

ABSTRACT

Nowadays, the dependence on the use of LPG fuel is still very high. The utilization of biomass as a teak wood pellet can be used as renewable energy with energy conversion techniques in the form of biomass gasification. Wood pellets were chosen because of their abundant availability and their contents including high volatile ingredients and are environmentally friendly fuels because they are not included in fossil fuels. One of alternative technology from techniques that can be used in various fields such as biomass gas as fuel. The biomass gasification stove in this industry is a Top-Lit Up Draft (T-LUD) Gasifier with a stove diameter 30 cm and height 60 cm. It has three types of gasifiers with the variations in the number of holes, which are 20, 30 and 40 air holes, also the variations in the velocity of air flow (0.5 m / s; 1 m / s; 1.5 m / s; 2 m / s; 2.5 m / s; 3 m / s) s; 3.5 m / s; 4 m / s). Testing TLUD stoves with two variables with varying amounts in the width of the primary air flow. Besides the variables, TLUD stove testing was carried out with a biomass furnace SNI 7926: 2013. From the characterization of biomass stove that has been done, the longest operation time is 23,02 minutes on the number of 40 air holes variation at a speed of 0,5 m/s. the highest thermal efficiency is 13,55 % on the number of 40 air holes variation at a speed of 2,5 m/s.

Keywords : *Teak wood pellet, gasification, Top-Lit Up Draft (T-LUD) Gasifier, thermal efficienc*