

ABSTRACT

Preliminary design of Biodiesel with capacity 50,000 ton/year is a plant to be built in Palembang, in the area of land 22,050 m². This chemical plant will be operated for 330 day/year or 24 hours a day with 134 employees.

Raw material needed is Palm Oil 50,278.28 ton/year and Metanol 5,663.05 ton/year. The production process will be operated at temperature 60°C, at pressure about of 1 atm using Continuous Steared Tank Reaktor (CSTR). The utility consist of 3,024,144.98 kg/year of cooling water, 22,650.62 kg/hour of steam, 4,688,430.912 liter/year of fuel while the power of electricity of about 50.9313 kwh provided by PLN. This chemical plant also use generator set as reserve, and the water which used for requirement utility taken away from MUSI river.

An economic analysis shows that this chemical plant need to be covered by fixed capital of about Rp.143,163,776,927.34 working capital of about Rp.100,081,818,212.03 Percentage of return on investemen (ROI) before tax is 17.10 % while after tax is 10.26 % Pay out time (POT) before tax is 3.69 years while after tax is 4.91 years. The value of break evek point (BEP) is for about 41.98 % and shut down point (SDP) is of about 25.36 % Based on the economic analysis, It is concluded that plant design of Biodiesel with capacity 50,000 ton/years is visible to be built.