

Durability Test of Fixed Bed Downdraft Gasifier Using Coconut Shells fuel for Produce Combustible Gases

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Abstrak

Gasification is a thermo chemical process for converting solid fuel such as coal, wood and other biomass into fuel gas that consists of the components CO, H₂, CH₄, CO₂ and N₂. Gasification technology is increasingly in demand due to oil fuel price is more expensive. And of course gasification technology must also be able to maintain continuity of Producer gas if want to compete in the world of industry. The research objective was to study the characteristics of gasification with coconut shell fuel. Type of gasification reactors that used is a downdraft fixed bed gasifier. This study aimed to obtain the temperature profile in the gasifier during operation, flow rate, flame visualization of combustion of producer gas and calculation aspects thermodynamic. The purpose of the above studies carried out to operating the gasifier for 12 hours with the primary air flow rate and suction blower that optimum. Gasification process use coconut shell with Equivalence ratio 0.423. The best efficiency of the current study scored 78.8 %; LHV from producer gas acquired 1070.49 kcal/m³.