SMART WATER PUMP

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Abstract— **With water being one of the many important natural resources. Seldom, for regular use water is wasted on a large quantity. Causing water shortage. Making, it imperative to handle water responsibly. Since, water is wasted because surplus flow of water into storage units. Monitoring Level of water becomes crucial. Water being stored into storage tanks of factories; it becomes important to monitor the level of water that flows inside the storage unit and the amount of water that moves out. As water decides the overall heath of the bio-diversity around us. With this system proposal we want to focus on water level and quality monitoring.**

Keywords— **Water level, Ultrasonic Proximity sensor, Turbidity, Smart Water Pump.**

I. INTRODUCTION

As every one can agree upon, that water is an important element in everyone's lives. Everyone's routine includes usage of water. The most basic need to survive, everyone's day start with water. It is observed that general households use overhead tanks as a preventive measure from various stuff. To protect it from pest infestation to surplus growth of algae. In these tanks, the stored level of water is however not monitored leading to people forgetting to turn the motor off which pumps the water. This inevitably wastes water and the root cause to water shortage. Hence, it becomes crucial for us to mitigate these issues and find a solution which can prevent the motor from keep on flowing water. With the applications of this project in several avenues such as Tidal studies, Surface water monitoring, River level monitoring, etc. The main goal of this paper is to review water level and its quality.

II. REVIEW OF LITERATURE

In an analytical have a look at carried out with the aid of using the Delhi Committee of the Associated Chambers of Commerce and Industry of India (ASSOCHAM), it's been discovered that there was a widespread increase within side the wastage of water because of severe reasons. According to ASSOCHAM, the proportion of water wasted has been multiplied to an alarming 40% compared to the preceding year. On February 11, 2018 the British Broadcasting Corporation (BBC) positioned Bengaluru on a listing of eleven essential towns in the contemporary-day generation having most water associated problems. The BBC blames a spike in population boom and new assets developments, Bengaluru's conflict to control its water and sewage systems, and a huge waste of consuming water because of negative plumbing. Also, many villages withinside the indoors of Maharashtra and lots of different states are going through essential water scarcity because of drought and water deliver mismanagement. Our device is an initiative to assist shrink or as a minimum lessen those water wastage and shortage problems at some point of the nation.

III. CIRCUIT AND COMPONENTS

To automate the method, we've created a complex circuit to keep away from any failure of the system. We have used Ultrasonic Proximity sensor as a number one decider whether or not to permit water flow or not that is similarly depending on the turbidity detector that detects the quality of the water. This method of every sensor depending on different sensor to intelligently make choice primarily based totally on it's surrounding, adds a further protection layer, through doing so we similarly enhance the performance of the system, and its

versatility to preserve changing in line with its surrounding. Designing such tricky circuit and providing software program to seamlessly adapt to surroundings is finished here.
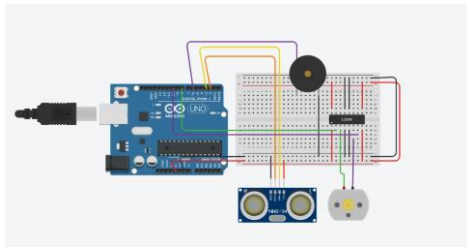

FIg.1 Circuit diagram of the system

A. Ultrasonic Proximity sensor:

Ultrasonic Proximity sensor is a very useful and effective sensor to measure the distance to an object. The simplicity it offers provides an amazing output. From 2 centimeters to 400 centimeters, or 1 inch to 13 feet. Sharp rangefinders are impaired by sunlight and black content, but this one isn't. Ultrasonic sensor is the primary decider whether the motor will open or close this is done by monitoring the water level Ultrasonic sensor will trigger the motor to run when it detects water is below the minimum level and starts the flow of water. As soon as water reaches the maximum point the motor stops the flow of water.

B. Turbidity Sensor:

The quality of water can be detected by using a unique sensor such as the turbidity sensor. The turbidity sensor detects the purity of water or the quality of water by measuring the impurities in the liquid. This is called as the total suspended solids. Whenever there is an increase in these solids, the sensor detects this as impurities and shows the user. You can adjust the range of the turbidity sensor to a specific limit. This sensor can be used in various places where liquid quality is of utmost importance. In our project we use this to check the quality of the water.

C. Arduino Uno:

Uno is a microcontroller board developed by Arduino.cc which is an open-source electronics platform mainly based on AVR microcontroller Atmega328. It is a unique microcontroller which acts as n 8-bit ATmega328P microcontroller. The Arduino Uno comes with USB interface, 6 analog input pins, 14 I/O digital ports that are used to connect with external electronic circuits. Out of 14 I/O ports, 6 pins can be used for PWM output. It allows the designers to control and sense the external electronic devices in the real world. It is an open-source platform, means the boards and software are readily available and anyone can modify and optimize the boards for better functionality. The software used for Arduino devices is called IDE (Integrated Development Environment) which is free to use and required some basic skills to learn it. It can be programmed using C and C++ language.

D. Piezo Sensor:

Piezoelectric transducers are electroacoustic transducers that convert strain or mechanical pressure into an alternating electric power. It's used to calculate physical portions that aren't strictly measurable, consisting of force, strain, tension, and so on. When water is flowing or not a legitimate alarm is located so it is able to warn the user that the system has completed its process and the tank is full

E. DC motor:

A direct current or DC motor, converts electrical energy into mechanical energy. It is one of two basic types of motors: the other type is the alternating current or AC motor. Among DC motors, there are shunt-wound, series-wound, compound-wound and permanent magnet motors. A DC motor consists of a stator, an armature, a rotor and a commutator with brushes. Opposite polarity between the two magnetic fields inside the motor cause it to turn. DC motors are the simplest type of motor and are used in household appliances, such as electric razors, and in electric windows in cars.
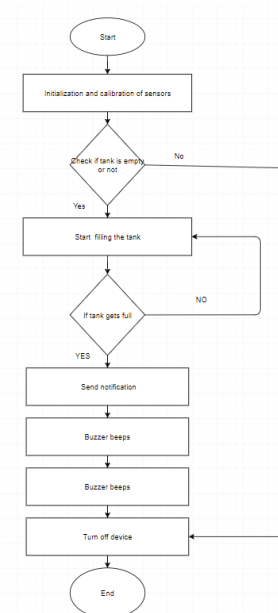
IV. CONNECTIONS AND WORKING

Fig.2 Flowchart of the System

V. CONCLUSION

As we can see the project can reduce the incessant wastage of water and it can be seen that water can be saved on a large scale. The projects also display unique and correct results. As the whole process is automated it can be seen that, with the introduction of technology there won't be a need for human intervention, hence keeping the error rate of human mistakes to a minimum. With the use of wide range of sensors, it can be observed that water which is pumped is clear and not wasted. Which is done swiftly without and error and accurately. As these sensors are cost effective it can perform as a to have gadget which can be hooked up in rural areas where the problem lies predominately.

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