

ABSTRAK

RANCANG BANGUN KONTROL SISTEM PERAWATAN IKAN GURAME BERBASIS *INTERNET OF THINGS* (IoT)

2025: 81 HALAMAN + 24 GAMBAR + 29 TABEL + LAMPIRAN

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Pemeliharaan benih ikan gurame memerlukan pengawasan lingkungan yang optimal agar tingkat kelangsungan hidupnya tetap tinggi. Pada fase awal pertumbuhan, suhu air dan kadar oksigen terlarut menjadi faktor penting yang memengaruhi kesehatan benih. Penelitian ini merancang dan membangun sistem otomatisasi perawatan benih ikan gurame berbasis mikrokontroler ESP32 dengan pendekatan Internet of Things (IoT). Sistem menggunakan sensor suhu DS18B20, modul RTC DS1307, dan dua relay untuk mengendalikan pemanas (heater) serta aerator. Pengendalian dilakukan melalui aplikasi Blynk dengan dukungan mode otomatis dan manual. Suhu air diatur berdasarkan ambang batas minimum dan maksimum, sementara aerator menyala selama 15 menit setiap jam menggunakan referensi waktu dari RTC. Semua konfigurasi disimpan dalam memori EEPROM agar tetap tersimpan saat perangkat dimatikan. Hasil pengujian menunjukkan bahwa sistem dapat menjaga suhu dalam rentang ideal dan mengaktifkan aerator sesuai jadwal, sehingga menciptakan lingkungan yang stabil bagi benih. Sistem ini diharapkan dapat meningkatkan efisiensi dan keberhasilan pemeliharaan benih ikan gurame.

Kata Kunci : Internet of Things (IoT), Sensor DS18B20, Modul RTC DS1307,
ESP-32

Sitasi : (2019-2025)

ABSTRACT

**DESIGN AND BUILD OF A CONTROL SYSTEM FOR GOURAMI FISH
CARE BASED ON THE *INTERNET OF THINGS* (IOT)
2025: 81 PAGES + 24 IMAGES + 29 TABLES + ATTACHMENTS**

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The cultivation of gourami fry requires optimal environmental control to maintain a high survival rate. In the early growth stage, water temperature and dissolved oxygen are critical factors affecting fry health. This study designed and built an automated care system for gourami fry using an ESP32 microcontroller with an Internet of Things (IoT) approach. The system integrates a DS18B20 temperature sensor, an RTC DS1307 module, and two relays to control a heater and an aerator. Control is managed through the Blynk application, supporting both automatic and manual modes. Water temperature is regulated based on user-defined thresholds, while the aerator runs for 15 minutes every hour using RTC time as a reference. All configurations are saved to EEPROM to retain data after power loss. The system also operates locally when the internet is disconnected. Test results show the system effectively maintains ideal water temperature and activates the aerator on schedule, providing a stable environment for the fry. This system is expected to improve the efficiency and success of gourami fry cultivation.

Keyword : Internet of Things (IoT), Sensor DS18B20, Module RTC DS1307, ESP-32

Citation : (2019-2025)