

INTISARI

Sistem monitoring pembayaran, kekeruhan, dan pH pada PDAM berbasis *Internet of Things* (IoT) dirancang menggunakan tiga sensor utama yaitu sensor pH, sensor kekeruhan, dan sensor debit air yang dihubungkan dengan mikrokontroler ESP32. Sistem ini menggunakan tiga unit ESP32, yaitu satu ESP32 utama dan dua ESP32 pengguna.

Data sensor dikirim ke Antares IoT menggunakan protokol HTTP POST, kemudian disimpan pada Google Spreadsheet dan ditampilkan pada aplikasi monitoring serta Telegram Bot. Sistem juga mampu menghitung estimasi biaya penggunaan air berdasarkan metode *Increasing Block Tariff* (IBT).

Hasil pengujian menunjukkan bahwa sistem mampu mengirim data dengan tingkat keberhasilan sebesar 100% dengan rata-rata error sensor pH sebesar 2,9%, sensor kekeruhan 1,4%, dan sensor debit air 1,3%. Nilai Tarif sudah sesuai dengan perhitungan. Sistem ini terbukti dapat melakukan monitoring secara real-time dengan baik dan dapat meningkatkan efisiensi pengawasan kualitas air PDAM.

Kata kunci: *Internet of Things* (IoT), sistem monitoring, PDAM, kualitas air, sensor pH, sensor kekeruhan, sensor debit air



ABSTRACT

An Internet of Things (IoT)-based monitoring system for payments, turbidity, and pH at a PDAM (Regional Water Company) was designed using three main sensors: a pH sensor, a turbidity sensor, and a water flow sensor, connected to an ESP32 microcontroller. This system utilizes three ESP32 units: one main ESP32 and two user ESP32s.

Sensor data is sent to Antares IoT using the HTTP POST protocol, then stored in a Google Spreadsheet and displayed in a monitoring application and Telegram Bot. The system is also capable of calculating estimated water usage costs using the Increasing Block Tariff (IBT) method.

Test results showed that the system was able to send data with a 100% success rate, with an average error of 2.9 for the pH sensor, 1.4 for the turbidity sensor, and 1.3 for the water flow sensor. This system has proven to be effective in real-time monitoring and can improve the efficiency of PDAM water quality monitoring.

Keywords: *Internet of Things (IoT), monitoring system, PDAM, water quality, pH sensor, turbidity sensor, water discharge sensor*

