ABSTRACT

**PREDESIGN OF SODIUM DIPHOSPHATE HEPTAHHYDRAT (Na_2HPO_4)
FROM PHOSPHIC ACID AND SODIUM CARBONATE
CAPACITY 57,000 TONS/YEAR
(REACTOR DESIGN (RE-201))**

By

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Sodium Diphosphate Heptahydrate is one of the chemical industry products which is used as raw material for textile dyeing, detergent, color making, water treatment, paper industry, and fire protection material. The raw materials used are Phosphoric Acid (H_3PO_4) 4.580,421 kg/h and Sodium Carbonate (Na_2CO_3) 3.452,653 kg/h , by using Crystallization Method and reaction conversion of 85,64%..

The manufacture of sodium diphosphate heptahydrate on a large scale is carried out in the design of a sodium diphosphate heptahydrate plant with a capacity of 57,000 tons / year with Phosphoric Acid as raw material obtained from PT. Petrochemical Gresik and Sodium Carbonate were obtained from China's Tianjin Soda, China. The location of the factory is planned to be established in Gresik Regency, East Java Province. The form of the company is a Limited Liability Company (PT) led by a President Director assisted by a Production Director and a Finance Director using a line and staff organizational structure with a total of 146 labors.

Feasibility analysis of Sodium Diphosphate Heptahydrate Plant Design as follows:

Fixed Capital Investment (FCI)	= Rp 1.346.994,856.459,-
Working Capital Investment (WCI)	= Rp 237.704.974.669,-
Total Capital Investment (TCI)	= Rp 1.018.735.605.725,-
Break Even Point (BEP)	= 46,72 %
Pay Out Time after Taxes (POT)	= 2,42 years
Return on Investment after Taxes (ROI)	= 26,66 %
Discounted Cash Flow (DCF)	= 36,02 %
Shut Down Point (SDP)	= 28,09 %

Considering the above explanation, it is appropriate that the establishment of this Sodium Diphosphate Heptahydrate plant should be studied further, because it is a profitable factory and has a good future.

ABSTRAK

PRARANCANGAN PABRIK NATRIUM DIFOSFAT HEPTAHIDRAT (Na_2HPO_4) DARI ASAM FOSFAT DAN NATRIUM KARBONAT KAPASITAS 57.000 TON/TAHUN

(Prarancangan Reaktor (RE-201))

Oleh

GHALY UKTA PRADANA

Natrium Difosfat Heptahidrat merupakan salah satu produk industri kimia yang digunakan sebagai bahan baku pencelupan tekstil, deterjen, pewarna, pengolahan air, industri kertas, dan bahan proteksi kebakaran. Bahan baku yang digunakan adalah Asam Fosfat (H_3PO_4) 4.580,421 kg/jam dan Natrium Karbonat (Na_2CO_3) 3.452.653 kg/jam, dengan menggunakan Metode Kristalisasi dan konversi reaksi sebesar 85,64%.

Pembuatan Natrium Difosfat Heptahidrat dalam skala besar, dilakukan pada perancangan pabrik Natrium Difosfat Heptahidrat dngan kapasitas 57.000 Ton/Tahun degan bahan baku Asam Fosfat diperoleh dari PT. Petrokimia Gresik dan Natrium Karbonat diperoleh dari PT. Aneka Kimia Inti, Jawa Timur. Lokasi pabrik direncanakan didirikan di Kabupaten Gresik, Provinsi Jawa Timur. Bentuk perusahaan adalah Perseroan Terbatas (PT) yang dipimpin oleh seorang Direktur Utama dibantu oleh Direktur Produksi dan Direktur Keuangan menggunakan struktur organisasi *line* dan *staff* dengan jumlah karyawan sebanyak 146 orang.

Analisa kelayakan Perancangan Pabrik Natrium Difosfat Heptahidrat sebagai berikut :

Fixed Capital Investment (FCI)	= Rp 1.346.994,856.459,-
Working Capital Investment (WCI)	= Rp 237.704.974.669,-
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Mempertimbangkan paparan di atas, sudah selayaknya pendirian pabrik Natrium Difosfat Heptahidrat ini dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dan mempunyai masa depan yang baik.