

ABSTRAK

PRARANCANGAN PABRIK MAGNESIUM SULFAT DARI MAGNESIUM KARBONAT DAN ASAM SULFAT KAPASITAS 15.000 TON/TAHUN

(Perancangan *Crystallizer* (CR-401))

Oleh

DEVI SAGITHA ANGGRAINI

Magnesium sulfat adalah suatu senyawa kimia garam anorganik yang mengandung magnesium, sulfur, dan oksigen. Magnesium sulfat banyak digunakan di berbagai bidang, seperti bidang farmasi, bidang pertanian, bidang peternakan, hingga industry kertas. Magnesium sulfat dapat diproduksi dengan 2 jenis proses reaksi yaitu 1) Reaksi antara Magnesium Karbonat dengan Asam Sulfat, dan 2) Reaksi antara Magnesium Hidroksida dengan Kalsium Sulfat. Penyediaan kebutuhan utilitas pabrik berupa sistem 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 Kawasan Industri JIPE, Gresik. Tenaga kerja yang dibutuhkan sebanyak 188 orang dengan bentuk badan usaha Perseroan Terbatas (PT) dengan struktur organisasi *line and staff*.

Dari analisis ekonomi diperoleh:

Fixed Capital Investment (FCI)	= Rp 307.390.629.194,926
Working Capital Investment (WCI)	= Rp 54.245.405.152,046
Total Capital Investment (TCI)	= Rp 578.876.500.285
Break Even Point (BEP)	= 44%
Shut Down Point (SDP)	= 25%
Pay Out Time before taxes (POT) ^b	= 3,16 years
Pay Out Time after taxes (POT) ^a	= 3,65 years
Return on Investment before taxes (ROI) ^b	= 27,91%
Return on Investment after taxes (ROI) ^a	= 26%
Discounted Cash Flow (DCF)	= 26%

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.

ABSTRACT

PRE-DESIGN OF MAGNESIUM SULFATE FACTORY FROM MAGNESIUM CARBONATE AND SULFURIC ACID WITH CAPACITY OF 15,000 TONS/YEAR

(Design of Crystallizer (CR-401))

By

DEVI SAGITHA ANGGRAINI

Magnesium sulfate is an inorganic salt chemical compound containing magnesium, sulfur, and oxygen. Magnesium sulfate is widely used in various fields, such as pharmaceuticals, agriculture, animal husbandry, and the paper industry. Magnesium sulfate can be produced by 2 types of reaction processes, namely 1) Reaction between Magnesium Carbonate and Sulfuric Acid, and 2) Reaction between Magnesium Hydroxide and Calcium Sulphate. Provision of factory utility needs in the form of water treatment and supply systems, steam supply systems, cooling water, and power generation systems.

The production capacity of the magnesium sulfate factory is planned to be 15,000 tons/year with 330 working days in 1 year. The factory location is planned to be established in the JIPE Industrial Area, Gresik. The workforce needed is 188 people in the form of a Limited Liability Company (PT) with a line and staff organizational structure. From the economic analysis obtained:

Fixed Capital Investment (FCI)	= Rp 307,390,629,194.926
Working Capital Investment (WCI)	= Rp 54,245,405,152.046
Total Capital Investment (TCI)	= Rp 578,876,500,285
Break Even Point (BEP)	= 44%
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Based on the above explanations, the establishment of this magnesium sulfate factory is worthy of further study, because it is a factory that is profitable from an economic perspective and has relatively good prospects.