ENGINEERING OF PYROLYSIS TEST EQUIPMENT FOR WOOD SAWDUST FUEL BIOMASS

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ABSTRACT

Solid biofuels, in various forms, are an integral component of the energy mix in almost all developed and developing countries. Solid biofuels in the form of pellets, briquettes, chips, wood, or even as raw materials have been used in many industries, especially in the heat and electricity producing sectors. There has been a great deal of concern regarding the environmental, economical and technical aspects of the exploitation of solid biofuels, leading to major advances in recent years in this area. These developments mainly focus on the solid biomass pre-treatment process into the biofuel chain, the minimum requirements for solid biofuels produced, and the efficiency and environmental performance of thermochemical conversion. This study aims to design a test kit for wood sawdust pyrolysis as a new renewable energy source (EBT). Wood sawdust is put into a tube which is then compacted and closed then given a heat source in the center of the tube (reactor). 6 thermocouples are installed at 6 points to measure the temperature distribution that occurs at several locations on the powder. There are 3 variations of temperature tested, namely 400, 600 and 750oC. Research shows that the designed test equipment has good performance and works according to its function. The test results show that the powder located closest to the heat source has the highest temperature among other temperatures, with an average heat absorption of 40%.

Kata Kunci: *pyrolysis test equipment, sawdust, biomass, temperature distribution*