

**SISTEM OTOMASI DAN MONITORING LINGKUNGAN KANDANG
BERBASIS IOT MELALUI APLIKASI MOBILE DI PETERNAKAN
RIZQIE JEMBER**

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ABSTRAK

Produktivitas ayam ras petelur sangat dipengaruhi oleh kondisi lingkungan kandang, seperti suhu, kelembaban, dan kadar gas amonia. Ketidakseimbangan faktor-faktor ini dapat menyebabkan penurunan kesehatan ayam dan hasil produksi. Penelitian ini dilakukan di Peternakan Rizqie, Jember, yang menghadapi kendala dalam pemantauan dan pengendalian kondisi lingkungan kandang secara efektif. Untuk itu, dikembangkan sistem otomasi dan *monitoring* berbasis *Internet of Things* (IoT) yang terintegrasi dengan aplikasi *mobile*. Sistem ini memanfaatkan *mikrokontroler* ESP32 yang dilengkapi sensor DHT22 untuk pengukuran suhu dan kelembaban, serta sensor MQ-135 untuk deteksi gas amonia. Data lingkungan dikirimkan secara *real-time* ke aplikasi *mobile* yang dirancang menggunakan *framework* Flutter dan terhubung dengan Firebase sebagai basis data. Sistem ini juga mendukung otomatisasi pengendalian, seperti penyemprotan cairan probiotik ketika parameter lingkungan melebihi batas aman. Hasil pengujian di lapangan menunjukkan adanya peningkatan efisiensi pemantauan, penurunan waktu kerja harian, serta kontribusi terhadap kenaikan produktivitas telur dan profit mitra sebesar 30,7%. Rata-rata profit mitra meningkat dari 5,8 juta rupiah per bulan menjadi 7,6 juta rupiah per bulan setelah implementasi sistem.

Kata Kunci: *IoT, Lingkungan Kandang, Aplikasi Mobile, Otomasi*

***AUTOMATION AND ENVIRONMENTAL MONITORING SYSTEM FOR
CHICKEN COOPS BASED ON IOT THROUGH A MOBILE APPLICATION
AT RIZQIE FARM JEMBER***

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ABSTRACT

The productivity of layer chickens is highly influenced by environmental conditions within the coop, such as temperature, humidity, and ammonia gas levels. Imbalances in these factors can lead to decreased animal health and production output. This study was conducted at Rizqie Farm in Jember, which faced challenges in effectively monitoring and controlling coop conditions. To address this issue, an Internet of Things (IoT)-based automation and monitoring system was developed and integrated with a mobile application. The system utilizes an ESP32 microcontroller equipped with a DHT22 sensor for measuring temperature and humidity, and an MQ-135 sensor for detecting ammonia gas levels. Environmental data is transmitted in real-time to a mobile application built using the Flutter framework and connected to Firebase as the database. The system also supports automated control actions, such as probiotic spraying when environmental parameters exceed safe thresholds. Field testing showed improvements in monitoring efficiency, reduced daily manual work, and positive impacts on egg production and partner profits, which increased by 30.7%. The average partner profit increased from ±5.8 million rupiah per month to ±7.6 million rupiah per month after implementing the system.

Keywords: *IoT, Chicken Coop Environment, Mobile Application, Automation*