

ABSTRACT

Organic waste in Indonesia dominates the total waste generated. The majority of organic waste processing is only made into compost, this process takes a long time. As an alternative, organic waste can be processed into briquettes or charcoal through a carbonization process. Briquettes made from organic waste such as leaves, coconut shells, and vegetables, not only serve as an alternative energy source but can also reduce environmental pollution.

The development of an IoT (Internet of Things)-based furnace using a temperature sensor allows for more accurate monitoring during the carbonization process. The development of this furnace is equipped with a prediction system and integrated with a mobile application. This technology not only provides a solution for organic waste management but also maximizes the potential of existing resources.

Based on the research conducted, the carbonization process for making briquettes shows significant differences depending on the type of material used. Materials with low moisture content such as coconut shells and dry leaves require a shorter time to produce optimal carbon. While materials with high moisture content such as green leaves and vegetables require a longer time. Materials with coconut shells can be predicted using polynomial regression of order 10. This prediction proved effective with an accuracy of 99.51%. Tests on ESP32 and ESP8266 microcontrollers show good throughput according to ITU-T G.1010 standards. Based on the same standard, the delay obtained only meets the medium value category. The results of the mobile application questionnaire survey show that the majority of users are satisfied with the appearance and function of the application, with an average satisfaction score of 91%. This shows that the application is acceptable to users.

Keywords: Organic Waste, Briquette, Internet of Things.