## ABSTRACT

## FACTORY DESIGN OF METHYL OLEATE FROM OLEIC ACID AND METHANOL WITH CAPACITY 52,000 TONS/YEAR
## (Destillation Column Design (DC-301)

**By**
**RETNO AYU ASTUTI**

Methyl Oleate is one of the chemical industry products that is used as an oiling agent, paint, and surfactant. Methyl Oleate can be produced by several processes, namely the estrification process from oleic acid and methanol, as well as the hydrogenation process from methyl linoleate and hydrogen. Provision of plant utility needs in the form of water treatment and supply systems, steam supply systems, cooling water, and power generation systems.

The production capacity of the Methyl Oleate plant is planned at 52,000 tons/year with 330 working days in 1 year. The location of the factory is planned to be established in the Bontang area, East Kalimantan. The workforce needed is 180 people in the form of a limited liability company (PT) with a line and staff organizational structure.

From the economic analysis, it is obtained that :

| | | | |
|---|---|---|---|
| *Fixed Capital Investment* | (FCI) | = | Rp 3.131.489.758.456 |
| *Working Capital Investment* | (WCI) | = | Rp 552.615.839.728 |
| *Total Capital Investment* | (TCI) | = | Rp 3.684.105.598.184 |
| *Break Even Point* | (BEP) | = | 30,87% |
| *Shut Down Point* | (SDP) | = | 17,32% |
| *Pay Out Time after taxes* | $(POT)_b$ | = | 4,64 tahun |
| *Returnon Investment after taxes* | $(ROI)_a$ | = | 27,77% |
| *Discounted cash flow* | (DCF) | = | 34,35% |

Based on the explanations above, the establishment of the Methyl Oleate plant deserves to be studied further, because it is a profitable factory from an economic point of view and has relatively good prospects.

# ABSTRAK

## PRARANCANGAN PABRIK METIL OLEAT DARI ASAM OLEAT DAN METANOL DENGAN KAPASITAS 52.000 TON/TAHUN
## (Perancangan *Destillation Column* (DC-301))

**Oleh**

**RETNO AYU ASTUTI**

Metil Oleat merupakan salah satu produk industri kimia yang digunakan sebagai bahan *oiling agent*, cat, *dan surfaktan*. Metil Oleat dapat diproduksi dengan beberapa proses yaitu proses estrifikasi dari asam oleat dan metanol, serta proses hidrogensai dari metil linoleat dan hidrogen .Penyediaan kebutuhan utilitas pabrik berupa sistem pengolahan dan penyediaan air, sistem penyediaan *steam*, *cooling water*, dan sistem pembangkit tenaga listrik.

Kapasitas produksi pabrik Metil Oleat direncanakan 52.000 ton/tahun dengan 330 hari kerja dalam 1 tahun. Lokasi pabrik direncanakan didirikan di daerah Bontang, Kalimantan Timur. Tenaga kerja yang dibutuhkan sebanyak 180 orang dengan bentuk badan usaha Perseroan Terbatas (PT) dengan struktur organisasi *line and staff*.

Dari analisis ekonomi diperoleh:

| | | | |
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Berdasarkan beberapa paparan di atas, maka pendirian pabrik Metil Oleat ini layak untuk dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dari sisi ekonomi dan mempunyai prospek yang relatif cukup baik.