

AUTOMATIC WATER TANK LEVEL DISPLAYER

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Abstract— The need of automatically controlled water level indicator in our water tanks is a serious demand. We therefore intend to provide solution by constructing an automatic water level displayer using arduino. This proposed system have the capability of detecting the water level periodically using an ultrasonic sensor and display the respective output effectively using a small LCD display near the motor switch. By using this simpler and cost efficient system we can save the huge amount of precious water we are wasting every day. By observing the water level we can thereby make the motor working and water usage more and more efficient.

I. INTRODUCTION

A water tank level displayer may be defined as a system by which we can get the information of water within the tank. Water tank level displayer systems are quite useful to reduce the wastage of water. The need of automatically controlled water level indicator in our water tanks is a serious demand. The amount of water we are wasting every day due to carelessness and absence of an efficient water tank system is huge. We therefore decided to implement an automatic water level detector and displayer using arduino as a solution to this issue. Using the connecting wires connections are done to arduino and other components like ultrasonic sensor etc. Using ultrasonic sensor the water level can be detected. The need of automatically controlled water level indicator in our water tanks is a serious demand. Ordinary people are facing many issues on pumping water from tank as a result the wastage of water in all houses, industries, hotels and in many other places are increasing. When water has been pumped to tank the people doesnot have any idea when the water is filled fully in tank. And some cases there will be overflow of water from the tanks.

This will results in seepage of roofs and walls and due to these overflow in tanks, wastage of energy as well as wastage of water happens and those pose a biggest threat to the development of an economy.

II. DRAWBACKS OF EXISTING SYSTEM

- Overflow Problems.
- Wastage of Energy and Water.

- Serious Attention and Observation is Required.
- During Rainy days, Overflow cant be Identified.

III. METHOD

To overcome all the above drawbacks and meet the requirements of the system, we propose a system which mainly consists of ultrasonic sensor and lcd display used with arduino system.

In fig 3.1 these data flow diagram it specifies the whole working of automatic water tank level displayer. Arduinouno is used here. Atmega 328 is the micro controller. The ultrasonic sensor will produce out a high-frequency sound pulse and then look how long it takes for the echo of the sound to reflect back. The sensor has 2 openings transmits ultrasonic waves (like a tiny speaker), the other receives them (like a tiny microphone). The actual speed of sound is 341 meters (1100 feet) per second in air. The ultrasonic sensor uses this information and the time difference between sender and the reciever, sound pulse to determine the distance to an object. To establish a good communication between human world and machine world, display units play an important role. And so they are an important part of embedded systems. The 16*2 LCD will have 32 characters in total 16 pin, 1st line and another 16 in 2nd line. The distance measured is converted to percentage level and it is displayed In the lcd display.

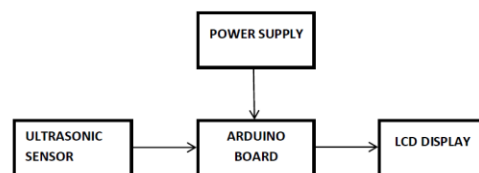


Figure 3.1 Data flow diagram

Figure 1 is the use case diagram which depicts the various design modules in the system including the user side and system side. The sensors are used in order to measure the level in the watertank. It then passes on this data to the micro controller. The micro controller has the ability to process the data and displays the particular message as per input obtained. The micro controller now displays the associated message on the LCD screen. Automatic water tank level displayer user will switch on the motor and water gets filled in the tank. Here the water level is calculated by motor tank system and from this power of tank is derived. Water level and power of the motor are displayed to User at regular intervals of time. At last when the tank become full, the system will give an alert to the user to off the motor.

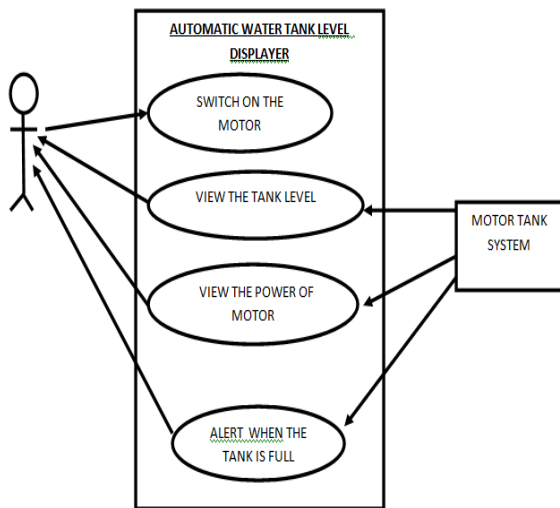


Figure 1: Use case diagram

Water is an essential source. Many people are facing difficulties due to wastage of water. As a result, we had done a survey on this basis. By analysing the difficulties of ordinary people, we had made a solution for these by introducing a new system named as automatic water tank level displayer. This system is introduced using Arduino software. Using an Arduino board, an automatic water level detector and displayer is implemented. By placing the ultrasonic sensor in the water tank's covering part, the water level can be easily obtained. The distance between the water and the tank can also be calculated. The obtained water level is processed and displayed efficiently by a small LCD monitor. This display mechanism is placed near to the motor switch in order to know the current water level. This system helps each user to come out from their difficulties like wastage of water, wastage of energy, and also from the main problem of overflow. This system is also useful in fuel tanks; it can also be used as liquid level indicators in huge containers in companies. These systems are less expensive. These systems will also reduce the wastage of electricity. These systems have a user-friendly approach

to the motor working. Thus, this system is very useful to every person.

The advantages are:

- Wastage of electricity and water can be reduced
- User-friendly approach to the motor working.
- Less expensive.
- Low power consumption
- Easy implementation

IV. RESULTS

The need of an automatically controlled water level indicator in our water tanks is a serious demand. The amount of water we are wasting every day due to carelessness and absence of an efficient water tank system is huge. We therefore decided to implement an automatic water level detector and displayer using Arduino as a solution to this issue. Using the connecting wires, connections are done to Arduino and other components like ultrasonic sensor etc. Using an ultrasonic sensor, the water level can be detected. No need to go on the roof to look at the water level. The water level will be displayed on the LCD display. Suitable for every tank. It can be used in hotels, factories, homes, apartments etc. It can be used as fuel level indicator in vehicles. It can also be used as liquid indicator in huge containers in companies. It can be used by ordinary people who face difficulties due to wastage of water. So we are introducing a new system named as automatic water tank level displayer. Atmega 328 is the micro controller. The ultrasonic sensor sends out a high-frequency sound pulse and then times how long it takes for the echo of the sound to reflect back. The sensor has 2 openings: transmits ultrasonic waves (like a tiny speaker), the other receives them (like a tiny microphone). The approximate speed of sound is 341 meters (1100 feet) per second in air. The ultrasonic sensor uses this information along with the time difference between sending and receiving the sound pulse to determine the distance to an object. To establish good communication between the human world and machine world, display units play an important role. And so they are an important part of embedded systems. The 16*2 LCD will have 32 characters in total, 16 pins, 1st line and another 16 in 2nd line. The distance measured is converted to percentage level and it is displayed in the LCD display.

V. CONCLUSION

The water level displayer employs a simple mechanism to detect and display the water level of an overhead tank or any other water containers in an LCD display. It helps in efficient utilization of water resources. Its simplicity in design and low cost make it an ideal piece of technology for common man. The main advantages of these

system is:Wastage of electricity and water can be reduced,User friendly approach to the motor working,Lessexpensive.Our system gives first priority to users problem.Thus the system is implemented using arduino software.

ACKNOWLEDGEMENT

This is an opportunity to express my sincere gratitude to all. At the very outset, we express our thanks to the Almighty god for all the blessings endowed on us.This report is submitted in regard with the project done as a part of the fifth semester curriculum, we acknowledge our Sahrdaya College of Engineering And Technology for giving us this opportunity to do our project. We would like to thank Associative Executive Director **Rev.Fr. George Pareman**,Principal**Dr. Nixon Kuruvila** for providing us with such a great opportunity.We express our wholehearted gratitude to **Prof. Krishnadas J**, H.O.D of Computer Science Department who was a source of constant inspiration and suggestions throughout the project work. We extend our sincere gratitude to our project guide **Ms.Linnet Tomy**, Assistant Professorand project coordinator **Ms.Anila Thomas**, Assistant Professor for leading the way for the completion of the Project. We would like to extend our appreciation to all other faculty members for their help and advices.

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