

**ABSTRAK**  
**PRARANCANGAN PABRIK VINIL ASETAT DARI ETILEN,**  
**ASAM ASETAT DAN OKSIGEN DENGAN PROSES**  
**OKSIDASI DENGAN KAPASITAS 36.000 TON/TAHUN**  
**(Perancangan Kolom Distilasi (DC-301))**

Oleh:  
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Pabrik Vinil Asetat ( $C_4H_6O_2$ ) berbahan baku Etilen ( $C_2H_4$ ), Asam Asetat ( $C_2H_4O_2$ ), dan Oksigen ( $O_2$ ) dengan proses oksidasi menggunakan katalis Paladium (Pd/Au), direncanakan didirikan di Cilegon, Banten. Pendirian pabrik berdasarkan atas pertimbangan ketersediaan bahan baku, sarana transportasi yang memadai, kebutuhan utilitas yang mencukupi, tenaga kerja yang mudah didapatkan dan kondisi lingkungan.

Pabrik direncanakan memproduksi Vinil Asetat sebanyak 36.000 ton/tahun, dengan waktu operasi 24 jam/hari, 330 hari/tahun. Bahan baku yang digunakan berupa Etilen, Asam Asetat, dan Oksigen.

Penyediaan kebutuhan utilitas pabrik Vinil Asetat terdiri dari unit pengadaan air, udara, instrument, *steam*, listrik dan limbah. Bentuk perusahaan adalah Perseroan Terbatas (PT) menggunakan struktur organisasi *line* dan staff dengan jumlah karyawan 136 orang.

Dari analisis ekonomi diperoleh:

<i>Fixed Capital Investment</i>	(FCI)	= Rp. 957.440.514.510
<i>Working Capital Investment</i>	(WCI)	= Rp. 168.960.090.796
<i>Total Capital Investment</i>	(TCI)	= Rp. 1.126.400.605.306
<i>Break Even Point</i>	(BEP)	= 45,34%
<i>Shut Down Point</i>	(SDP)	= 20,91%
<i>Pay Out Time</i>	(POT) <sub>a</sub>	= 3,3 tahun
<i>Return on Investment before taxes</i>	(ROI) <sub>b</sub>	= 22,67%
<i>Return on Investment after taxes</i>	(ROI) <sub>a</sub>	= 21,57%
<i>Discounted Cash Flow</i>	(DCF)	= 25,02%

Berdasarkan ringkasan di atas, pendirian Pabrik Vinil Asetat ini layak untuk dikaji lebih lanjut, karena menguntungkan dan memiliki prospek yang baik di masa mendatang.

**Kata kunci :** *Vinil Asetat, Etilen, Asam Asetat, Proses oksidasi, Katalis Pd/Au*

## ABSTRACT

### PRE-DESIGN OF VINYL ACETATE PLANT FROM ETHYLENE, ACETIC ACID, AND OXYGEN THROUGH OXIDATION PROCESS WITH A PRODUCTION CAPACITY OF 36.000 TONS/YEAR (Design of Distillation Column (DC-301))

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Vinyl Acetate is made from ethylene, acetic acid, and oxygen through a oxidation process using a Palladium (Pd/Au) catalyst, planned to be built in Cilegon, Banten. Establishment of factories based on consideration of availability of raw materials, adequate means of transportation, sufficient utility supplies, easily accessible labor and environmental conditions.

The plant is planned to produce Vinyl Acetate of 36.000 tons/year, with operating time 24 hours/day, 330 day/year. The raw material used are ethylene, acetic acid, and oxygen.

The utility requirements for the Vinyl Acetate plant include units for water supply, instrument air, steam, electricity, and waste treatment. The company is structured as a Limited Liability Company (PT) with a line and staff organizational structure.

From economic analysis, it it obtained that:

<i>Fixed Capital Investment</i>	(FCI)	= Rp. 957.440.514.510
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<i>Return on Investment before taxes</i>	(ROI) <sub>b</sub>	= 22,67%
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<i>Discounted Cash Flow</i>	(DCF)	= 25,02%

Based on the summary above, the establishment of this Vinil Asetat plant is feasible for further development as it is profitable and has promising future prospects.

**Keywords :** *Vinyl acetate, Ethylene, Acetic acid, Pd/Au Catalyst*