

Abstract

Chicken feed fermentation is a crucial technique in the poultry industry as it optimizes the preservation of nutritional content in feed, extending its shelf life. Manual supervision during the fermentation process often faces challenges in monitoring fluctuating temperature and gas levels, leading to uncertainties that can affect fermentation outcomes. This tool aims to enhance efficiency and reduce difficulties in monitoring the chicken feed fermentation process. It is equipped with a DHT11 sensor for temperature detection, an MQ-135 sensor for ammonia gas detection, a water pump for spraying EM4 fermentation liquid, and a DC motor with a mixer for stirring the fermenting feed. Sensor data is processed in real-time using a Mamdani fuzzy logic algorithm to make decisions based on predefined fuzzy rules. Testing, conducted 51 times, demonstrated high accuracy, with 99.43% accuracy for the pump and 99.48% for the mixer. The main result of the testing indicates that the tool can monitor via smartphone and provide automatic control during the fermentation process. Following testing, the researcher conducted dissemination at the Jago Karah Farm Jambangan poultry farm to gather feedback from poultry farmers on the developed system and tool. The results show that fermentation was successfully carried out without opening the container to add liquid, reducing errors during fermentation.

Keywords: *Fermentation, Poultry Farming, Internet of Things, Fuzzy Logic, Ammonia*