

ABSTRACT

Preliminary design of azodicarbonamide plant from biurea and chlorine with the capacity of 50.000 ton/year is planned to be built in Cilegon, Banten. This chemical plant will be operated for 330 day/year or 24 hours a day with 150 employees.

Raw material needed is biurea of 59834 ton/year and chlorine of 39535 ton/year. The production process will be operated at temperature of 45 °C, and pressure about 1 atm using bubble reactor with 85 % conversion of azodicarbonamide. The utility consists of 43651 ton/year of cooling water, 13368 ton/year of housing water, while the power of electricity of about 273.82 kWh provided by PLN. This chemical plant also uses generator set as electrical reserve.

An economic analysis shows that this chemical plant needs by fixed capital of about \$ 11.961.194,04 + Rp 185.724.114.463, working capital of about Rp 161.263.818.925 + \$ 17.433.926,37. The profit before tax is Rp 117.660.201.731,34 per year while the profit after tax is Rp. 100.011.171.471,98 per year. Percentage of return on investment (ROI) before tax is 0,83 %, while that of after tax is 0,95 %. Pay out time (POT) after tax is 2.70 years while that of after tax is 4.3 years. The value of break even point (BEP) of about 43,10 % and shut down point (SDP) of about 25,82 %. Based on the economic analysis, It is concluded that plant design of azodicarbonamide with capacity 50,000 ton/years feasible to be built.