

## **ABSTRAK**

**PRARANCANGAN PABRIK BIOETANOL DARI BIOMASSA  
LIGNOSELULOSA TONGKOL JAGUNG DENGAN PROSES  
*SEPARATED HYDROLYSIS AND FERMENTATION (SHF)* KAPASITAS  
37.000 TON/TAHUN  
(Perancangan *Distillation Column (DC-301)*)**

**Oleh**

**ESTERLITA SIHOMBING**

Pabrik Bioetanol dari Biomassa Lignoselulosa Tongkol Jagung, akan didirikan di Kabupaten Kediri. Pabrik ini berdiri dengan mempertimbangkan ketersediaan bahan baku, sarana transportasi yang memadai, tenaga kerja yang mudah didapatkan dan kondisi lingkungan.

Pabrik ini direncanakan memproduksi Bioetanol sebanyak 37.000 ton/tahun, dengan waktu operasi 24 jam/hari, 330 hari/tahun. Bahan baku yang digunakan adalah Tongkol Jagung sebanyak 18.355,1006 kg/jam

Penyediaan kebutuhan utilitas pabrik Bioetanol terdiri dari unit pengadaan air, pengadaan udara instrument, *steam*, pengadaan listrik dan pengolahan limbah. Bentuk perusahaan adalah Perseroan Terbatas (PT) menggunakan struktur organisasi *line* dan *staff* dengan jumlah karyawan sebanyak 211 orang.

Dari analisis ekonomi diperoleh :

<i>Fixed Capital Investment</i>	(FCI)	= Rp 974.993.363.486
<i>Working Capital Investment</i>	(WCI)	= Rp 172.057.652.380
<i>Total Capital Investment</i>	(TCI)	= Rp 1.147.051.015.866
<i>Break Even Point</i>	(BEP)	= 44,38 %
<i>Shut Down Point</i>	(SDP)	= 23,47 %
<i>Pay Out Time before taxes</i>	(POT) <sub>b</sub>	= 2,39 years
<i>Pay Out Time after taxes</i>	(POT) <sub>a</sub>	= 2,82 years
<i>Return on Investment before taxes</i>	(ROI) <sub>b</sub>	= 21,69 %
<i>Return on Investment after taxes</i>	(ROI) <sub>a</sub>	= 27,11 %
<i>Discounted cash flow</i>	(DCF)	= 29,93 %

Mempertimbangkan paparan di atas, sudah selayaknya pendirian pabrik Bioetanol ini dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dan mempunyai masa depan yang lebih baik.

## ***ABSTRACT***

### ***MANUFACTURE OF BIOETHANOL FROM LIGNOCELLULOSIC BIOMASS CORNCOB (*Zea mays*) WITH SEPARATED HYDROLYSIS AND FERMENTATION (SHF) PROCESS CAPACITY 37.000 TONS/YEAR (Design Of Distillation Column (DC-301))***

***By***

***ESTERLITA SIHOMBING***

*Bioethanol plant with raw materials, Corncob (*Zea mays*), will be build in Kediri, Jawa Timur. Establishment of this plant is based on some consideration due to raw material resources, transportation, the labors availability and also the environmental condition.*

*This plant will produce 37.000 tons/year, with time of operation 24 hours/day, and 330 days on a year. The raw material used consist of 18.355,1006 kg/hour of Corncob (*Zea mays*).*

*This plant has utility units which the function are for water supply system, instrument air supply system, steam, power generation system, refrigerant supply system and waste treatment system. The bussines entity of this plant is limited liability company (PT) and using line and staff structure with 211 labors*

*From the economic analysis, it is obtained that :*

<i>Fixed Capital Investment</i>	<i>(FCI)</i>	= Rp 974.993.363.486
<i>Working Capital Investment</i>	<i>(WCI)</i>	= Rp 172.057.652.380
<i>Total Capital Investment</i>	<i>(TCI)</i>	= Rp 1.147.051.015.866
<i>Break Even Point</i>	<i>(BEP)</i>	= 44,38 %
<i>Shut Down Point</i>	<i>(SDP)</i>	= 223,47 %
<i>Pay Out Time before taxes</i>	<i>(POT)<sub>b</sub></i>	= 2,39 years
<i>Pay Out Time after taxes</i>	<i>(POT)<sub>a</sub></i>	= 2,82 years
<i>Return on Investment before taxes</i>	<i>(ROI)<sub>b</sub></i>	= 21,69 %
<i>Return on Investment after taxes</i>	<i>(ROI)<sub>a</sub></i>	= 27,11 %
<i>Discounted cash flow</i>	<i>(DCF)</i>	= 29,93 %

*Consider the summary above, it is proper establishment of Bioethanol plant is studied further, because the plant is profitable and has good prospects.*