INTISARI

Tujuan penelitian ini untuk mengamati pembakaran bahan bakar diesel yang dikombinasikan dengan prosentase volume air dan bahan emulsi (*emulsifier*) yakni *alkyl benzene sulfonic acid* (ABS). Komposisi bahan bakar emulsi yang digunakan dalam studi eksperimen ini adalah campuran bahan bakar diesel, *emulsifire* dan air. Komposisi bahan bakar emulsi dirancang menurut prosentase volume air dan *emulsifier* di dalam bahan bakar diesel dengan variasi prosentase 10%, 20% dan 30%. Parameter yang diamati temperatur api pembakaran, temperatur dinding annulus Combustor, temperatur gas panas, *air fuel ratio* (AFR), kerugian kalor dan bentuk api dari perbedaan komposisi prosentase volume bahan bakar emulsi. Dalam pengujian ini menggunakan *Combustion Laboratory Unit* C 491. Hasil penelitian menunjukkan bahwa kalor yang terserap karena pendinginan (Qa) pada AFR stoikiometri bahan bakar diesel (solar) 26,334 kW lebih kecil dibandingkan dengan bahan bakar emulsi (30,096 kW), maka penggunaan bahan bakar emulsi pada *Burner Combustion Laboratory Unit* C 49 sangat cocok (sesuai). Bentuk *flame* yang dihasilkan oleh pembakaran bahan bakar emulsi adalah pendek, turbulen dan diselimuti uap air.

Kata kunci : *diesel fuel, emulsifier, burner.*

ABSTRACT

The objective of this experimental study is to observe combustion of fuel diesel and combination of volume procentages of the water and *alkyl benzene sulphonic acid (ABS)* as emulsifier. Emulsified-fuel composition used in this experimental study was a mixing among diesel fuel, emulsifier and water. The composition was determined according to the volume percentages of water and emulsifier media in diesel fuel varied 10, 20 and 30%. Parameters to be examined were flame temperature, wall combustor annulus temperature, exhaust gas temperature, air fuel ratio (AFR), heat loss and flame formed from different volume percentages of emulsified-fuel composition. The experiment was conducted in Combustion Laboratory Unit C491. The result showed that heat absorber by cooling (Qa) on the AFR stoichiometric of combustion diesel fuel 26.334 kW lessthan emulsified-fuel (30.096 kW), hence usage of emulsified-fuel on a burner Combustion Laboratory Unit C491 very compatible. Form of flame yielded by combustion of emulsified-fuel is short, turbulence and blanketed by water vapour.

***Keywords**: diesel fuel, emulsifier, burner.*