



ABSTRACT

Maleic anhydride is made by oxidation reaction between butane and air with presence of VPO as catalyst in fixed bed multi tube reactor.

The plant was designed to operate on capacity of 25.000 tons/year, butane needs as much as 4938,37 kg / hour and air needs as much as 146.401,09 kg / hour. Utilities needs include water as much as 32 279 kg / hour, electricity as much as 2.2 MVA , fuel oil as much as 1230 kg / hour and compressed air (STP) as much as 100 m³/hour.

The planned factory was established in 2016 in the industrial area Cilegon, West Java. Land used as many as 5 hectares including residential and plant expansion. Plant work continuously for 24 hours per day for 330 days per year with 220 employers.

Fixed Capital (FCI) requirement of US\$ 26.992.179,25 + Rp. 107.139.930.359 and working capital of US\$ 16.847.110,35 + Rp. 28.013.666.995. Profit before tax of Rp. 108.037.665.342 and after tax of Rp. 54.018.832.671. ROI before tax is 28,65% and after tax is 14,33%. POT (Pay Out Time) before tax is 2,59 year and after tax is 4,11 year. BEP (Break Even Point) is 47,97% from maximum production capacity whereas SDP (Shut Down Point) is 26,17%. With consideration of the characteristic of the raw materials and products, operating conditions, the consumers who need, and similar plants that already established in the world, so that this plant is classified as medium-risk plant. Restriction that applies is the value of BEP is 40-60% for plants in Indonesia, minimum ROI of 11%, five years maximum POT, and discounted cash flow rate of return (DCFRR) which is 1,5 times higher than bank interest rates. Based on the results of the economic analysis and constraints, it can be concluded that the plant Maleic Anhydride from Butane with capacity of 25.000 tonnes per year is interesting to study further.



INTISARI

Maleic anhydride dibuat dengan cara mengoksidasi butana dengan udara dengan bantuan VPO sebagai katalisator pada reaktor *fixed bed multi tube*.

Pabrik dirancang beroperasi dengan kapasitas 25.000 ton/tahun, dengan kebutuhan butana sebanyak 4938,37 kg/jam serta kebutuhan udara sebanyak 146.401,09 kg/jam. Kebutuhan utilitas meliputi air sebanyak 32279 kg/jam, listrik 2,2 MVA, bahan bakar berupa *fuel oil* sebanyak 1230 kg/jam dan udara tekan (STP) sebanyak 100 m³/jam.

Pabrik ini direncanakan didirikan pada tahun 2016 di kawasan industri Cilegon, Jawa Barat. Luas tanah yang digunakan sebanyak 5 Ha termasuk untuk perumahan dan perluasan areal pabrik. Pabrik bekerja secara kontinu selama 24 jam per hari selama 330 hari per tahun dengan jumlah karyawan 220 orang.

Kebutuhan modal tetap, FCI sebesar US\$ 26.992.179,25 + Rp. 107.139.930.359 dan modal kerja sebesar US\$ 16.847.110,35 + Rp. 28.013.666.995. Laba sebelum pajak sebesar Rp. 108.037.665.342 dan setelah pajak Rp. 54.018.832.671. ROI sebelum pajak 28,65% dan setelah pajak 14,33%. POT (*Pay Out Time*) sebelum pajak 2,59 tahun dan setelah pajak 4,11 tahun. BEP (*Break Even Point*) sebesar 47,97% dari kapasitas maksimum produksi sedangkan SDP (*Shut Down Point*) sebesar 26,17%. Dengan pertimbangan sifat bahan baku dan produk, kondisi operasi, adanya konsumen yang membutuhkan, dan sudah berdirinya pabrik sejenis di dunia, maka pabrik ini digolongkan sebagai pabrik beresiko sedang. Batasan yang berlaku adalah nilai BEP 40-60% untuk pabrik di