

ABSTRACT

Air is an important factor in life, but rapid urban and industrial development has led to a significant decline in air quality. Air pollution not only affects human health but also causes acid rain that adversely affects the ecosystem. This research aims to design an Internet of Things (IoT)-based air and rainwater quality monitoring and notification system to monitor parameters such as carbon dioxide (CO₂), rainwater pH, and Total Dissolved Solids (TDS). The research method involves the integration of an MQ-135 sensor for air quality, a pH-4502C sensor for rainwater acidity, and a KS0429 TDS sensor to measure solute density. Data from the sensors is processed by the ESP32 microcontroller and displayed on the LCD as well as sent to the Blynk app for remote monitoring. The system is also equipped with a buzzer and LED as visual and audible notifications when parameters exceed the threshold. The test results show that the sensors used have high accuracy, namely the pH-4502C sensor has an accuracy of 98.16%, the KS0429 TDS sensor has an accuracy of 98.71% and the MQ-135 sensor has an accuracy of 94.83%. The conclusion of this research shows that the developed system can provide real-time monitoring of air and rainwater quality with high accuracy, although there are some limitations that need to be considered. .

Keywords: *Air, Rainwater, Internet of Things, MQ-135 Sensor, 4502C pH Sensor, KS0429 TDS Sensor*