

RANCANG BANGUN ALAT KARBONISASI DENGAN TINJAUAN KINERJA ALAT KARBONISASI

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ABSTRACT

Carbonization technology is one way to utilize waste biomass into alternative fuels where the carbonization process is still in a very traditional stage takes a lot of time and produce little. Carbonization convert solid biomass feedstock into charcoal. Carbonization equipment types used in this design is the electric carbonization. Carbonization tool designed feedstock capacity 3 kg with a power of 3.6 kW to use fire bricks type c-2 and using ceramic fiber insulation that has a high insulating value. This study aims to review the performance of the tool and determine the efficiency of the carbonization heat produced by the carbonization equipment and the efficiency of heat during the process of carbonization of coconut shell. Results of this study indicate, the value of thermal efficiency of 60.484%, while the coconut shell raw material of the highest heat efficiency is 61.73% and 33.65% efficiency terendah is the amount of heat that is lost versus heat input. This tool has a value carbonization free air convection at a high enough temperature at the outer wall due to high tool temperature than surrounding environment, it is used less because insulator thickness to contain the propagation of conduction from furnace. Carbonization chamber is capable of producing charcoal quality standards in the combustion temperature 6500 °C for 1hr burning with as much raw material which results rendemennya 1 kg of 50% of the raw material.

Keywords : electric furnace, conductivity, convection, carbonisation equipment