

RANCANG BANGUN ALAT *MONITORING* PEMBERIAN PAKAN, PENDETEKSI KEKERUHAN DAN NILAI PH PADA IKAN KOKI SECARA OTOMATIS BERBASIS IOT

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ABSTRAK

Penelitian ini merancang dan membangun alat *monitoring* pemberian pakan, pendeteksi kekeruhan, dan pengukuran pH pada ikan koki berbasis *internet of things* (IoT) menggunakan ESP32. Sistem dilengkapi sensor pH 4502C, sensor *turbidity*, dan motor servo SG90 sebagai penggerak pakan otomatis yang dikontrol melalui aplikasi Blynk. Hasil pengujian menunjukkan akurasi sensor pH mencapai rata – rata 90,2 %, sedangkan sensor *turbidity* mampu mendeteksi tingkat kekeruhan 21–126 NTU dengan batas aman ≤ 50 NTU. Pengujian servo menunjukkan selisih sudut rata-rata 3° dari sudut perintah dengan konsumsi arus maksimum 228 mA saat berbeban. Sistem catu daya mampu bertahan hingga 360 menit dengan penurunan tegangan dari 4,20 V menjadi 3,35 V. Secara keseluruhan, sistem mampu melakukan *monitoring* kualitas air dan pemberian pakan otomatis dua kali sehari secara stabil dan *real-time*.

Kata kunci: *Internet of Things* (IoT), sensor pH, sensor *turbidity*, ikan koki, pemberian pakan otomatis.

***DESIGN AND CONSTRUCTION OF A FEEDING MONITORING DEVICE,
TURBIDITY DETECTION AND PH VALUE IN GOLDFISH
AUTOMATICALLY BASED ON IoT***

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ABSTRACT

This study aims to design and develop an Internet of Things (IoT)-based monitoring system for automatic fish feeding, turbidity detection, and pH measurement in goldfish aquariums using an ESP32 microcontroller. The system integrates a pH 4502C sensor, a turbidity sensor, and an SG90 servo motor as an automatic feeding actuator controlled through the Blynk application. Experimental results show that the pH sensor achieved an accuracy of 99.1 % with a minimum error of 0.9 %, while the turbidity sensor successfully detected water clarity levels ranging from 21 to 126 NTU, with a safe threshold of ≤ 50 NTU. Servo testing indicated an average angle deviation of 3° from the commanded position, with a maximum current consumption of 228 mA under load. The power supply system operated for up to 360 minutes, with voltage decreasing from 4.20 V to 3.35 V. Overall, the system performed stable real-time monitoring and automatic feeding twice daily, effectively maintaining aquarium water quality and goldfish health.

Keywords: *Internet of Things (IoT), pH sensor, turbidity sensor, goldfish, automatic feeding system.*