



Dry Handwash Machine by Fog Disinfectant

Aanvi jain ¹, Mohit thusoo ²

¹ ²Students, Department of Biomedical Engineering ,

¹Parul institute of technology , Vadodara , India

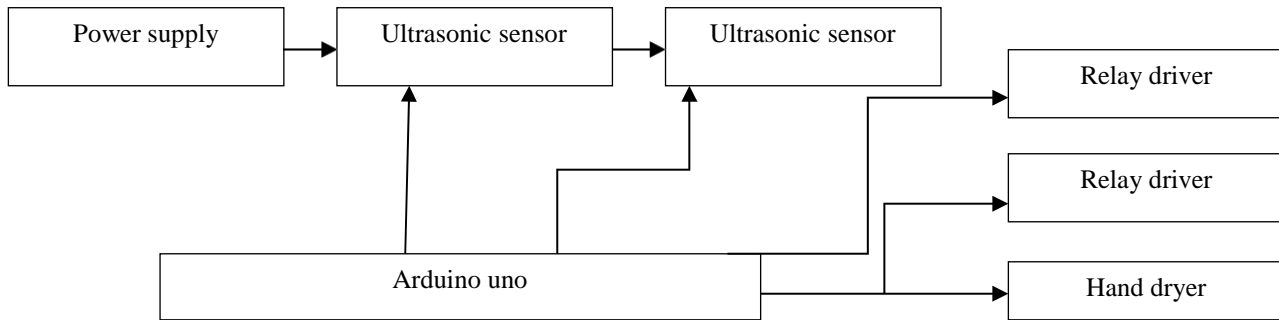
Abstract : Since the onset of the COVID-19 pandemic, it is recommended that you wash your hands several times a day. But can you waste so much water? The problem of irrational water use will cause more problems than the epidemic itself. To solve this problem, we have developed a system that allows you to wash your hands without using more than 95% water. Sometimes hand disinfection is a very important factor in the fight against infectious diseases. But do you need a lot of water to disinfect your hands? After all, many wash their hands (more than 15-20 seconds when turning the tap). To disinfect with disinfectant or soap, water is enough to reach every millimeter of your hand. This should be enough to kill the infection or get out of your hands. When the faucet is open, only 10-30% of the water touches the skin and the rest flows through this first layer of water. Our machines go even further and save more water through the wrong base system. The engine is integrated with the tank at the bottom. If necessary, the tank is filled with water with a safe herbal disinfectant. When the user rubs his hands against the soap system, the water mist system activates automatically, converting the water in the reservoir into mist leading to the bathroom. Since it is in a gas (water vapor) state, it can be reached in less than 5 seconds. After exposing the user to water mist for 5-15 seconds, wash off the soap from hands with water mist. Use less than 95% of the water needed to wash your hands in a traditional mixer. The machine consists of a fan that moves the air needed to float the fertilizer in the toilet. This hand-held washing machine is equipped with a manual control system based on Atmega. This parameter includes the amount of time that the device must pass for each user. Thus, the machine we offer can be sterilized by hand washing while saving a lot of water.

Key Words: Atmega238u, COVID-19, Sanitizer, Dry hand washing system, Disinfection, Poly herbal

1. INTRODUCTION

The project is fighting the corona virus pandemic by regularly washing hands and keeping public areas clean, taking into account the useless access to water caused by regular hand washing and control measures. The lives of residents to protect access to water use. When the user's hand is placed in the specified position on the machine, the sensor is activated and the water mist system is automatically activated, turning the water in the reservoir into a malfunction and directing it to the bathroom. When the liquid material evaporates at the end of the resonator and condenses on contact with cold ambient air, it forms ultrafine aerosols and creates a noticeable thick cloud of fog. Pure oil solutions or aqueous liquids with a glycol component are especially suitable. The DC fan is used to mechanically drive and deliver the generated mist to the manual chamber. Here we are using ATMEGA328P, a high performance, low power controller from Microchip. ATMEGA328P is an 8-bit microcontroller based on AVR RISC architecture. It is the most popular of all AVR controllers as it is used in ARDUINO boards. Here, an embedded 8051 family controller (AT328P) is used to control according to a data pattern generated by the input port of the microcontroller. The right job will do. The logic is generated by programs written in the embedded C language. The program is created in the KEIL microvision environment. After simulation, the resulting program is converted into a HEX code and written to the microcontroller as micro vision FLASH. Dry Fogging is a relatively new disinfection method that uses liquid disinfectants and compressed air as consumables. The ultra-fine dry mist droplets prevent the chamber from falling easily onto the surface, which is a desirable quality for a disinfection chamber. Liquid per acetic acid (LPA) has excellent microbial activity. But there are problems with other ingredients and normal skin type. The aim of this study was to simultaneously determine bactericidal activity, compatibility with electronic devices in public places, and water conservation. This dry hand fog hand sanitizer can be widely used when used properly. In densely populated cities and metropolitan areas, there are several public spaces such as hospitals, shopping malls, and theatre toilets. Like trains and airports, this system ensures proper sanitation and efficient management of water consumption, while saving about 95%. Plain water is used to wash your hands and maintain a non-contact environment. It also helps prevent the spread of the virus by allowing multiple people to have access to these affected public faucets. Ease of use as users simply place their hands where indicated and the LED illuminates before the process is complete via a series of manually programmable timers.

2. BLOCK-DIAGRAM



[Figure .1 block diagram of dry hand wash machine]

Figure shows the block diagram of dry hand wash machine. Following components are used in this :-

MICROCONTROLLER:- ATMEGA 328u ATmega328 is the ATMEL Microcontroller on which Arduino UNO is based. The Atmel 8-bit AVR RISCbased microcontroller consolidates 32 kB ISP streak memory with read-while-compose abilities, 1 kB EEPROM, 2 kB SRAM, 23 universally useful I/O lines, 32 broadly useful working registers, three adaptable clock/counters with think about modes, interior and outer interferes with, sequential programmable USART, a byte-situated 2-wire sequential interface, SPI sequential port, 6-channel 10-bit A/D converter (8-diverts in TQFP and QFN/MLF bundles), programmable guard dog clock with inner oscillator, and five programming selectable power sparing modes. The gadget works between 1.8-5.5 volts. The gadget accomplishes throughput moving toward 1 MIPS for each MHz Serial information to the MCU is timed on the rising edge and information from the MCU is timed on the falling edge. Power is connected to VCC while RESET and SCK are set to zero. ATmega328 is ordinarily utilized in numerous tasks and self-sufficient frameworks where a basic, lowpowered, ease smaller scale controller is required.



[Figure.1 Microcontroller]

Fog Maker/Machine :- A smoke machine, smoke generator or smoke machine is a device that emits thick smoke similar to fog or smoke. This artificial fog is mainly used for professional recreational purposes, but smaller and cheaper smokers are often used for personal purposes. Smoking machines are also used for a variety of industrial, educational and military purposes. Mist is created by evaporating your own water and liquid, usually based on glycol or glycerin, or by spraying with mineral oil. This liquid (often referred to colloquially as fog juice) is vaporized in the fumigation machine. When leaving the smokehouse and mixing with the external cooling liquid, the steam condenses and forms a thick, visible fog.



[Figure.2 Fog Maker]

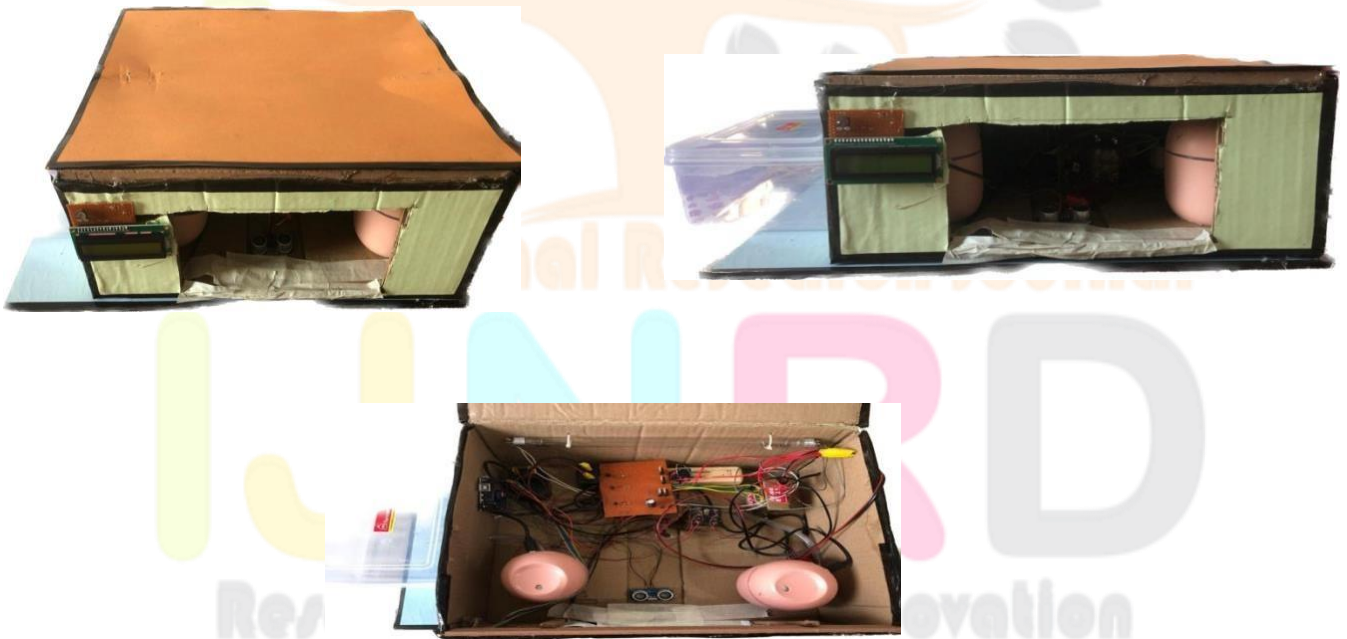
Water Tank :- A water tank is a container that stores water. Water tanks are used to store water for use in drinking water, agricultural irrigation, firefighting, agriculture, crop and livestock production, chemical production and many other fields. The parameters of the water tank include the general design of the tank and the choice of building materials and coatings. Various materials are used to make water tanks, such as plastic (polyethylene, polypropylene), fiberglass, concrete, stone and steel (welded or threaded, carbon or stainless). Earthen pots, such as matki used in South Asia, can also be used for water storage. Water tanks are an efficient way to help developing countries to store clean water.

LCD :- LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other and 3 multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special used in most embedded projects, the reason being its cheap price, availability and programmer friendly. & even custom characters (unlike in seven segments), animations and so on. LCD modules are very commonly used.



[Figure.3 Liquid Crystal Display]

3. Hardware



[Figure. 4 & 5 , 6 Hardware model]

4. RESEARCH METHODOLOGY

STEP 1: Start

STEP 2: Set the input sensor for sensing

STEP 3: Check for the activation of Fog Maker. If the Fog Maker is activated go to step 4 and step 5 otherwise repeat step 3.

STEP 4: The Disinfectant Solution is converted into the Fog.

STEP 5: Fog is transferred to the Hand Chamber.

STEP 6: We are ready to get our Hand Sanitized.

STEP 7: Check for the hand got sanitized by the machine. If the hand is sanitized go to next step. Otherwise repeat step 2.

STEP 8: When the process is done the machine will Stop. When the user's hand is placed in the desired groove of the machine, the active sensor inadvertently creates water in the tank and activates the water mist system, which automatically connects to the toilet using the ATMEGA328P. The microchip is a powerful controller with low power consumption. The ATMEGA328P is an 8-bit microcontroller based on the AVR architecture. The liquid evaporates at the edges of the nebulizer (resonator) and condenses on contact with cold ambient air, forming ultrafine aerosols, forming a dense visible cloud of fog. During this process, the LED will remain on until the process is completed by a series of manually programmable timers. You can also control your work using the keyboard. When the process is complete, the LED will turn off and the result will be displayed on the LCD screen. It is completely contactless.

5. RESULTS AND CONCLUSION

The proposed work has many important advantages and helps to kill viruses and bacteria in public places such as Hospitals , dispensaries, train stations, airports and theaters. Good hygiene is helpful as it is a non-contact approach that helps maintain proper social distancing in line with general standards. Its portable design makes it easy to install and use in a variety of locations depending on your needs. The technology used is still new and very unstable. Using about 95% less water than traditional hand washing, it solves one of the biggest water saving problems, which is why we see progress and new products on the market with a similar mechanism. Use less than 95% of the water needed to wash your hands using conventional faucets. The saved water can be used for other purposes. The system is fully automated and avoids manual mistakes such as opening the tap, tap leaks and maximizing water savings. With this mechanism, the installation and maintenance of existing faucets is no longer a problem, people can operate them comfortably, contactless and very hygienic.

6. REFERENCES

- [1] Weislander G, Norback D, Lindgren T
Experimental exposure to propylene glycol mist in aviation emergency training: acute ocular and respiratory effects. *Occupational and Environmental Medicine*. 2001 Oct;58(10):649- 55.
- [2] Varughese S, Teschke K, Bauer M, Chow Y, van Netten C, Kennedy SM.
Effects of theatrical smokes and fogs on respiratory health in the entertainment industry.

