

SUMMARY

Ardira Fariz Pasha, Department of Mechanical Engineering, Faculty of Engineering, Brawijaya University, January 2017, *The Effect of Alcohol Addition on Combustion Characteristics of Jatropha Curcas Biodiesel Droplet*, Supervisor: Lilis Yulianti dan Purnami.

Inequality between the amount of crude oil production in total consumption continues experienced by Indonesia, which led to Indonesia must import crude oil from other countries. Preventive measures carried out as a solution to the problem is to replace fossil fuels with alternative fuels that are environmentally friendly, easy to find, and a short production process.

Much of the research on alternatives of fuel oil, for example is vegetable oil. The vegetable oils derived from the seeds of *Jatropha* is castor oil. Castor oil can be a mixture of fuel, but still has a high viscosity, so it must be converted into biodiesel to be used as a mixture of diesel with a lower viscosity.

So with low viscosity, biodiesel atomization process will be easier and the ability to evaporate and blend with the air will be faster. The addition of alcohol to the combustion characteristics of castor oil biodiesel droplet aims to reduce viscosity and increase fuel cetane value, so that the fuel will be more flammable and more easy to be atomized. The alcohol used is methanol, ethanol, propanol, and butanol with the percentage of alcohol in a mixture of 20% by volume.

Droplet size of 1mm with a tolerance of 0.1 mm. Combustion characteristics examined included ignition delay, visualization of flame, burning temperature and burning rate. The results showed that the value of ignition delay mix of biodiesel with a low of propanol is 0,4s. The size of the smallest flame is owned by a mix of biodiesel with ethanol amounted to 22.46 cm to 5.53 cm for height and width. The highest temperature of combustion produced from a mixture of biodiesel and propanol at 678.32 ° C. The highest rate for burning owned by a mix of biodiesel with methanol was 1.03 mm² / s.

Keywords: *Alcohol, Jatropha Curcas Biodiesel, Combustion Characteristics, Droplet Combustion.*