ABSTRACT

Preliminary design of methyl chloride from methanol and hydrogen chloride acid plant is designed with capacity 35.000 tons product / year, with minimum 99,9 % methyl chloride content in the product. This plant will operate 330 days a year. This plant will need 24,35 tons/year methanol as raw material and hydrogen chloride acid of 66,51 tons/year. We plan to build this plant at industrial zone in east Kalimantan, will use about 5 hectar area and 135 total workers..

Production of methyl chloride could be devided into three major step, the first step is raw material preparation, vapourize methanol and hydrogen chloride and make these vopours suitable as reactor feed at 613 K and 1.3 atm. The next step is chemical reaction between methanol vapour and hydrogen chloride acid vapour over alumina gel catalist with 95 % of methanol is converted to methyl choride. The last step from methyl chloride production is product purification with minimum 99,9 % methyl choride content in the product.

This plant will need water about 290,090 kg water/hour, fuel oil about 702,60 kg/hour, and total electricity 217,52 kW. The plant will need total fixed capital investment US$ 11.107.409,25 = Rp 99.966.683.274,24, and working capital US$ 16.302.231,55 + Rp 146.720.083.942

This is low risk plant, from economic evaluation we know that net profit after taxes about Rp 15.575.924.221 / year, with Rate of Return on Investment (ROI) 16 % , Pay out Time (POT) 3.91 years, Break Event Point (BEP) 55,06 % design capacity, Shut Down Point (SDP) 25.76 % design capacity, and Discounted Cash Flow (DCF) 14,07 %. Base on these results we have conclusion that this methyl choride from methanol and hydrogen chloride acid plant with capacity 35.000 tons product /year is interesting.

