

ABSTRAK

PRARANCANGAN PABRIK ASAM NITRAT (HNO_3) DARI NITROGEN (N_2), OKSIGEN (O_2) DAN AIR (H_2O) DENGAN KAPASITAS PRODUKSI 55.000 TON/TAHUN

Perancangan *Plasma Reactor* (R-201)

Oleh

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Asam Nitrat merupakan salah satu produk industri kimia yang digunakan sebagai bahan baku industri kimia, bahan baku peledak, *nitrating agent*, *oxidizing agent*, pelarut, katalis dan *hydrolizing agent*. Asam Nitrat dapat di produksi dengan beberapa proses yaitu 1) Proses Oksidasi Ammonia, 2) Proses *Retort*, dan 3) Proses *Electrical Arc*. Dalam Pra-Rancangan Pabrik Asam Nitrat ini dipilih proses *Electrical Arc* yang lebih menguntungkan dari segi ekonomi dan termodinamika dibandingkan proses lainnya.

Kapasitas produksi pabrik direncanakan 55.000 ton/tahun dengan 330 hari kerja dalam 1 tahun. Lokasi pabrik direncanakan didirikan di Kawasan Industri Gresik, Kab. Gresik, Jawa Timur. Tenaga kerja yang dibutuhkan sebanyak 168 orang dengan bentuk badan usaha Perseroan Terbatas (PT) yang dipimpin oleh seorang Direktur Utama yang dibantu oleh Direktur Produksi dan Direktur Pemasaran dan Keuangan dengan struktur organisasi *line and staff*.

Dari analisis ekonomi diperoleh:

<i>Fixed Capital Investment</i>	(FCI)	= Rp 442.854.394.558
<i>Working Capital Investment</i>	(WCI)	= Rp 78.150.775.510
<i>Total Capital Investment</i>	(TCI)	= Rp 521.005.170.068
<i>Break Even Point</i>	(BEP)	= 30,51%
<i>Shut Down Point</i>	(SDP)	= 12,25%
<i>Pay Out Time before taxes</i>	(POT) _b	= 2,19 years
<i>Pay Out Time after taxes</i>	(POT) _a	= 2,59 years
<i>Return on Investment before taxes</i>	(ROI) _b	= 30,32%
<i>Return on Investment after taxes</i>	(ROI) _a	= 24,26%
<i>Discounted cash flow</i>	(DCF)	= 24,73%

Mempertimbangkan rangkuman di atas, sudah selayaknya pendirian pabrik Asam Nitrat ini dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dan mempunyai prospek yang baik.

ABSTRACT

MANUFACTURING OF NITRIC ACID (HNO₃) FROM NITROGEN (N₂), OXYGEN (O₂) AND WATER (H₂O) WITH CAPACITY 55.000 TONS/YEAR Design of Plasma Reactor (R-201)

By

ERFINA FEBRIANTI

Nitric Acid is one of the chemical industry products used as raw material for chemical industry, explosive raw material, nitrating agent, oxidizing agent, solvent, catalyst and hydrolizing agent. Nitric Acid can be produced with several processes namely 1) Ammonia Oxidation Process, 2) Retort Process, and 3) Electrical Arc Process. On the Manufacturing of Nitric Acid was selected Electrical Arc process that is more profitable in terms of economics and thermodynamics than other processes.

This Plant is meant to produce 55.000 tons/year with operation time 24 hours/day and 330 days on a year. This Plant is planned to be built in Gresik, Kab. Gresik, Jawa Timur. The bussines entity form of this plant is Limited Liability Company (Ltd) using line and staff organizational structure with 168 labors.

From the economic analysis, it is obtained that :

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<i>Interest Rate of Return</i>	(IRR)	= 24,73%

Consider the summary above, it is proper establishment of Nitric Acid Plant is studied further, because the plant is profitable and has good prospects.