

ABSTRAK

RANCANG BANGUN SISTEM PENGENDALIAN KADAR OKSIGEN DALAM AIR DAN TINGKAT KEKERUHAN PADA KOLAM IKAN KOI BERBASIS *INTERNET OF THINGS* (IoT)

**(2026: xix + 71 Halaman + 39 Gambar + 17 Tabel + Daftar Pustaka +
Lampiran)**

ANNISA SERIN AULIA

062330320590

JURUSAN TEKNIK ELEKTRO

PROGRAM STUDI TEKNIK

ELEKTRONIKA POLITEKNIK NEGERI

SRIWIJAYA

Kualitas air merupakan faktor penting dalam menjaga kesehatan dan pertumbuhan ikan koi. Penelitian ini bertujuan merancang dan membangun sistem pengendalian kadar oksigen dalam air dan tingkat kekeruhan pada kolam ikan koi berbasis Internet of Things (IoT). Sistem menggunakan mikrokontroler ESP32 yang terintegrasi dengan sensor Dissolved Oxygen (DO), sensor turbidity, sensor pH, dan modul ADS1115 sebagai konverter sinyal analog ke digital. Data hasil pembacaan sensor digunakan untuk mengendalikan aerator dan pompa filtrasi secara otomatis, serta ditampilkan pada LCD dan dikirimkan ke aplikasi Telegram secara *real-time*. Hasil pengujian menunjukkan bahwa sistem mampu membaca nilai DO, pH, dan tingkat kekeruhan dengan baik. Aerator bekerja otomatis ketika nilai DO di bawah 6 mg/L, sedangkan pompa filtrasi aktif saat tingkat kekeruhan mencapai 30 NTU atau lebih. Dengan demikian, sistem yang dirancang mampu melakukan monitoring dan pengendalian kualitas air secara otomatis sehingga membantu menjaga kondisi kolam ikan koi secara lebih efektif.

Kata kunci: Internet of Things (IoT), ESP32, Dissolved Oxygen, Turbidity, pH, ADS1115, Telegram.

ABSTRACT

DESIGN AND DEVELOPMENT OF AN INTERNET OF THINGS (IoT) - BASED DISSOLVED OXYGEN AND WATER TURBIDITY CONTROL SYSTEM FOR KOI FISH POND

(2026: xix + 71 Pages + 39 Figures + 17 Tables + References + Appendices)

ANNISA SERIN AULIA

062330320590

ELECTRICAL ENGINEERING

STUDY PROGRAM OF ELECTRONICS ENGINEERING

STATE POLYTECHNIC OF SRIWIJAYA

Water quality is an important factor in maintaining the health and growth of koi fish. This study aims to design and develop an Internet of Things (IoT)-based water quality control system for koi fish ponds. The system employs an ESP32 microcontroller integrated with a Dissolved Oxygen (DO) sensor, turbidity sensor, pH sensor, and ADS1115 module as an analog-to-digital converter. Sensor data are used to automatically control the aerator and filtration pump, while the measurement results are displayed on an LCD and transmitted to Telegram in real time. The results show that the system is capable of monitoring DO, pH, and turbidity effectively. The aerator is activated when the DO level is below 6 mg/L, while the filtration pump operates when turbidity reaches 30 NTU or higher. Therefore, the developed system can automatically monitor and control water quality, helping maintain optimal conditions in koi fish ponds.

Keywords: *Internet of Things (IoT), ESP32, Dissolved Oxygen, Turbidity, pH, ADS1115, Telegram.*