

## ABSTRAK

### PRARANCANGAN PABRIK KLOORIN DIOKSIDA DARI NATRIUM KLOORAT, ASAM SULFAT, DAN HIDROGEN PEROKSIDA DENGAN KAPASITAS 26.000 TON/TAHUN (Perancangan Reaktor (RE-201))

Oleh

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Klorin dioksida merupakan senyawa anorganik yang digunakan sebagai *bleaching agent* dalam industri pulp, kertas dan tekstil menggantikan  $Cl_2$ , *chloride* dan *hypochloride*. Klorin dioksida dapat diproduksi dengan beberapa cara antara lain: 1) Proses Solvay 2) Proses Mathiesson dan 3) Proses *Hydrogen Peroxide-Atmosphere*. Penyediaan kebutuhan utilitas pabrik berupa sistem pengolahan dan penyediaan air, sistem penyediaan *steam*, *cooling water*, penyedia udara dan instrumentasi.

Kapasitas produksi pabrik klorin dioksida direncanakan sebesar 26.000 ton/tahun dengan 330 hari kerja dalam 1 tahun. Lokasi pabrik direncanakan didirikan di Karawang, Jawa Barat. Tenaga kerja yang dibutuhkan sebanyak 115 orang dengan bentuk badan usaha Perseroan Terbatas (PT) dengan struktur organisasi lini.

Dari analisis ekonomi diperoleh:

<i>Fixed Capital Investment</i>	(FCI)	= Rp 493.641.648.333
<i>Working Capital Investment</i>	(WCI)	= Rp 87.113.232.059
<i>Total Capital Investment</i>	(TCI)	= Rp 580.754.880.391
<i>Break Even Point</i>	(BEP)	= 45,33%
<i>Shut Down Point</i>	(SDP)	= 14,36%
<i>Pay Out Time before taxes</i>	(POT) <sub>b</sub>	= 2,78 tahun
<i>Pay Out Time after taxes</i>	(POT) <sub>a</sub>	= 3,69 tahun
<i>Return on Investment before taxes</i>	(ROI) <sub>b</sub>	= 33,90%
<i>Return on Investment after taxes</i>	(ROI) <sub>a</sub>	= 22,37%
<i>Discounted cash flow</i>	(DCF)	= 28,57%

Berdasarkan beberapa paparan di atas, maka pendirian pabrik klorin dioksida ini layak untuk dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dari sisi ekonomi dan mempunyai prospek yang relatif baik.

## ABSTRACT

### PREDESIGN OF CHLORINE DIOXIDE FROM SODIUM CHLORATE, SULFURIC ACID, AND HYDROGEN PEROXIDE WITH CAPACITY 26.000 TONS/YEARS

(Reactor Design (RE-201))

By

TIARA CAHYA PUTRI

Chlorine dioxide is an organic compound that used as a bleaching agent in the pulp, paper and textile industries to replace  $\text{Cl}_2$ , chloride and hypochloride. Chlorine dioxide can be produced in several ways, including: 1) Solvay Process 2) Mathiesson Process and 3) Hydrogen Peroxide-Atmosphere Process. Provision of utility plant needs a treatment system and water supply, steam supply system, cooling water, air and instrumentation providers.

Capacity of the plant is planned to produce chlorine dioxide 26.000 tons/year with 330 working days in a year. The location of plant is planned in Karawang, West Java. Labor needed in this plant as many as 115 people with a business entity form Limited Liability Company (PT) with line organizational structure.

From the economic analysis are obtained :

Fixed Capital Investment	(FCI)	= Rp 493.641.648.333
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Discounted cash flow	(DCF)	= 28,57%

By considering the summary, it is proper establishment of chlorine dioxide plant for studied further, because the plant is profitable and has good prospects future.