

ABSTRAK

PRARANCANGAN PABRIK *CALCIUM HYPOCHLORITE* DARI *CALCIUM HYDROXIDE* DAN *HYPOCHLOROUS ACID* DENGAN KAPASITAS 45.000 TON/TAHUN (Perancangan Reaktor (RE-201))

Oleh

KETRINE SHAPA VITALOKA

Kalsium hipoklorit merupakan bahan kimia yang dibutuhkan paling banyak sebagai disinfektan untuk pengolahan air dan sebagai pemutih pada industri kertas dan tekstil. Kalsium hipoklorit dapat dihasilkan dari proses reaksi kalsium hidroksida dan asam hipoklorit. Pemenuhan kebutuhan kalsium hipoklorit di Indonesia masih diperoleh dari impor, sehingga perlu didirikan pabrik kalsium hipoklorit di Indonesia untuk mengurangi ketergantungan terhadap luar negeri. Penyediaan utilitas pabrik berupa unit pengolahan dan penyediaan air, unit refrigerasi, unit penyediaan *steam*, penyedia udara dan instrumentasi, serta pembangkit tenaga listrik. Kapasitas produksi pabrik direncanakan sebesar 45.000 ton/tahun dengan 330 hari kerja dalam 1 tahun. Lokasi pabrik direncanakan didirikan di Tuban, Jawa Timur. Tenaga kerja yang dibutuhkan sebanyak 122 orang dengan bentuk badan usaha Perseroan Terbatas (PT) dengan struktur organisasi *line* dan *staff*.

Dari analisis ekonomi diperoleh:

<i>Fixed Capital Investment</i>	(FCI) = Rp 697.717.852.898
<i>Working Capital Investment</i>	(WCI) = Rp 123.126.679.923
<i>Total Capital Investment</i>	(TCI) = Rp 820.844.532.822
<i>Total Production Cost</i>	(TPC) = Rp 1.037.634.601.528
<i>Break Even Point</i>	(BEP) = 49,37%
<i>Shut Down Point</i>	(SDP) = 24,61%
<i>Pay Out Time before taxes</i>	(POT) _b = 2,81 tahun
<i>Pay Out Time after taxes</i>	(POT) _a = 3,28 tahun
<i>Return on Investment before taxes</i>	(ROI) _b = 21,61%
<i>Return on Investment after taxes</i>	(ROI) _a = 17,29%
<i>Discounted cash flow</i>	(DCF) = 23,14%

Berdasarkan pada hasil analisis, maka pendirian pabrik kalsium hipoklorit ini layak untuk dikaji lebih lanjut karena merupakan pabrik yang menguntungkan dari sisi ekonomi dan mempunyai prospek yang baik.

Kata kunci: kalsium hipoklorit, kalsium hidroksida, prarancangan, pabrik.

ABSTRACT

CALCIUM HYPOCHLORITE FACTORY PREDESIGN FROM CALCIUM HYDROXIDE AND HYPOCHLOROUS ACID WITH CAPACITY OF 45.000 TON/YEAR (Design of Reactor (RE-201))

By

KETRINE SHAPA VITALOKA

Calcium hypochlorite is a chemical that is needed most as a disinfectant for water treatment and as a bleach in the paper and textile industries. Calcium hypochlorite can be produced from the reaction process of calcium hydroxide and hypochlorous acid. The fulfillment of calcium hypochlorite needs in Indonesia is still obtained from imports, so it is necessary to establish a calcium hypochlorite plant in Indonesia to reduce dependence on foreign countries. Provision of plant utilities in the form of water treatment and supply units, refrigeration units, steam supply units, air and instrumentation providers, and power plants. The production capacity of plant is planned to be 45,000 tons/year with 330 working days in 1 year. The factory location is planned to be established in Tuban, East Java. The required labor are 122 people with a business entity form Limited Liability Company (PT) with a line and staff organizational structure.

From the economic analysis obtained:

<i>Fixed Capital Investment</i>	(FCI) = Rp 697.717.852.898
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Based on the results of the analysis, the establishment of this calcium hypochlorite plant is worthy of further study because it is a profitable plant from an economic perspective and has good prospects.

Keywords: calcium hypochlorite, calcium hydroxide, predesign, plant.