

ABSTRAK

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Judul : **PRARANCANGAN PABRIK ISOAMIL ASETAT**
KAPASITAS PRODUKSI 25.000 TON/TAHUN

Isoamil Asetat ($C_5H_{11}COOCH_3$) diproduksi dengan mereaksikan Asam Asetat (CH_3COOH) dengan Isoamil Alkohol ($C_5H_{11}OH$). Melihat kondisi di masa mendatang, produk isoamil asetat akan sangat dibutuhkan oleh banyak industri seperti industri tekstil, cat, kosmetik, makanan dan minuman. Pabrik Isoamil Asetat akan didirikan pada awal tahun 2022 dengan kapasitas 25.000 Ton/Tahun di Kota Semarang, Jawa Tengah. Proses yang terjadi pada Pabrik Isoamil Asetat yaitu Proses Esterifikasi dengan mereaksikan Asam Asetat (CH_3COOH) dan Isoamil Alkohol ($C_5H_{11}OH$) menjadi Isoamil Asetat ($C_5H_{11}COOCH_3$) dengan bantuan katalis *Amberlyst 15* dan Proses Pemurnian produk Isoamil Asetat di dalam *Reactive Distillation* dengan kondisi operasi pada suhu 130 °C dan tekanan 1 atm. Kebutuhan sarana penunjang antara lain, kebutuhan steam 2.358,8661 kg/jam, air pendingin 62.975,9915 kg/jam, air domestik 1.087,7900 kg/jam, bahan bakar solar 6.285,6978 liter/jam dan listrik sebesar 341,6396 kW/jam. Bentuk badan hukum dari perusahaan ini adalah Perseroan Terbatas (PT), dengan struktur organisasi yang dipakai adalah sistem organisasi garis. Perusahaan dipimpin oleh dewan direksi yang membawahi 132 orang karyawan. Karyawan bekerja sesuai dengan jam kerja yang terdiri dari karyawan *shift* dan karyawan *non-shift*. Pabrik ini beroperasi selama 330 hari dalam 24 jam.

Hasil analisa ekonomi yang telah dilakukan adalah sebagai berikut:

- | | |
|--|------------------------|
| a Total Modal Investasi | = Rp 1.807.786.720.011 |
| - Modal sendiri (77,25%) | = Rp 1.257.786.720.011 |
| - Pinjaman Bank (22,75%) | = Rp 550.000.000.000 |
| b BEP (<i>Break Even Point</i>) tahun ketiga | = 38,84% Kapasitas |
| c IRR (Internal Rate of Investment) | = 32,92% |
| d MPP (Minimal Payback Periode) | = 4 tahun 5 bulan |
| e NCFPV (Net Cash Flow Percent Value) | = Rp 2.616.791.358.303 |

Berdasarkan hasil analisa ekonomi yang dilakukan maka dapat ditetapkan bahwa Pabrik Isoamil Asetat layak untuk didirikan.

Kata kunci: Isoamil Asetat, Esterifikasi, *Reactive Distillation*.

ABSTRACT

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Title : **PRARANCANGAN PABRIK ISOAMIL ASETAT**
KAPASITAS PRODUKSI 25.000 TON/TAHUN

Isoamyl Acetate ($C_5H_{11}COOCH_3$) is produced by reacting Acetic Acid (CH_3COOH) with Isoamyl Alcohol ($C_5H_{11}OH$). Looking at future conditions, butyl acetate products will be highly needed by many industries such as the textile, paint, cosmetic, food and beverage industries. The Butyl Acetate Plant will be established in early 2022 with a capacity of 25.000 Tons / Year in Semarang City, Central Java. The process that occurs in the Butyl Acetate Plant is the Esterification Process by reacting Acetic Acid (CH_3COOH) and with Isoamyl Alcohol ($C_5H_{11}OH$) to Isoamyl Acetate ($C_5H_{11}COOCH_3$) with the addition of Amberlyst 15 catalyst and the Purification Process of Isoamyl Acetate products in Reactive Distillation with operating conditions at a temperature of 130 °C and 1 atm. In the process this plant needs supporting facilities (utilities) such as steam demand of 2.358,8661 kg / hour, cooling water 62.975,9915 kg / hour, domestic water 1.087,7900 kg / hour, diesel fuel 6.285,6978 liters / hour and electricity amounting to 341,6396 kW / hour. The legal entity form of this company is a Limited Liability Company (PT), with the organizational structure used is a line organizational system. The company is headed by a President Director with a total of 132 employees. Working time in this factory consisting of shift employees and non-shift employees. This plant operates 330 days in 24 hours.

The results of the economic analysis that have been carried out are as follows:

- a. Total investment capital = Rp 1.807.786.720.011
 - Own capital (75,8%) = Rp 1.257.786.720.011
 - Bank loans(24,2%) = Rp 550.000.000.000
- b. Break Event Point (BEP) in 3rd year = 38,84% Capacity
- c. Internal Rate of Return (IRR) = 32,92%
- d. Minimum Payback Period (MPP) = 4 years 5 months
- e. Net Cash Flow at Present Value (NCFPV) = Rp 2.616.791.358.303

Based on the results of an economic analysis conducted, it can be determined that the Isoamyl Acetate Factory is feasible to be established.

Keywords: Isoamyl Acetate, Esterification, Reactive Distillation Column