IOT Based Smart Water Pump Switch

Sumesh Chandran |Reneesh Zacharia | Sajana Sajith | Sreeja K S | Anandhu Krishnan P

Department of ECE, Mangalam College of Engineering, Ettumanoor, Kerala, India

To Cite this Article

Sumesh Chandran, Reneesh Zacharia, Sajana Sajith, Sreeja K S and Anandhu Krishnan P. IOT Based Smart Water Pump Switch. International Journal for Modern Trends in Science and Technology 2022, 8(S09), pp. 44-46. https://doi.org/10.46501/IJMTST08S0911

Article Info

ABSTRACT

The world population is increasing day by day, so demands for the resources like water and food also increases because these are the basic need for the people. People need the water for their daily uses. Even through your earth is covered mostly of water but it is not useful for humans to use. There is less amount of water that is useful. To save the water without wasting it. To reduce the water from wasting this is designed an automated switch that can automatically on and off the device. When the tan is full of water, these reduce the overflow of water; it uses IOT to make these processes automated. The water level is divided into three levels, Low Medium and High. When the water level is high the tank will automatically turn off and the motor of the vertical farm will be on. At the same time check the moisture of the garden and the motor will be on only if the plants need water. When the water used becomes medium the motor of the garden purpose will be turned off and the tank will be filed this process will continue. It help to reduce human effort and prevent wastage of water to some extent and also saves electricity

KEYWORDS: Arduino, IOT, HumiditySensor, Moisture Sensor

1. INTRODUCTION

People sometimes forgets to turn the motor on and off due to human negligence. As a result, electricity and water are wasted excessively. Using this hardware device which uses IOT. The water and electric resources can be saved. Time is running out and water is being poured on the crop,making it impossible to do other work. Therefore, this project reduces human consumption and provides automatic pumping system. The aim of this project is to reduce human effort and prevent wastage of water and electricity

2. LITERATURE SURVEY

In this paper water level monitoring system using IOT by [1]. One of the major problems faced by most of the countries is the issue of water scarcity in the world and wastage during transmission has been identified as a major culprit; this is one of the motivations for this research, to deploy computing techniques in creating a barrier to wastage in order to not only provide more financial gains and help the environment as well as the water cycle which in turn ensures that we save water for our future. The IOT based Water Level Monitoring system is an innovative system which will inform the users about the level of liquid and will prevent it from overflowing. This system helps to prevent the wastage of water by informing about the liquid levels of the containers.

In this paper IOT based monitoring system in smart agriculture by[2].Smart farming is an emerging concept, because IoT sensors capable of providing information about their agriculture fields. The paper aims making use of evolving technology i.e., IoT and smart agriculture using automation. Monitoring

environmental factors is the major factor to improve the yield of the efficient crops. The feature of this paper includes monitoring temperature and humidity in agricultural field through sensors using CC3200 single chip. Camera is interfaced with CC3200 to capture images and send that picture through MMS to farmers mobile using WiFi.

In this paper real time water quality monitoring system using IOT by[3]. The conventional method of testing water quality is to gather samples of water manually and send them to the lab to test and analyze. This method is time consuming, wastage of man power, and not economical. This system checks the quality of water in real time through various sensors (one for each parameter: pH, conductivity, temperature) to measure the quality of water. This system can keep a strict check on the pollution of the water resources and be able to provide an environment for safe drinking water.

In this paper IOT and GSM based solar operated water pump system by [4].The paper is to provide solar operated water pump which is controlled by IOT and GSM. This minimizes the human effort (Farmer) in the remote places. The users which mean the farmer can control the all operations through his mobile devices. The whole water pump is operated through the IOT and GSM and Electricity is supplied to water pump is through solar system. The IOT and GSM discussed in this paper is used in our project as the basic part of our smart switch.

In this paper solar water pump for vegetable field under the climate condition in Bangladesh by [5]. A Solar water pump has been used for vegetable field under the climate conditions in Bangladesh. The solar cell which has been used for this water pump the I-V characteristics of those solar cells has been studied. The variation of fill factor (FF) and the conversion efficiency have been observed in this Research work. The Method used to produce solar water pump can be used in our project as an alternative. The use of electricity is reduced and eco-friendly Method. And the limitations are on the intensity of sunlight received in particular region.

In this paper IOT based waste collection management system for smart cities by [6].This paper smart bin is built on a microcontroller-based platform Raspberry pi Uno board which is interfaced with GSM modern and ultrasonic sensor and also the weight sensor which is used for calculating the weight of the dustbins. The weight sensor is placed at the top of the dustbin which will read the status of the dustbin. The threshold limit is set as 10 cm. Raspberry will be programmed is such a way that when the dustbin is being filled the remaining height from the threshold height will be displayed. And the technology relevant to our project Is during this paper we have tendency to inspire the technology used is smart cities and internet of things enabled system design

2. PROPOSED SYSTEM
**Conceptual block diagram of the project**
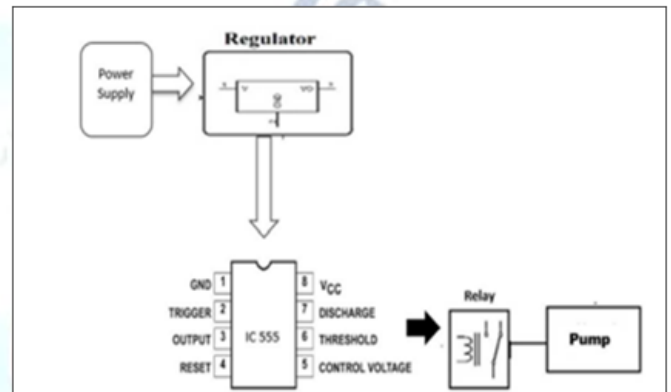
CIRCUIT DIAGRAM
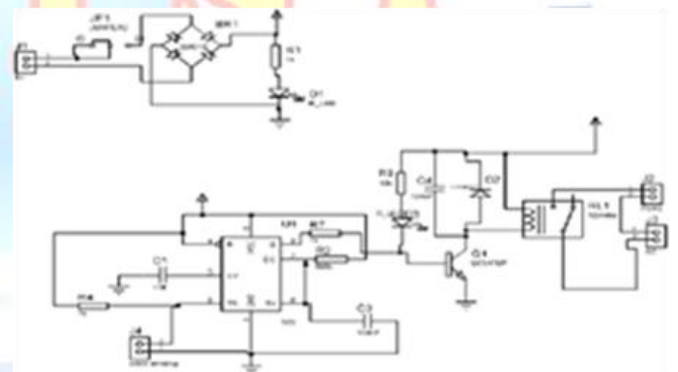
This is A IOT device that sends the signal without any wire contact. This device is designed using sensors that can sense and send the signal to the device from the tank to the hardware. Now a day's people are busy with their works and forgot to switch on and off the motor for the tanks. This device [11] helps a lot for the people this is fully automated that works using IOT. As the future is concerned this can be widely used for household purpose. This contains hardware component which works on electricity, but these do not consume [12] ah huge amount of power supply that why it is easy to maintain. The hardware architecture is built in a way that there is no scope for the circuit breakdown as shown in figure 2 because it contains the regulator and diode. This component keeps the circuit from unstable

electricity from the power input.

FLOW CHART
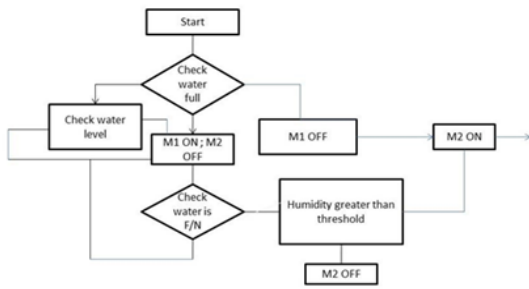
When we start the system, it will check the water level in the tank if the water is full then M1 will be OFF then M2 will be ON and after decreasing of the water in the tank then the M1 will ON and M2 will OFF and it again check the water level full or not and if humidity is greater than threshold then the M2 is OFF and the M1 will ON.

BLOCK DIAGRAM
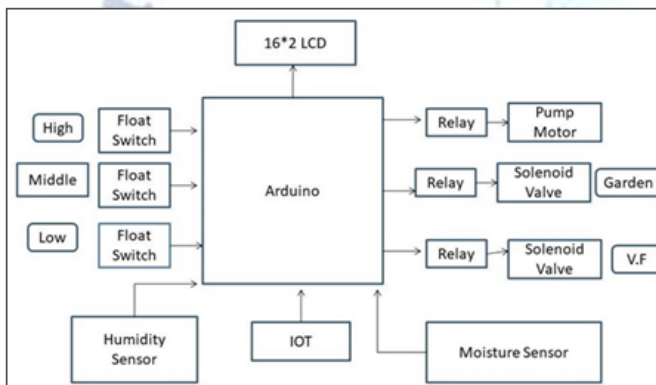
3. RESULTS & DISCUSSION

We consider two tanks one is the main tank and other is source. The main tank divided into three is high, medium and low and also two pumps are connected in both sides for water pumping. The working of motor depends upon the moisture and humidity level .A Threshold value is given in the motor so that greater than the threshold the motor will start working. The system is implemented using Adriano board I embedded c programming language

It is used to control agriculture value. If tank is fully filled vertical farm will on. For garden purpose also it is automatically on but according to moisture content water will pump. We referred the paper authored by Jayaprakash it is the based on IOT technology. We can also use this system for household purpose

4. CONCLUSION & FUTURE SCOPE

The motor turns on and off based on the float switch rating. The motor turns on and off depending on the value of moisture and humidity. This prevents wastage of water to some extent. Using this tool can avoid manual work and save energy and electricity. Plants can pump as much water as they need without wasting a single drop. Wages for human labor will be sufficient to carry out this activity. Based on this, we can conclude that this is an innovative way to save water and electricity and reduce human effort. This project we are implementing saves water and maintains the beauty of nature. This scheme can be implemented very successfully in houses and flats. By the end of this report, it looks like water conservation is going well in the construction of the working project model.

In the future, water conservation methods can be improved using various automated technologies. In addition, many improved methods can be introduced in homes and other establishments. Automated pipes etc. can be installed. In tanks you can find other methods that are better than the sensor system. Sunlight methods can also be used for plant growth

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

REFERENCES

[1] Priya J, SailushaChekuri, "WATER LEVEL MONITORING SYSTEM USING IOT", International Research Journal of Engineering and Technology (IRJET), pp. 1- 5,2017.

[2] S. R. Prathibha, A. Hongal, and M. P. Jyothi, "IOT Based Monitoring System in Smart Agriculture," 2017 International Conference on Recent Advances in Electronics and Communication Technology (ICRAECT), pp. 81-84, 2017, Bangalore, India..

[3] B. Das and P. C. Jain, "Real-time water quality monitoring system using Internet of Things," 2017 International Conference on Computer, Communications, and Electronics (Comptelix), pp. 78-82, 2017, Jaipur, India.

[4] Bhushan Band, Professor Ram Megha "IOT AND GSM BASED SOLAR OPERATED WATER PUMP SYSTEM", Institute of Engineering & Management, Conference paper March 2019.

[5] Md.Kamrul Alam Khan ``SOLAR WATER PUMP FOT VEGETABLE FIELD UNDER THE CLIMATE CONDITIONS IN BANGLADESH" International journey of advance Research and innovative ideas in Education, 2019.

[6] Megha S chaudhari, Bharti patil, Vaishali Raut "IOT BASED WASTE COLLECTION MANAGEMENT SYSTEM FOR SMART CITIES", 2019.