

# AN IOT BASED WATER MONITORING SYSTEM FOR SMART CITY

Chetna Bhisekar<sup>1</sup>, Harshalata Meghare<sup>2</sup>, Shital Parate<sup>3</sup>, Swati Prajapati<sup>4</sup>, Bhushan Meshram<sup>5</sup>

Prof. N. P. Bobade<sup>6</sup>

<sup>1,2,3,4,5</sup> U.G. Scholar, Department of Electronics Engineering, BDCE, Sewagram, Wardha (MH)-442102, INDIA

<sup>6</sup> Assistant Professor, Department of Electronics & Telecommunication Engineering, BDCE, Sewagram, Wardha (MH)-442102, INDIA

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**Abstract** – In this paper we detect the impurities of water using IOT. We have provided an efficient solution for water monitoring on real time. Whole system is IOT based. In water monitoring system, we studied different parameters of water such as temperature, PH, turbidity, water flow sensors for water monitoring system. It will help us to detecting the water quality.

**Key Words:** Arduino IDE, BLYNK android application, ATmega328 microcontroller, PH sensor, turbidity, temperature, water level sensor, IOT.

## 1. INTRODUCTION

Water pollution is serious issue for the environment. It is dangerous for human being. It creates many diseases. It affects health for human, animals and affects all living thing. Many inventions are developed for safe water. The water is valuable for human being safe water good for health. Water monitoring detects the all impurities such as PH, turbidity, temperature all these are detects the quality of water. The PH is important for detect the acidic level. Original value is 7 but this value are less than 7 then they are acidic and more than 7 then they are alkalinity. The PH value is not in normal range then they affect eye, skin and mucous membrane. Turbidity detects the impure water, how many impurities in the water. Temperature is used for detecting water is in normal or not. Normally, the water tested in laboratory water sample collect in different location and this water testing the laboratories in new technique. In traditional method, it is long process for testing the water quality for different sources and this are complicate method. It has high cost so that we are developed new design for water detecting the water quality. The water quality system that can detect the water quality using IOT based. The water monitoring system as various parameters is measured in different way. Water monitoring measured sensors such as pH, turbidity, water temperature. Water monitoring through the browse application using IP address using IOT based. We are operating this device from all over world. We are used blink software for water monitoring system for smart city.

Problem identities are:

- To conduct the survey in rural area for collection of water sample in different location.

- Test the entire sample in the laboratory.
- Use all the sensors such as PH, turbidity, water temperature.
- To detect acidic, alkalinity and how many impurities in the water.
- To analyze the data using core controller systems i.e arduino model.

## 2. Sensors

### 2.1 PH sensor

PH sensor used for detecting the PH level of water. It has an LED which works on power indicator and BNC connector.

### 2.2 Water Flow sensor

Water level sensor is useful for measuring the flow of water. It consists of plastic wave body, rotor and half effect sensor. It works on dc voltage ranging from 5 to 18v.

### 2.3 Turbidity sensor

It is used for measuring the turbidity i.e. cloudless of water. If water having high turbidity then water having high concentration.

### 2.4 Temperature sensor (LM35)

Temperature sensor is useful for measuring the temperature of water. It operates from 4 to 30volt. It used temperature sensor having range -55° to +150°C.

## 3. ESP8266 Wi-Fi module

ESP8266 Wi-Fi module is an attractive, it having low cost and it is suitable for adding different Wi-Fi technology.

It requires 3.3v power supply. ESP8266 Wi-Fi module is reprogrammed.

#### 4. Blink app

Blink is an android app designed for internet of things. It can control hardware remotely it can display sensor data. It can store the data, visualize it and do many other things.

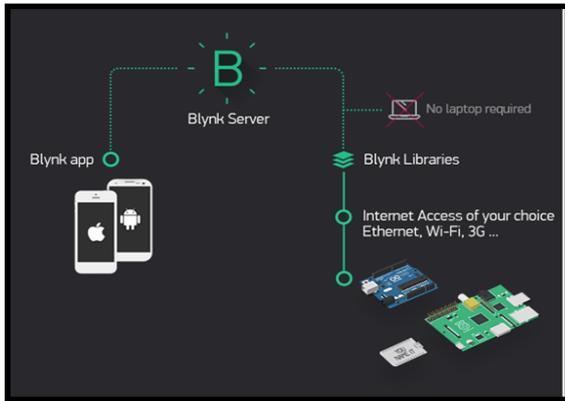


FIG 1.ARCHITECTURE OF BLYNK SOFTWARE

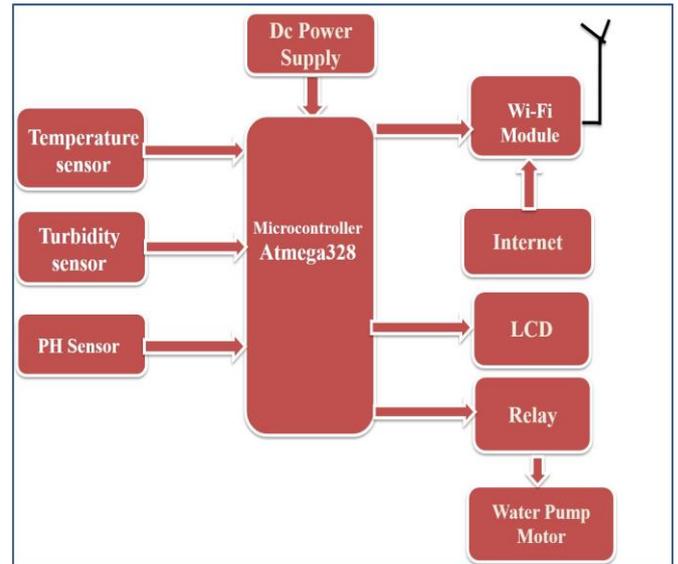


FIG 4. BLOCK DIAGRAM OF WATER MONITORING SYSTEM

#### 6. OBSERVATION



FIG 3. SYSTEM OUTPUT ON IOT BESED WATER MONITORING SYSTEM

#### 5. Working

The whole designs are mainly based on IOT to introduced development of environment. There are basically two parts used, first part is hardware and second part is software. The hardware part of sensor used for measured real time and arduino model is used for convert analog value to digital. LCD display giving output and Wi-Fi module gives the connection between hardware and software. PCB design is first level of construction. BLYNK app installed in adroid to see the output. We can see the output in anytime.

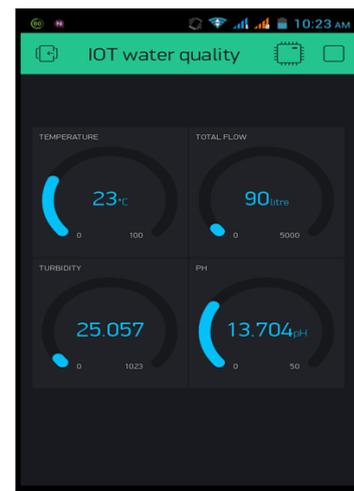


FIG 5. PARAMETER OF BLYNK APP



FIG 6. PARAMETER DISPLAY ON ICD DISPLAY

Parameters	Standard value	Result(observed value)	
		1	2
1)Temperature	13°C(Normal value) 7°C(For cold water) 50°C(FOR hot	31°C	15°C

	water)		
2)PH Level	0-6 (Acidic) 7( Neutral) Above 7 (Alkaline)	13.72	7.55
3)Turbidity	1NTU(For ideal) 1 to 5NTU(Normal) Above 5NTU(high turbid)	25.41	4.88

- [2] Patawala Amatulla .H “IOT Based Water Management System for Smart City” International Journal of Advance Research, Ideas and Innovations in Technology,2017.
- [3] Kiran M. Dhobale “IOT based Smart Water Supply management System” International Journal of Advanced Research in Computer and Communication Engineering,2017.

**7. RESULT**

1) In First Observation

- a) The value of water temperature is 31°C that is water is little hot.
- b) PH of water is 13.72 that is water is high alkaline.
- c) Turbidity of water is 25.41 that is water is high turbid.

2) In Second Observation,

- a) The value of water temperature is 15°C that water is usable for drinking purpose.
- b) PH of water is 7.55 that water is Alkaline which is usable for drinking purpose.
- c) Turbidity of water is water have normal turbidity and usable for drinking purpose.

**8. CONCLUSION**

Monitoring of turbidity, PH and water temperature of water makes use of water detection sensor with unique advantage and existing GSM network. The system can monitor water quality automatically, and it is low in cost and does not require people on duty so the water quality testing is likely to the more economical, convenient and fast. The system has good flexibility. Only by replacing the corresponding sensors and changing the relevant software programs, this system can be used to monitor other quality parameters. The operation is simple. The system can be expanded to monitor hydrologic, air pollution, industrial and agricultural production and so on. It has wide spread application and extension value.

**REFERENCES**

- [1] Joy Shah “An Internet of Things Based Model for Smart Water Distribution with Quality Monitoring” International Journal of Innovative Research in Science, Engineering and Technology,2017.