

ABSTRACT

PRE-DESIGN OF SILICON CARBIDE (SiC) FROM SILICA SAND AND CARBON CAPACITY 50.000 TONS/YEAR (Grate Cooler Preliminary Task (GC-101))

**By :
ANNISYA HUTAMI**

Silicon Carbide (SiC) plant use raw materials Silicon Dioxide, Carbon, Natrium Silicate and Phosphate Iron. Silicon Carbide, which serves as an abrasive, other materials such as ceramics and process tools. Raw materials used are 9.469,6980 kg/hr Silicon Dioxide, 5.681,8188 kg/hr Carbon, 1.089,4343 kg/hr Natrium Silicate and 167,6053 kg/hr Phosphate Iron, by using carbothermal method.

The location of plant is planned to be established in Periuk Sub-district, Tangerang City, Province of Banten, based of some consideration due to the raw material reources, transportation, and marketing area. The production capacity of plant is planned to 50.000 tons/year of Silicon Carbide (SiC) with operation time 24 hour/day, 330 day/year. The bussines entity is Limited Liability Company (Ltd) using line and staff organizational structure with 193 labors.

From the economic analysis, it is obtained that:

<i>Fix Capital Investment</i>	(FCI)	= Rp. 499.997.619.035
<i>Working Capital Investment</i>	(WCI)	= Rp. 88.234.873.947
<i>Total Capital Investment</i>	(TCI)	= Rp. 588.232.492.983
<i>Break Even Point</i>	(BEP)	= 49,94%
<i>Shut Down Point</i>	(SDP)	= 23,07%
<i>Pay Out Time after taxes</i>	(POT)	= 2,16 tahun
<i>Return on Investment after taxes</i>	(ROI)	= 30,93 %
<i>Discounted Cash Flow</i>	(DCF)	= 22,10 %

By considering above, it is proper establishment of Silicon Carbide (SiC) plant to studied further, due to plant profit and has good prospects future.

ABSTRAK

PRARANCANGAN PABRIK SILIKON KARBIDA (SiC) DARI PASIR SILIKA DAN KARBON DENGAN KAPASITAS 50.000 TON/TAHUN (Prarancangan *Grate Cooler* (GC-101))

Oleh
ANNISYA HUTAMI

Silicon Carbide (SiC) merupakan produk industri kimia berbahan baku *Silicon Dioxide*, *Carbon*, *Natrium Silicate* dan *Phosphate Iron*. *Silicon Carbide* merupakan produk pada pabrik ini, yang berfungsi sebagai bahan abrasif, bahan baku produk lainnya seperti keramik dan alat proses. Bahan baku yang digunakan adalah 9469,6980 kg/jam *Silicon Dioxide*, 5681,8188 kg/jam *Carbon*, 1089,4343 kg/jam *Natrium Silicate* dan 167,6053 *Phosphate Iron*, dengan menggunakan proses pembakaran.

Lokasi pabrik direncanakan didirikan di Kecamatan Periuk, Kota Tangerang, Provinsi Banten, dekat dengan penyedia bahan baku dan kawasan pemasaran. Kapasitas produksi direncanakan 50.000 ton/tahun *Silicon Carbide* (SiC) serta waktu operasi 24 jam/hari, 330 hari /tahun. Bentuk perusahaan adalah Perseroan Terbatas (PT), menggunakan struktur organisasi *line and staff* dengan jumlah karyawan sebanyak 193 orang.

Dari analisis ekonomi diperoleh :

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Dengan mempertimbangkan paparan diatas serta bahan *Silicon Carbide* (SiC), maka sudah selayaknya pendirian pabrik *Silicon Carbide* (SiC) ini dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dan mempunyai prospek yang baik.