ABSTRACT

Biomass is a renewable energy derived from living or recently dead organisms such as wood, agricultural waste, and biogas. One of the applications of biomass as an alternative energy is as a gasification stove fuel. The development of gasification stoves as a solution in food processing technology has been rampant, but there are still shortcomings, one of which is the amount of heat wasted into the environment or not distributed properly to the pan that causes a decrease in the performance of gasification stove. The factor of the roof of the gasifier in the form of a flat is considered to be the cause of the poor distribution of heat because the resulting fire is not focused on the pan. By using sengon wood pellet fuel and updraft type gasification stove, in this study was done modification of the shape of the roof of the gasifier becomes more angled with some variation of slope angle so as to minimize the waste of heat out, and more focused the heat distribution on the pan. The best gasification stove performance is achieved by a 10° gasifier because it has the highest efficiency values of 4.38% (Cold-Start High Power) and 11.86% (Hot-Start High Power & Simmering-Low Power).

Keywords *: gasifier, tilt angle of roof gasifier, thermal efficiency*