

# Survey Paper On Water Leakage Detector And Level Sensor Using HC-SR04 Sensor

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**Abstract-** Water overflow is a common problem which leads to the wastage of water. Though there are many solutions to it like alarm system, metal rod indicator but these are not fully automatic system and are less efficient. Automatic water level sensor and controller can provide a solution to this problem. The paper deals with the survey on leakage problem. This problem is common in every household. It detects the leakage and works on it.

**Keywords-** HC-SR04 sensor, Time span, Leakage pipe, Water Pump, Arduino UNO, Switch.

## I. INTRODUCTION

Water wastage is a common problem in this era .In many places of earth there is water scarcity and thousands of people have no access to water. This system can solve the problem of water wastage which occurs through leakage and overflow. This system checks for any leakage in the water connection. If the running time of pump is more than the fixed time for filling the tank then the system will detect the leakage in the connection .This system also explains how to detect and control the water level in any tank .It checks the availability of water in the container and gives the output.

## II. OBJECTIVE

This system explains how to detect and control the water leakage and water level in any tank or any container. It checks the availability of water in the container and gives the output.

## III. PROBLEM STATEMENT

System can independently and concurrently measure water level and leakage problem in the connection. It can measure if the water level is very low or very high in the water tank.

## IV. LITERATURE SURVEY

In previous papers, there were many systems like use of [1] flip-flop, electrodes, alarm systems, floatable system which helped in detecting water level in the water tank. There were various drawbacks of these system. [2]Use of electrodes were not efficient as it causes rusting in the electrodes. similarly, alarm system was not fully automatic and hence required human help.[5]floatable devices which were used to measure water level was not accurate and not efficient.

## V. EXISTING SYSTEM

Water overflow is a common problem which leads to the wastage of water. Though there are many solutions to it like alarm system, metal rod indicator but these are not fully automatic system and are less efficient. Existing system consists of electrodes which are used to measure the level of water but after some time it becomes less efficient. Since the electrode are dipped in water for a long time rusting takes place in the rod and hence the system loses its efficiency.

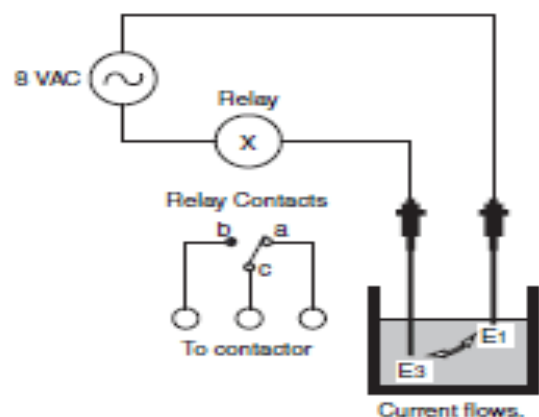


Fig1: existing system

## VI. PROPOSED SYSTEM

The working of proposed leakage and water level monitoring system as follows:

we will develop a system which will measure the time span in which the water is filled in the tank normally in a time span of 1 week .Based on that we will set a certain time span in which the water should be filled in the tank. If the water doesn't gets filled in that time span then the motor will turn off automatically. In this way the system will check for the leakage in the tank..The proposed system will also automatically detect the level of water in tank without any human help. The system will detect the water level with the help of HC-SR04 sensor and will send the input to Arduino. We will set the minimum limit of the tank. If the water level is below this limit then it will automatically turn on the motor. In same way we will set the maximum limit of the tank. If the water level is above this limit then it will turn off the motor.

Hardware:

HC-SR04 Sensor Features:

- Operating voltage: +5V
- Theoretical Measuring Distance: 2cm to 450cm
- Practical Measuring Distance: 2cm to 80cm
- Accuracy: 3mm
- Measuring angle covered: <15°
- Operating Current: <15Ma

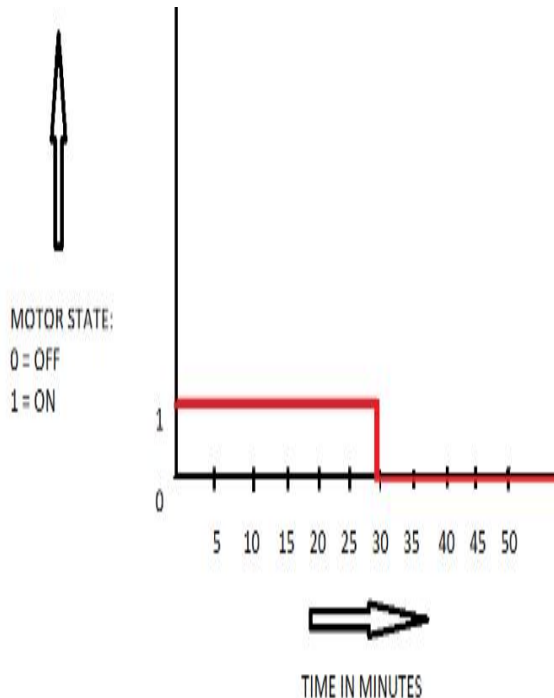


Fig 1: leakage system monitor

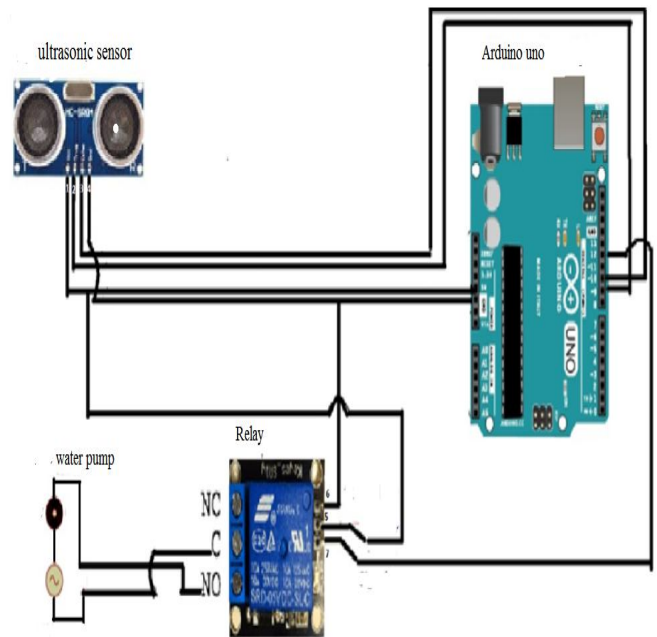


Fig 2 : water level system architecture.

1. Equations

In this project ,we will calculate the distance with the help of ultrasonic sensor .Since, the wave will once go and strike water surface and then will return back so the equation for measuring the distance is as follows:

T= approx time taken in one 1 week span.  
 $D=S*T/2$

2. Other recommendations

Ideally the system is 100%efficient. But since our system is hardware based 100% efficiency cannot be achieved .Small measurement error may arrive in system due to hardware components.

REFERENCES

[1] BezaNegashGetu ,HussainA.Attia,Department of Electrical,Electronics and communication Engineering,American University Of Ras Al Khaimah,2016  
 [2] Vlad Bande,Dan pitica, and Loan Ciascai,Applied Electronics Department, Technical University Of Cluj Napoca,Cluj Napoca,Romania,2013  
 [3] Oyandrilla Roy,Aranyak Roy,Dr.Debasis Roy,University of Engineering and management ,Kolkata India,LaMartiniere For Boys,KolkataIndia,Depart of Physics,JadavpurUniversity,Kolkata India,2014

- [4] Satie Hilmar alnajar<sup>3</sup>, R. Badlishah Ahmad <sup>4</sup>  
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- [5] S.A.M. Matiur Rahmani, Md. Abdullah Al Mamun<sup>2</sup>,  
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- [6] Stevensachio, Agustnus Noertjahyana, Resmana Lim, Inform  
ation Engineering Dept, petra Christian University  
, Electrical Engineering Dept, petra Christian  
University, 2018

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