ABSTRACT

Preliminary plant design of Crystal Glukose with capacity 30,000 tons/year will be built in North Lampung, in the area of land 40,000 m^2. This chemical plant will operate during 330 days/year or 24 hours a day with 155 employees.

Raw materials needed are corns 5,642.6148 kg/hour, water 15,162.2034 kg/hour. The hydrolisis process the produce glukose operates at 100°C temperature, and at 1 atm pressure using Continuous Stirred Tank Reactor (CSTR) with conversion 97%. The utiliy consist of 11,924.0293 kg/hour of cooling water, 13,657.9433 kg/hour of processing water, 1.4583 m^3/hour of housing water, 2,220.9999 kg/hour of steam, 350,8134 kg/hour of fuel while the power of electricity of about 400 kwh provided by PLN. This chemical plant also use generator set as reserve.

An economic analysis shows that this chemical plant need to be covered by fixed capital of about Rp 92,549,842,004.34, working capital of about Rp 65,359,250,064.32. The profit before tax is Rp 24,638,482,206.76 while the profit after tax is Rp 12,319,241,103.38. Percentage of return on investment (ROI) before tax is 26.6219% while after tax is 13.3109%. Pay out time (POT) before tax is 2.8883 years while after tax is 4.6924 years. The value of break even point (BEP) for about 45.7540% and shut down point (SDP) of about 25.3775%. Based on the economic analysis, it is concluded that plant design of Crystal Glukose with capacity 30.000 ton/years visible to built.