

AUTOMATIC CLEANING AND DISINFECTANT SPRAYING SYSTEM IN CHICKEN COOPS BASED ON IOT WITH NH₃ SENSOR AND SOLAR ENERGY

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ABSTRACT

The poultry farming industry faces challenges in maintaining coop hygiene due to ammonia (NH₃) gas contamination, which can lower the chickens' quality of life and increase the risk of disease. This study aims to design and implement an Internet of Things (IoT)-based automatic system that detects ammonia levels using an MQ-135 sensor and ESP32 as the main controller, while activating a conveyor motor for waste removal and a pump for automatic disinfectant spraying. The system is powered by solar energy to enhance efficiency and environmental friendliness and is equipped with real-time monitoring and control capabilities via the MQTT Panel application on smartphones. Testing results show that the device functions properly across various testing scenarios, achieving a 100% success rate in detecting ammonia levels above the threshold and activating the actuators as needed. This system is expected to assist farmers in maintaining sustainable coop hygiene, reducing operational costs, and improving chicken health.

Keywords: Internet of Things (IoT), MQ-135 sensor, ESP32, disinfectant spraying, conveyor motor