

WATER pH LEVEL MONITORING USING MOBILE APPLICATION INTEGRATED WITH INTERNET OF THINGS USING pH SENSOR

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ABSTRACT - This study presents the development of a pH monitoring system integrated with a notification system using an Arduino microcontroller. The system is designed to measure the pH levels of a solution and send notifications to the user in the event of any deviation from the pre-set threshold. The system consists of a pH sensor, an Arduino ESP8266 microcontroller, and a notification system that sends alerts through telegram. The pH sensor is interfaced with the Arduino ESP 8266 microcontroller, which processes the sensor data and sends it to the database. The database then sends the appropriate notification to the user based on predefined rules or thresholds. The system is designed to be low- cost, easy to use, and customizable to meet the specific needs of the application. The system is suitable for monitoring pH levels in various agriculture, aquaculture, and many others. The system is designed to ensure real-time monitoring, data analysis, and control of the pH level; it is aimed to improve the efficiency and sustainability of the process being monitored. This project aims to incorporate the use of IoT and telegram applications to deliver the notification about the quality of water. By integrating both IoT and telegram applications, people with phones have easy access to all data about the quality of water.

Keywords: Monitoring, pH, Notification

1. INTRODUCTION

The integration of Arduino microcontrollers in pH level monitoring systems is a recent advancement in pH measurement technology. The main advantage of using an Arduino for pH monitoring system is its ability to connect with multiple sensors and other components, which enables the creation of flexible and personalized systems that can be adapted to the specific needs of the application. The Internet of Things (IoT) is a network of physically linked electronic devices that interact with one another and other devices in ways other than machine-to-machine (M2M) communication through the Internet. (S. A. Hamid, 2020). Due to its versatility and low cost, Arduino is a preferred choice for pH monitoring systems in various industries. Freshwater is the most valuable natural resource on the earth, yet it is also vulnerable to contamination, necessitating real-time monitoring. Freshwater resources may be monitored in real-time using a system powered by the Internet of Things (IoT). Moreover, both pH and alkalinity tests should always be performed on irrigation water. This is crucial because high alkalinity has a profound impact on the fertility and nutrient content of growth media. (Cox, D. 2017)

2. METHODOLOGY

This research used functionality testing to determine whether it worked well or not. In functionality testing, the pH sensor was tested three times by changing the different types of liquid whether they could send an alert by telegram. Meanwhile, the LCD screens were tested based on the functionality of the data displaying the status of pH level. Moreover, the system performance has been tested by using different types of telecommunications services.

3. RESULTS AND DISCUSSION

In the analysis, users will no longer have to manually check the pH level of water because they will be notified right away through the Telegram app if pH becomes too high or Too low, and the system will automatically notify the user if the pH is below 6 or above 10.

4. NOVELTY OF RESEARCH / PRODUCT

In the context of pH level monitoring, IoT devices can be deployed to measure and transmit pH data wirelessly. This integration of IoT technology into pH level monitoring adds a new dimension to traditional monitoring methods. By

continuously monitoring pH levels, it becomes possible to identify fluctuations, anomalies, or critical conditions that may require prompt action. The use of IoT devices for pH level monitoring offers a more automated and efficient approach compared to manual sampling and testing.

5. CONCLUSION

The objectives of this research were successfully achieved. Based on the result, the notification was sent immediately to the user when pH level is too High or Low, and the user can request the data for pH level through telegram application.

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