Desain *Prototype* Reaktor Biodiesel Tipe *Static Mixer* Sistem *Batch* (*Prototype Design of Biodiesel Reactor Type Static Mixer Batch System)*

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ABSTRACT

The biodiesel transesterification reaction takes place on a special reactor wherein the reactor is equipped with a stirrer which mixes methoxide and oil. The reactor used for the biodiesel production process is generally a blade agitator type. The agitation mechanism using blade agitator still has a deficiency that is stirring or mixing occurs only around the impeller when done at low rotation or RPM and result in less optimal collision. This research aims to design and test the prototype of biodiesel reactor type static mixer batch system and determine the characteristics of biodiesel produced. This research aims to design and test the prototype of biodiesel reactor type static mixer batch system and determine the characteristics of biodiesel produced. The biodiesel reactor has been designed to produce static mixer elements with dimensions of 15 mm diameter, 50.8 mm long, 45^o angle with the number of elements in each reactor as many as 15 units where the number of reactors used is 2 units, maximum capacity 1.6 liter reactor volume. Based on the results of the tests that have been done, the material rotation for 20 minutes resulted 85% yield and 30 minutes yielded a yield of 90%, while the control yield was 85%. While the value of density at play time for 20 minutes equal to 865,318 kg/m^3 whereas at 30 minute time equal to 860.064 kg/m^3 control equal to 853.6 kg/m^3.

Keywords : *biodiesel, static mixer, rendement, density.*