

## ABSTRACT

### POLYVINYL CHLORIDE PLANT PRE DESIGN FROM ETHYLEN, CHLORIDE ACID, AND OKSIGEN 100.000 TON/YEAR CAPACITY (Fluidized Bed Reactor Design (RE-101))

By  
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Polyvinyl chloride is one of the most important polymer in chemical industry, because the largest is used in many industries such as rubber substitute, coating, flooring, cable isolation, many kinds of construction equipments, tank lining, phonograph record, and the other plastic equipments like gasket, shoes, skin imitation, pipes, and housewife equipments.

Polyvinyl chloride demand in Indonesia is increasing every year and during this requirement such materials are still imported from abroad. On the other hand, polyvinyl chloride world demand is increasing as big as the growth of industries which is using polyvinyl chloride. So, polyvinyl chloride plant building is needed to support the domestic industries growth.

Polyvinyl chloride is produced by suspension polymerization system in batch reactor at 57,5°C and 7,6 atm with 96% conversion. The bottom outlet of the reactor introduce to flash drum to separate the residue of reactants from its product, and the top outlet of flash drum is recycled to liquefaction compressor. The bottom outlet of flash drum introduced to stripper to stripping the residue of reactant which is entering the particle of product. Then, the product is separated from its mother liquor using centrifuge which is enter to rotary dryer for decrease the water containing the product.

Plant's production capacity is planned 100.000 ton/year with 330 working day in a year. Manufacturing site is established in an area planned industrial park located at Salira Bojonegoro road, Serang in Banten province. Manpower needed as many as 189 people with a business entity from limited liability company (PT) which is headed by a Director who is assisted by the director of production and director of finance with line and staff organizational structure.

Provision of utility plant needs a treatment system and water supply, steam supply system, instrument air supply system, and power generation system.

From the economic analysis is obtained :

<i>Fix Capital Investment</i>	(FCI)	= Rp 199.590.921.556
<i>Working Capital Investment</i>	(WCI)	= Rp 35.221.927.333
<i>Total Capital Investment</i>	(TCI)	= Rp 234.812.848.889
<i>Break Event Point</i>	(BEP)	= 39, 1312 %
<i>Shut Down Point</i>	(SDP)	= 29, 0819%
<i>Pay Out Time before taxes</i>	(POT) <sup>b</sup>	= 1,3514

<i>Pay Out Time after taxes</i>	(POT)a	= 1,6340
<i>Return of Invesment before taxes</i>	(POT)b	= 54,3990 %
<i>Return of Invesment after taxes</i>	(POT)a	= 43,5192 %
<i>Discounted Cash Flow</i>	(DCF)	= 43,9610 %

Consider the summary above, it is proper establishment of the factory Polyvinyl chloride is studied further, beacuse it is a prifitable plant and has good prospects.