

Water Unit Control System

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Abstract:- A smart water measuring system has been designed and constructed to get the desired volume of water from the storage. This can be mainly used for industrial, beverage industries laboratory purposes, in large scale industries, house tank etc.

Our project takes over the task of manual filling of liquid in small industries, laboratories. There by reducing the chances of human errors and wastage of any liquid due to spill or overflow. The our project is also giving these benefits –

- We can get the exact volume of the liquid as needed.
- Saving in water cost and energy conservation. This circuit finds wide applications in our industries. The primary objective of our system is to develop a user-friendly system and the second objectives is to design the system to minimize the worker and operation cost.

Keywords:- Microcontroller, Water Flow Sensors, Relay, 16*2 LCD , 4*3 Keypad, Water pump, I2C Module

I. INTRODUCTION

The earth's surface is covered 71 % of water. Water is vital for all living things on the earth. Though the rate of population growth will greatly affect the increasing need for clean water. One effort to prevent water vulnerability is to save water using **water unit controller system**. A water unit controller system is a type of system that is used to automatically fill water containers, such as tanks, reservoirs, or bottles. This study aims to develop Water unit controller or Water unit controller using matrix keyboard to get the desired volume of water from the storage. This system can be used in various applications such as industrial, agriculture and domestic use. There by reducing the chances of human errors and wastage of water and any liquid due to spill or overflow.

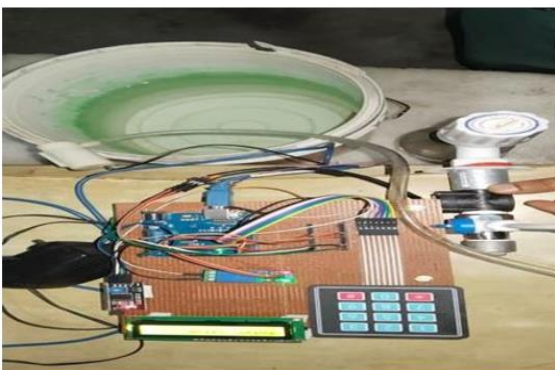


Fig 1 Circuit of Smart Measuring System

II. METHODOLOGY

In this project we research and go through that what are the components which is necessary for the development of the project are DC water pump(5-12volt), I2C Module, LCD Display, Water Flow Sensor, Relay, 4*3 Matrix Keypad, Arduino UNO, Water Tap, Fluid pipe, Male Female Jumper Wires.

Here we use Arduino UNO, which is low-cost general-purpose microcontroller running on atmega328p Chip.

In this water level controller will use mainly two components the water flow sensor and relay module. The motor to turn off and on needs to be specified. There is a program that executes the sensor via Arduino uno. Through relay we will start the whole process of this project; relay states that switching process of this project.

We use Arduino Uno and water flow sensor the sensor can be used for the count of water flow rate and using flow rate of water flow sensor we can easily calculate the amount of the water, it is a simple sensor that tells the amount of water by using some calculation of flow rate which is written below

Flow Rate = ((1000.0 / (millis () - oldTime)) * pulseCount) / calibrationFactor

Later, the Arduino Uno interprets as some digital value, and 16* 2 LCD displays the amount of water and the flow rate of water on screen which can be done using Arduino Uno command and programming the point to be noted here is that, we need to download LiquidCrystalI2C.h for 16*2 LCD display, Keypad.h for keypad functioning and wire.h for the I2C protocol communication, library file for Arduino IDE to execute these. The motor is also given manual control, when the water level is full, it will be stop automatically. The motor is turned on via a relay, the motor also stops pumping whenever the water level reaches the same amount of water which is showed on LCD display less manpower required. If the industry can produce the product within the required range, then the demand of the product will be increased. So, the company will be benefited.

III. RESULT

Every day, we waste water in our homes, restaurant, hotels etc. as well. Our finding is helpful to better understand the development process of water – saving standards. We have successfully completed our project. The water controller provided desired volume of the water. In result analysis we after uploading the code to the Arduino

uno board, the project is ready for testing. Power the supply entire circuit with supply or using USB port of Arduino uno.

The set volume option appears on the LCD screen. We need to input the water quantity using the 4x3 matrix keypad. After entering the volume, press the start button the water will start dispersing. Once the filling is done, the relay disconnects the water pump, and hence the water dispersing is stops. The water controller project has a lot of applications in industries.

IV. CONCLUSION

The water controller or water controller using matrix keypad concept was successfully implemented and studied various observations were taken which closely resembled the actual volume to be filled. The water controller system was beneficial in reducing the wastage of water, time, and work. The fabricated model of water controller using matrix keypad can be used where high precision is not necessary and time limits not bound. Hence it must be used application and it is mainly used in industries for filling large amount of liquids.

We have successfully achieved our objective that is water controller using matrix keypad.

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