

Automatic Hand Sanitizer Using 8051 Microcontroller

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Abstract— The Hygiene and cleanliness became a crucial part of our life after the huge impact of COVID-19 pandemic time. The sanitization of our hands plays an important role in maintaining the hygiene in our fast paced lifestyle. Because of our fast paced lifestyle, the consistency of the efforts in maintaining the hygiene and cleanliness is not assured on daily basis, which creates a need of automation of this sanitization process in our lifestyle. This system proposes that automation in the process of sanitization with help of 8051 Microcontroller. The system will make sure that, due to day to day work and fast paced lifestyle the sanitization process should not be compromised. The system also proposes the backup provision by using the piezoelectric sensor assembly. This feature makes this system stand out separate from the existing systems in the market. The System can be very useful for small scale industries where human efforts or manpower can be saved in the process of maintaining the hygiene and cleanliness.

Keywords: 8051 Microcontroller, Piezoelectric Backup System, Automation

I. INTRODUCTION

This system automates the sanitization process for maintaining the effectiveness of the sanitization in our daily lifestyle.

The System uses 8051 Microcontroller for controlling the system and automate the process. The logic is programmed in the C language program which burned into 8051 Microcontroller.

The system can be used into social places like office, Colleges, Bus stand, Railway station etc.. to avoid the cross contamination of any germs or viruses due to physical contact. This system automates the sanitization process for increasing the effectiveness of the sanitization process.

The Backup provision into the system is carried out with help of Piezoelectric sensor assembly which is fitted on the surface where the user stands during the sanitization process. Which generates the analog signal of low amplitude which can be amplified and then converted into the DC signal with help of Rectifier. This rectified DC output can be used as the backup supply for the system. The system becomes very useful and commercially sustainable due to backup provision introduced into the system.

The automatic hand sanitization is better option for increasing effectiveness and awareness of the hygiene and cleanliness while behaving in our daily lifestyle. The system can help reduce the manual human efforts involved into the process of maintaining the hygiene and cleanliness.

This system can be utilized in the daily routine in various social and private places to maintain the hygiene of the particular location or area

II. IR SENSOR MODULE:



IR Sensor module used as the input sensor for the motion of human hand. This sensor gives high signal to the 8051 Microcontroller once the human hand is detected in the range of IR Sensor. The sensor plays important role in the detection of human hand for turning on the DC pump for the sanitization.

IR sensor consists of transmitter and receiver LEDs on the same module where Tx Led transmits IR light and Rx Led receives the reflected IR light when any object is detected within range of IR light.

III. BACKUP PROVISION USING PIEZOELECTRIC SENSOR:

As we know Piezoelectric materials generates the electric charge whenever the pressure / mechanical force is applied on it.

The piezoelectric tile made up of series of piezoelectric sensor is fitted on the surface where the users stands during the process of sanitization. The pressure exerted by the human body weight is applied on the piezoelectric sensor creates small amount of AC current at the output wires of piezoelectric materials.

This small amount of AC current can be amplified and then applied to rectifier to obtain DC supply which can be used as the backup for the system.

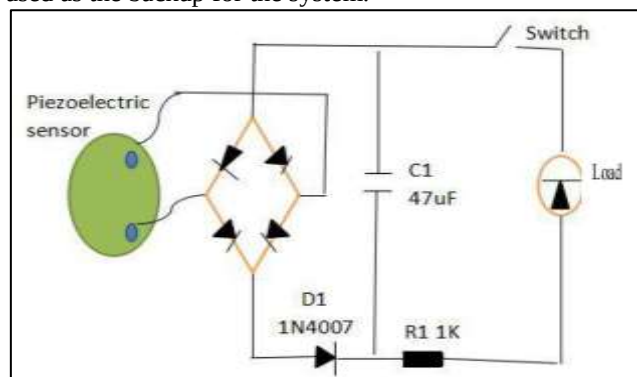


Fig. 1: Backup provision using piezoelectric sensor

IV. BLOCK DIAGRAM:

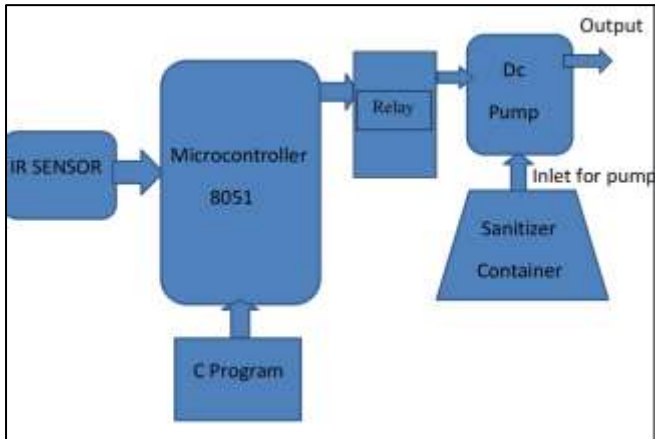


Fig. 2: Block diagram

V. WORKING PROGRESS:

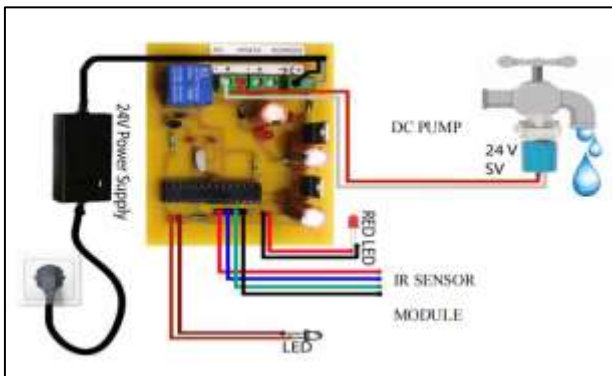


Fig. 3: Practical Assembly

VI. CONCLUSION:

This system introduces automation for the hand sanitization process in daily routine to maintain the hygiene and cleanliness effectively. The system becomes more efficient due to the backup provision using piezoelectric sensors.

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