

ABSTRAK

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Program Studi : Teknik Elektro
Judul : Alat Deteksi Kelayakan Oli dan Kebocoran *Water Coolant* pada Ruang Mesin Kendaraan Roda Dua Berbasis *Internet Of Things*

Penelitian ini bertujuan untuk merancang dan menguji alat pendeteksi kebocoran air radiator yang masuk ke dalam ruang oli mesin kendaraan berbasis Internet of Things (IoT). Kebocoran air radiator ke ruang oli dapat menyebabkan penurunan performa mesin dan kerusakan komponen internal secara bertahap. Sistem yang dirancang menggunakan mikrokontroler ESP32 sebagai pusat kendali, serta dilengkapi dengan sensor water, sensor suhu, sensor tekanan, dan sensor kekeruhan (turbidity) untuk memantau kondisi oli mesin. Pengujian dilakukan dalam dua kondisi, yaitu saat mesin dalam keadaan mati dan menyala, guna mengevaluasi efektivitas deteksi kebocoran pada berbagai skenario operasional. Data hasil pembacaan sensor ditampilkan secara lokal melalui OLED display dan secara daring melalui aplikasi Blynk. Hasil pengujian menunjukkan bahwa sistem mampu mendeteksi keberadaan air dalam oli secara akurat, serta memberikan informasi suhu, tekanan, dan kualitas oli secara real-time. Dengan demikian, alat ini dapat berfungsi sebagai sistem peringatan dini yang membantu pengguna dalam mencegah kerusakan mesin akibat kebocoran air radiator. Rancang bangun alat ini diwujudkan dalam bentuk prototipe untuk kebutuhan penelitian dan pengembangan lebih lanjut.

Kata kunci: kebocoran radiator, ruang oli, ESP32, sensor *water*, *Internet of Things* (IoT), *monitoring* kendaraan.

ABSTRACT

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Title : IoT-Based Device for Oil Feasibility Detection and Water Coolant Leakage in the Engine Compartment of Two-Wheeled Vehicles

This research aims to design and test a device that detects radiator water leakage into the engine oil compartment of two-wheeled vehicles using Internet of Things (IoT) technology. Leakage of radiator water into the oil compartment can degrade engine performance and gradually damage internal components. The proposed system uses an ESP32 microcontroller as the control center and is equipped with a water sensor, temperature sensor, pressure sensor, and turbidity sensor to monitor the condition of engine oil. Testing was conducted under two conditions—when the engine is off and when it is running—to evaluate the effectiveness of leakage detection in various operational scenarios. Sensor readings are displayed locally via an OLED display and remotely through the Blynk application. Test results show that the system can accurately detect the presence of water in the oil and provide real-time information on temperature, pressure, and oil quality. Thus, this device serves as an early warning system that helps users prevent engine damage caused by radiator water leakage. The prototype was developed for research purposes and future development.

Keywords: radiator leakage, oil compartment, ESP32, water sensor, Internet of Things (IoT), vehicle monitoring.