

ABSTRACT

Calcium Carbonate plant is planned to be built in Palembang, South Sumatra with an area of 18,950 m² and a production capacity of 12212,5045 kg/hour which operates for 330 days with a total of 153 employees. The process of making Calcium Carbonate using the Ca(OH)₂ purification process method to produce CaCO₃ deposits which has a higher reaction conversion than other methods that can achieve a reaction conversion of 97%. To reach the production capacity, Calcium Oxide as raw material is 1355,4019 kg/hour, Water is 9873,0172 kg/hour and Carbon Dioxide is 984,0854 kg/hour. Utilities needed for each hour are 2421 kg/hour steam water, 39959 kg/hour cooling water, 19197 kg/hour domestic water, 2421 kg/hour service water, 11848 process water, 222,7602 kW electricity and 24,5814 kg/fuel hour. The results of the economic analysis indicates that the plant and the plant's Calcium Carbonate has a low level of risk (low risk) to obtain the results of an economic evaluation indicates a fixed capital of Rp. 171.252.842.352, production costs Rp. 150.272.727.050, profit before tax of Rp. 40.441.722.950, profit after tax of Rp. 20.220.861.475. Based on the results of the feasibility study obtained a Return On Investment before tax (ROI_b) of 23,62% (ROI_b requirement for low risk factories > 11%) and Return On Investment after tax (ROI_a) of 11,8%, Pay Out Time before tax (POT_b) for 3 years (POT_b requirement for low risk factories < 5 years) and Pay Out Time after tax (POT_a) of 4,6 years, Break Even Point (BEP) of 47,19% (BEP requirement of 40% -60%) , Shut Down Point (SDP) amounted to 20,36%, and Discounted Cash Flow Rate of Return (DCFR) amounted to 19,83%. Based on the results of this economic evaluation, it can be concluded that the Calcium Carbonate plant using the Ca(OH)₂ purification process method to produce CaCO₃ deposits is economically feasible to establish.

Key words : Calcium Carbonate, Calcium Oxide, Purification of Ca(OH)₂ to produce CaCO₃ deposits.

ABSTRAK

Pabrik Kalsium Karbonat ini direncanakan akan dibangun di Palembang, Sumatera Selatan dengan luas lahan 18.950 m² dan kapasitas produksi 12212,5045 kg/jam yang beroperasi selama 330 hari dengan total 153 karyawan. Proses pembuatan Kalsium Karbonat menggunakan metode Proses pemurnian Ca(OH)₂ untuk menghasilkan endapan CaCO₃ yang memiliki konversi reaksi lebih tinggi dibanding metode lainnya yaitu dapat mencapai konversi reaksi sebesar 97%. Untuk mencapai kapasitas produksi dibutuhkan bahan baku Kalsium Oksida sebesar 1355,4019 kg/jam, Air sebesar 9873,0172 kg/jam dan Karbon Dikoksida sebesar 984,0854 kg/jam. Utilitas yang dibutuhkan untuk setiap jamnya yaitu 2421 kg/jam air steam, 39959 kg/jam air pendingin, 19197 kg/jam air domestik, 2421 kg/jam *service water*, 11848 air proses, 222,7602 kW listrik dan 24,5814 kg/jam bahan bakar. Hasil analisis pabrik dan ekonomi menunjukkan bahwa pabrik Kalsium Karbonat ini memiliki tingkat resiko rendah (*low risk*) sehingga diperoleh hasil evaluasi ekonomi menunjukkan modal tetap sebesar Rp. 171.252.842.352, biaya produksi Rp. 150.272.727.050, keuntungan sebelum pajak Rp. 40.441.722.950, keuntungan setelah pajak Rp. 20.220.861.475. Berdasarkan hasil studi kelayakan diperoleh *Return On Investment* sebelum pajak (ROI_b) sebesar 23,62% (syarat ROI_b pabrik beresiko rendah >11%) dan *Return On Investment* sesudah pajak (ROI_a) sebesar 11,8%, *Pay Out Time* sebelum pajak (POT_b) sebesar 3 tahun (syarat POT_b untuk pabrik beresiko rendah < 5 tahun) dan *Pay Out Time* sesudah pajak (POT_a) sebesar 4,6 tahun, *Break Even Point* (BEP) sebesar 47,19% (syarat BEP 40%-60%), *Shut Down Point* (SDP) sebesar 20,36%, dan *Discounted Cash Flow Rate of Return* (DCFR) sebesar 19,83%. Berdasarkan hasil evaluasi ekonomi ini, dapat disimpulkan bahwa pabrik Kalsium Karbonat dengan metode Proses Pemurnian Ca(OH)₂ untuk Menghasilkan Endapan CaCO₃ secara ekonomi layak untuk didirikan.

Kata-kata kunci : Kalsium Karbonat, Kalsium Oksida, Pemurnian Ca(OH)₂ untuk menghasilkan endapan CaCO₃.