ABSTRAK

PRARANCANGAN PABRIK SODIUM SILIKAT PENTAHIDRAT ($Na_2SiO_3.5H_2O$) DARI SODIUM HIDROKSIDA (NaOH) DAN SILIKON DIOKSIDA (SiO_2) KAPASITAS 25.000 TON/TAHUN DENGAN TUGAS KHUSUS REAKTOR (RE-201)

Oleh
AGUNG KHAERU ZAMAN

Pabrik Sodium Silikat Pentahidrat ($Na_2SiO_3.5H_2O$) berbahan baku Sodium Hidroksida (NaOH) dan Silikon Dioksida (SiO_2) direncanakan didirikan di Cilegon, Banten. Pendiriaan pabrik berdasarkan atas pertimbangan ketersediaan bahan baku, sarana transportasi yang memadai, tenaga kerja yang mudah didapatkan dan kondisi lingkungan.

Pabrik direncanakan memproduksi Sodium Silikat Pentahidrat sebanyak 25.000 ton/tahun, dengan waktu operasi 24 jam/hari, 330 hari/tahun. Bahan baku yang digunakan Silikon Dioksida adalah sebanyak 958,252 kg/jam dan Sodium Hidroksida sebanyak 1268,471 kg/jam.

Penyediaan kebutuhan utilitas pabrik terdiri dari unit pengadaan air, pengadaan *hot oil*, pengadaan listrik, pengadaan udara *instrument*, dan pengadaan *refrigerant*.

Bentuk perusahaan adalah Perseroan Terbatas (PT) menggunakan struktur organisasi *line* dan *staff* dengan jumlah karyawan sebanyak 136 orang.

Dari analisis ekonomi diperoleh:

Fixed Capital Investment	(FCI)	=	Rp. 422.505.703.448,-
Working Capital Investment	(WCI)	=	Rp. 74.559.830.020,-
Total Capital Investment	(TCI)	=	Rp. 497.065.533.468,-
Breakeven Point	(BEP)	=	52%
Shutdown Point	(SDP)	=	25%
Pay Out Time	(POT)	=	3,47 tahun
Return on Investment	(ROI)	=	15,97%
Internal Rate of Return	(IRR)	=	23,22%

Mempertimbangkan paparan di atas, sudah selayaknya pendirian pabrik Sodium Silikat Pentahidrat ini dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dari sisi ekonomi dan mempunyai prospek yang relatif baik.

ABSTRACT

PRE-DESIGN OF SODIUM SILICATE PENTAHYDRATE ($Na2SiO_3.5H_2O$) PLANT FROM SODIUM HYDROXIDE (NaOH) AND SILICON DIOXIDE (SiO_2) CAPACITY 25,000 TON/YEAR WITH SPECIAL TASK REACTOR (RE-201)

By
AGUNG KHAERU ZAMAN

A plant of Sodium Silicate Pentahydrate ($Na_2SiO_3.5H_2O$) made of raw Sodium Hydroxide (NaOH) and Silicon Dioxide (SiO_2) is planned to be established in Cilegon, Banten. The establishment of a plant is based on consideration of availability of raw materials, adequate means of transport, readily available labour and environmental conditions.

The plant is planned to produce 25,000 tons of Sodium Silicate Pentahydrate per year, with 24 hours a day, 330 days a year. The raw material used was Silicon Dioxide at 958,252 kg/hour and Sodium Hydroxide at 1268,471 kg/hour.

Plant utility supplies consist of water supply units, hot oil supply, electricity supply, instrument air supply, and refrigerant supply.

The form of the company is a Limited Company (PT) using the organizational structure of the line and staff with the number of employees as many as 136 people.

From economic analysis obtained:

Fixed Capital Investment	(FCI)	=	Rp. 422.505.703.448,-
Working Capital Investment	(WCI)	=	Rp. 74.559.830.020,-
Total Capital Investment	(TCI)	=	Rp. 497.065.533.468,-
Breakeven Point	(BEP)	=	52%
Shutdown Point	(SDP)	=	25%
Pay Out Time	(POT)	=	3,47 year
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Considering the summary above, it is appropriate for the establishment of this Sodium Silicate Pentahydrate plant to be studied further, as it is a profitable plant from the economic side and has a relatively good prospect.