

ABSTRACT

PRADESIGN OF MAGNESIUM SULPHATE PLANT FROM MAGNESIUM CARBONATE AND SULPHURIC ACID CAPACITY 15.000TONS/YEAR (Reactor 201 Design (RE-201))

By

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Magnesium sulphate is a white crystalline solid which is widely used in various fields such as paper industry, chemical industry, pharmaceutical industry, fertilizer industry, textile industry, plastic industry, rubber industry, animal husbandry, bleaching process on cellulose, manufacture of fructose syrup and others . Magnesium sulphate can be produced by several reaction processes 1) Reaction between Magnesium Carbonate and Sulfuric Acid, 2) Reaction between Magnesium Hydroxide and Calcium Sulphate. The provision of utility plant necessary consists of water treatment and supply systems, steam supply systems, cooling water, and power generation systems.

The production capacity of magnesium sulphate plant is planned to be 15.000 tons/year with 330 working days in 1 year. The location of plant is planned in Cilegon, Banten. The required workforce is 157 people with the form of Limited Liability Company (PT) with line and staff organization structure.

From the economic analysis is obtained :

<i>Fixed Capital Investment</i>	(FCI)	= Rp 307.390.629.194,926
<i>Working Capital Investment</i>	(WCI)	= Rp 54.245.405.152,046
<i>Total Capital Investment</i>	(TCI)	= Rp 361.636.034.346,972
<i>Break Even Point</i>	(BEP)	= 34%
<i>Shut Down Point</i>	(SDP)	= 23%
<i>Pay Out Time before taxes</i>	(POT) _b	= 2,08 years
<i>Pay Out Time after taxes</i>	(POT) _a	= 2,88 years
<i>Return on Investment before taxes</i>	(ROI) _b	= 32%
<i>Return on Investment after taxes</i>	(ROI) _a	= 26%
<i>Discounted Cash Flow</i>	(DCF)	= 32,5%

Based on some of the above explanations, the establishment of the magnesium sulphate plant is feasible for further study, because it is a profitable plant from the economic side and has a relatively good prospect.

ABSTRAK

PRARANCANGAN PABRIK MAGNESIUM SULFAT DARI MAGNESIUM KARBONAT DAN ASAM SULFAT KAPASITAS 15.000 TON/TAHUN (Perancangan Reaktor 201(RE-201))

Oleh

PUSPITO WIJAYANTO

Magnesium sulfat berupa padatan kristal berwarna putih yang banyak digunakan di berbagai bidang, seperti industri kertas, industri kimia, industri farmasi, industri pupuk, dan lain sebagainya. Magnesium sulfat dapat diproduksi dengan beberapa proses reaksi yaitu 1) Reaksi antara Magnesium Karbonat dengan Asam Sulfat, 2) Reaksi antara Magnesium Hidroksida dengan Kalsium Sulfat. Penyediaan kebutuhan utilitas pabrik berupasisitem pengolahan dan penyediaan air, sistem penyediaan *steam*, *cooling water*, dan sistem pembangkit tenaga listrik.

Kapasitas produksi pabrik magnesium sulfat direncanakan 15.000 ton/tahun dengan 330 hari kerja dalam 1 tahun. Lokasi pabrik direncanakan didirikan di daerah Gresik, Jawa Timur. Tenaga kerja yang dibutuhkan sebanyak 157 orang dengan bentuk badan usaha Perseroan Terbatas (PT) dengan struktur organisasi *line and staff*.

Dari analisis ekonomidiperoleh:

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Berdasarkan beberapa paparan di atas, maka pendirian pabrik magnesium sulfat ini layak untuk dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dari sisi ekonomi dan mempunyai prospek yang relatif cukup baik.