

ABSTRAK

RANCANG BANGUN SISTEM MONITORING LINGKUNGAN IKAN GABUS BERBASIS SENSOR DAN *INTERNET OF THINGS* (IoT) DI KANDANG OM BOBBY

Karya tulis ilmiah berupa Laporan Akhir, 2025

Thoriq Thufailah

RANCANG BANGUN SISTEM MONITORING LINGKUNGAN IKAN GABUS BERBASIS SENSOR DAN *INTERNET OF THINGS* (IoT) DI KANDANG OM BOBBY

Budidaya ikan gabus (*Channa striata*) memerlukan kualitas lingkungan yang stabil agar pertumbuhan ikan optimal. Kualitas air seperti suhu, pH, oksigen terlarut (DO), dan kekeruhan (*kekeruhan*) menjadi faktor penting yang harus dikendalikan secara rutin. Oleh karena itu, pada proyek ini dirancang dan dibangun sebuah sistem monitoring berbasis *Programmable Logic Controller* (PLC) *Haiwell* dan teknologi *Internet Of Things* (IoT) untuk memantau dan mengatur kualitas air secara *real-time*.

Sistem ini dilengkapi dengan berbagai sensor seperti sensor suhu, sensor pH, sensor DO, dan sensor kekeruhan air (*turbidity*). Data yang diperoleh dikirimkan ke platform IoT untuk ditampilkan dalam bentuk grafik pemantauan. Ketika nilai parameter air berada di luar batas normal, PLC secara otomatis mengaktifkan pompa untuk proses pengurasan atau pengisian air. Dengan sistem ini, proses pemeliharaan ikan gabus menjadi lebih efisien, akurat, dan dapat dikendalikan dari jarak jauh melalui smartphone. Hasil pengujian menunjukkan bahwa sistem mampu beroperasi secara stabil dan responsif terhadap kondisi lingkungan yang berubah

Kata Kunci: Ikan Gabus, Internet of Things (IoT), PLC, Monitoring Otomatis

ABSTRACT

Design and Implementation of an IoT-Based Environmental Monitoring System for Gabus Fish (Channa striata) at Om Bobby's Pond

Scientific Paper in the form Final Report, 2025

Thoriq Thufailah

Design and Implementation of an IoT-Based Environmental Monitoring System for Gabus Fish (Channa Striata) at Om Bobby's Pond

The cultivation of gabus fish (Channa Striata) requires a stable and controlled aquatic environment to ensure optimal growth and health. Key water quality parameters such as temperature, pH level, dissolved oxygen (DO), and turbidity must be continuously monitored and maintained within acceptable thresholds. In response to this need, the present project developed an automated environmental monitoring system utilizing a Haiwell Programmable Logic Controller (PLC) integrated with Internet of Things (IoT) technology to enable real-time water quality management.

The system is equipped with multiple sensors including temperature, pH, DO, and turbidity sensors which transmit data to an IoT platform for graphical visualization and remote access. When any parameter exceeds predefined limits, the PLC initiates corrective actions by automatically activating water pumps for draining or refilling the aquarium. This solution enhances the efficiency and precision of fish farming operations, reduces manual intervention, and allows remote system monitoring via smartphones. Experimental results demonstrate that the system operates reliably and exhibits responsive behavior to environmental fluctuations.

Keyword: Gabus Fish, Internet of Things (IoT), PLC, Automatic Monitoring