

Automatic Water Level Controller

Shameel K^{*1}, Rashid K M^{*2}, Mohammed Ansar^{*3}, Muhammad Basith P^{*4},
Rishad P^{*5}

**1 Faculty of Mechanical Engineering, Eranad Knowledge City Technical Campus, Manjeri, Malappuram, Kerala, India*

**2,3,4,5 Students of Mechanical Engineering (2017-2021 batch), Eranad Knowledge City Technical Campus, Manjeri, Malappuram, Kerala, India*

Corresponding Author: Shameel K

Abstract

Water is extremely valuable for the living creatures and shortage of the equivalent is bit by bit expanding. The vast majority of the urban areas in the province and that of the world are dealing with this issue. This is one of the inspirations for the ebb and flow work and to convey procedures all together to save water and help the climate which thus guarantees water for what's to come. Consequently, it is of most extreme significance to protect and save water. In various houses there exists pointless wastage of water on account of flood from overhead tanks; etc. Programmed Water Level Controller can offer a response for this issue. . Present work doesn't utilize any microcontrollers and so forth the activity of water level regulator depends on the way that water conducts power. As the water level risings or falls the recognizing tests and circuits of the controller separate something practically the same. These signs are used to kill ON or switch the siphon motor as indicated by essentials. This framework is utilized to computerize the interaction of water siphoning to overhead tank stockpiling and has the office to choose the degree of water to siphon. The intelligent circumstances utilizing electronic circuit deal with the framework. The necessary sum or volume of water can be siphoned to the overhead tank by picking level selector dissimilar to sitting tight for the total filling in the traditional circuits.

Keywords: *Water sensing circuit, Logic circuit, Timer circuit*

Date of Submission: 09-06-2021

Date of acceptance: 23-06-2021

I. INTRODUCTION

Individuals for the most part switch on the siphon when their taps go get and switch dries the siphon when the overhead tank begins spilling over. This outcomes in the pointless wastage and in some cases non accessibility of water on account of crisis. The venture "programmed water level control with a programmed siphon control framework" is configuration to screen the degree of fluid in the tank. The framework has a programmed siphoning framework connected to it to top off the tank once the fluid gets to the lower limit, while offing the siphon once the fluid gets to the higher edge. Supportability of accessible water asset in many explanation of the word is currently a predominant issue. This issue is watchfully related to vulnerable water partition, inefficient use, and nonattendance of acceptable and facilitated water the board. Water is commonly used for developing, industry, and neighborhood use. In this manner, effective use and water checking are ordinary need for home or office water the board framework. Water is generally utilize This water level control, controls screen and keep up the water level in the overhead tank and guarantees the ceaseless progression of water nonstop without the pressure of going to turn the siphon ON or OFF along these lines saving time, energy, water, and keep the siphon from workaholic behavior Besides this, fluid level control frameworks are generally utilized for observing of fluid levels in repositories, storehouses. Legitimate observing is expected to guarantee water maintainability is really being reached with dispensing connected to detecting and computerization.

1.1 Special features

- Compared to other AWLC (Automatic water level controller), Our system has more durability, because it gives pulsating signal to the sensors. This will decrease the rate of accumulation of slushes
- In our system when the level of water in the well decreases, the system gets OFF, and it will check the water presence in a time period of about 1 to 1 and half hours. If the presence of water is there the system gets ON (Regeneration time factor).
- In order to protect our motor, when the voltage variation occurs the system gets make alarm and gets OFF.
- Also it will give stabilization to the motor. That is why there is no need of external stabilization.

- Our circuit is a unique circuit.
- It an analog circuit, hence more durability.
- When the level of water in the well decreases, our system will gets OFF, In order to protect the motor.

II. COMPONENT SELECTION

- Transformer
- LED (Light Emitting Diode)
- Resistor
- Capacitor
- Transistor
- Buzzer

2.1 Transformer

A middle tapped advance down transformer is utilized to give an appropriate voltage to the full-wave rectifier. We explicitly chose this transformer with the goal that the gadget could be associated straightforwardly to the divider outlet. Additionally the middle tapping assists us with creating a positive extremity voltage needed for the circuit (12v).



Figure 1: Centre-Tap Step down Transformer

2.2 LED (Light Emitting Diode)

It is a light emitting diode, it emit light when current passing through it. Here, we are used 5 LED

| Mode | LED indication |
|-----------|----------------|
| Power ON | Red |
| Automatic | White |
| Manual | Yellow |
| High tank | Green |
| Dry Run | Red |

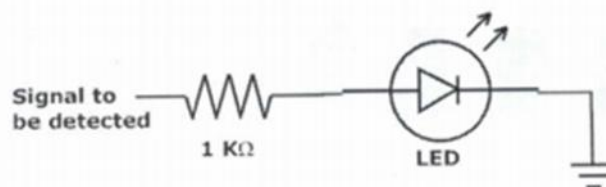


Figure 2: Light Emitting Diode

2.3 Resistor

A resistor is a passive electrical component which helps to control electrical resistance in a electrical circuit. Also resistors used to reduce current flow, adjust signal level. Generally 2 types of resistors are available now days. Fixed resistors and variable resistors. Fixed resistors have resistance that only change with temperature. While variable resistors are used to adjust circuit elements.



Figure 3: Resistor

2.4 Capacitor

A capacitor is a device used to store electrical energy. The types of down to earth capacitors change broadly, yet all contain finally two electrical transmitters (plates) isolated by a dielectric (for example cover). An ideal capacitor is portrayed by a solitary consistent incentive for its capacitance. Capacitance is communicated as the proportion of the electric charge Q on every conduit to the expected distinction v between them.



Figure 4: Capacitor

2.5 Transistor

Transistors are semiconductor devices used to amplify electronic signals. Generally a transistor have 3 terminal for external circuit. Here we uses BC548 transistor.

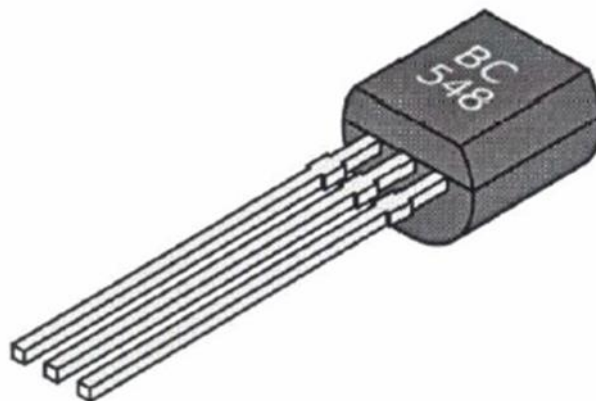


Figure 5: Transistor

2.6 Buzzer

Buzzer or beeper is a small component used to get sound to our system. It is very small and having 2 legs. Buzzer are also uses for alarm purpose.



Figure 6: Buzzer

III. WORKING

In our project have a main circuit known as mother circuit. This mother circuit is a combination of 5 sub circuits. Those are

- **Water sensing circuit:** It is the amplifier circuit. Which amplify low voltage in to high voltage, This amplifying is done when the base of the sensor got active.
- **Voltage regulating circuit:** It regulates constant voltage supply to the mother circuit. Also it informs voltage variation to the mother circuit.
- **Logic circuit:** It controls entire water level system.
- **Rectifier circuit:** This circuit is used to convert AC voltage in to DC voltage.
- **Timer circuit:** The main function of this circuit is to control time. Which also enable dry run protection
When the water level in the tank reaches minimum level, the controller device starts the water pump motor allowing water to flow to the tank.

After reaching the maximum level of the water tank, the device turn off the water pump motor. If the water in the resources is empty, the supply to the motor is cut to prevent motor burnout.

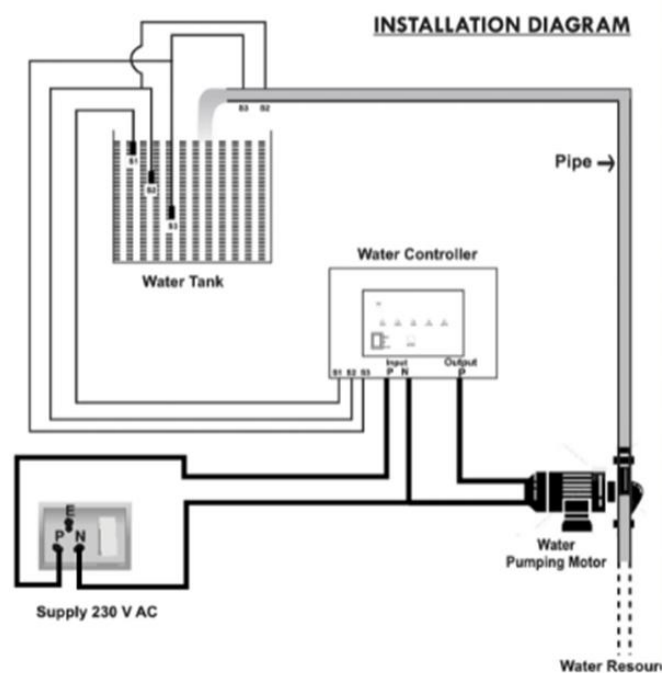


Figure 7: Installation Diagram

IV. RESULT

The programmed water level regulator has been effectively planned and created. The sub siphon is killed and on as per the water levels. Contrasted with other ordinary strategies, the programmed water level regulator shows brilliant execution with its solid innovation and it is less expensive and strong. The programmed water level regulator is a promising regulator as far as framework reaction in water level control as for the non-linearity presented by siphons and sensors. The exploratory model was made by the circuit graph and the outcomes were true to form.

V. ADVANTAGES

5.1 Advantages

- Automatic water level regulator has low upkeep.
- Automatic water level regulator has minimal and exquisite plan.
- Automatic water level regulator is completely programmed.
- Automatic water level regulator with its exact working saves water and the engine energy.
- Automatic water level regulator stays away from the leakage of dividers and rooftops when the tank floods.
- Automatic water level regulator is ideal as it is hard to get to overhead tanks.
- Automatic water level regulator has safe activity of engine/siphon inside admissible voltage limits.

VI. CONCLUSION

In nowadays, when Earth's save of consumable water is diminishing each second, every drop has its worth. Water level regulator is a basic yet powerful approach to forestall wastage of water. Its straightforwardness in plan and minimal expense parts make it an ideal piece of innovation for the everyday person. In this way the programmed water level regulator is a major help as worried about the house hold applications just as other water saving purposes including farming area and enterprises. In view of the overview result, it is tracked down that the programmed water level regulator has a rising interest and it is a decent resource from the hardware viewpoint. Thus we reason that-□ this framework is advantageous in provincial just as metropolitan regions. □ It helps in the proficient usage of accessible water sources. □ If utilized for a huge scope, it can give a significant commitment in the preservation of water for us and the people in the future.

ACKNOWLEDGMENT

We would remember with grateful appreciation, the encouragement and support rendered by Dr. Vince Paul, Principal, Eranad Knowledge City, Manjeri. We express our deepest sense of gratitude to Mr. Fazludheen Chemmala, Professor and Head, Department of Mechanical Engineering and Mr. Shameel K, Assistant Professor and Project Coordinator, Department of Mechanical Engineering for their valuable advice and guidance. We would always oblige for the helping hands of all other staff members of the department and all our friends and well-wishers, who directly or indirectly contributed in this venture. Last but not least, we are indebted to God Almighty for being the guiding light throughout this project and helped us to complete the same within the stipulated time

REFERENCE

- [1]. [www'. electrmioshnb.org](http://www.electrmioshnb.org)
- [2]. P.S Bimbhra," Power Electronics", Kha nna Publication.
- [3]. S. M. Khaled Reza., Shah Ahsanuzzaman Md. Tariq., and S.M. Mohsin Reza., "Microcontroller Based Automated Water Level Sensing and Controlling: Design and Implementation Issue", Proceedings of the World Congress on Engineering and Computer Science, Vol 1, pp.1-7, 2010.
- [4]. Ning An; Sch. of Mechanical engineering, Hubei polytechnic. University, Wuhan, China; Yu An. "A water level controller for greenhouse sump tank", Mechanic Automation and control Engineering (MACE), 2011 second International conference, Hohhot.
- [5]. Bird John (2010),Electrical Electronics Principles and Technology".
- [6]. Rex Niedermeyer *Aquarium water Pump'.