

ABSTRAK

Dimas Wibowo¹, Fenilisa Adi Artanto², Aslam Fatkhudin³

IMPLEMENTASI SISTEM PEMANTAUAN KADAR GAS AMONIA BERBASIS IOT DENGAN SISTEM MONITORING *REAL-TIME* BERBASIS APLIKASI UNTUK KEAMANAN DAN KEBERSIHAN KANDANG AYAM

Penelitian ini bertujuan mengembangkan sistem pemantauan kadar gas amonia (NH_3) berbasis *Internet of Things* (IoT) dengan aplikasi monitoring *real-time* untuk meningkatkan keamanan dan kebersihan kandang ayam. Sistem menggunakan sensor MQ-135 yang terhubung dengan mikrokontroler ESP32 dan dikembangkan menggunakan *Firebase* serta aplikasi *mobile* berbasis *React Native*. Data dikumpulkan melalui pengujian pada sensor dengan tiga paparan amonia yang berbeda. Hasil pengujian menunjukkan bahwa sistem mampu mendeteksi kadar amonia secara akurat dan mengirim data secara *real-time* ke *cloud*. Fitur aktuator kipas otomatis aktif saat kadar amonia melebihi 25 ppm, memungkinkan tindakan mitigasi dini. Kendala utama berupa waktu pemanasan sensor dan ketergantungan pada kestabilan koneksi *Wi-Fi*. Meski demikian, sistem menunjukkan responsivitas tinggi dan keandalan yang baik. Keseluruhan sistem terbukti efektif membantu peternak dalam memantau serta mengendalikan kualitas udara kandang, sehingga dapat mencegah dampak negatif terhadap kesehatan ayam dan lingkungan sekitar.

Kata Kunci: *Internet of Things (IoT)*, Gas Amonia, Monitoring *Real-Time*, Sensor MQ-135

**Undergraduate Program in Informatics
Faculty of Engineering and Computer Science
University of Muhammadiyah Pekajangan Pekalongan**

ABSTRACT

Dimas Wibowo¹, Fenilisa Adi Artanto², Aslam Fatkhudin³

Implementation of an Iot-Based Ammonia Gas Level Monitoring System with A Real-Time Application-Based Monitoring System for Chicken Coop Safety and Hygiene

This study aims to develop an *Internet of Things* (IoT)-based ammonia (NH₃) gas monitoring system with a *real-time* monitoring application to improve the safety and hygiene of chicken coops. The system uses an MQ-135 sensor connected to an ESP32 microcontroller and developed using *Firebase* and a *React Native*-based *mobile* application. Data was collected through testing on the sensor with three different ammonia exposures. The test results show that the system is capable of accurately detecting ammonia levels and sending data in real time to the cloud. An automatic fan actuator feature is activated when ammonia levels exceed 25 ppm, enabling early mitigation measures. The main constraints are sensor warm-up time and dependence on Wi-Fi connection stability. However, the system demonstrates high responsiveness and good reliability. Overall, the system proved effective in helping farmers monitor and control the air quality in their barns, thereby preventing negative impacts on the health of the chickens and the surrounding environment.

Keywords: *Internet of Things (IoT), Ammonia Gas, Real-Time Monitoring, MQ-135 Sensor*