PERFORMANCE STOVES OF BIOGAS FUEL HAVE HIGH EFFICIENCY WITH ADDITION REFLECTOR

Name : MARRIO SYAHRIAL
Number : 2109 106 028
Department : Mechanical Engineering FTI-ITS
Academic Advisor : Dr. Bambang Sudarmanta, ST. MT.

ABSTRACT

The purpose of this research was to design a biogas-fueled stove that could be operated at low pressure and with the addition of a reflector was expected that thermal energy from some of biogas was not discharged into the environment but reflected into the combustion chamber and the reflector served also as a regulator of the air supply need for combustion. Biogas-fueled stoves so obtained the maximum performance and utilization of biogas fuel itself became more efficient.

The used research method was an experimental method to determine the effect of biogas fuel using for the performance produced by stove. Test material used as fuel in the experiment this time was biogas. In stoves using a standard burner "LPG gas stove" that had been modified, but the biogas-fueled. Varying the pressure to find the best efficiency of the resulting stove. The data measured in the form of biogas mass flow rate, water temperature, the temperature of the reflector and the resulting flame temperature. Performance of each test was indicated on the stove, sfc, and efficiency of the stove, as well as visualization of the flame. Then test using the reflector by means of pressure that had been selected the best efficiency from the previous testing without reflector.

The results stove-11C TDC biogas-fueled show at a pressure of 0.25 Lbf/in2 work best stoves have an efficiency of 50.59% with a power of 1.631 kW and the length of time beginning 3.7 Liter boiling water for 20.38 minutes and sfc stove for 0.3451 kg/KW.jam. While testing with a 10 mm reflector added stove efficiency increased by 53.42%, a decrease sfc of 0.3168 kg/KW.jam, start boiling faster time to 19.14 minutes and the average flame temperature increases in the combustion chamber at 366, 62oC.

Key Word : Performance Stove, Reflector, AFR, Radiation, Biogas, Biogas and Composition.
( halaman kosong )