ABSTRACT

Acrylonitrile (ACRY) is substance for making Synthetic Fiber, Rubber, Plastic which used for making home tools, office equipments, etc. Acryonitrile Monomer factory purpose to full fill domestic required even for export. Vinyl Chloride Monomer factory will build in South Sumetra industry distric at Mariana with 60000 ton/year product capacity and has 166 employes.

Basic material for ACRY product is Ethylene Cyanohidrine (EC).. Ethylene Cyanohidrine mechanism reaction need dehidrasi process in reactor fixed bed non adiabatic with AL2O3 solid catalyst. The reaction runs on 250 ^{0}C with 2 atm pressure. It has about 99% conversion. And than reaction product ACRY process craking in distillations minaret to make ACRY, The reaction runs on 87.54 ^{0}C with 1.1 atm pressure. It has about 80% conversion. The product appeared after reboiler process in distillation minaret than condensed. And than reaction product ACRY process craking in Stripper minaret to make ACRY, The reaction runs on 104,4°C with 1.2 atm. It's saved as liquid essence.

The factory need 9,1755 kw of electricity which supply by PLN; and 41,131,4623 kj/k of fuel.

The factory fixed capital is Rp 294,510,772,013.2, it's from bank loan and capital investment and the factory needs Rp 199,479,508,008 working capital. It has Rp 82,054,146,389 profit in a year before tax and Rp 41,027,073,195 in a year after tax. It's counted that return on investment (ROI)is 28% before tax and 14% ater tax; pay out time (POT) is 2.91 year before tax and 4.91 after tax; break even point(BEP) 55.74%; shut down point(SDP) 43.32%; and discounted cash flow rate of return (DCFR)30%. Based on the economic analysis, It is concluded that plant design of Vinyl Chloride Monomer with capacity 60000 ton/years visible to be built.