

ABSTRACT

PRE-DESIGN OF ALUMINIUM OXIDE (Al_2O_3) FROM BAUXITE AND SODIUM HYDROXIDE CAPACITY 450.000 TONS/YEAR (Reactor Design (RE-201))

By
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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 reources, 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 2.465.728.667.000c
<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.