

INTISARI

Pabrik asam asetat ini dirancang dengan kapasitas 100.000 ton/tahun untuk mengurangi 80% ketergantungan impor asam asetat. Untuk memenuhi kebutuhan tersebut digunakan bahan baku asetaldehid sebanyak 82.248,90 ton/tahun dengan katalisator mangan asetat sebanyak 200 ton/tahun. Asam asetat dibuat dengan mereaksikan asetaldehid dengan udara di dalam reaktor gelembung dengan katalis mangan asetat pada tekanan 5 atm dan reaksi dijalankan secara adiabatik dengan suhu masuk 31,34°C dan keluar reaktor pada suhu 91,52°C.

Utilitas yang diperlukan terdiri dari air sebanyak 146361,13 kg/jam, listrik sebanyak 25.703.206 kWh/tahun, dan bahan bakar diesel oil sebanyak 664,75 L/jam untuk menghasilkan steam jenuh sebanyak 8.416,6 kg/jam.

Pabrik ini direncanakan berdiri di Kawasan Industri Bintan, Batam, Kepulauan Riau. Pabrik didirikan di atas tanah seluas 4 hektar dengan jumlah pekerja sebanyak 292 orang.

Modal tetap yang diperlukan sebanyak US\$ 11.817.353,06+ Rp 7.116.419.521,36 dan modal kerja sebanyak US\$ 15.266.263,98+ Rp 8.321.881.872,80. Hasil evaluasi ekonomi yang diperoleh adalah *Percent Return of Investment* (ROI) sebelum pajak sebesar 62,58%, *Pay Out Time* (POT) sebelum pajak sebesar 1,38 tahun, *Break Even Point* (BEP) sebesar 51,58% dan *Shut Down Point* (SDP) sebesar 40,56% Nilai *Discounted Cash Flow of Rate of Return* (DCFRR) sebesar 31,17%. Berdasarkan hasil evaluasi ekonomi, pabrik ini layak untuk dikaji lebih lanjut.

ABSTRACT

Preliminary design of acetic acid plant with production capacity of 100.000 ton/year is intended to reduce about 80% import demands. In order to fulfill the demands, 82.248,90 ton/year of acetaldehyde and 200 ton/year of catalyst manganese acetate are needed. Acetic acid are prepared by reacting acetaldehyde and oxygen from air in bubble reactor with a help of catalyst manganese acetate at adiabatic condition and the pressure is 5 atm.

Utility needed to extend the process system consists of 40,50 ton/year of demineralized water, 25.703.206 kWh/year of electricity, and 171,41 US gal/year of diesel oil to produce 8,22 ton/year saturated steam.

The plant will be established in Kawasan Industri Bintan, Batam, Kepulauan Riau with 4 hectare area and 292 manpower are needed. Batam is chosen because of its strategic location at free trade area. The location of the plant also near to market targets which are Pure Terephthalic Acid company in Dumai and Plaju. The transportation and energy are easy to get to provide the process of the plant.

Fixed capital needed is US\$ 11.817.353,06+ Rp 7.116.419.521,36 and working capital of US\$ 15.266.263,98+ Rp 8.321.881.872,80. Based on economic analysis, the Percent Return of Investment (ROI) before tax is 62,58%, Pay Out Time (POT) before tax is 1,38 year, Break Even Point (BEP) is 51,58% and Shut Down Point (SDP) is 40,56%. *Discounted Cash Flow of Rate of Return* (DCFRR) is 31,17%. Therefore, further research on acetic acid plant from acetaldehyde and air with production capacity of 100.000 ton/year should be carried out.