

ABSTRAK

PRARANCANGAN PABRIK ETILEN DARI PROSES DEHIDRASI ETANOL DENGAN KAPASITAS PRODUKSI 130.000 TON/TAHUN (Perancangan Reaktor RE-201)

Oleh

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Pabrik Etilen (C_2H_4) berbahan baku etanol (C_2H_5OH) direncanakan didirikan di Ngoro, Jawa Timur. Pendirian pabrik didasarkan atas pertimbangan ketersediaannya bahan baku, sarana transportasi yang memadai, dan tenaga kerja yang mudah didapatkan serta kondisi lingkungan sekitar lokasi pabrik akan didirikan.

Pabrik dirancang akan memproduksi etilen sebanyak 130.000 ton/tahun, dengan waktu operasi yaitu 24 jam/hari, 330 hari/tahun. Bahan baku yang digunakan adalah etanol sebanyak 16.414,1414 kg/jam. Penyediaan kebutuhan utilitas pabrik terdiri dari unit pengadaan air, pengadaan *steam*, pengadaan listrik, dan pengadaan udara *instrument*.

Bentuk perusahaan adalah Perseroan Terbatas (PT) menggunakan struktur organisasi *line* dan *staff* dengan jumlah karyawan sebanyak 141 orang.

Dari analisis ekonomi diperoleh :

<i>Fixed Capital Investment</i>	(FCI)	=	Rp825.275.894.509,-
<i>Working Capital Investment</i>	(WCI)	=	Rp145.636.922.560,-
<i>Total Capital Investment</i>	(TCI)	=	Rp970.912.817.069,-
<i>Break Even Point</i>	(BEP)	=	58,75%
<i>Shut Down Point</i>	(SDP)	=	47,01%
<i>Pay Out Time before taxes</i>	(POT) ^b	=	1,48 tahun
<i>Pay Out Time after taxes</i>	(POT) ^a	=	2,09 tahun
<i>Return on Investment after taxes</i>	(ROI) ^a	=	49,54%
<i>Discounted cash flow</i>	(DCF)	=	40,09%

Mempertimbangkan paparan diatas, sudah selayaknya pendirian pabrik etilen ini dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dari sisi ekonomi dan mempunyai prospek yang relatif cukup baik.

**PLANT PREDESIGN OF ETHYLENE (C₂H₄) FROM
DEHIDRATION ETHANOL (C₂H₅OH) PROCESS
130.000 TONS/YEARS CAPACITY
(Reactor Design (RE-201))**

By

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Ethylene (C₂H₄) plant from ethanol (C₂H₅OH) is planned to be built in Ngoro, East Java. The establishment of this factory is based on considerations of the availability of raw materials, adequate transportation facilities, and available labor as well as environmental conditions around the location where the factory will be built.

The factory is designed to produce 130.000 tons of ethylene per year, with an operating time of 24 hours/day, 330 days/year. The raw materials used are 16.414,1414 kg/hour of ethanol.

Provision of this factory utility needs consists of water procurement, steam procurement, electricity procurement, and instrument air procurement units.

The form of this company is a Limited Liability Company (LLC) using a line and staff organizational structure with a total of 141 employees.

From the economic analysis it is obtained :

<i>Fixed Capital Investment</i>	(FCI)	=	Rp825.275.894.509,-
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Considering the explanation above, it is appropriate to study the establishment of this sodium sulphate factory further, because it is profitable from economic perspective and has relatively good prospects.