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WATER OVERFLOW ALARM

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Abstract : *Generally most of the houses depends upon the overhead tanks as the main source of water. People generally switch on the motor when their taps go dry and switch off the motor when the tank starts overflowing. This results in unnecessary wastage of water and sometimes non-availability of water in emergency. Some of the advantages of Automatic water level control system in overhead tanks are Automatic system replaces human intervention and provides hassle free maintenance, prevents wastage of water, efficient usage of water and energy resources.*

Keywords - *Integrated Circuit, Microcontroller, Pump, Transistor, Water level indicator.*

I. INTRODUCTION

A Water Level Indicator may be defined as a system by which we can get the information of any water reservoir. Water level indicator system is quite useful to reduce the wastage of water from any reservoir, while filling such reservoir. Water is most essential thing on earth Safe drinking water is essential to human and other life forms even though it pro vides no calories or organic nutrients.

Some observers have estimated that by 2025 more than half of the world population will be faced water-based vulnerability. The presence of water level indicator in reservoir can help control wastage and water inadequacy in such reservoir. Water level indicator is used to show level of water in an overhead tank, this keeps the user informed about the water level at all time avoids the situation of water running out when it is most needed. Indicators circuits have also alarm features. It not indicates amount of water present in overhead tank but also gives an alarm when tank is full.

Advantages of the proposed water level controller are, very less maintenance, very low cost, very simple construction and the circuit involved is also relatively simpler. It can be easily made at home. After assembling the system, what remains is to observe its operation and efficiency. This can be done by breaking down the activity of the controller from the detection of water to the working of the pump. We go over the responses obtained when water reaches the sensors and the logic employed behind it. We also try to justify how a system as simple as ours can compete with those available commercially.

II. PROBLEM DEFINITION

Sustainability of available water resource in many regions of the world is now a dominant issue. This problem is quietly related to poor water allocation, inefficient use, and lack of adequate and integrated water management. Water is commonly used for agriculture, industry, and domestic consumption. Therefore, efficient use and water monitoring are potential constraint for home or office water management system. Last few decades several monitoring systems integrated with water level detection have become accepted. Measuring water level is an essential task for government and residence perspective. In this way, it would be possible to track the actual implementation of such initiatives with integration of various controlling activities. Therefore, water controlling system implementation makes potential significance in home applications.

III. METHODOLOGY

The circuit is designed to indicate three levels of water stored in the tank: low but not empty, half and full but not overflowing. When there is no water in the tank, all the LEDs are off as an indication that the tank is completely empty. When water level increases and touches the sensor, the Red LED will glow indicating that there is water within the tank. As the water level continues to rise and reaches half the tank, Yellow LED will glow. When the water in the tank rises to full an alarm is made by the buzzer as an indication that the tank is full.

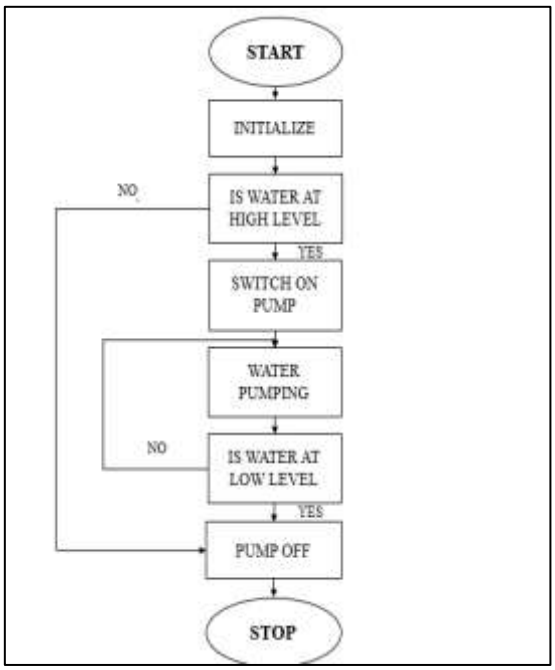

Fig 3.1: Flow chart of working of water flow alarm

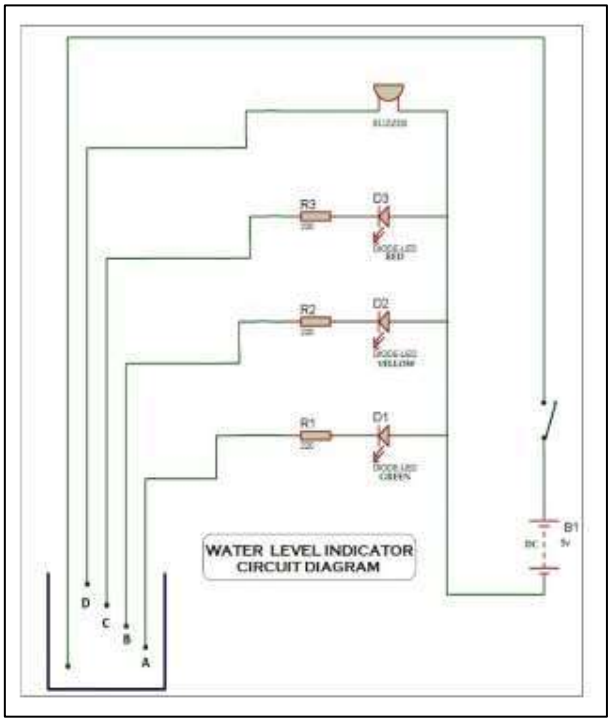

Fig 3.2: Circuit diagram of water over flow alarm

Table 3.1 Part list and cost

Parts	Quantity	Cost
Relay 12 v	1	150
1k resistors	2	50
1M resistors	2	40
Transistor bc547	1	100
Diode IN 4007	1	50
IC 555	1	150
Pump	1	100
Wire	As required	100
Circuit board	1	100
Soldering iron	1	200
Miscellaneous	-	100

IV. CONCLUSION

This type of water level controller will reduce the human interference. The power consumption of the motor and the wastage of water because of unwanted overflow can be controlled. The sensing is done by using a set of four probes which are placed at four different levels. We can conclude that this system is very beneficial in rural as well as urban areas. It helps in the efficient utilization of available water sources. If used on a large scale, it can provide a major contribution in the conservation of water for us and the future generations. In these days, when the Earth's reserve of consumable water is decreasing every moment, every drop has its value. Water level controller is a simple yet effective way to prevent wastage of water. Its simplicity in design and low-cost components make it an ideal piece of technology for the common man.

Acknowledgements

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REFERENCES

Journal Paper

[1] **Sampreeth.S.J,"International Journals of Multi-Dimensional Research"** Access International Journal, Vol. 8 Issue 5, pp 1-15, 2020.

[2] **Md Moyeed Abrar, "Design and Implementation of Astable Multivibrator using 555 Timer"** IOSR Journal of Electrical and Electronics Engineering, Vol. 12 Issue 1, pp 22-29, 2017.

[3] **MR Latte, D Prasad, "Blow-hole Defect Analysis of Cylinder Block- A Case Study"** International Journal of Engineering Research and Technology, Vol. 10 no.1, pp 601-605, 2017.

[4**] Bourdillon O Omijeh, M Ehikhamenle, Elechi Promise, "Simulated Design of Water Level Control System"** Computer Engineering and Intelligent Systems. Vol. 6 no.1, pp 30-40, 2015.

[5] **Takatoshi Takikawa, Masao Shibata, "Load Durability Performance of Small-size Power SMD Relays"** SAE International in United States, Vol. 5, pp 1-12, 2007.