

ABSTRACT

MANUFACTURE OF ETHYLENE GLYCOL FROM ETHYLENE OXIDE AND WATER CAPACITY 90.000 TONS/YEAR (Design Distillation Column (DC-301))

By

Indri Febrian Esa Tika

The necessity of Indonesia about ethylene glycol ($C_2H_4(OH)_2$), mainly as raw material in polyester industry is much enough. Polyester is polymer compound type thermoplastic, that is used as raw material in textile and pastic industry.

Ethylene glycol is made from ethylene oxide and water through hydrolysis process in fixed bed multitubular reactor by using catalyst amberjet 4200 cl in temperature $84,85\text{ }^\circ\text{C}$ and pressure 11 atm with 90% conversion. This industry will be planted in the region of Cilegon in Banten Province, and will be planned produce 90.000 tons/year of ethylene glycol, in operating time 24 hours/day, 330 days/year.

The supplying requirements of utility plant are namely treatment system and water supply, steam supply systems, chilled ammonia, instrument air supply systems, and power generation systems.

Feasibility analysis manufacture of ethylene glycol are :

<i>Fixed Capital Investment (FCI)</i>	= Rp. 415.574.185.757
<i>Working Capital Investment (WCI)</i>	= Rp. 73.336.621.016
<i>Total Capital Investment (TCI)</i>	= Rp. 488.910.806.773
<i>Break Even Point (BEP)</i>	= 33,33 %
<i>Pay Out Time before Taxes (POT)_b</i>	= 1,11 tahun
<i>Pay Out Time after Taxes (POT)_a</i>	= 1,35 tahun
<i>Return on Investment before Taxes (ROI)_b</i>	= 67,95 %
<i>Return on Investment after Taxes (ROI)_a</i>	= 54,36 %
<i>Discounted Cash Flow (DCF)</i>	= 55,19 %
<i>Shut Down Point (SDP)</i>	= 23,68 %

The type of company is Limited Liability Company (PT), which is using line and staff organizational structure, headed by a director who is assisted by the director of production and director of finance with amount of the official employee are 147 people. Consider the feasibility analisis of economic, establishment of ethylene glycol plant has to be studied further, because the plant is profitable and has good prospects.