

# Lora Based Water Management System

Samruddhi Jawanjal<sup>1</sup>, Khushi Sharma<sup>2</sup>, Komal Nanaote<sup>3</sup>, Ankita Sable<sup>4</sup>, Shubham Parise<sup>5</sup>

Students, Department of Electronic & Telecommunication<sup>1,2,3,4,5</sup>

P. R. Pote College of Engineering and Management, Amravati, India

**Abstract:** *In today's world, people gets so busy in their work. So they do not have enough time for doing their all work. Everyone wants to accomplish their work on a fingertip. So, with the increase in the living standards, there is an immediate need for developing circuits that would change the complexity of life to simplicity, the demand for the resources also gets increased. Food and water are the very essential resources. Water is very needful for the daily uses. Most part of the earth is covered with water, but less amount of that is useful. So it is very important to save the water without wasting it. This automated device is designed to reduce the wastage of water as well as electricity. When the water tank gets full then the water pump get automatically off and this automation is done using Lora. The sensor is present in the water tank. When the water level touches the sensor then the water pump gets automatically off. So, there is no need to go at that place for switching activities. This device is beneficial for the people who live in flat system or building because for the switching activities of the water pump, always they have to come to the ground floor. This is very time consuming process and exhausting also.*

**Keywords:** LORA (Long Range), Water, Pump, Far-Distance, Auto mode, Manual mode

## I. INTRODUCTION

Lora concept is used to make the device automated. Because, in market, various water pump motors are available. But to make that motor advanced and automated, Lora technology is used. Home automation is also done using Lora I.e. when we leave home, sometimes we forgot to switch off the lights and fans. So, by using our mobile we can operate all these home appliances and this can be successfully done using the technology Lora. To make these things into work, we can fix the sensors in water tank and as well as in phone. When a person leaves that area then the appliances like fan and lights gets automatically off. The electricity consumption gets automatically reduced and it is our duty to use electricity very carefully without doing the wastage of it. It reduces the efforts of going to that place for doing that switching activities. From our comfort zone we can operate the devices. Nowadays, there are various automated devices available in the market, but some of these are highly expensive hence all the people cannot afford it. It is today's need to design the device which are pocket friendly so that all needy people can easily buy it. And all these advanced automations we are doing is due to LORA (Long Range). It is becoming the major part of our life.

It plays a very important role. So the device "Water management using LORA" made by using hardware as well as software. To reduce the human efforts and to reduce the wastage of energies i.e. water and electricity this device is very beneficial. So the structure of this device is shortly explained as follows.

In this project it consists of following sections:

- Transmitter Section
- Receiver section

In the transmitter section it installed at tank as well as another section i.e. receiver section at in mobile phone or in house. The first section i.e transmitter section it consists of Arduino microcontroller, Relay, Switch, wireless transmitter HC-12. In the other hand the i.e. Receiver section consist of wireless receiver, Arduino Microcontroller. An Arduino is used as a main controlling unit of the first section i.e. transmitter section as comparing to sensor relay, transmitter HC-12 and as well as switch.

The sensors are fixed in water tank and its used to measure the level of a water. This system will be operated in two modes:

Auto Mode and manual mode.

When the application will be used in auto mode it will automatically take action that when the signal received from transmitter that tank is empty the receiver will start the motor and when the signal received from transmitter that tank is

full the receiver well switch off the motor. In manual mode the receiver will just indicate the water level and weather to on and off the motor that decision has to be taken by user and as per his convenience he can switch on and off the motor by using on and off switch connected to the receiving end of the system. Wired type and IOT-based water-level monitoring and control system are already in the market. But the major drawback of wired-type is large wiring network from overhead-tank and ground-tank to the control system. The power losses in the wiring, electromagnetic interference, aging of the wiring, wear and tear, and cost.

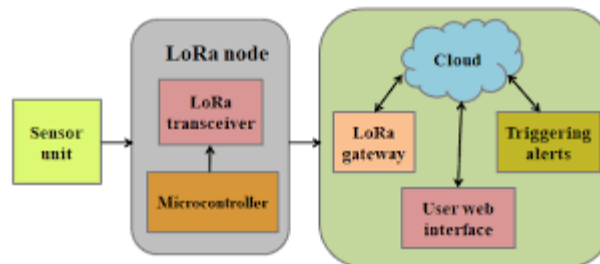
one sensor is present in tank, when water level is near to that sensor at a particular distance then motor gets automatically off. Or if the water level of the tank gets down then also automatically the motor gets switch ON.

Whenever anyone buy this device, then they have to do some changes in the program, as per the height of tank some of the values they have to change for the perfect working and result.

### II. OBJECTIVES

The main aim of this system is to monitor the water level at rural areas. As well as this system detects the wastage of water and measures can be taken avoid unnecessary flowing of water. LED switches on when the particular level is detected.

### III. BLOCK DIAGRAM



This “LORA based water management system” is a hardware plus software device and it is based on both hardware as well as software components. There are various hardware components required to make this device. it is used in making various device. It can also be used as timing device. Integrated circuit consists of 8 types of pins. Ground, Trigger, Output, Reset, +Vcc, Discharge, Threshold, Control Voltage are the 8 types of pins. LED are used to indicate that the motor is ON or OFF. Relay acts as switch for this device.

Relay works according to the signal sent by IC. Due to this, the power supply cuts and the motor gets turn off. And this is very important to work ON-OFF the motor at perfect time, to reduce the wastage of water, electricity and other resources.

This device is made up of the ultrasonic sensors, which sends the signal to turn off or on the motor as per the conditions. This device is totally LORA based device, wires are not required to send the signal. Hence it is time saving device.

### IV. CIRCUIT DIAGRAM



## V. ADVANTAGES AND DISADVANTAGES

### 5.1 Advantages

- It requires very little maintenance.
- Easy to implement.
- Economical.

### 5.2 Disadvantages

- Accuracy is less.
- Initial cost is high.
- The electronic parts have to installed separately.

## VI. RESULTS

The main objective of this device is to save the resources such as water as well as electricity. Because population is increasing day by day but the resources are limited. So it is very important to save it. When the tank gets full then the switch will gets automatically turn off and hence water and electricity, both will be saved.

## REFERENCES

- [1]. Santra M., Biswas S. et al. (2017). Smart Wireless Water Level Monitoring and Pump Controlling System, Int. Jour. Adv. Sci. Res. Eng., vol. 03, issue 4.
- [2]. Debts., Chakraborty P. et al. (2018). Wireless Pump Control with Water Level Monitoring System, Int. Indo-Iranian Jour. Sci. Reser., vol.2, issue-2, pp. 5-10.
- [3]. Md. Momin S A, Roy P. et al. (2016). Construction of Digital Water Level Indicator and Automatic Pump Controlling System, Int. Jour. Reserve., vol.03, issue12
- [4]. Ms. AshaT, Ms. SrijaV. (2020). Design and Implementation of Wireless Based Water Level Monitoring System using Arduino and Bluetooth, Int. Resear. Jour. Eng. Tech., vol.7, issue-01.
- [5]. Gupta N., Kumar S. et al. (2016). Wireless Water Level Controller using Zigbee, IJLEMAS, vol. V, issue-IV. [6]. Nishmitha, Shetty S. et al. (2019). Water Tank Monitoring System, IJERT, special issue 2, conf. proc., ISSN:2278-0181