



DRY HANDWASHING MACHINE BY FOG DISINFECTION TO SAVE WATER

YASMEEN SULTANA , PROF NANDINI V PATIL

PG Student CSE Department ,lecturer CSE Department

Sharanbasva University , Department Of Computer Science and Engineering ,

Faculty Of Engineering and Technology(Exclusively For Women)

Kalaburgi

ABSTRACT: An dry handwashing machine by fog disinfection is automated, easy to use , alcohol based hand sanitizer dispenser, which finds its use in hospitals, work places, offices, schools and much more. Alcohol can be used as an disinfectant when compared to liquid soap or solid soap, also it does not need water to wash off since it is volatile and evaporate instantly after contact to hands. It is also confirmed that a application of >70% alcohol can destroy Coronavirus in hands. Here an ultrasonic sensor senses the hand placed near it, the Arduino uno is used as a microcontroller, which sanity the distance and the result is the pump running to pump out the hand sanitizer.

Keywords :- antiseptic, Pump, Alcohol, Soap, virus, Ultrasonic Sensor, Relay

INTRODUCTION

Since the start of COVID pandemic it is been recommended to wash your hands several number of times per day. But can we manage to pay for to waste such huge amount of water. The problems that would be created by consumption of excess water for ridiculous reasons would create a greater problem than the

deadly disease itself. To help solve this system we here design a system that provides handwashing while consuming over 95% fewer water.

Disinfecting our hands from time to time is a very key factor in fighting the pandemic. But does it actually require so much water to sanitize your hands. Additionally many people actually end up over washing their hands (over 15- 20 seconds with wastage of water (full tap) released). Disinfection actually just requires that water reaches every millimeter of your hand along with a disinfectant or soap and it should be just sufficient to eradicate any infection or help it slide out of your hand. When we use a tap only 10 – 30% of water actually touches our skin and rest just flows over this earliest layer of water.

Corona sickness was a serious issue for the future planet. In the recent world, no medication or vaccination was discovered. People are afflicted with corona disease as a result of this disease's aggressive attack. Corona disease is more than just a frank virus infection it harms people by infecting their respiratory systems(Lungs). The corona virus disease is rapidly spreading throughout the world, and countries are clamor for monitoring and control of this phenomenon. The corona virus has caused great suffering around the world..There is a strict estimate to control the corona sickness everywhere and prevent to spread in the nation. The hospital and the nurse people are suffering to heal the affected people and stop spreading the virus to the neighbouring nation.

As there is a method for handwashing, such as pressing the sanitizer bottle with the foot, it is possible for a virus sickness to travel from one person to another. With a long press, the footer causes the Sanitizer liquid to be sprayed out automatically by mechanical force. A sudden liquid force emanating from the sanitizer bottle disables elderly people from using the system because of mechanical stress and the corona virus sickness, which will pose a serious concern in the future.

Sanitization means clear out or sterilize an object or body part like hands or whole body. Sanitization can be done in many ways including UV Sanitization, Soap cleansing, Alcohol Sanitization and Bleach Sanitization and so on. Of the above methods alcohol was found to be more useful for human beings since it is harmless on skin surface, vanish easily and kills most of the viruses, bacteria, and also remove dirt in our hands. Alcohol may be expensive to use on a large scale to sanitise buildings or quarters, and its extreme flammability necessitates careful storage to prevent disaster. Since alcohol absorbs moisture, it also dries out the hands, necessitating the use of moisturisers. Additionally offered are alcohol-based hand sanitizers that contain antiseptic disinfectants like chlorhexidine gluconate. To be effective against viruses, hand sanitizers must include a minimum alcohol absorption of greater than 70%. However, frequently touching the hand sanitizer bottles to reapply a drop causes contact with people who might be dangerous. Therefore, a non-contact hand sanitizer dispenser is necessary.

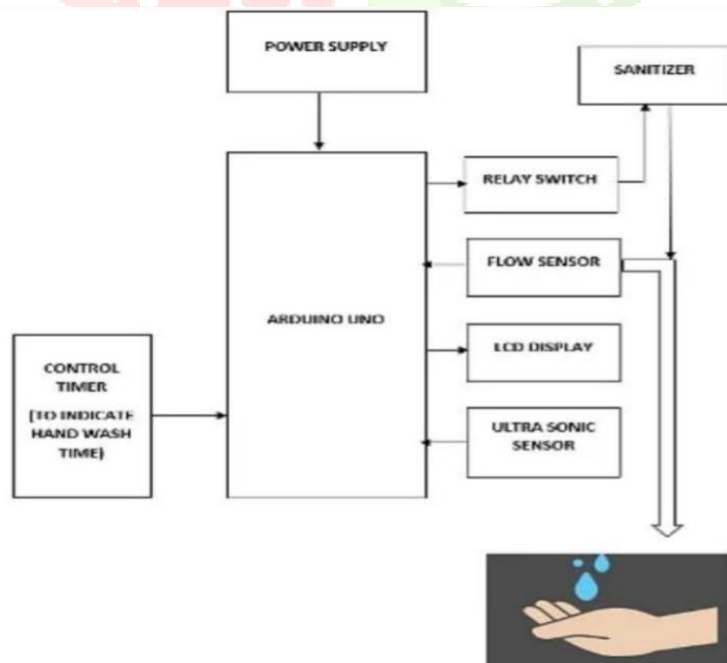
RELATED WORK

In [1], the study mostly discusses hospital grip infections, which affect roughly 2 million patients annually and are ranked as the eighth leading cause of mortality in the USA. Additionally, it states that washing your hands with soap and water takes time, especially at busy times in hospitals, but that it is important and effective when done correctly. This study also demonstrated the efficiency of alcohol-based hand sanitizers, which significantly decreased infection rates (by 30%). They employed hand sanitizers that contained 60 to 70 percent ethanol to significantly lower the quantity of germs. The use of hand sanitizers during a 10-month period resulted in a 36.1 percent decrease in illness.

In [2], the paper says about the infection caused by drug anti micro-organisms which causes raise in death rate and also complication, the multidrug resistant bacteria includes Methicillin Resistant Staphylococcus aureus(MRSA), Extended Spectrum Beta-lactamase (ESBL) producing bacteria, Multidrug Resistant Pseudomonas aeruginosa(MDRP), which are very common globally . Several antibiotics have increasing multidrug microorganisms isolation rate, even personal protection equipment(PPE) can't be effective in segregation rate of MSRA. Hence they highlight about the use of alcohol based hand sanitizers since the alcohol based hand sanitizers had harmful association with MRSA isolation rate, which means that hand hygiene is very important in hospitals .

In [3], the paper discusses the advent of a novel coronavirus (SARS-CoV-2), which has presented unexpected problems to human health. The paper also tries to lower the disease's transmission rate. The paper discusses the structure of viruses and how it differs from that of bacteria, explaining that viruses have single-stranded or double-stranded RNA or DNA enclosed in capsids, can replicate only in the presence of a host, and are therefore considered to be living organisms. Bacteria may replicate on their own and have a structure similar to that of a human cell membrane, DNA, or RNA. In the research, hand sanitizers and soap are thoroughly compared along with foam and gel .

DESIGN METHODOLOGY



Using a fog-based mechanism, our technology advances to a new level to enable even greater water savings. A tank is attached to the machine beneath it. If necessary, the tank is filled with water and any safe herbal sanitising liquid. A water fogging system is unintentionally activated when a user applies soap to their hands and inserts them into the device, turning the water in the tank into fog and propelling it into the handwashing chamber. Now that fog is in a vapour state, it may cover the entire hand in less than 5 seconds (water vapor). The soap on a user's hand gets washed away with the fog five to fifteen seconds after being exposed to water fog. This calls for little effort.

EXISTING SYSTEM: Sensor-based water turn-on and turn-off units are used in the majority of automatic hand washing machine models. In most cases, this is done to prevent direct physical contact between the user and the faucet surfaces. The ability to enable involuntary soap dispensing integration into the same system is typically not present in these involuntary hand washing machines. Among the select few, a design that incorporates sensors during the wetting, lathering, scrubbing, rinsing, and drying steps of typical hand washing techniques was implemented. An electronic control unit, pumps, valves, a hot blower mechanism, and a hand washing chamber with two apertures covered by rubber gaskets are all parts of the current design. The proposed system was created to take into account.

PROPOSED SYSTEM: The system presented in this work is portable, low cost and suitable for public use. It contains two sensors to separately release soap and water, giving enough time for the user to apply standard hand washing procedures and it includes UV light to kill harmful virus also we design a fog based system to save 95% of water consumption. The duration of the scrubbing was indicated by a buzzer and LED light. The sensor selected is less sensitive to external variables such as temperature, light and pressure, hence yielding an improved performance. Moreover, an electronic buzzer is triggered to remind users of the duration of washing thereby providing the user a means of engagement with the washing procedure.

3.2 System Description The main controlling device of the project is Arduino microcontroller. SR04 ultrasonic sensor , timer buttons , LCD

ADVANTAGES

- (i) It is non contactable.
- (ii) Can guard from COVID 19.
- (iii) Infrared sensor tools.
- (iv) Design is dense.
- (v) Easy barrier mounted installation
- (vi) Available in various sizes.
- (vii) User friendly.
- (viii) Maintenance cost is low.

Disadvantages

- (i) parched skin.
- (ii) Fire hazard.

APPLICATIONS

It can be used hospitals.

Used in open locations

Also used in School & colleges

Used in airport.

Used in hotel and restaurants.

Used in bank.

CONCLUSION

Implementing of Contactless Automatic Hand Wash distributor for Sanitation is proficient and the low cost . It works like the regular contactless automatic machine. The human gets the limited antiseptic liquid for sanitation in hand, to wash the hands and to defend themselves from the corona virus. This system can be utilized in malls, high populated areas,hospitals , schools etc. The profitable cost of the seminar, it will be enhanced quality when considering the life of the system and the seminar. The major goal of this seminar was to use current advanced technologies to enlarge an involuntary hand sanitizing machine to improve hygiene and prevent the infectious viruses entering our body. Automatic hand sanitizers are less costly when compared to any other hand sanitizing tools . At the same time it is environment friendly as because the disposable wastage is very low, since it can be refilled easily without any mechanical support. These automatic hand sanitizer machines are developed keeping in mind about its affordability by poor sections of the society as it can be purchased by lower income groups .

REFERENCES

- [1] Newman J, Hancock DD , Davis MA, Sheng H. Comparison of a dry hand-hygiene research and soap and water hand washing to lessen coli forms on hands in animal exhibit settings. Epidemiol Infect. 2006;134:1024–1028.
- [2] Health impact of handwashing. WELL fact sheet 2006. at: <http://www.lboro.ac.uk/well/resources/factsheets/fact-sheets htm/Handwashing>.
- [3] <https://www.instructables.com/id/DIY-Easy-NonContact-Automatic-Hand-Sanitizer- Automaticchand-sanitizer-disp>

[4] <https://www.theguardian.com/world/2020/feb/28/hand-sanitiser-or-hand-washing-which-more-effective-against-coronavirus-covid>

[5] International Journal of Engineering Research & Technology (IJERT) Published by :ISSN: 2278-0181 <http://www.ijert.org> Vol. 9 Issue 07, July-2020

