

ABSTRACT

Preliminary design of Diisopropyle Ether with capacity 50,000 ton/year is a plant to be built in Cilacap (Central Java) in the area of land 2,2 ha. This chemical plant will be operated for 330 day/year or 24 hours a day with 144 employees.

Raw material needed is IsoPropil Alcohol 1.625.843,74 kg/ yers, its get by import from the producer country like Singapura, japan and China. This plant also needed about 837,8 kg/yers acid catalyst Zeolite beta and about 16.544,84 kg /yers of silica gel as a molecular sieve. The production process will be operated at temperature 150-210 °C, at pressure about of 10 atm using Fixed Bed, Singgel Bed Catalitic Reactor. The utility consist of 689,60 m³ / day of cooling water, 116,45 m³ / day of steam, for sanitasion about 49 m³ / day of fuel while the power of electricity of about 325,77 kwh provided by PLN. This chemical plant also use generator set as reserve.

An economic analysis shows that this chemical plant need to be covered by fixed capital of about \$13.696.529,05 or Rp.169.688.780,997. working capital of about \$21.434.220,68 dan Rp.203.625.096.431,03. Percentage of return on investemen (ROI) before tax is 25,00%, while after tax is 15,00%, Pay out time (POT) before tax is 2,7022 years while after tax is 3,7031 years. The value of break event point (BEP) is for about 44,95% and shut down point (SDP) is of about 22,78% Based on the economic analysis, It is concluded that plant design of Diisopropyl Ether with capacity 50,000 ton/years is feasible to be built.

