

ABSTRACT

Preliminary design of Benzyl Alcohol with capacity 5,000 ton/year is plant to be built in industry area Gresik-East Java, in the area of land 50000 m². This chemical plant will be operated for 330 day/year or 24 hours a day with 150 employees.

Raw material neededs is Benzyl Chloride 0.7781 ton/hour, Sodium Carbonat 0.4479 ton/hour, and Water 0.6719 ton/hour. The production process will be operated at temperature 100°C, at pressure about of 1 atm using Continuous Steared Tank Reaktor (CSTR) with convesion 72% . The utiliy consist of 11,145.68 kg/hour of cooling water, 806.2285 kg/hour of processing water, 3504.167 kg/hour of housing water, 121.8459 kg/hour of steam, 214.2159 m³/hour of fuel while the power of electricity of about 114.664 kwh provided by PLN. This chemical plant also use generator set as reserve.

An economic analysis shows thats this chemical plant need to be covered by fixed capital of about Rp.179,430,684,521.36 working capital of about Rp.51,298,627,745.51. The profit before tax is Rp.39,731,020,047.53 while the profit after tax is Rp.19,865,510,024. Percentage of return on investemen (ROI) before tax is 22.1428% while after tax is 11.0714%. Pay out time (POT) after tax is 3.1111 years while after tax is 4,7458 years. The value of break even point (BEP) for about 40.6890% and shut down point (SDP) of about 14.5106%. Based on the economic analysis, It is concluded that plant design of Benzyl Alcohol with capacity 5,000 ton/years visible to be built.