

Online System for Monitoring Water Quality, Contamination and Managing Pipeline Network

Prof. Aparna R. Kare¹, Praful Rajendra Bhalerao², Gaurav Kishor Gosavi³, Shubham Ganesh Shisode⁴, Amey Vinay Kamat⁵

Assistant Professor, Department of Electrical Engineering, NBN SINHGAD School of Engineering, Pune¹
Student, Department of Electrical Engineering, NBN SINHGAD School of Engineering, Pune^{2,3,4,5}

Abstract: *From top nations like the USA to developing nations like India, drinking water is an important need for people of all the countries. With such universal necessity, distribution of drinking water has not been streamlined. With the present manual techniques to prevent leaks, contamination, and managing pipeline network there are lots of inefficiencies in the system which leads to wastage of water. The system is meant so as to watch the standard of water using internet of things (IoT) to see its containment and confirm to eradicate its impurities. This article presents low costs system for time monitoring of water quality system. We've used Temperature, pH, Turbidity, Sensors, etc. The temperature sensor detects the degree of hotness and coldness of the water. The ESP-32 model is often used as a controller. The measured value of the sensor is processed by the controller. Finally, the sensor data are often shown on IoT based system. The information then received is employed within the purification of impure water through IoT functioning.*

Keywords: Internet of Things, Temperature Sensor, Turbidity Sensor, Flow Sensor, pH Sensor ESP-32 Model, etc.

I. INTRODUCTION

Water is the most significant overabundant compound of the earth. Water is life, no life can lie without water. Water is used in different sectors like domestic, agriculture and industry. In the meantime, the drink is much appreciated by everyone. In recent times very low water levels and water within the ponds have occurred. It is therefore of the utmost importance to seek a response to water and system monitoring. IoT can be the solution. In recent days, advances in computer and electronic technology have created the IoT technology. The IoT is always defined because of a network of electronic devices to communicate with each other with the help of an administrator. IoT can be a collection of devices that rent together to help people work efficiently. It includes computational power to send data about a location. We introduce the designs and implementation of a standard system for monitoring real-time IoT water quality.

The IoT water quality measuring system monitors the quality of water in real-time using various sensors which sense pH level, conductivity, TDS and leakage to know the live water quality status of water. A complete solution has to check the quality of the water throughout the distribution line, that is, know the TDS and leakage. Should provide features to remotely control a city's pipeline. Apart from monitoring and controlling, with minimal increase in price, the system should be able to monitor the water consumption to each and every house in a city. Using these features the complete system can be revolutionized.

II. OBJECTIVES

- Monitor PH value Display on LCD
- Pipeline leakage detection and give audio alert and indication on Android app
- Display turbidity value and LCD

III. LITERATURE SURVEY

A Chandana Urs, Shubha J, Sushmitha Pai B, Vaishnavi A Pikle “Design of Smart Sensors for Real-Time Water Quality Monitoring Using IOT Technology” [1] The system consists of sensor which is used to measuring physical and chemical parameters of water. The measured values from the sensors process by microcontroller through Wi-Fi module and it will transmit the collected data to server and on LCD screen it will show the result. The water department will retrieve and analyze the sensor values, it will be stored into the cloud and these can value can be used at any point of time hence it is time efficient and department can be necessary actions by sending the report which consists of details about the water quality to the factory owner.

Vaishnavi V. Daigavane and Dr. M.A Gaikwad “Water Quality Monitoring System Based on IOT” [2] The system can expand to monitor hydrologic, air pollution, industrials and agricultural production by keeping the embedded devices in the environment for monitoring enables smart environment. To implement model ATMEGA328 microcontroller used which is connected with Wi-Fi module. Inbuilt ADC and Wi-Fi module connect the embedded device to internet. Sensor is connected to Arduino UNO board for monitoring, ADC will convert the corresponding sensor reading to its digital values and from that values environment parameter will be evaluated.

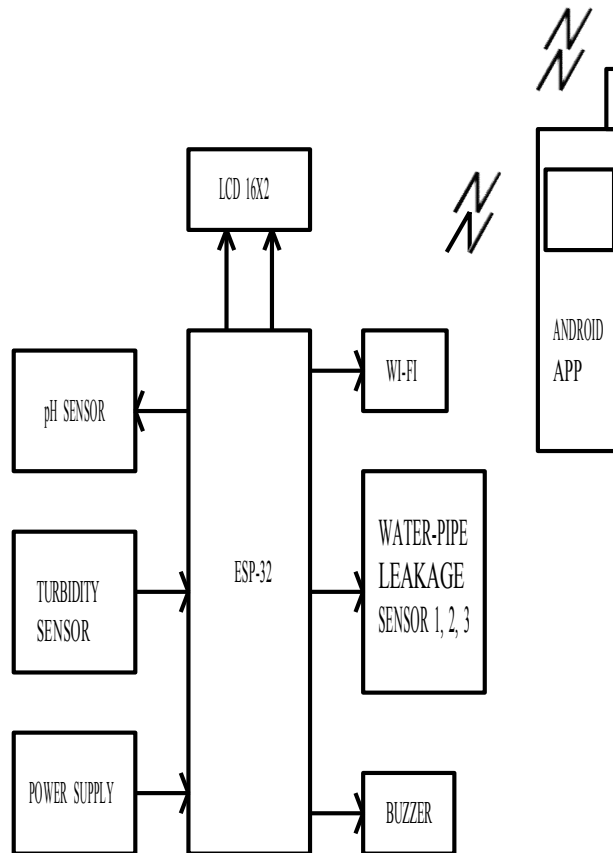
Prasanna kumar M J, Meghana M S, Navarathna S, Kruthika D M, Sumanth Kumar B S, “IoT Based Water Quality Monitoring System Using Wireless Sensor Network” [3] The real time monitoring of water quality using raspberry PI B+ model used as controller. The sensor data view on internet using cloud computing. The results of the system into five parameter of water quality. The water temperature may vary from 0 to 0.4 degree Celsius depending upon the speed of the ambient air temperature cycles.

Wong Jun Hong, Norazanita Shamsuddin, Emeroylariffion Abas, Rosyzie Anna Apong, Zarifi Masr, Hazwani Suhaimi, Stefan Herwig Gödeke and Muhammad Nafi Aqmal Noh, “Article Water Quality Monitoring with Arduino Based Sensors” [5]. The system is built with the Arduino UNO R3 and a microcontroller board is based on the ATmega328. Due to the limited number of power outputs of the Arduino, the power pin of the Arduino was connected to a breadboard to allow powering of multiple devices at the same time. The turbidity sensor was calibrated by measuring several soil and mixture made from known masses of mixed with 0.6L of water. Testing was carried out at a small stream within the university brunei Darussalam (USB) Campus ground. Testing done working days a provider of 4 weeks for total 20 days.

S. Barath Raj, P. Hari Prasad, S. Prasath, A. Moorthy, “Water Quality Monitoring System Using Arduino” [7] the system attained the consistency and possibility using it for the real time monitoring purpose. Monitoring of pH, turbidity and temperature of water makes use of water recognition sensor with exclusive advantage. The sensors control the propose system that can display water quality robotically.

There is literature where systems dedicatedly are developed for monitoring drinking water, for example, Smart water monitoring using IoT uses different water quality sensors such as PH sensor and turbidity sensor to keep a check on the quality of the water. This information is then sent to a cloud using Wi-Fi. This system is dependent on Wi-Fi signal underground and cannot be used in a practical situation. The system also measures the quantity of water using a Hall Effect water flow sensor. This data is then uploaded into a cloud. The user can monitor this data using an app or website connected to this cloud server. Depending on the water level present in the tanks, which is measured using the ultrasonic sensor, water is pumped from the local overhead tank to the end citizen's tank.

IV. SYSTEM ARCHITECTURE



V. FUTURE SCOPE AND CONCLUSION

With the advent of IoT and smart cities, developing technology which promotes sustainability and protects the environment is the need of the hour. If the researched system can be implemented in a developing country like India, then thousands of lives can be saved, which are lost due to contamination of water and water can be supplied to all the areas which face high stress due to limited water supply.

The proposed work has a lot of scope in terms of maintain the purity of water. The overall project scope includes cityspecific water quality monitoring. To address the water quality in all the industrial areas water monitoring station will be installed at locations such as residential, and industrial areas.

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BIOGRAPHY

Amey Kamat is a final year engineering student at NBN Sinhgad School of Engineering. He is receiving a bachelor’s degree in Electrical engineering from Savitribai Phule Pune University. He is interested in circuit designs and developing Electrical schematics.

Gaurav Gosavi is a last year engineering student at NBN Sinhgad School of Engineering. He is receiving a bachelor’s degree in Electrical engineering from Savitribai Phule Pune University. He is interested in Data collection and analysis and electronic equipment.

Shubham Shisode is a final year engineering student at NBN Sinhgad School of Engineering. He is receiving a bachelor’s degree in Electrical engineering from Savitribai Phule Pune University. He is interested in PLC, SCADA and HMI.

Praful Bhalerao is a final year engineering student at NBN Sinhgad School of Engineering. He is receiving a bachelor’s degree in Electrical engineering from Savitribai Phule Pune University. He is interested in Direct construction activities and equipment upkeep and Electrical equipment maintenance.