

ABSTRAK

PRARANCANGAN PABRIK KALSIUM SULFAT DIHIDRAT (GYPSUM) DARI KALSIUM KARBONAT DAN ASAM SULFAT DENGAN KAPASITAS 127.000 TON/TAHUN (Perancangan *Rotary Dryer* (RD-101))

Oleh

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Pabrik Kalsium Sulfat Dihidrat (Gypsum) dengan bahan baku Kalsium Karbonat dan Asam Sulfat akan didirikan di Desa Srowo, Kecamatan Sidayu, Kabupaten Gresik, Provinsi Jawa Timur. Pabrik akan memproduksi Kalsium Sulfat Dihidrat (Gypsum) sebanyak 127.000 ton/tahun, dengan waktu operasi 24 jam dalam 1 hari, 330 hari dalam 1 tahun. Bahan baku yang digunakan adalah Kalsium Karbonat sebanyak 9.431,90 kg/jam dan Asam Sulfat sebanyak 8.319,89 kg/jam. Pendirian pabrik berdasarkan atas beberapa pertimbangan yaitu, bahan baku yang tersedia, sarana transportasi yang memadai, tenagakerja yang mudah didapatkan, dan juga kondisi lingkungan. Proses pembuatan Kalsium Sulfat Dihidrat (Gypsum) terdiri dari 4 tahap yakni tahap penyiapan bahan baku, tahap reaksi, tahap kristalisasi dan pemisahan dan yang terakhir tahap pemurnian dan *packaging* produk. Penyediaan kebutuhan utilitas pabrik terdiri dari unit penyediaan dan pengolahan air, unit penyediaan bahan bakar, unit pembangkit tenaga listrik, unit penyediaan udara dan unit pengolahan limbah.

Bentuk perusahaan adalah Perseroan Terbatas (PT) menggunakan struktur organisasi *line* dan *staff* dengan jumlah karyawan sebanyak 149 orang.

Dari analisis ekonomi diperoleh:

<i>Fixed Capital Investment</i>	(FCI)	= Rp. 1.165.545.999.967,79,-
<i>Working Capital Investment</i>	(WCI)	= Rp. 205.684.588.229,61,-
<i>Total Cost Investment</i>	(TCI)	= Rp. 1.371.230.588.197,40,-
<i>Break Even Point</i>	(BEP)	= 47,70 %
<i>Shut Down Point</i>	(SDP)	= 22,90 %
<i>Pay Out Time</i>	(POT)	= 3,98 tahun
<i>Return on Investment before taxes</i>	(ROI) ^b	= 22,63 %
<i>Return on Investment after taxes</i>	(ROI) ^a	= 18,10 %
<i>Discounted Cash Flow</i>	(DCF)	= 24,12 %

Dengan mempertimbangkan paparan di atas, sudah selayaknya pendirian pabrik kalsium sulfat dihidrat (gypsum) ini dikaji lebih lanjut baik dari segi kebutuhan produksi, proses maupun ekonomi.

ABSTRACT

PRE-DESIGNED CALCIUM SULFATE DIHYDRATE (GYPSUM) PLANT FROM CALCIUM CARBONATE AND SULFURIC ACID WITH A CAPACITY OF 127,000 TONS / YEAR (Rotary Dryer Design (RD-101))

By

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A Calcium Sulfate Dihydrate (Gypsum) factory with raw materials for Calcium Carbonate and Sulfuric Acid will be established in Srowo Village, Sidayu District, Gresik Regency, East Java Province. The factory will produce Calcium Sulfate Dihydrate (Gypsum) as much as 127,000 tons / year, with an operating time of 24 hours in 1 day, 330 days in 1 year. The raw materials used are Calcium Carbonate ask 9,431.90 kg / hour and Sulfuric Acid as much as 8,319.89 kg / hour. Founder an factory based on several considerations namely, available raw materials , adequate means of transportation , easy labor obtained, and also environmental conditions . The manufacturing process of Calcium Sulfate Dihydrate (Gypsum) consists of 4 stages, namely the raw material preparation stage, the reaction stage, the crystallization and separation stage and the last one is the purification and *product packaging* stage. The provision of utility needs of the plant consists of a water supply and treatment unit, a fuel supply unit, an electric power development unit , an air supply unit and a sewage treatment unit.

The form of the company is a Limited Liability Company (PT) using a *line* and *staff* organizational structure with total of 149 employees.

From the economic analysis is obtained:

<i>Fixed Capital Investment</i>	(FCI)	=	IDR 1,165,545,999,967.79,-
<i>Working Capital Investment</i>	(WCI)	=	IDR 205,684,588,229.61,-
<i>Total Cost Investment</i>	(TCI)	=	Rp. 1,371,230,588,197.40,-
<i>Break Even Point</i>	(BEP)	=	47,70 %
<i>Shut Down Point</i>	(SDP)	=	22,90 %
<i>Pay Out Time</i>	(POT)	=	3.98 years old
<i>Return on Investment before taxes</i>	(ROI) ^b	=	22,63 %
<i>Return on Investment after taxes</i>	(ROI) ^a	=	18,10 %
<i>Discounted Cash Flow</i>	(DCF)	=	24,12 %

Taking into account the above exposure , it is appropriate that the establishment of a calcium sulfate plant inhydrate (gypsum) is further studied both in terms of production, process and economic needs .