

ABSTRACT

Vinyl Chloride Monomer (VCM) is substance for making Poli Vinyl Chloride (PVC) which used for making home tools, office equipments, water pipe etc. In indonesia, Vinyl Chloride Monomer factory purpose to full fill domestic required even for export.

Basic material for VCM product is Ethylene Dichloride (EDC). EDC is made up from ethylene, HCL, and Oxygen. Ethylene Dichloride mechanism reaction need oxychlorinasm process in reactor fixed bed non adiabatic with CuCl_2 solid catalyst. The reaction runs on 280°C with 11 atm pressure. It has about 99% conversion. And than reaction product EDC process craking in reactor Furnace to make VCM, The reaction runs on 508°C with 13,8 atm pressure. It has about 60% conversion. The product appeared after separated process in distillation minaret than condensed. It's saved as liquid essence.

Vinyl Chloride Monomer factory will build in Cilegon industry distric at Banten with 250.000 ton/year product capacity and has 155 employess. The factory need 155.396,076 ton/year of ethylene basic material; 156.198,240 ton/year of hydrogen chloride; and 380.609,6105 ton/year of oxygen wich taken from air. It also need about 3.673.706,60 ton/year of water for production process which taken from river; 3700 kw of electricity which supply by PLN; and 33.952,9363 ton/year of fuel.

The factory fixed capital is Rp 792.033.541.778,17 it's from bank loan and capital investment and the factory needs Rp 682.748.518.262,52 working capital. It has Rp 268.681.769.375,61 profit in a year before tax and Rp 161.209.061.625,36 in a year after tax. It's counted that return on investment (ROI) is 33.92% before tax and 20.35% ater tax; pay out time (POT) is 2,27 year before tax and 3,29 after tax; break even point (BEP) 47,17%; shut down point (SDP) 30,047%; and discounted cash flow rate of return (DCFR) 18.83%. Based on the economic analysis, It is concluded that plant design of Vinyl Chloride Monomer with capacity 250.000 ton/years visible to be built.