ABSTRAK

Pabrik dinatrium fosfat dihidrat merupakan salah satu pabrik kimia yang mampu memberikan prospek yang sangat baik. Pabrik ini direncanakan akan didirikan di Kecamatan Manyar, Gresik di atas lahan seluas 16.150 m^2 dengan kapasitas produksi 30.000 ton/tahun. Pabrik akan beroperasi selama 330 hari dengan total pekerja sebanyak 150 orang. Dinatrium fosfat dihidrat dibuat melalui proses kristalisasi dengan mereaksikan natrium karbonat dan asam fosfat di dalam Reaktor Alir Tangki Berpengaduk (RATB) dengan suhu 85°C dan tekanan 1 atm. Pabrik dinatrium fosfat dihidrat membutuhkan bahan baku natrium karbonat sebanyak 2.790,94 kg/jam dan asam fosfat sebanyak 2.157,94 kg/jam. Utilitas yang dibutuhkan untuk setiap tahunnya antara lain 159.777,29 kg/jam air pendingin, 6.385,99 kg/jam *steam*, 1.641,67 kg/jam air domestik, 8.803,69 kg/jam air proses, 15,87 lt/jam bahan bakar, dan 310,92 kW listrik. Dari hasil analisis ekonomi diperoleh hasil keuntungan sebelum pajak sebesar Rp 117.964.964.913 dan keuntungan setelah pajak sebesar Rp 88.473.723.684. *Break Even Point* (BEP) sebesar 44,30% dan *Shut Down Point* (SDP) sebesar 22,17% serta *Discounted Cash Flow Rate* (DCFR) sebesar 14,77%. *Return On Investment* (ROI) sebelum pajak sebesar 27,68% dan setelah pajak sebesar 20,76%. *Pay Out Time* (POT) sebelum pajak adalah 2,8 tahun sedangkan setelah pajak selama 3,5 tahun. Berdasarkan hasil analisa tersebut maka pabrik dinatrium fosfat dihidrat dengan kapasitas 30.000 ton/tahun layak untuk didirikan.

Kata kunci: Asam Fosfat, Dinatrium Fosfat Dihidrat, Natrium Karbonat

ABSTRACT

Dinatrium phosphate dihydrate plant is one of the chemical plants which is able to provide excellent prospects. The plant is planned to be established in Manyar District, Gresik on an area of 16.150 m^2 with a production capacity of 30.000 tons/year. The plant will be operated for 330 days with a total of 150 employees. Dinatrium phosphate dihydrate is made through a crystallization process by reacting natrium carbonate and phosphoric acid in a Continuous Stirred Tank Reactor (CSTR) at 85°C and 1 atm. The dinatrium phosphate dihydrate plant requires 2.790,94 kg/hour of natrium carbonate as raw material and 2.157,94 kg/hour of phosphoric acid. Utilities needed for each year are 159.777,29 kg/hour of cooling water, 6.385,99 kg/hour of steam, 1.641,67 kg/hour of domestic water, 8.803,69 kg/hour of process water, 15,87 lt/hour of fuel, and 310,92 kW electricity. From the calculation of economic analysis shows that, the pre-tax profit is Rp 117.964.964.913 and profit after tax Rp 88.473.723.684. Break Even Point (BEP) is 44,30% and Shut Down Point (SDP) is 22,17% and Discounted Cash Flow Rate (DCFR) is 14,77%. Return On Investment (ROI) before tax is 27,68% and after tax is 20,76%. Pay Out Time (POT) before tax is 2,8 years while after tax is 3,5 years. Based on the results of this analysis the dinatrium phosphate dihydrate plant with a capacity of 30.000 tons/year is suitable to be established.

***Key words**: Dinatrium Phosphate Dihydrate, Phosphoric Acid, Sodium Carbonate*