

**ABSTRAK**

**PRARANCANG PABRIK 2-BUTANOL**  
**DARI BUTENA DAN ASAM SULFAT**  
**KAPASITAS 35.000 TON/TAHUN**  
**(Desain Reaktor - 201)**

Oleh :

**Supriyanto Ardi**

2-Butanol merupakan bahan kimia dengan fungsi yang beragam, dan kebutuhannya terus meningkat. Bahan baku utama pembuatan 2-butanol adalah butena dan asam sulfat. Bahan kimia ini banyak digunakan dalam industri cat, pelarut non reaktif untuk reaksi kimia, kamper, lilin, perekat, dan yang paling utama adalah sebagai bahan baku pembuatan metil etil keton.

Pabrik 2-Butanol ini direncanakan didirikan di Cilegon, Provinsi Banten. Kapasitas produk 2-Butanol adalah 35.000 ton/tahun dan membutuhkan butena sebesar 4,545 ton/hari dan Asam Sulfat sebesar 6,277 ton/hari. Pabrik beroperasi 24 jam/hari, 330 hari/tahun. Kebutuhan utilitas diantaranya adalah pengadaan air *Water Treatment Plant* (WTP), penyediaan listrik dan steam, penyediaan bahan bakar, dan penyediaan udara tekan.

Bentuk perusahaan adalah Perseroan terbatas, berstruktur organisasi *line and staff* dengan kebutuhan karyawan 142 orang. Keekonomian Pabrik 2-Butanol ini adalah

<i>Fixed Capital Investment</i>	(FCI)	= Rp 301.028.161.544
<i>Working Capital Investment</i>	(WCI)	= Rp 40.420.636.659
<i>Total Capital Investment</i>	(TCI)	= Rp 341.448.798.202
<i>Break Even Point</i>	(BEP)	= 18,46 %
<i>Shut Down Point</i>	(SDP)	= 15,8 %
<i>Pay Out Time after taxes</i>	(POT) <sub>a</sub>	= 2,3 tahun
<i>Return on Investment after taxes</i>	(ROI) <sub>a</sub>	= 24,14 %
<i>Discounted cash flow</i>	(DCF)	= 19,5 %

Hasil studi kelayakan teknik dan ekonomi menyatakan bahwa, Pabrik 2-Butanol dari butena dan asam sulfat layak dikaji lebih lanjut, karena menguntungkan dan beresiko sedang.

**Kata Kunci** : 2-Butanol, Butena, Asam Sulfat, Absorpsi, Netralizer.

## ABSTRACT

### PREDESIGN OF 2-BUTANOL PLANT FROM BUTENE AND SULFURIC ACID CAPACITY 35.000 TON/YEAR (Designing Reactor RE-201)

By:

**Supriyanto Ardi**

2-Butanol is a chemical with diverse functions, and needs continue to increase. The main raw material manufacture 2-butanol is butene and sulfuric acid. These chemicals are widely used in the paint industry, non-reactive solvent for chemical reactions, camphor, wax, adhesive, and the most important is the raw material for methyl ethyl ketone.

2-Butanol plant planned to be built at Cilegon, Banten Province. Production capacity is 35,000 tons / year and requires butene amounted to 4.545 tons / day and sulfuric acid of 6.277 tons / day. The factory operates 24 hours / day, 330 days / year. Utility requirements include holding water Water Treatment Plant (WTP), provision of electricity and steam, the supply of fuel, and the provision of compressed air.

The company entity form is Limited Liability Company (PT) with line and staff organization structure. Total labor is 132 peoples. Economic study of the plant is

Fixed Capital Investment	(FCI)	= Rp 301.028.161.544
Working Capital Investment	(WCI)	= Rp 40.420.636.659
Total Capital Investment	(TCI)	= Rp 341.448.798.202
Break Even Point	(BEP)	= 18,46 %
Shut Down Point	(SDP)	= 15,8 %
Pay Out Time after taxes	(POT) <sup>a</sup>	= 2,3 tahun
Return on Investment after taxes	(ROI) <sup>a</sup>	= 24,14 %
Discounted cash flow	(DCF)	= 19,5 %

The result of technical and economic feasibility study is feasible and need further analysis, because the plant is profitable with good sustainability.

**Key Word** : 2-Butanol, Butene, Sulfuric Acid, Absorption, Netralizer.