ABSTRAK

PRARANCANGAN PABRIK NATRIUM SILIKAT (Na_2SiO_3) DARI NATRIUM HIDROKSIDA (NaOH) DAN SILIKON DIOKSIDA (SiO_2) DENGAN KAPASITAS 40.000 TON/TAHUN (Perancangan Reaktor (RE-201))

Oleh

ANGGA KUSUMA JAYA

Pabrik Natrium Silikat (Na_2SiO_3) berbahan baku Natrium Hidroksida (NaOH) dan Silikon Dioksida (SiO_2) direncanakan didirikan di Purwakarta, Jawa Barat. Pendiriaan pabrik berdasarkan atas pertimbangan ketersediaan bahan baku, sarana transportasi yang memadai, tenaga kerja yang mudah didapatkan dan kondisi lingkungan.

Pabrik direncanakan memproduksi Natrium Silikat sebanyak 40.000 ton/tahun, dengan waktu operasi 24 jam/hari, 330 hari/tahun. Bahan baku yang digunakan Silikon Dioksida adalah sebanyak 4224,21 kg/jam dan Natrium Hidroksida sebanyak 1311,24 kg/jam.

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

Bentuk perusahaan adalah Perseroan Terbatas (PT) menggunakan struktur organisasi *line* dan *staff* dengan jumlah karyawan sebanyak 150 orang.

Dari analisis ekonomi diperoleh:

Fixed Capital Investment	(FCI)	=	Rp. 509.968.716.300,-
Working Capital Investment	(WCI)	=	Rp. 89.994.479.300,-
Total Capital Investment	(TCI)	=	Rp. 599.963.195.600,-
Break Even Point	(BEP)	=	40,20%
Shut Down Point	(SDP)	=	21,30%
Pay Out Time	(POT)	=	3,46 tahun
Return on Investment	(ROI)	=	28,90%
Discounted cash flow	(DCF)	=	20%

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

ABSTRACT

PRE-DESIGN OF SODIUM SILICATE (Na_2SiO_3) FROM SODIUM HYDROXIDE (NaOH) AND SILICONE DIOXIDE (SiO_2) CAPACITY 40.000 TONS/YEAR (Crystallizer Design (CR - 301))

By

Angga Kusuma Jaya

Sodium silicate (Na_2SiO_3) plant use raw materials Sodium Hydroxide (NaOH) and Silicone Dioxide (SiO_2). The location of plant is planned in Purwakarta Regency, West Java. Establishment of this plant is based on some consideration due to the raw material resources, the transportation, the labors availability and also the environmental condition.

Capacity of the plant is planned to production Sodium silicate is 40.000 tons/year with operation time 24 hour/day, 330 hour/year. Raw materials used Sodium Hydroxide (NaOH) 4.224,21 kg/hour and 1.311,24 kg/hour of Silicone Dioxide (SiO_2).

The utility units consist of water supply system, heating oil supply system, electrical supply system, instrument air supply system, and refrigerant supply system.

The bussines entity form is Limited Liability Company (Ltd) using line and staff organizational structure with 150 labors.

From the economic analysis, it is obtained that:

Fixed Capital Investment	(FCI)	=	Rp. 509.968.716.300,-
Working Capital Investment	(WCI)	=	Rp. 89.994.479.300,-
Total Capital Investment	(TCI)	=	Rp. 599.963.195.600,-
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By considering above the summary, it is proper establishment of Sodium Silicate plant for studied further, because the plant is profitable and has good prospects future.