ERROR RATE ANALYSIS OF DHT-22 SENSOR IN DETECTING TEMPERATURE AND HUMIDITY IN DUCK EGG HATCHING MACHINE AT UD PUTRA JEMBER

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ABSTRACK

Poultry farming in Indonesia has great potential, but the success of egg hatching is highly dependent on temperature stability. UD Putra Jember located in East Java faces challenges in increasing productivity due to temperature instability in the incubator, which causes a high hatching failure rate. To overcome this, a temperature and humidity measuring device using a DHT-22 sensor and an ESP-32 microcontroller has been designed. The data obtained from the sensor is then analyzed by comparing it with a thermohygrometer to ensure measurement accuracy. The results show that the temperature measurement error ranges from 0°C to 0.2°C, while the humidity measurement error ranges from 0.8% to 1.3%. The relative error values range from 0% to 0.56% for temperature measurement and the relative error values range from 0% to 2.17% for humidity measurement, the error values are in accordance with the datasheet with a tolerance of 0.5°C for temperature measurement and 5% for humidity measurement and the relative error values do not exceed 10% which indicates good accuracy.

Keywords: *ESP-32, DHT-22, Relative Error, Hatching incubator, Thermohygrometer*