SUMMARY

Geefry Nindyo Pinandito, Department of Mechanical Engineering, Faculty of Engineering, University of Brawijaya, April 2016, The Effect of Clove Oil Percentage on The Combustion Characteristic of Jathropa Curcas Biodiesel Droplet, Academic Supervisor : Lilis Yuliati and Nurkholis Hamidi.

As time goes by, Indonesia diminishing energy reserves, the goverment should discover of more renewable energy fields in order to prevent exhaustion of energy reserves. Biodiesel selected because this fuel has a calorific value of diesel resemble. Unfortunately, biodiesel still has a high viscosity, additional additives and catalysts to drive down the value of its viscosity. The addition of clove oil have been selected for clove oil is one of the main volatile aromatic oils and has a low viscosity. The test used for droplet combustion because the fuel droplets, air and fuel can react with both cross-sectional area because the air is very large.

This observations were made to determine the combustion characteristics such as: ignition delay, burning rate, flame visualization, combustion temperatures and microexplosion phenomenon . The percentage increase in clove oil biodiesel jatropha oil was 1%, 2%, 3% and 4%.

The results showed that the ignition delay jathropa oil biodiesel that has been mixed with clove oil has decreased significantly. From the first during 6,21 s become of 4,35s to increments of 1%. As for the best result of the addition of clove oil on the percentage of 3% is for 4.01 s. Furthermore, for the burning rate of castor oil biodiesel mixed with clove oil declines. Values of pure jathropa oil biodiesel burning rate is 1.30 mm^2 / s, while the value of burning rate with a mixture of oil of cloves 1% worth of 1.28 mm^2 / s. Decrease the lowest occurred in 4% increase in the amount of 1.22 mm^2 / s. For visualization of the flame obtained decrease flame height for each additional percentage clove oil and an increase in the width of fire every additional percentage of clove oil. Combustion temperature decreased each additional percentage clove oil. From research gained combustion temperature of pure castor oil biodiesel amounted to 544, 275 ° C, while the low burning temperature is obtained when the addition of 4% of clove oil is 491,25^oC.

Keywords : droplet, biodiesel, clove oil, combustion characteristics