

INTISARI

Vinyl chloride monomer (VCM) dibuat dengan beberapa metode, salah satunya *catalytic pyrolysis* terhadap *ethylene dichloride* (EDC). Kebutuhan bahan baku EDC dipenuhi oleh produsen dalam negeri yang menjamin keberlangsungan dan ketersediaan bahan baku EDC. VCM digunakan sebagai bahan baku utama industri *polyvinyl chloride* (PVC) dan sebagai pelarut pada industri *anti-knocking agent*. Kebutuhan VCM dalam negeri masih dipenuhi oleh impor, sehingga pendirian pabrik VCM untuk mengurangi ketergantungan impor. Pendirian pabrik direncanakan beroperasi selama 300 hari/tahun dengan kapasitas produksi VCM 75.000 ton/tahun. Bahan baku yang dibutuhkan adalah EDC sebanyak 27.522,4265 kg/jam. Metode yang digunakan adalah *catalytic pyrolysis* dengan katalis Pd/C. Secara umum, tahapan proses pembuaan VCM adalah sebagai berikut: (i) reaksi pirolisis EDC menjadi VCM dan HCl, (ii) proses pemurnian VCM dan HCl melalui proses distilasi. Unit utilitas sebagai penunjang menyuplai kebutuhan air pendingin sebanyak 459.057,9270 kg/jam, *steam* sebanyak 347.932,4826 kg/jam dan kebutuhan listrik 8 MW. Pabrik ini akan didirikan di Kabupaten Serang, Provinsi Banten dengan pertimbangan *raw material oriented*. Ketersediaan air utilitas dipenuhi oleh air laut. Perhitungan evaluasi ekonomi memberikan hasil *annual cash flow* (ACF) sebesar US \$ 92.735.978,44; nilai *pay out time* (POT) 4,5 tahun, nilai *net profit over total lifetime of the projrct* (NPOTLP) US \$ 965.183.456,05; nilai *total capital sink* (TCS) US \$ 973.556.513,67; nilai *rate of return on investment* (ROI) adalah 82,32 %, nilai *rate of return based on discounted* (DCF) sebesar 44,01 % dan nilai *break event point* (BEP) sebesar 41,62 %. Dengan pertimbangan hasil evaluasi tersebut, maka pabrik VCM dengan kapasitas 75.000 ton/tahun ini layak untuk dikaji lebih lanjut.

Kata Kunci: *VCM, EDC, Pirolisis, Utilitas, Evaluasi Ekonomi.*

ABSTRACT

Vinyl chloride monomers (VCM) are made by several methods, one of which is *catalytic pyrolysis* against *ethylene dichloride (EDC)*. The needs of EDC raw materials are met by domestic producers who ensure the sustainability and availability of EDC raw materials. VCM is used as the main raw material of the *polyvinyl chloride (PVC)* industry and as a solvent in the *anti-knocking agent industry*. Domestic VCM needs are still met by imports, so the establishment of VCM factories to reduce import dependency. The establishment of the plant is planned to operate for 300 days/year with a VCM production capacity of 75,000 tons/year. The raw material needed is *Ethylene Dichloride* as much as 27,522.4265 tons/year. The method used is *catalytic pyrolysis* with a Pd/C catalyst. In general, the stages of the VCM harvesting process are as follows: (i) the EDC pyrolysis reaction into VCM and HCl, (ii) the VCM and HCl purification process through distillation. Utility units as support supply cooling water needs as much as 459,057.9270 kg/hour, steam as much as 347,932.4826 kg/hour and electricity needs 8 MW. This factory will be established in Serang Regency, Banten Province with consideration of raw material oriented. The availability of utility water is met by seawater. Calculation of economic evaluation provides *annual cash flow (ACF)* results of US\$ 92,735,978.44; *pay out time (POT)* value of 4.5 Years, *net profit value over total lifetime of the project (NPOTLP)* US\$ 965,183,456.05; *total capital sink (TCS)* is US\$ 973,556,513.67; *the rate of return on investment (ROI)* of 82.32 %, the value of the rate of *return based on discounted (DCF)* of 44.01 % and the *break event point (BEP)* value of 41.62%. Considering the results of the evaluation, the *Vinyl Chloride Monomer* plant with a capacity of 75,000 tons / year is worthy of further study.

Keywords: *VCM, EDC, Pyrolysis, Utility, Economic Evaluation.*