ABSTRAK

Pabrik Ammonium Nitrat dari Ammonia dan Asam Nitrat memberikan prospek yang sangat baik mengingat kebutuhan Ammonium Nitrat di Indonesia yang semakin meningkat. Pabrik ini merupakan industri hulu, karena produk yang dihasilkan dapat digunakan sebagai bahan baku industri lainnya, seperti agrochemical sebagai insektisida, sedangkan di industri pertambangan sebagai bahan peledak.Pembuatan Ammonium Nitrat dari Ammonia dan Asam Nitrat menggunakan proses prilling, dimana reaksi di jalankan pada reactor gelembung (*Reactor Bubble Coloumn*). Operasi dijalankan pada tekanan 4 atm dan suhu 150ºC. Konversi reaksi 80% dan menghasilkan produk dengan kemurnian 99,5 %. Pabrik ini di rancang dengan kapasitas 300.000 ton/tahun. Pabrik ini direncanakan berdiri pada tahun 2024 di daerah Cikampek, dengan luas tanah 86700m^2 dengan jumlah karyawan 124 orang. Pabrik bekerja selama 24 jam dengan sekali turn around.Dalam sehari terbagi 3 kelompok shift dengan 3 kelompok bekerja dan 1 kelompok libur.Bahan baku yang di perlukan adalah Ammonia 99,5 % sebanyak 70.636,43 ton/tahun dan Asam Nitrat 60 % sebanyak 261.402,12 ton/Tahun.Pabrik ini membutuhkan air sebanyak 8.382,1 kg/jam, steam 5.179,69 kg/jam, listrik 765,67 kW/jam. Modal tetap (*Fixed Capital Investment*) yang diperlukan Rp. 638.859.002.505 modal kerja (*Working Capital*) sebanyak Rp.280.204.045.095. Biaya setiap tahun yang di keluarkan meliputi biaya pembuatan (*Manufacturing Cost*) sebesar Rp 1.477.162.107.548 dan biaya pengeluaran umum (*General Expense*) sebesar Rp.513.970.651.730 Keuntungan yang diperoleh sebelum pajak sebesar Rp. 245.298.959.849 dan setelah pajak sebesar Rp. 183.974.219.887 Hasil evaluasi ekonomi menunjukkan *Return On Investnment* (ROI) sebelum pajak 30,08 % dan sesudah pajak 22,12%. *Pay Out Time* (POT) sebelum pajak 2,407 tahun dan sesudah pajak 3,05 tahun. *Break Event Point* (BEP) adalah 55,01 % sedangkan *Shut Down Point* (SDP) sebesar 38,34 %. *Discounted Cash Flow Rate of Return* (DCFRR) sebesar 15 % Berdasarkan pertimbangan dari hasil perhitungan evaluasi ekonomi, dapat di simpulkan bahwa pendirian pabrik Ammonium Nitrat dari Ammonia dan Asam Nitrat layak untuk didirikan dan menarik untuk dikaji lebih lanjut.

Kata Kunci : Ammonium Nitrat, Amonia, Asam Nitrat, Proses Prilling

ABSTRACT

The Ammonium Nitrate factory from Ammonia and Nitric Acid gives very good prospect, considering the requirement of Ammonium Nitrate in Indonesia which progressively increase. This factory is an upstream industry, because the resulting product could be used as the other industrial raw material, like agrochemical as insecticide, while in the mining industry as detonator. The process of making Ammonium Nitrate from Ammonia and Nitric Acid usin prilling process, where the reaction is being run on the bubble reactor (Reacto Bubble Column). The Operation is being run at 4 atm pressure and 150 ^oC temperature.The Reaction conversion is 80 % and resulting product with 99,5 % purity. This factory is designed with 3000.000 tons/year capacities. This factory is planned to build up in 2024 at Cikampek, with 86700 m^2 broad of land, with amount of employees are 124 people. Factory works for 24 hours with once turn around. In a day there are 3 divisible shift group, with 3 working groups and 1 off group.The required raw material are 70.636,43 tons/year of Ammonia 99,5 %, and 261.402,12 tons/year of Nitric Acid 60 % .This factory needs water as much 8.382,1 kg/hour, 5.179,69 steam kg/hour, electrics 765,67 kW/hour. Fixed Capital Investment that is needed is Rp. 638.859.002.505 with working capital is Rp. 280.204.045.095 The costs incurred annually include Manufacturing Cost, as much Rp. 1.477.162.107.548 and General Expense, as much Rp. 513.970.651.730. Profit that is obtained before the tax as much Rp. 245.298.959.849 and after the tax as much Rp. 183.974.219.887. Result of economic evaluation show Return On Investnment (ROI) before the tax is 30,08
%, and after the tax is 22,12%. Pay Out Time (POT) before the tax is 2,407 year and after the tax is 3,05 year. Break Event Point (BEP) is 55,01 % while Shut Down Point (SDP) is 38,34 %. Discounted Cash Flow Rate of Return (DCFRR) is 15 %. Based on the review of the economic evaluation result, could be concluded that the construction of the Ammonium Nitrate factory from Ammonia and Nitric Acid is feasible to be build and interesting for further study.

Keywords : Ammonium Nitrate, Ammonium, Nitrate Acid , Prilling Process