ABSTRACT

The fermentation process of tempeh dage is influenced by many factors, both raw material factors and environmental factors. Environmental factors that influence include temperature and humidity. In the conventional fermentation process of tempeh dage, it is done by covering the material that is ready to be fermented with cloth or plastic and placed on a small rack to achieve the desired temperature and humidity values, but this conventional process has an uncertain success rate, thus requiring a system for monitoring temperature and humidity for stabilization in the fermentation process of tempeh dage. This system uses a DHT22 sensor to read humidity and temperature values in a controlled room with an Wemos microcontroller-based internet of things, so it can be monitored remotely. This system is equipped with a room heater consisting of a light bulb and an fan heater, and a blower for temperature control. Here is the translation. The final result of this system will compare the quality of tempe dage fermentation using room heaters in the form of light bulbs and fan heaters. From the testing, the accuracy for the DHT22 sensor for temperature measurement was found to be 98.61%, and for humidity, it was 98.134. The temperature recorded during the stabilization at 27°C for 35 minutes using a fan heater was noted to be stable up to 34.1°C, while the bulb component stabilized at a temperature of 31.5°C. Meanwhile, the temperature stabilization at 40°C using a blower was successfully recorded up to 29.8°C. The QoS measurement for data transmission to the Antares platform resulted in an average delay of 199 ms.

***Keywords:** DHT22, Fermentation, Internet of Things, Tempe Dage, Wemos*