

***ANALYSIS OF TEMPERATURE AND HUMIDITY SENSOR
MEASUREMENT ERROR LEVELS IN A BROILER CHICKEN BROODING
CAGE MONITORING SYSTEM***

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ABSTRACT

The success of the broiler chicken brooding phase depends on maintaining a stable brooding house temperature; therefore, an accurate monitoring system is required. This study aims to analyze the measurement errors of DS18B20 and DHT22 sensors in a broiler chicken brooding house. The experiment was conducted at temperature set points of 31°C and 34°C with five heater positions. Sensor measurements were compared with a reference instrument using Absolute Percentage Error (APE), Mean Absolute Percentage Error (MAPE), Root Mean Square Error (RMSE), and Bias. The results showed that the DS18B20 sensor achieved a MAPE of 2.25%, an RMSE of 0.70°C, and a Bias of -0.55°C, while the DHT22 sensor achieved a MAPE of 3.57%, an RMSE of 1.10°C, and a Bias of 0.21°C. These results indicate that the DS18B20 provides better temperature measurement accuracy than the DHT22, while heater position affects the temperature distribution inside the brooding house.

Keywords: DS18B20, DHT22, sensor accuracy, MAPE, RMSE, broiler chicken brooding house.