# Measuring the Quality of Water using Ph Sensor and Filling Automatically Into Bottles

**Aswin Kumer S V,SaiRam N L S P,Pavan B,Guru Sai Teja C,Arun KumarS**

*Abstract: Automatic monitoring and regulation of the water quality allows for the design of the process. This technology uses the engine-based water motor ON / OFF remotely. This indicates the pH sensor and when it is at the water quality level is neutral than water pump is automatically filling the water; the pump is gradually triggered to refill the Bottle. Whenever the Bottle is filled to its maximum potential, the pump is contra-energized gradually. Many circuits were fitted together to ensure the right operation of this design and the diagram involves the power unit, the Arduino (micro-controller unit), the sensor system, the monitor unit and the motor drive device. The power unit is responsible for switching on the whole circuit. Some components are used to set up and include a power unit; a 12v step down transformer, a smoothing capacitor and an IC voltage regulator. The microcontroller (ATmega328) controls absolutely all of the actions carried out in this functionality. The sensor module is for detecting the water quality as well as transferring the Present position of the water to the microcontroller or Arduino. The Control device in the circuit is used to actually fire.*

*Keywords: Arduino Uno Microcontroller),pH sensor, Water motor, LCD, solenoid valve, Stepper motor.*

## I. INTRODUCTION

We will process a novel use of Arduino-based sensor for programmed water tank filling in this study. A programmed water tank filling prototype will be built using the Arduino microcontroller. Water siphon is a tool used to fill a a tank with water to siphon the groundwater. The different models of water siphon were used right now. It is possible to work the primary version, the water siphon by physically destroying and turning the system on. On the other design, a floating ball made the water siphon as a physical tap when a tank was filled

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by the water. Nonetheless, due to design, a few flaws can be identified. In view of the fact that the water siphon can not turn on and therefore naturally turn off, the physically operating water siphon is not proficient, efficient use and water control are possible limitations for the water management system in the home or office. In addition, the traditional method of level control for home appliances. This water motor regulate, tracks and maintains the water levels in the overhead tank and ensures continuous water flow throughout the clock without the pressure of turning the pump ON or OFF, thereby saving time, power, water and preventing overwork. In addition, fluid level control systems in reservoirs, silos are commonly used to track liquid levels. Proper monitoring is needed to ensure that water conservation is actually achieved with sensing and automation related disbursement, such a programmatic approach requires microcontroller-based automated water level sensing and system control.

## II. LITERATURE REVIEW

This study presents a real time GSM based water quality assessment method. The program is very versatile and cost effective. It's a phone in real time tests and sends multiple water related parameters to the control center. The device will automatically control the quality of the water and it is cost-effective and does not require people on duty. There is some consistency in the process.it is a flexible device ,because of which you can use the device to measure some other water parameters. The method is reliable and easy to maintain and can be used for monitoring water pollution as well. Through making productive use of the proposed system, you can save time and also reduce costs. To produce more effectively, reliable results, the efficiency of the water quality monitoring system can be improved. Through adding various sensors for calculating dissolved oxygen, chemical demand for oxygen, biochemical demand for oxygen, ammonia nitrogen, nitrate, phosphate, the number of sensing parameters can be can be increased. The network of wireless sensors can also update the device. To track growth of hydrology, air pollution, industrial and agriculture, etc. The network can be extended.it has a common importance for implementation and extension. Research can be continued to include regulating water supply. It displays the SMS with the text warning and the value of the parameter. The approved person will receive a warning message based on the parameters sensed by the different sensors and will therefore take the necessary action to prevent or regulate the level of pollution. Our project designing, developing, controlling" Automatic Water Filling System using Arduino".

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This work offers many benefits such as lower consumption low operating costless testing, reliability and much more. This project is based on industrial automation and is a huge technology that is used in many sectors such as dairy industry, chemicals, milk, water and many industrial producer. To demonstrate the design.

A prototype was created. This project's was to create a bottle filling system based on requirements. The project presents an Arduino controlled automatic filling system based on the filling specification that is simple to operate. The benefits of the process are easy design and efficient operation. Arduino is controlling the process. This has been introduced successfully. We find it project to be a journey where we gained information and also gained some insight into the subject that we discussed in this study. Through adding jet nozzle and strong solenoid value, bottle filling time can be reduced and efficiency can be improved efficiently. In the case of motion, a reference way could be used. It was also possible to introduce a capping section. Further care and attention must be given to the placement of the nozzle. The process could be redesigned to increase the size and efficiency of the tank.
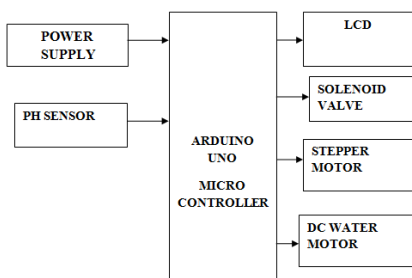
## III. PROPOSED MODEL



**Fig..1: HardWare Block Diagram**

### IV.SYSTEM OVERVIEW

#### A. Micro controller

This component is the control device of the entire project. This segment basically consists of a microcontroller through its correlated through its correlated circuitry such as precious stone with Condenser, rest circuitry, pull-up resistors along with occurrence accordingly. The microcontroller is the center of the project as it controls the equipment interfacing and interacts with the machines according to the program being developed.
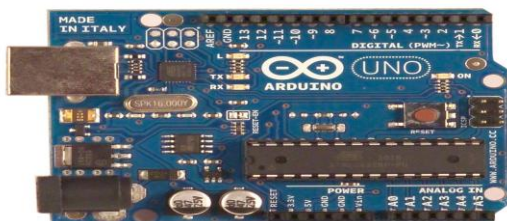


Fig.2: Arduino Uno

#### B. Power Supply Unit

A step down transformer is supplied from the primary supply panel with a 230v, 50Hz ac signal .The transformer is chosen for its output range from 10v to 12v. Thus the primary role as concerns the supply of influence is to provide the necessary

power for judgment families, which is a supply output controlled by + 5v.5v can be displayed as below. Obviously, the dominance deliver entity example of the 230v ac power is connected to transformer, which typically has several swell or ac power variants that were originally filtered by a straightforward capacitive filter. This dc participation canister is worn by a supervisor path headed to provide a managed voltage that not only has a lot o ripple voltage. In order to obtain this voltage regulation, an integer of sufficient energy rolling IC devices is typically used as solitary.

#### C. Liquid-crystal display (LCD)

It is a flat panel displays that uses the properties of liquid crystals to modulate light. Water crystals do not emit directly. LCDs are used to show random objects or static images that can be shown or concealed in a digital clock, such as per set words, numbers and 7-segment displays.



**Fig.3: LCD display**

#### D. DC water Motor

If the gauge reads 0 – 20 psi then search in the electrical box for a well or water pump breaker to see if the valve is turned on. The well pumps are weak or if the breaker is tripped. The wire will be shortened to the ground. If the pressure gage is used, You may have a blocked water filter reads 40+ psi.



**Fig.4: Dc motor**

#### E. pH Sensor

pH sensor is the equipment, which is used to measure the pH value of the water or any liquid ranges from 0 to 14. If the pH value ranging from 0 to 7 are acidic solutions with a high concentration of hydrogen ions, whereas solutions with pH ranging from 8 to 14 are simple solutions with a low concentration of hydrogen. The pH valve solutions of 7 are positive solutions.
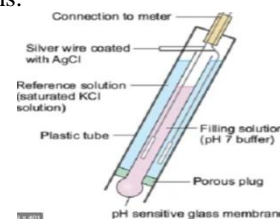


**Fig.5:pH sensor**

#### F. Solenoid valve

Solenoid valve is a control device that either shuts down or enables fluid flow when electrically operated or de-energized. The actuator is an electromagnet in shape. When energized, a magnetic filed builds up that pulls against a spring's motion a plunger or pivoting armature.

#### G. Stepper motor

Stepping motors can be perceived as electrical motors without a switch. Usually, both windings are part of the stator, and the rotor is either a permanent magnet or a block of magnetically soft material for variable reluctance engines. The motor controller has to handle all the switches externally, and typically the motors and controllers are designed to hold and rotate the motor in any position there's one way or another. Most steppers, can be stepped at audio frequencies, as they are also called, allowing them to spin very quickly and can be started and stopped at controlled orientations with an appropriate controller.
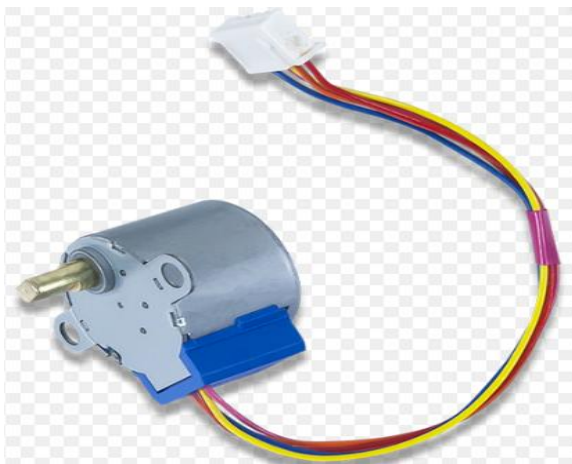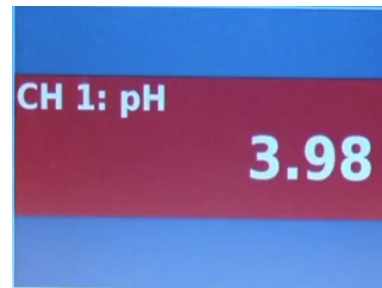


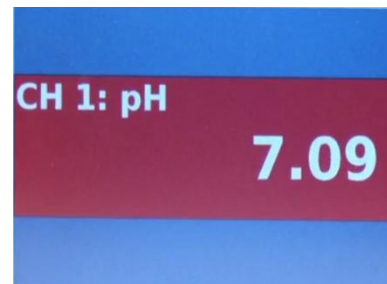**Fig.6:Stepper motor**

## IV. RESULTS ANALYSIS



**Fig.7:Testing the solution using pH sensor**



**Fig.8: Implementation Setup**



**Fig.9:Extremely acidic**



**Fig.10:Neutral**



**Fig.11:Very strongly alkaline**

## V. CONCLUSION

Automation provides the water bottle with automated operation to control the water level of the water motor. This system was designed to be very simple to use and to be more reliable to operate, this system uses automation to prove the domestic application and industrial application to use water and power more efficiently. The automated water tank filling system has been successfully built. The new system is ideal for home use, leading to a reduction in energy usage due to water pills. It can also help individuals analyze water consumption. Because of the manual switch and the floating ball top to avoid filling the bath, the prototype can be suggested.

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