

## ABSTRAK

### PRARANCANGAN PABRIK PROPILEN GLIKOL DARI PROPILEN OKSIDA DAN AIR DENGAN KAPASITAS 45.000 TON/TAHUN

(PERANCANGAN MENARA DISTILASI (MD-301))

Oleh  
**SALSABILLA MUHARANI**

Propilen glikol (1,2-Propadienol, 1,2-Dihydroexpropane atau 1,2-Propilen glikol) merupakan senyawa organik yang digunakan sebagai pengawet dan pelarut dalam industri makanan, sebagai *plastisizer* dan *antifreeze*. Propilen Glikol diproduksi dengan proses yaitu Hidrasi Propilen Oksida menggunakan katalis Asam sulfat. Penyediaan kebutuhan utilitas pabrik berupa sistem pengolahan dan penyediaan air, sistem penyediaan *steam*, *chilled water*, dan sistem pembangkit tenaga listrik

Kapasitas produksi pabrik direncanakan 45.000 ton/tahun dengan 330 hari kerja dalam 1 tahun. Lokasi pabrik direncanakan didirikan di daerah Gresik, Jawa Timur. Tenaga kerja yang dibutuhkan sebanyak 127 orang dengan bentuk badan usaha Perseroan Terbatas (PT) dengan struktur organisasi *line and staff*.

Dari analisis ekonomi diperoleh:

|  |                    |                      |
|--|--------------------|----------------------|
| <i>Fixed Capital Investment</i>          | (FCI)              | = Rp 437.273.184.766 |
| <i>Working Capital Investment</i>        | (WCI)              | = Rp 77.165.856.135  |
| <i>Total Cost Investment</i>             | (TCI)              | = Rp 514.439.040.901 |
| <i>Break Even Point</i>                  | (BEP)              | = 34,03%             |
| <i>Shut Down Point</i>                   | (SDP)              | = 25,41%             |
| <i>Pay Out Time before taxes</i>         | (POT) <sub>b</sub> | = 1,54 years         |
| <i>Pay Out Time after taxes</i>          | (POT) <sub>a</sub> | = 1,89 years         |
| <i>Return on Investment before taxes</i> | (ROI) <sub>b</sub> | = 50,73%             |
| <i>Return on Investment after taxes</i>  | (ROI) <sub>a</sub> | = 40,58%             |
| <i>Discounted cash flow</i>              | (DCF)              | = 33,469%            |

Berdasarkan pertimbangan di atas, sudah selayaknya pendirian pabrik Proplen Glikol ini dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dan mempunyai prospek yang baik.

Kata kunci : Propilen Glikol, Propilen Oksida, Air, Ekonomi

## ABSTRACT

### MANUFACTURING OF PROPYLENE GLYCOL FROM PROPYLENE OXIDE AND WATER WITH CAPACITY 45.000 TONS/YEAR

#### (DESIGN OF DISTILATION COLUMN (MD-301))

By  
**SALSABILLA MUHARANI**

Propylene glycol (1,2-Propadienol, 1,2-Dihydroexpropane or 1,2-Propylene glycol) is an organic compound used as a preservative and solvent in the food industry, as a plasticizer and antifreeze. Propylene Glycol is produced by a process namely Hydration of Propylene Oxide using Sulfuric Acid catalyst. Provision of factory utility needs in the form of a water treatment and supply system, a steam supply system, chilled water, and a power generation system.

The factory's production capacity is planned to be 45,000 tons/year with 330 working days in 1 year. The factory location is planned to be established in the Gresik area, East Java. The workforce required is 127 people in the form of a Limited Liability Company (PT) with a line and staff organizational structure.

From the economic analysis is obtained:

|  |                    |                      |
|--|--------------------|----------------------|
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| <i>Discounted cash flow</i>              | (DCF)              | = 33,469%            |

Based on the considerations above, it is appropriate to study the establishment of this Propylene Glycol factory further, because it is a profitable factory and has good prospects..

Key Words : Propylene glycol, Propylene Oxide, Water, Economics.