ABSTRACT

Indonesia as an agricultural country has abundant agricultural waste which can be used as fuel, but in fact it still relies on fossil fuels as the main energy source. One solution that can be used to solve the problem of using LPG is the use of biomass. Biomass resources are alternative energy and renewable energy because they can be renewed. Therefore, this study aims to analyze the effect of variations in biomass and air blowing patterns on the efficiency of updraft-type gasification stoves. The test was carried out using the SNI Biomass Furnace method and an air velocity assistance of 4.50 m / s. Tests used variations in biomass: namely sengon wood pellets and rice husk wood pellets, variations in air blowing patterns: namely direct and cyclone, variations in height: 25 and 40 cm and variations in the number of holes: 30 and 70. Based on the test results show stove performance updraft type gasification is good, the best rate of fuel consumption is obtained at sengon biomass with a cyclone blowing pattern and a gasifier height of 40 cm with a hole of 70 of 0.49 kg / hour, the best percentage of char is in sengon biomass with a direct blowing pattern and a gasifier height of 25 cm with hole 70 was 6.37%, and the best thermal efficiency was at sengon biomass with a cyclone blowing pattern and a gasifier height of 25 cm with hole 70 at 18.80%.

Keywords: biomass, wood pellet, updraft type gasification stove, air blowing pattern.