

ABSTRACT

PRE-DESIGN FACTORY OF XYLITOL WITH XYLOSE HYDROGENATION PROCESS CAPACITY 25.000 TONS/YEAR (Design *Evaporator* (EV-301 and EV-302))

By

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Xylitol is one of industrial chemical products used as a low calorie sweetener. Xylitol sweetness equivalent to sucrose, but contains a lower calorific value makes Xylitol is widely used in the food and pharmaceutical industries.

Xylitol needs in Indonesia has increased each year and for the needs of the materials are imported from abroad. In addition, the needs of Xylitol in the world also increased along with the increasing development of the industry-industrial users Xylitol. Therefore, the construction of the plant Xylitol is needed to support the industrial development especially in the country.

Xylitol manufacture on a large scale, carried on Pre-design Factory of Xylitol with Xylose Hydrogenation Process capacity of 25,000 tons/year with Xylose obtained from Denmark 's Danisco and Hydrogen from PT Air Liquide Indonesia in Cilegon, Banten.

Xylitol is produced by reacting Xylose with hydrogen in the reactor at a temperature of 130 °C and a pressure of 40 bar at 99% conversion. Results below the reactor in the form of Xylitol solution then flowed into the evaporator to be concentrated up to 83% purity.

The production capacity of the plant is planned 25,000 tons/year with 330 days of work for 24 hours in 1 year. Planned plant location was established in Tarahan, Katibung, South Lampung. Labor required as many as 182 people with a form of business entity Limited Liability Company (PT) which is headed by a Director

who is assisted by the Director of Production and Director of Finance with line and staff organizational structure.

Provision needs such as utility plants and water treatment system, steam supply systems, instrument air supply systems, and power generation systems. Analysis Pre-design Xylitol Plant as follows :

<i>Fixed Capital Investment (FCI)</i>	= Rp 1.176.821.334.889,-
<i>Working Capital Investment (WCI)</i>	= Rp 207.674.353.216,-
<i>Total Capital Investment (TCI)</i>	= Rp 1.384.495.688.104,-
<i>Break Even Point (BEP)</i>	= 42,56%
<i>Pay Out Time before Taxes (POT)_b</i>	= 1,5 years
<i>Pay Out Time after Taxes (POT)_a</i>	= 1,8 years
<i>Return on Investment before Taxes (ROI)_b</i>	= 47,84 %
<i>Return on Investment after Taxes (ROI)_a</i>	= 38,27 %
<i>Discounted Cash Flow (DCF)</i>	= 74,60 %
<i>Shut Down Point (SDP)</i>	= 29,09 %

Considering the above summary, it is proper establishment Xylitol plant is studied further, because it is a profitable factory and has good prospects.