

ABSTRACT

PREDESIGN OF ALUMINIUM OXIDE (Al_2O_3) FROM BAUXITE AND SODIUM HYDROXIDE CAPACITY 450.000 TONS/YEAR (Rotary Kiln Design (RK-601))

By
DIKA KAMESWARA

Aluminium Oxide or Alumina (Al_2O_3) plants use raw material Bauxite. Alumina is an intermediate product that can be further processed in various chemical industries such as the aluminum metal industry and the ceramic industry. Raw materials used are 135.049,51 kg/hr Bauxite and 4.439,43 kg/hr Sodium Hydroxide, by using Bayer method.

The location of plant is planned to be established in Tayan Sub-district, Sanggau City, Province of West Kalimantan, based of some consideration due to the raw material resources, transportation, and marketing area. The production capacity of plant is planned to 450.000 tons/year of Aluminium Oxide (Al_2O_3) with operation time 24 hour/day, 330 day/year. The bussines entity is Limited Liability Company (Ltd) using line and staff organizational structure with 180 labors.

From the economic analysis, it is obtained that:

<i>Fixed Capital Investment</i>	(FCI)	= Rp 2.465.728.667.000
<i>Working Capital Investment</i>	(WCI)	= Rp 435.128.588.294
<i>Total Capital Investment</i>	(TCI)	= Rp 2.900.857.255.295
<i>Break Even Point</i>	(BEP)	= 39,60 %
<i>Shut Down Point</i>	(SDP)	= 22,27 %
<i>Pay Out Time before</i>	(POT)	= 2,57 tahun
<i>Return on Investment</i>	(ROI)	= 24,58 %
<i>Discounted cash flow</i>	(DCF)	= 31,18 %

By considering above, it is proper establishment of Aluminium Oxide (Al_2O_3) plant to studied further, due to plant profit and has good prospects future.

ABSTRAK

PRARANCANGAN PABRIK ALUMINIUM OKSIDA (Al_2O_3) DARI BAUKSIT DAN NATRIUM HIDROKSIDA KAPASITAS 450.000 TON/TAHUN (Perancangan *Rotary Kiln* (RK-601))

Oleh
DIKA KAMESWARA

Pabrik Alumunium Oksida atau Alumina (Al_2O_3) menggunakan bahan baku Bauksit. Alumina merupakan produk intermediat yang dapat diproses lebih lanjut pada berbagai industri kimia seperti industri logam aluminium dan industri keramik. Bahan baku yang digunakan adalah Bauksit ($\text{Al}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$) 135.049,51 kg/jam dan Natrium Oksida (NaOH) 4.439,43 kg/jam dengan menggunakan metode Bayer.

Lokasi pabrik direncanakan akan didirikan di daerah Tayan, Kabupaten Sanggau, Provinsi Kalimantan Barat, dengan beberapa pertimbangan seperti sumber bahan baku, transportasi dan wilayah pemasaran. Pabrik ini direncanakan menghasilkan 450.000 ton/tahun Alumina, dengan waktu operasi 24 jam/hari, 330 hari/tahun. Badan Usaha Perseroan Terbatas (Persero) dengan struktur organisasi line and staff dengan 180 tenaga kerja.

Dari analisis ekonomi, diperoleh:

<i>Fixed Capital Investment</i>	(FCI)	= Rp 2.465.728.667.000
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Dengan pertimbangan di atas, sudah selayaknya pendirian pabrik Alumina ini dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dan mempunyai prospek yang baik.