

ABSTRACT

MANUFACTURING OF CALCIUM HYDROXIDE FROM CALCIUM OXIDE AND WATER WITH CAPACITY 30.000 TONS/YEAR (Design of Reactor-201 (R-201))

By

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Calcium hydroxide plant with raw materials, calcium oxide and water is planned to be built in Gresik, Jawa Timur. Establishment of this plant is based on some consideration due to the raw material resources, the transportation, the labors availability and also the environmental condition.

This plant is meant to produce 30,000 tons/year with 333 working days in a year. The raw materials used consist of 2990.5752 kg/hour of calcium oxide and 1152.8933 kg/hour of water.

The utility units consist of water supply system, power generation system, air supply system, and steam supply system.

The business entity form is Limited Liability Company (Ltd) using line and staff organizational structure with 163 employee.

From the economic analysis, it is obtained that:

<i>Fixed Capital Investment</i>	(FCI)	= Rp 205,740,256,298.81
<i>Working Capital Investment</i>	(WCI)	= Rp 36,307,104,052.73
<i>Total Capital Investment</i>	(TCI)	= Rp 242,047,360,351.54
<i>Break Even Point</i>	(BEP)	= 35.93 %
<i>Shut Down Point</i>	(SDP)	= 23.21 %
<i>Pay Out Time before taxes</i>	(POT) _b	= 1.3 Tahun
<i>Pay Out Time after taxes</i>	(POT) _a	= 1.58 Tahun
<i>Return on Investment before taxes</i>	(ROI) _b	= 56.68 %
<i>Return on Investment after taxes</i>	(ROI) _a	= 45.35 %
<i>Discounted cash flow</i>	(DCF)	= 48 %

After the assessment, the utility unit does not require demineralization process, because the demineralization will be eliminated by positive ions such as Ca²⁺ and Mg⁺ ions which is contained in the product. In addition, the steam coming from the water demineralization process can be replaced with a heater equipped with a furnace, to reduce production costs.

Considering the summary above, it is proper to study the establishment of Calcium Hydroxide plant further.