

ABSTRAK

Rinaldo Rama Andika Bimantara. 2025. Sistem Monitoring Kualitas Air Minum Layak Konsumsi Menggunakan Sensor pH, TDS, dan Turbidity Berbasis Internet of Things. *Skripsi*. Program Studi Teknik Informatika, FT, Universitas PGRI Madiun. Pembimbing (I) Slamet Riyanto, S.T., M.M. (II) Moch Yusuf Asyhari, S.Tr.Kom., M.Kom.

Kualitas air minum isi ulang di masyarakat sering kali tidak dapat diketahui secara langsung oleh konsumen karena kurangnya transparansi dan *monitoring* yang memadai. Penelitian ini bertujuan untuk merancang dan mengimplementasikan sistem monitoring kualitas air minum isi ulang yang layak konsumsi berbasis *Internet of Things*, guna memberikan informasi kualitas air secara *real-time*. Solusi yang ditawarkan adalah sebuah sistem berbasis sensor pH, *Total Dissolved Solids*, dan *Turbidity* yang diintegrasikan dengan mikrokontroler dan jaringan *internet*. Penelitian ini menggunakan metode *Rapid Application Development* dengan tahapan perencanaan, perancangan, implementasi, dan evaluasi. Perangkat keras yang digunakan meliputi Arduino Uno R3, sensor pH 4502C, sensor TDS KG3002, sensor *Turbidity* SEN-0175, dan modul Wi-Fi NodeMCU ESP8266. Data dari sensor dikirim secara *real-time* ke *platform* Blynk dan ditampilkan melalui website monitoring. Hasil pengujian menunjukkan bahwa sistem mampu membaca nilai pH antara 5,37 hingga 8,49, TDS antara 116,29 hingga 502,14 ppm, dan *turbidity* antara 1,821 hingga 3,000 NTU. Temuan menunjukkan bahwa sistem bekerja dengan baik dan mampu menampilkan data secara akurat serta sesuai dengan standar Permenkes No. 492/MENKES/PER/IV/2010. Dengan demikian, sistem ini dapat digunakan sebagai solusi praktis dan efisien dalam memantau kelayakan air minum isi ulang secara *real-time*.

Kata Kunci: Kualitas Air Minum, Internet of Things, Sensor pH, Sensor TDS, Sensor Turbidity

ABSTRACT

Rinaldo Rama Andika Bimantara. 2025. *Drinking Water Quality Monitoring System Using pH, TDS, and Turbidity Sensors Based on Internet of Things*. Informatics, Faculty of Engineering, Universitas PGRI Madiun. Advisor (I) Slamet Riyanto, S.T., M.M. Co-Advisor (II) Moch Yusuf Asyhari, S.Tr.Kom., M.Kom.

The quality of refillable drinking water in the community is often unknown to consumers due to the lack of transparency and adequate monitoring. This study aims to design and implement a monitoring system for the quality of refillable drinking water that is safe for consumption, based on the Internet of Things (IoT), in order to provide real-time information. The proposed solution is a system based on pH, Total Dissolved Solids (TDS), and Turbidity sensors integrated with a microcontroller and internet connectivity. The research employs the Rapid Application Development (RAD) method, consisting of planning, design, implementation, and evaluation stages. The hardware used includes Arduino Uno R3, pH sensor 4502C, TDS sensor KG3002, Turbidity sensor SEN-0175, and the NodeMCU ESP8266 Wi-Fi module. Sensor data is transmitted in real-time to the Blynk platform and displayed through a monitoring website. Test results show that the system can read pH values ranging from 5.37 to 8.49, TDS values from 116.29 to 502.14 ppm, and turbidity values from 1.821 to 3.000 NTU. The findings indicate that the system functions well and provides accurate data in accordance with the standards set by the Indonesian Ministry of Health Regulation No. 492/MENKES/PER/IV/2010. Therefore, this system offers a practical and efficient solution for real-time monitoring of refillable drinking water quality..

Keywords: Drinking Water Quality, Internet of Things, pH Sensor, TDS Sensor, Turbidity Sensor