

ABSTRACT

PREDESIGN OF N-BUTANOL PLANT FROM N-BUTYRALDEHYDE AND HYDROGEN USING OXO HIDROGENASE METHOD WITH CAPACITY 45.000 TONS/YEAR

(Fixed Bed Multitube Reactor Design (RE-201))

By

LUTHFIYANA INDRIATI

A plant to produce n-butanol from n- butyraldehyde and hydrogen, is planned to be located at Warnasari village, Citangkil Regency, Cilegon City, Banten. The plant is established by considering availability of raw materials, transportation facilities, readily available labor and environmental conditions.

Capacity of the plant is 45.000 tons/year operating 24 hour/day and 330 working days/ year. The plant required 7,559.6557 kg/h of n-butyraldeyde; 1,797.5928 kg/h of hydrogen.

Quantity of labor is around 196 people. The plant is managed as a Limited Liability Company (PT), which is headed by a Director. The company is organized in the form of line and staff structure.

From analysis of the plant economy is obtained:

<i>Fixed Capital Investment (FCI)</i>	= Rp. 1,577,893,029,627,-
<i>Working Capital Investment (WCI)</i>	= Rp. 278,451,711,111,-
<i>Total Capital Investment (TCI)</i>	= Rp. 1,856,344,740,738,-
<i>Break Even Point (BEP)</i>	= 41 %
<i>Shut Down Point (SDP)</i>	= 13 %
<i>Pay Out Time after Taxes (POT)_a</i>	= 3.1 years
<i>Return on Investment after Taxes (ROI)_a</i>	= 19 %
<i>Discounted Cash Flow (DCF)</i>	= 24.81%

By considering above the summary, it is suitable study further the n-butanol plant since plant is profitable and has good prospects.

ABSTRAK

PRARANCANGAN PABRIK N-BUTANOL DARI N-BUTYRALDEHID & HIDROGEN MENGGUNAKAN PROSES OXO HIGROGENASI DENGAN KAPASITAS 45.000 TON/TAHUN

(Perancangan Reaktor *Fixed Bed Multitube* (RE-201))

Oleh

LUTHFIYANA INDRIATI

Pabrik n-butanol berbahan baku n-butiraldehid dan hidrogen, akan didirikan di Desa Warnasari, Kec. Citangkil, Kota Cilegon, Banten. Pabrik ini berdiri dengan mempertimbangkan ketersediaan bahan baku, sarana transportasi yang memadai, tenaga kerja yang mudah didapatkan dan kondisi lingkungan.

Pabrik direncanakan memproduksi n-butanol sebanyak 45.000 ton/tahun, dengan waktu operasi 24 jam/hari, 330 hari/tahun. Bahan baku yang digunakan adalah n-butiraldehid sebanyak 7.559,6557 kg/jam dan hidrogen sebanyak 1.797,5928 kg/jam.

Jumlah karyawan sebanyak 196 orang dengan bentuk perusahaan adalah Perseroan Terbatas (PT) yang dipimpin oleh seorang direktur. Sistem manajemen perusahaan menggunakan struktur organisasi *line* dan *staff*.

Dari analisis ekonomi diperoleh:

<i>Fixed Capital Investment</i> (FCI)	= Rp. 1.577.893.029.627,-
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<i>Total Capital Investment</i> (TCI)	= Rp. 1.856.344.740.738,-
<i>Break Even Point</i> (BEP)	= 41 %
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<i>Pay Out Time after Taxes</i> (POT) _a	= 3,1 tahun
<i>Return on Investment after Taxes</i> (ROI) _a	= 19 %
<i>Discounted Cash Flow</i> (DCF)	= 24,81%

Mempertimbangkan paparan di atas, sudah selayaknya pendirian pabrik n-butanol ini dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dan mempunyai masa depan yang baik.