

ABSTRAK

RANCANG BANGUN ALAT PENYIRAM TANAMAN AGLONEMA OTOMATIS BERBASIS (IOT) *INTERNET OF THINGS* MENGGUNAKAN SUMBER ENERGI PANEL SURYA

(2025: 66 Halaman + 32 Gambar + 8 Tabel + Daftar Pustaka + Lampiran)

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Penelitian ini bertujuan untuk merancang alat penyiram tanaman aglonema otomatis berbasis *Internet of Things* (IoT) dengan sumber energi panel surya. Sistem dirancang menggunakan mikrokontroler ESP8266 yang terhubung dengan sensor kelembaban tanah (*soil moisture*), sensor suhu DS18B20, pompa air *submersible*, dan aplikasi Blynk sebagai pemantau data secara *real-time*. Alat akan menyiram tanaman secara otomatis ketika kelembaban tanah turun di bawah 30%. Sumber energi alat berasal dari panel surya yang mengisi baterai lithium 18650 berkapasitas 3500 mAh. Hasil pengujian menunjukkan sistem mampu bekerja hingga ± 34 jam tanpa pengisian ulang. Waktu pengisian baterai melalui panel surya berkisar antara 6–22 jam tergantung kondisi beban. Sistem ini tidak hanya memudahkan perawatan tanaman, tetapi juga mendukung efisiensi energi dan pemanfaatan sumber daya terbarukan.

Kata Kunci: *Internet of Things, aglonema, soil moisture, ESP8266, panel surya, otomatisasi.*

ABSTRACT

DESIGN ANF DEVELOPMENT OF AN AUTOMATIC AGLONEMA PLANT WATERING SYSTEM BASED ON INTERNET OF THINGS (IOT) USING SOLAR ENERGY AS A POWER SOURCE

(2025: 66 Pages + 32 Images + 8 tables + References + Appendices)

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This research aims to design an automatic aglaonema plant watering system based on the Internet of Things (IoT) and powered by solar energy. The system uses an ESP8266 microcontroller connected to a soil moisture sensor, DS18B20 temperature sensor, submersible water pump, and the Blynk application for real-time monitoring. The system automatically activates the water pump when soil moisture drops below 30%. The device is powered by a 5V 6W solar panel that charges a 3500 mAh lithium 18650 battery. Test results show that the system can operate for approximately 34 hours without recharging. Solar recharging time ranges from 6 to 22 hours depending on system load. This system not only simplifies plant care but also promotes energy efficiency and the use of renewable energy sources.

Keywords: *Internet of Things, aglonema, soil moisture, ESP8266, solar panel, automation.*