

ABSTRACT

In today's era, technology plays an important role in everyday life. Over time, technology has experienced rapid development which has brought new problems, for example the increasing need for energy and the depleting availability of conventional fuels, which encourages people to seek solutions through research on renewable energy. One way to get alternative energy is to convert leaf waste into briquette fuel. This briquette is an energy source derived from biomass, and can be used as an alternative to oil. The process of processing leaf waste into briquettes is carried out through carbonization, which turns the raw material into black carbon through burning in a closed space such as a tank or heat-resistant container used to put the leaf material.

Based on these problems, this research offers a solution by developing a prototype of an IoT-based carbonization monitoring tool for processing leaf waste into briquettes. This tool is designed to improve the efficiency and effectiveness of leaf waste processing with carbonization and pyrolysis processes in real time. By using IoT technology. In addition, this tool is connected to a WiFi-based microcontroller which allows users to monitor the carbonization process via an Android smartphone-based application.

The test results show that briquettes can be used properly and can last up to 52 minutes during the combustion process. Furthermore, the QoS test results show that this system has good performance with an average throughput reaching 105,333 kbit/s in the three scenarios tested, and the average delay in the three scenarios is 213,209 ms. In addition, through a user satisfaction survey, it is known that users of the "MyBriquettes" mobile application are very satisfied with the experience of using the application. This indicates that this application has succeeded in providing satisfactory services to users.

Keywords: Briquet, Carbonization, Mobile Application, Internet of Things (IoT), Quality of Service (QoS).