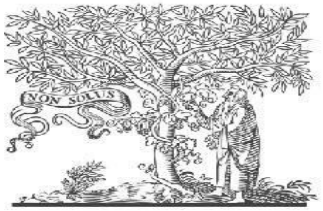
International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

COPY RIGHT



ELSEVIER SSRN

IJIEMR Transactions, online available on 14th Apr 2024. Link :http://www.ijiemr.org/downloads.php?vol=Volume-13&issue=Issue 04

10.48047/IJIEMR/V13/ISSUE 04/15

Title **Water Purification Lamp Failure Detection and Monitoring over IOT**

Volume 13, ISSUE 04, Pages: 109-114

Paper Authors **Kamini Jaya Ramya, Halavath Venkatesh, Rangu Anusha, Kondaboina Tharun Kumar, Mr.P.Bala Suresh Reddy**

USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per UGC Guidelines We Are Providing A Electronic Bar Code

International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

Water Purification Lamp Failure Detection and Monitoring over IOT

Kamini Jaya Ramya[1], [1]20Q91A0494, Electronics and Communications Engineering, Malla Reddy College of Engineering
Halavath Venkatesh[2], [2]21Q95A0407, Electronics and Communications Engineering, Malla Reddy College of Engineering
Rangu Anusha[3], [3]20Q91A0486, Electronics and Communications Engineering, Malla Reddy College of Engineering
Kondaboina Tharun Kumar[4], [4]20Q91A0484, Electronics and Communications Engineering, Malla Reddy College of Engineering
Mr.P.Bala Suresh Reddy[5], [5]Professor & HOD, Electronics and Communications Engineering, Malla Reddy College of Engineering

Abstract—
Internet of Things (IoT) is one among the rapidly developing fields for giving social and financial points of interest for rising and creating an economy of the state. Presently IoT field is flourishing in areas like medical, agriculture, transportation, training, etc. When it comes to liquids, turbidity is an important term. Because it plays an important role in liquid dynamics and is also used to measure water quality. So in this tutorial, let's discuss what is turbidity, how to measure the turbidity of a liquid using Arduino. If you want to take this project further, you can also consider a interfacing pH meter with Arduino and also read the pH value of water to better assess the quality of water. Previously we have also built an IoT based Water quality monitoring device using ESP8266, you can also check that out if interested. That being said, let's get started

Keywords—water purification, Turbidity, Nephelometric

INTRODUCTION

The Internet of Things, otherwise referred to as IOT within the simplest sense, refers to the concept of connecting physical devices, machines, software, and objects to the web .In a broader sense, it's a dynamic and global network infrastructure, during which intelligent objects and entities are utilized in conjunction with actuators, electronics, sensors, software and connectivity to reinforce connection, collection and data exchange. this sort of network generally features a sizable amount of nodes that interact with the environment and exchange data, whilst reacting to events or triggering actions to exert control or change upon the physical world. By sharing and working on shared data contributed by individual parts, an IOT system would be greater than the sum of its parts. Each network node is considered smart and consumes little resources like processing and data storage power also as energy consumption.Work is employed in various activities, like consumption like agriculture and travel, which can affect water quality measurement is important which incorporates several parameters a number of these are: PH, temperature, dissolved oxygen amount. There is go to improve existing system for measurement water bodies. IOT may be a solution in recent days, development in computing and electronic technologies have triggered Internet of Things technology. Internet of things often describe because the network of electronics devices communicating among them by the assistance of controller. The IOT may be a collection of devices communicating among them by the assistance of a controller. The IOT may be a collection of devices that employment together so as to serve human tasks during a efficient manner. It combine computational power to send data about the environments.

In proposed system there is IOT based water quality measurement system using Arduino. As per water quality behalf all process are required for maintain and measures water quality and not just

International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

measures but also using through modern technology through IOT and various sensors using ARDUINO UNO And WI-FI module like ESP8266.

This is a strategy of our IOT based water quality measurement using Arduino during this paper we specialized in several parameters Like pH, Turbidity, Temperature. We measure this parameter because Water Quality Measurement mostly depends on those parameters. Firstly, we connect sensors (pH, Turbidity, Temperature, etc.) to Arduino and interface with it.This data is processed through Arduino. All processed data then send to WI-FI Module with a serial communication with Arduino and WI-FI module. We send data through character y character transmission. Then separate whole string data into individual data. Processed parameters data then send to fire base Real time database. In our own web domain, we exportdata as JSON format from fire base cloud store and show it in our website. Statistic and decision parts are exhausted web system.In this project we used ESP8266 WI-FI MODULE

EXISTING METHOD

Arduino Uno water turbidity gauge has been successfully designed and manufactured. This tool is made using LDR as sensor and led as a light source to measure the water turbidity value and Arduino Uno for data processing. The existence of this tool is already familiar and comfortable to find. However, the price is relatively higher to make this tool is only owned by certain circles only. Nephelometric Method is a method of measuring the turbidity of water by passing a light source on water so that the intensity of light reflected by the substances causing turbidity can be known. With the use of led as a light source and photodiode as a light detector, and combined with processing using Arduino Uno then the voltage obtained from the LDR sensor in the form of analog data is processed into digital data and can be displayed in the LCD.

PROPOSED METHOD

2.1 BLOCK DIAGRAM OVERVIEW:

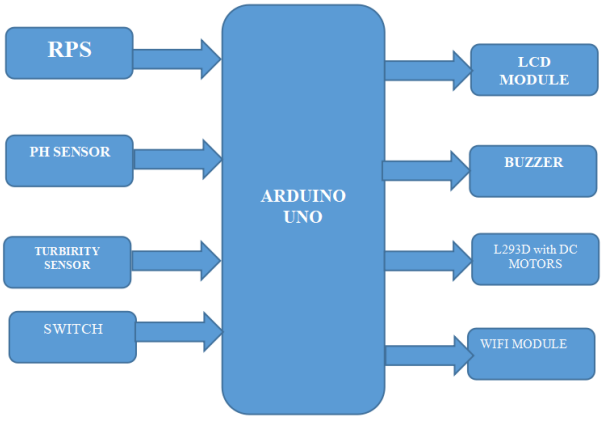
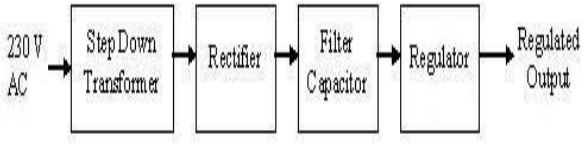


Fig:2.1 block diagram

2.2 POWER SUPPLY:

All digital circuits require regulated power supply. In this article we are going to learn how to get a regulated positive supply from the mains supply.



International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

Fig:2.2 shows the basic block diagram of a fixed regulated power supply. Let us go through each block

2.3 PH SENSOR

A pH meter is a scientific instrument that measures the hydrogen-ion activity in water-based solutions, indicating its acidity or alkalinity expressed as pH. The pH meter measures the difference in electrical potential between a pH electrode and a reference electrode, and so the pH meter is sometimes referred to as a "potentio metric pH meter". The difference in electrical potential relates to the acidity or pH of the solution.[3] The pH meter is used in many applications ranging from laboratory experimentation to quality control.

2.4 LCD module

To display interactive messages we are using LCD Module. We examine an intelligent LCD display of two lines, 16 characters per line that is interfaced to the controllers. The protocol (handshaking) for the display is as shown. Whereas D0 to D7th bit is the Data lines, RS, RW and EN pins are the control pins and remaining pins are +5V, -5V and GND to provide supply. Where RS is the Register Select, RW is the Read Write and EN is the Enable pin.

The display contains two internal byte-wide registers, one for commands (RS=0) and the second for characters to be displayed (RS=1). It also contains a user-programmed RAM area (the character RAM) that can be programmed to generate any desired character that can be formed using a dot matrix. To distinguish between these two data areas, the hex command byte 80 will be used to signify that the display RAM address 00h will be chosen.Port1 is used to furnish the command or data

type, and ports 3.2 to 3.4 furnish register select and read/write levels.

Liquid Crystal Display also called as LCD is very helpful in providing user interface as well as for debugging purpose

Fig: 2.16 2x16 Line Alphanumeric LCD Display

The most commonly used ALPHANUMERIC displays are *1x16* (Single Line & 16 characters), *2x16* (Double Line & 16 character per line) & *4x20* (four lines & Twenty characters per line).

The LCD requires 3 control lines (RS, R/W & EN) & 8 (or 4) data lines. The number on data lines depends on the mode of operation. If operated in 8-bit mode then 8 data lines + 3 control lines i.e. total 11 lines are required. And if operated in 4-bit mode then 4 data lines + 3 control lines i.e. 7 lines are required. How do we decide which mode to use? It's simple if you have sufficient data lines you can go for 8 bit mode & if there is a time constrain i.e. display should be faster then we have to use 8-bit mode because basically 4-bit mode takes twice as more time as compared to 8-bit mode.

International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

Table: 2.1 Pin Description

Pin	Symbol	Function
1	Vss	Ground
2	Vdd	Supply Voltage
3	Vo	Contrast Setting
4	RS	Register Select
5	R/W	Read/Write Select
6	En	Chip Enable Signal
7-14	DB0-DB7	Data Lines
15	A/Vee	Gnd for the backlight
16	K	Vcc for backlight

When *RS* is low (0), the data is to be treated as a command. When RS is high (1), the data being sent is considered as text data which should be displayed on the screen.

When *R/W* is low (0), the information on the data bus is being written to the LCD. When RW is high (1), the program is effectively reading from the LCD. Most of the times there is no need to read from the LCD so this line can directly be connected to Gnd thus saving one controller line.

The *ENABLE* pin is used to latch the data present on the data pins. A HIGH - LOW signal is required to latch the data. The LCD interprets and executes our command at the instant the EN line is brought low. If you never bring EN low, your instruction will never be executed.

ADVANTAGES

- Early detection of failure
- Remote monitoring and management
- Cost savings
- Enhanced Data Analysis
- Integration with smart technology

APPLICATIONS

- Industrial water treatment
- Healthcare Facilities
- Food and Beverage Industry
- Emergency response

RESULT

International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

The sensors which are measuring quality and level of the water. The turbidity, pH, conductivity, level of water and temperature values are displayed with its measurement units on the terminal window. Also, it shows the alert for crossing threshold values. Water is basic need of all the living beings. If that water is contaminated it will cause harmful effect on human as well as other living beings. So, to get notified about the level of contamination in water, this system is proposed. This system is monitoring quality of water continuously. It reads values from sensors and check for threshold set for parameter. When sensor values hit the threshold value, the notification of that event is successfully sent to authorities and citizens. Users can also access the data of water quality from database using web portal. So, the system is finally completed and deployed to perform it's best

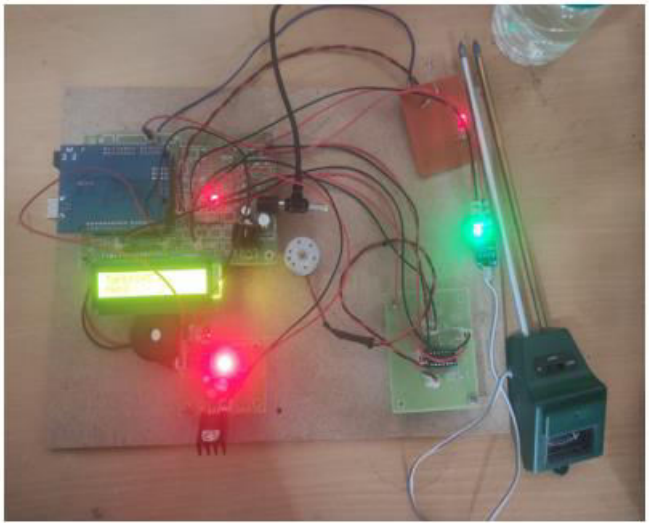


Fig-prototype(i)

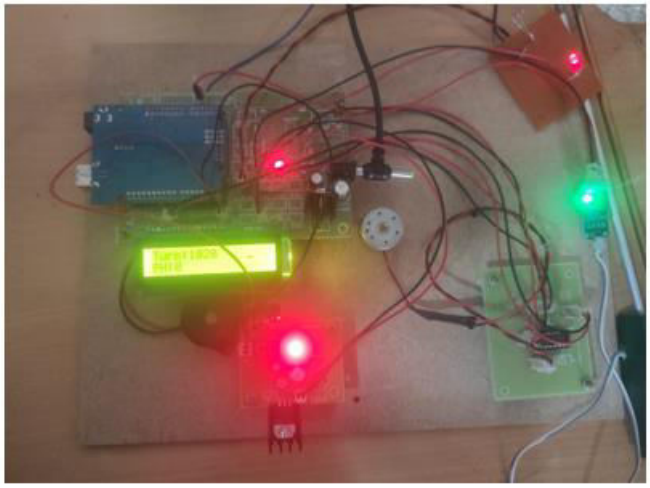


Fig-prototype(ii)

FUTURE DEVELOPEMENT

- providing a tamper-proof record of water treatment processes and ensuring data integrity.
- Continued advancements in data analytics and artificial intelligence for more sophisticated predictive maintenance algorithms.
- Optimization for real-time processing to enhanceresponsiveness.

CONCLUSION

IOT based Smart Water Monitoring System works very well. This will be very helpful for the societies where water problems are a big issue. Our project detects the flow, pressure, turbidity and leakage of water which will not only help society to monitor the water but also help save water. For this some sensors are used. The collected data from the all the sensors are used for analysis purpose for better solution of water problems. The data is sends to the cloud server via Wi-Fi module. So this application will be the best challenged in real time monitoring & control system and use to solve all the water related problems. This system can be modified according to the needs of the user and can also be implemented in various industries where water wastage is the major issue.

ACKNOWLEDGEMENT

It is a matter of immense pride for us to submit this project report on the “Water purification lamp failure detection and monitoring over IOT” We worked diligently throughout the year as a single unit to achieve satisfactory results in the end. At the completion of this project, we take this opportunity to express our gratitude towards our guide, Mr.P.Bala Suresh Reddy. he guided us at every stage of the present work and encouraged us during moments of anxiety. His guidance will always be priceless.

We are also thankful to Dr. Pattem Sampath Kumar, HOD, ECE department, who insisted that we undertake a project that would allow us to explore cutting-edge advancements. His suggestions proved to be fruitful at the end of the project. Special thanks go to the staff members from the ECE department who assisted us with topics related to their subjects.

Our sincere thanks to Dr. M. Ashok, Principal, Malla Reddy College of Engineering, Hyderabad. Without his encouragement, our project would have been incomplete.

Lastly, our heartfelt thanks to our friends who appreciated and encouraged us in our project. We are thankful to all those who directly and indirectly helped us in the completion of our project.

REFERENCES

[1] Chalamala Srinivas Goud, Srinjoy Das, Ravi Kumar, Chaitanya Vijaykumar Mahamuni, Swapnil Khedkar, "Wireless Sensor Network (WSN) Model for Shrimp Culture Monitoring using Open Source IoT", Inventive Research in Computing Applications (ICIRCA) 2020 Second International Conference on, pp. 764-767, 2020.

[2] Kumar Sai Sankar Javvaji, Md. Abbas Hussain, "Prototype of Aquaculture using IoT Technologies", Computing Communication and Networking Technologies (ICCCNT) 2020 11th International Conference on, pp. 1-4, 2020

[3] K. Raghu Raju, Rama Sita and G. Harish Kumar Varma, "Knowledge Based Real Time Monitoring System for Aquaculture Using IoT", Advance Computing Conference (IACC) 2017 IEEE 7th International, pp. 318-321, 2017.

[4] Kiruthika, S.U., Raja, S.K.S., Jaichandran, R., 2017. IoT based automation of fish farming. Journal of Advanced Research in Dynamical and Control Systems. 9. Pp. 50-57.

[5] Durga, S.B., Nirosha, K., Priyanka, P., Dhanalaxmi, B., 2017. GSM based Fish Monitoring System Using IOT, International Journal of Mechanical Engineering and Technology 8(7), pp. 1094–1101.

[6] Fourie, C.M., Bhatt, D.V., Silva, B.J., Kumar, A., Hancke, G.P., 2017. A solar-powered fish pond management system for fish farming conservation. Industrial Electronics (ISIE), 2017 IEEE 26th

International Symposium on, pp. 2021-2026. IEEE.
[7] Wivity, https://www.wivity.com, last accessed 1.05.2018.
[6] Arduino Mega 2560 Rev 3 Datasheet specification, https://store.arduino.cc/arduino-mega-2560-rev3, accesses 10 May 2018.