

ABSTRAK

RANCANG BANGUN SISTEM MONITORING LINGKUNGAN KANDANG AYAM SECARA *REAL-TIME* BERBASIS *INTERNET OF THINGS* (IOT)

(2026 : 69 Halaman + 38 Gambar + 7 Tabel + Daftar Pustaka + Lampiran)

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Kondisi lingkungan kandang ayam, seperti suhu, kelembapan, kadar gas amonia (NH_3), dan ketersediaan pakan, perlu dipantau karena memengaruhi kesehatan dan produktivitas ayam. Pemantauan secara manual dinilai kurang efektif karena memerlukan pengecekan secara langsung dan tidak dapat dilakukan secara terus-menerus. Oleh karena itu, laporan akhir ini merancang dan mengimplementasikan sistem monitoring lingkungan kandang ayam secara *real-time* berbasis *Internet of Things* (IoT). Sistem menggunakan sensor DHT22, sensor MQ137, dan sensor *load cell* yang diproses oleh ESP32. Data hasil pengukuran ditampilkan pada LCD dan dikirimkan ke aplikasi Blynk melalui jaringan internet. Hasil pengujian selama empat hari menggunakan enam ekor ayam menunjukkan rentang suhu sebesar $27,3^{\circ}\text{C}$ – $37,1^{\circ}\text{C}$, kelembapan sebesar 59,9%RH–96,1%RH, dan kadar gas amonia sebesar 13,4–27,4 ppm. Perubahan kadar gas amonia dipengaruhi oleh kondisi kebersihan kandang, suhu, kelembapan, dan sirkulasi udara, sedangkan berat pakan menunjukkan pola penurunan yang berbeda setiap hari akibat tingkat konsumsi ayam yang tidak selalu konstan. Sistem juga mampu menampilkan data secara *real-time* dan mengirimkan notifikasi ketika pakan mencapai batas minimum yang ditentukan.

Kata kunci: Internet of Things (IoT), Monitoring Real-Time, Kandang Ayam, DHT22, MQ137, *Load Cell*, Blynk.

ABSTRACT

DESIGN AND DEVELOPMENT OF A REAL-TIME CHICKEN COOP ENVIRONMENTAL MONITORING SYSTEM BASED ON THE INTERNET OF THINGS (IOT)

(2026 : 69 Pages + 28 Figures + 7 Tables + Reference + Attachment)

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The environmental conditions of a chicken coop, such as temperature, humidity, ammonia gas (NH₃) concentration, and feed availability, need to be monitored as they significantly affect the health and productivity of chickens. Manual monitoring is considered less effective because it requires direct inspection and cannot be performed continuously. Therefore, this final project designs and implements a real-time chicken coop environmental monitoring system based on the Internet of Things (IoT). The system utilizes a DHT22 sensor, an MQ137 gas sensor, and a load cell sensor processed by an ESP32 microcontroller. The measurement data is displayed on an LCD and transmitted to the Blynk application via an internet connection. Experimental results over four days using six chickens showed a temperature range of 27.3°C–37.1°C, humidity of 59.9%RH–96.1%RH, and ammonia gas levels of 13.4–27.4 ppm. The variation in ammonia gas levels is influenced by coop cleanliness, temperature, humidity, and air circulation, while feed weight shows different decreasing patterns each day due to the inconsistent consumption rate of the chickens. The system is also capable of displaying real-time data and sending notifications when the feed level reaches a predefined minimum threshold.

Keywords: Internet of Things (IoT), Real-Time Monitoring, Chicken Coop, DHT22, MQ137, Load Cell, Blynk.