE SURVEY

The eruption of the COVID-19 virus has affected unnumberable folks everywhere on the planet. dominant this period pandemic is currently a significant priority of the scientific community. folks will get infected from this virus in many ways, in the main from person to person contact via the unfold of contaminated droplets originating from the oral and nasal passages, or by touching a contaminated surface (Zhang 2020). within the current situation, there's no immunizing agent accessible, which might treat the COVID-19 viral infection. Inadequate cleanliness and healthful practices will cause a rise in the infection rate throughout this eruption. The virus is active for up to a few hours in aerosols, up to four hours on copper surfaces, up to a few days on steel and plastic surfaces, and up to solar day on cardboard surfaces (Van Doremalen et al. 2020). this means that while not correct medical aid, the virus will multiply quickly through contact surfaces and air. Effective surface-associated air medical aid will guarantee an early containment and interference of more infective agents unfold.

The literature suggests that COVID-19 viral infection is in remission effectively with zero.1% whitener answer at intervals one min (Kampf 2020). heat and high humidness can even cut back and dampen coronavirus transmission (Wang et al. 2020; Jithin Krishan and Subash 2019).

‘Social distancing’ amongst folks has emerged as a useful gizmo for deceleration down the virus unfold. publically places, however, it's laborious to take care of social distancing. Hence, taking precautions is that solely thanks to tackling the virus. To curb the unfold of the COVID-19 virus eruption, once the economy limps back to normalcy, a brand new strain of COVID -19, extremely transmissible is rising we'd like a strong medical aid system to interrupt the chain of the virus from spreading publically places, no matter the hygiene condition of individuals. associate automatic medical aid system will perform contactless medical aid of the outside surfaces to arrest more infection if one gets contaminated whereas moving/ operating, and it'll be an efficient deterrence to the unfold of infection. Therefore, the medical aid tunnel ought to be autonomous and with none human intervention for stunning the virus on the outside surfaces of individuals.

METHODOLOGY

A self-preventive modular chamber with human sensors designed to deliver disinfectant on every individual passing through it

The Sanitizer Tunnel works through a central disinfectant mist generation and distribution arrangement located above the internal chamber & on the side walls which ensures that the operator is fully sterilized before entering any premises

The system is supplied with sanitizing nozzles to drop suitable size curative particulates which are placed such that mist spray will be possible on and all around the person passing through it. The system will operate for a duration as per the person's entry & exit inside the unit. During the operation, the operator is expected to gently rotate in the central space with his/her elbows raised and away from his body to get the best results from the system. During this misting cycle, the operator twists his/her body and moves his/her arms up and down to reduce any folds in the clothes and to help ensure uniform coverage. After a person exit the system, the sanitizing cycle automatically shuts off

These are both-way rooms. In a Sanitizing shower, highly pressurized disinfectant is spread on a suit of person to drain the contamination. This prevents the passing out of hazardous viruses from being circulating in different areas while person movement processes. Sanitizer Tunnel provides gentle wetting of all exposed surfaces of the operator's garment, digesting hazardous particulate.

Disinfectant Consumption is a 0.5 liter per minute misting cycle.

Before entering the chamber on the left side there is a temperature gun to detect the body temperature there is also vaporize sanitizer spray for mobile, wallet, and key sanitization and below there is sanitization spray for disinfection of bags

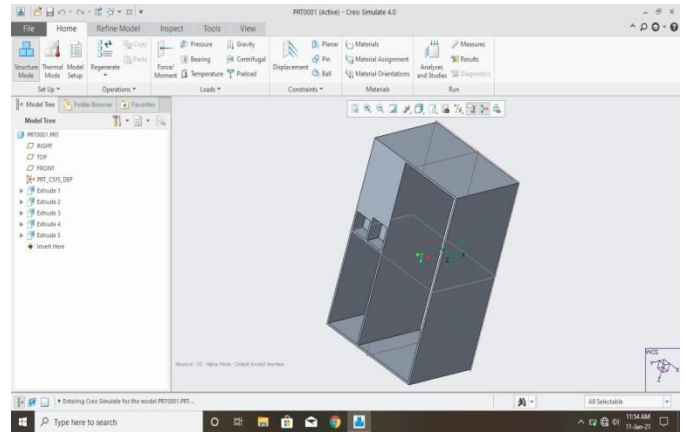


Fig -1: Creo analysis of CAD model

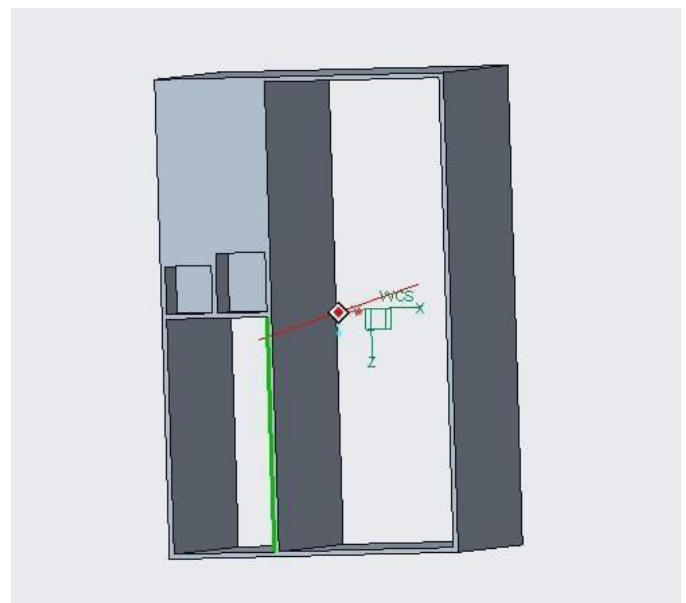


Fig -2: CAD model of the sanitizing booth

BASIC COMPONENTS

- . MOTION SENSORS:

A motion sensor is an electrical device that utilizes a sensor to detect nearby motion. Such a device is often integrated as a component of a system that automatically performs a task or alerts a user of motion in an area. This motion sensor is calibrated with the system.

- **PRESSURE PUMP:**

A pressure pump is a machine that regulates the pressure of a fluid. Here pressure pump is used to control the flow of liquid sanitizer used for sanitization. Here according to the number of nozzles the pressure pump is calibrated.

- **POWER SUPPLY CABLE :**

The primary task of the power supply cable is to provide your motherboard with power. In this sanitization system, the power supply used is about 24 V.

- **NOZZLES :**

A nozzle is a pipe or tube of a varying cross-sectional area and it can be used to direct or modify the flow of fluid. In this system we at least require 5 -7 nozzles also the number of nozzles can be changed according to the requirement.

- **TEMPERATURE SENSORS:**

These are called the laser thermometers which use a lens to focus the infrared energy from an object onto a sensor that measures it; typically a thermopile. The sensor absorbs infrared radiation and converts it to an electrical signal, with more intense radiation creating a stronger signal.

- **OTHER ACCESSORIES:**

a. Piping :

approx. Up to 10 meters.

b. Nuts & bolts :

approx. 10 each.

c. Cable ties :

required to connect piping with the system stand.

d. D-Type connector :

It is used where we want to attach the nozzle, by cutting the pipe at that point and installing D-connector so that we can attach a nozzle on top of it.

- **UV LIGHTBOX:**

A UV Disinfecting Box or a Cabinet rack is a solution that can be employed at homes, offices, apartments, etc...The received packages or objects can be disinfected and handled without the worry of transmission of diseases.

The UV package disinfecting apparatus can be created using any of the available cabinet racks or boxes at homes or one can create the entire apparatus from scratch by using any fabricating panel material such as plywood, aluminum sheet, composite boards, or any

sheet material. These panels should be sized into desired dimensions and assembled to a box with one side as a door held by a hinge.

3. CONCLUSIONS

This paper discusses the design and concept of automatic multipurpose sanitizing booth mainly for colleges and offices. the booth is collapsible and can be used to curb the spread of the corona virus and help in starting the school and colleges, and big offices in full fledge which are in running in a limited capacity. This booth aims to sanitize the human body as well as its belongings to a maximum extent to reduce the risk of infections.

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