

ABSTRAK

**RANCANG BANGUN ALAT *MONITORING* KUALITAS AIR
BERBASIS *INTERNET OF THINGS* (IOT) MENGGUNAKAN
SENSOR PH, TDS, DAN KEKERUHAN**

(2026: 64 Halaman + 28 Gambar + 16 Tabel + Daftar Pustaka + Lampiran)

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JURUSAN TEKNIK ELEKTRO

Kualitas air merupakan salah satu faktor penting yang perlu diperhatikan karena dapat mempengaruhi berbagai kebutuhan, baik dalam lingkungan, rumah tangga, maupun penelitian. Parameter kualitas air seperti derajat keasaman (pH), total zat terlarut (*Total Dissolved Solid*/TDS), dan tingkat kekeruhan menjadi indikator utama dalam menentukan kondisi air. Pengukuran secara manual dinilai kurang efisien sehingga diperlukan sistem monitoring yang dapat bekerja secara real-time. Pada perancangan alat ini dirancang sebuah sistem monitoring kualitas air berbasis *Internet of Things* (IoT) menggunakan mikrokontroler ESP32, sensor pH, sensor TDS, dan sensor kekeruhan. Data hasil pembacaan sensor ditampilkan melalui LCD OLED dan dikirim ke aplikasi Blynk menggunakan koneksi Wi-Fi sehingga dapat dipantau dari jarak jauh. Pengujian dilakukan menggunakan beberapa sampel air berbeda untuk mengetahui kemampuan sistem dalam membaca perubahan parameter kualitas air. Hasil pengujian menunjukkan bahwa sistem mampu membaca dan menampilkan data pH, TDS, dan kekeruhan dengan baik serta bekerja secara stabil dan real-time.

Kata Kunci: *Internet of Things* (IoT), *monitoring* kualitas air, sensor pH, sensor TDS, sensor kekeruhan, ESP32.

ABSTRACT

DESIGN AND CONSTRUCTION OF AN INTERNET OF THINGS (IOT)- BASED WATER QUALITY MONITORING DEVICE USING PH, TDS, AND TURBIDITY SENSORS

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Water quality is one of the important factors that needs to be considered, as it affects various needs in the environment, households, and research. Water quality parameters such as degree of acidity (pH), Total Dissolved Solids (TDS), and turbidity level are the main indicators in determining water condition. Manual measurement is considered inefficient, so a monitoring system capable of working in real-time is required. In this design, a water quality monitoring system based on the Internet of Things (IoT) was developed using an ESP32 microcontroller, a pH sensor, a TDS sensor, and a turbidity sensor. The sensor reading data is displayed through an OLED LCD and sent to the Blynk application via a Wi-Fi connection so that it can be monitored remotely. Testing was carried out using several different water samples to determine the system's ability to read changes in water quality parameters. The test results show that the system is able to read and display pH, TDS, and turbidity data accurately and operates stably in real-time.

Keywords: *Internet of Things (IoT), water quality monitoring, pH sensor, TDS sensor, turbidity sensor, ESP32.*