

## ABSTRACT

### MANUFACTURE OF LINIER ALKIL BENZENA FROM BENZENA AND OLEFIN CAPACITY 100.000 TONS/YEAR (Design Reactor (RE-201))

By

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Linear Alkyl Benzene is one of chemical product that to be used as raw material in detergent industry. The necessity of Linear Alkyl Benzene in Indonesia is increasing every year and so far the need of that material is still imported from abroad. So the development of Linear Alkyl Benzene plant is needed to support industrial development in the country.

Linear Alkyl Benzene is produced by reacting Benzene and the olefin in the multitubular fixed bed reactor at a temperature of 100 °C and pressure of 5,3 atm with 98% conversion. The reactor product flowed into the distillation tower-301 to be separated from the raw materials that have not reacted, and then purified by separating the main product by-product using distillation tower-102. After the product was cooled and poured into the storage tank products. The purity of the Linear Alkyl Benzene (major product) of 99,8%, and paraffin (product side) of 95,3%.

Plant's production capacity is planned 100,000 ton / year with 330 working days within 1 year. The plant location is planned establishing in Banten Province Cilegon industrial area. Labor required are 153 people with a business entity form Limited Liability Company (PT), headed by a director who is assisted by the director of production and director of finance with line and staff organizational structure.

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

From economic analysis is obtained:

<i>Fixed Capital Investment</i>	(FCI)	= Rp 371.406.893.442
<i>Working Capital Investment</i>	(WCI)	= Rp 65.542.392.960
<i>Total Capital Investment</i>	(TCI)	= Rp 436.949.286.402
<i>Break Even Point</i>	(BEP)	= 55,60 %
<i>Shut Down Point</i>	(SDP)	= 45,23 %
<i>Pay Out Time before taxes</i>	(POT) <sub>b</sub>	= 1,45 years
<i>Pay Out Time after taxes</i>	(POT) <sub>a</sub>	= 1,75 years
<i>Return on Investment before taxes</i>	(ROI) <sub>b</sub>	= 50,10 %

*Return on Investment after taxes* (ROI)<sub>a</sub> = 40,08 %

*Discounted cash flow* (DCF) = 42,76 %

Consider the summary above, it is proper establishment of Linear Alkyl Benzene plant is studied further, because the plant is profitable and has good prospects.