

ABSTRAK

PRARANCANGAN PABRIK PENTAERITRITOL DARI FORMALDEHID, ASETALDEHID DAN NATRIUM HIDROKSIDA KAPASITAS 30.000 TON/TAHUN (Perancangan Reaktor (RE-201))

Oleh

ERISHA PUTRI

Pabrik pentaeritritol ini berbahan baku formaldehid (CH_2O), asetaldehid ($\text{C}_2\text{H}_4\text{O}$), dan natrium hidroksida (NaOH) yang rencananya akan didirikan di Kawasan Industri JIPE Gresik, Jawa Timur. Pabrik ini berdiri dengan mempertimbangkan ketersediaan bahan baku, sarana transportasi yang memadai, tenaga kerja, perizinan dan kondisi social masyarakat sekitar.

Pabrik ini direncanakan dapat memproduksi krsital pentaeritritol sebanyak 30.000 ton/tahun, dengan waktu operasi selama 24 jam/hari serta 330 hari/tahun. Banyaknya bahan baku yang digunakan adalah formaldehid sebanyak 1672,1572 kg/jam, asetaldehid sebanyak 3189,1332 kg/jam dan natrium hidroksida sebanyak 3189,1332 kg/jam.

Penyediaan kebutuhan utilitas pabrik *pentaerythritol* ini berupa unit penyedia dan pengolahan air, unit penyedia *steam* dan unit penyedia udara instrument.

Jumlah karyawan sebanyak 162 orang dengan bentuk perusahaan adalah Perseroan Terbatas (PT) dengan struktur organisasi jenis line dan *staff*. Dari analisis ekonomi, maka diperoleh hasil sebagai berikut :

<i>Fixed Capital Investment</i> (FCI)	= Rp 301.858.991.892
<i>Working Capital Investment</i> (WCI)	= Rp 53.269.233.863
<i>Total Capital Investment</i> (TCI)	= Rp 355.128.225.756
<i>Break Even Point</i> (BEP)	= 34,89 %
<i>Shut Down Point</i> (SDP)	= 27,73%
<i>Pay Out Time before taxes</i> (POT) _b	= 0,88 tahun
<i>Pay Out Time after taxes</i> (POT) _a	= 1,09 tahun
<i>Return on Investment before taxes</i> (ROI) _b	= 87 %
<i>Return on Investment after taxes</i> (ROI) _a	= 70 %
<i>Discounted cash flow</i> (DCF)	= 29,17 %

Mempertimbangkan rangkuman di atas, sudah selayaknya pendirian pabrik *pentaerythritol* ini dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dan mempunyai prospek yang baik.

ABSTRACT

PENTAERYTHRITOL FACTORY DESIGN FROM FORMALDEHYDE, ACETALDEHYDE AND SODIUM SODIUM HYDROXIDE CAPACITY 30.000 TONS/YEAR (Design Reactor (RE-201))

By

ERISHA PUTRI

This pentaerythritol factory is made from formaldehyde (CH_2O), acetaldehyde ($\text{C}_2\text{H}_4\text{O}$), and sodium hydroxide hydroxide (NaOH) which is planned to be established in the JIPE Gresik Industrial Area, East Java. This factory was established by considering the availability of raw materials, adequate transportation facilities, workforce, permits and the social conditions of the surrounding community.

This factory is planned to be able to produce 30,000 tons of pentaerythritol crystals/year, with an operating time of 24 hours/day and 330 days/year. The amount of raw materials used was formaldehyde as much as 1672.1572 kg/hour kg/hour, acetaldehyde as much as 3189.1332 kg/hour and sodium hydroxide as much as 3189.1332 kg/hour.

Providing utility needs for the pentaerythritol factory is in the form of a water supply and treatment unit, a steam supply unit and an instrument air supply unit.

The number of employees is 162 people and the company form is a Limited Liability Company (PT) with a line and staff type organizational structure. From the economic analysis, the following results are obtained:

Fixed Capital Investment (FCI)	= Rp 301.858.991.892
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Considering the summary above, it is appropriate to study the establishment of this pentaerythritol factory further, because it is a profitable factory and has good prospects.