

Water Level Indicator

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Abstract

The drinking water crisis in India is reaching alarming proportions. It might very soon attain the nature of global crisis. Hence, it is of extreme importance to preserve water. In home based water tank, the one problem is very common to us that the control of water level of overhead tank, as a result the wastage of water is increasing day by day. But we all know water is very precious to us. This problem can be controlled by a simple electronic circuit consists with some cheap electronic components, that circuit is called 'Water Level Indicator'. The operation of water level controller works upon the fact that water conducts electricity. So water can be used to open or close a circuit. As the water level rises or falls, different circuits in the controller send different signals. These signals are used to switch ON or switch OFF the motor pump as per our requirements.

Water Level Indicator is a simple low cost circuit. First we introduced this circuit from the web. There the circuit is made with various components like transistors (BC547, BC548) Resistors, Leds and etc. After we discussed that how to make the circuit without transistors and after we calculate that we got the result, beside we got help from our teacher about this circuit. At last we got a simple circuit without transistor and it shows result. We removed the transistors to make the circuit cheap and easy installation to all. The other liquid control circuits, which we have seen those are very critical than this circuit.

Index Terms— Commercial, Most reliable, Water Level Indicator.

1 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 provides no calories or organic nutrients.

The total amount of water available on Earth has been estimated at 1.4 billion cubic kilometers, enough to cover the planet with a layer of about 3 km. About 95% of the Earth's water is in the oceans, which is unfit for human consumption.

About 4% is locked in the polar ice caps, and the rest 1% constitutes all fresh water found in rivers, streams and lakes which is suitable for our consumption. A study estimated that a person in India consumes an average of 135 litres per day. This consumption would rise by 40% by the year 2025. This signifies the need to preserve our fresh water resources [1].

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However, 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 indicate 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 [5].

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.

2 OBJECTIVES

The following objectives are likely to be focused and achieved at the end of the project.

- 1) To make the most commercial and reliable water level controller using as less resources as possible.
- 2) To study the controller model and observe its characteristics.
- 3) To compare the controller with the conventional controllers available in market

4) To propose any ideas or improvements that can lead to future development of the controller.

3 MARKET POTENTIAL

Market Potential of this water level indicator is very high for following reason.

3.1 Simple circuit:

This water level indicator consists with a simple circuit. It is so simple to install and its so much easy to use.

3.2 Low cost

The equipments required for this circuit are readily available in the market and of very low value.

3.3 Low voltage consumption

The circuit does not need any AC auxilliary supply, it operates on DC voltage source (9 V DC). Thus it is a very low consumption circuit.

3.4 Pollution control

Process Involved in the manufacturing of this item does not have any effect on environment

4 TECHNICAL ASPECTS

4.1 Process of manufacture

A simple water level indicator can be made using resistors, LEDs, etc. For this it may be designed a water sensor by using conducting wires. In this paper we have designed the sensor to measure water up to four levels. Take 4 segments of insulated conducting wires. Tore out the ends of these wires, approximately 1cm. Adjust the length of the wire segments according to the water levels. In the following diagram it has been displayed with 4 different colours. The wire with Black colour is connected to buzzer. The wires with colours Yellow, Red, & Green are adjusted to check Level1, Level2, Level3 and Level4 respectively.

Water level indicator works through the following circuit diagram. Here this circuit is connected to 9 volt dc voltage source. The positive end of the dc source is connected to the over head water tank and the negative end of the dc source is connected the diode leds and the buzzer accordingly.

The other end of the leds are connected to the 220 ohm resistors and the resistor ends are connected to the separately to the over head water tank. The buzzer's other end is connected to the over head water tank here the resistor is not connected. One switch is connected between the positive voltage source of the circuit and the battery.

4.2 Components

Sl. No.	Name of Components	Range
1.	One Printed Circuit Board	Small size
2.	3 Led Lights (Green, Yellow, Red)	1-2 volt
3.	Dc voltage source (BATTERY)	9 volt
4.	One switch	1-10 volt
5.	Power Connector (Here Using USB)	3 - 5 volt
6.	3 resistors	220 ohm
7.	Wires	As required
8.	One Buzzer	5 - 15 volt

4.3 Schemetic Diagram

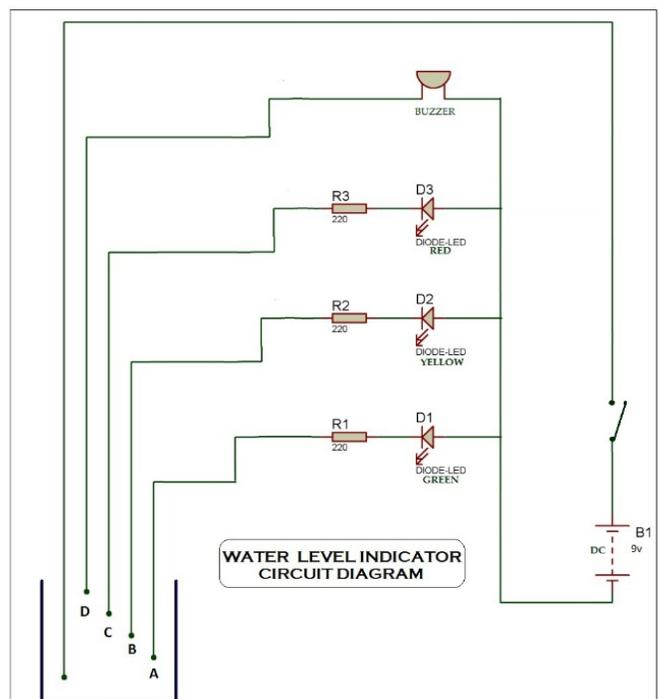


Fig.4.1 Water Level Indicator Circuit

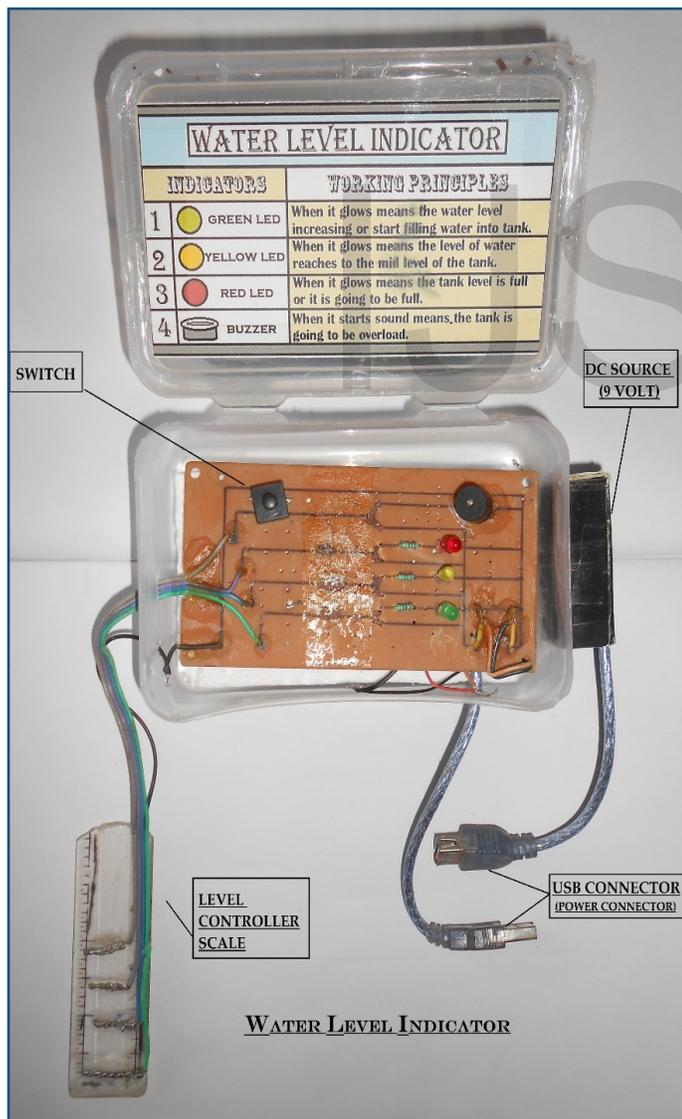
4.4 Working Principle

When the water started filling to the over head water tank then the green led glows, next when the level reaches upto the mid level of the over head water tank then yellow led glows after that the red led glows that the tank is going to be full or full at last the buzzer sounds when tank is going to be over flow.

5 APPLICATIONS

Water level Indicator can be used in Hotels, Factories, Homes, Apartments, Commercial complexes, Drainage, etc. It can be fixed for single phase motor, three phase motors, fuel level indicator in veichles.liquid level indicator in the huge container companies on the tank walls.

6 ARRENGEMENT OF PROJECT WORK



7 CONCLUSION

The water level Indicator employs a simple mechanism to detect and indicate the water level in an over head tank or any other water container. 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.

8 FUTURE WORK

In future, we want upgrade this circuit with some sensor which can automatically stop the power supply of the driving pump or motor. As a result the future circuit is not very cheaper the the present one, but we try our best to

- Make it simple,
- Easy to use,
- Easy to install,
- To make Available for all,
- Try to smaller than the present one.

As a result it can available

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“Excellence is not a destination; it is a continuous journey that never ends”

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