

# PROTOTYPE OF MOBILE INCINERATOR USING PIROLYSYS FUEL

Syamsul Hadi\*

## Abstract :

The annual generation of Municipal Solid Wastes (MSW) in Surakarta residence is reach 265 ton(Sudrajat, 2004). The main components of these are organic materials, paper, plastics/rubbers, textiles, and metals (Winara, 2008). These wastes are stored and transported in and through the society's living space and have a great potential of adversely affecting the hygiene of the people living in the areas concerned. It also has a potential for affecting the aesthetic of the environment. Incinerator is proposed as one of several optional most effective technologies for reduction solid waste, it is reach 2-5% reduction (Goerner, 2003).

From the results of 2<sup>nd</sup> year research the value of kinematic viscosity on composition paper 25% - PE 75% had an average of 25cSt, while for two other compositions of 1935 cSt and 20.7 cSt. While the viscosity of the composition of 25% paper - 75% of biomass had an average of 56 mm<sup>2</sup>/s, while the two other compositions by 39.67 mm<sup>2</sup>/s and 46.67 mm<sup>2</sup>/s. The density for the pyrolysis oil with a composition of 25% paper - 75% of PE obtained at 897 kg/m<sup>3</sup>, in both other composition obtained 1113 kg/m<sup>3</sup> and 1181 kg/m<sup>3</sup>. While on the test paper with a composition of 25% - 75% of biomass has a value average of 1140.33 kg/m<sup>3</sup>, to the other of 1095 kg/m<sup>3</sup> and 1104.67 kg/m<sup>3</sup>. The calorific value of paper on the composition of 25% - 75% of PE has an average calorific value equal to 43.55 MJ/kg, with a flash point of 48 ° C. On paper the composition of 25% - 75% of biomass amounted to 10.05 MJ/kg and the other at 10.56 MJ/kg and 11.23 MJ/kg. Also obtained several nozzle designs that give the conclusion the higher pressure and the thickness of the nozzle tip the better the droplet and the bursts pattern, with a few other designs still need testing. Airflow and temperature distribution throughout the combustion chamber was obtained by Fortran simulation and it was predicted the intake air temperature in the pyrolysis reactor at 600<sup>0</sup>C, drying machine at 300<sup>0</sup>C, and the exhaust chimney at 700<sup>0</sup>C.

**Keywords:** solid waste, pyrolysis, low-temperature, incinerator, drying

---

\* Staf Pengajar Jurusan Teknik Mesin FT UNS