

## **ABSTRACT**

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*Thesis Title : Temperature Monitoring System for Biomass-Fueled Briquette  
Oven with Internet of Things Platform*

*This study aims to develop a data acquisition system for a briquette oven, evaluate the system used and adjust the blower speed to achieve temperature stability. The method used is by measuring the temperature of the briquette oven by 4 K-type thermocouple sensors displayed on Blynk. System evaluation using thermo camera for system performance and Arduino IDE software for Internet of Things performance. The test results show that the data acquisition can be implemented well. System performance on sensor reading speed is very good, in 1 second interval the sensor can read the temperature in 301 ms and sensor accuracy < 6%. Data availability reached 8,14% error on microSD is quite high. Connectivity with Blynk reached an error of 1,29% showing the reliability of the IoT system used with the duration of sending data to the Blynk server 343 ms by ESP32. From the first oven test, it can be ascertained that to maintain temperature stability, the optimal VFD frequency is 8,3 Hz, and it is necessary to adjust the air direction of the furnace. As a result, in the second test, the production duration can be reduced from 44 hours with energy consumption of about 2.370,20 Wh to 41 hours with energy consumption of about 2.202,56 Wh. Although accuracy and availability produce a fairly high error value, it can reduce production duration. This indicates that there are energy savings that have an impact on reducing operational costs, including fuel and electrical energy use.*

*Keywords: Biomass Fuel, Blynk, Energy Saving, Internet of Things, K-type Thermocouple.*