ABSTRACT

Preliminary design of Phthalic Anhydride for 45,000 ton/year of capacities O-xylene and Air (oxygen) oxidation of Phthalic Anhydride with purity 99%. This plant is planned to be built in Tangerang, Banten. It covers 35,000 m² of land and needs 146 employees. It works continually for 24 hours/day and 330 day/year.

This process is using Von Heyden Method. The process of reaction is exothermic using V2O5 as catalyst to produce Phthalic Anhydride in Fixed Bed Multitube Reactor at 350°C and 1.4 Atm. Process unit requires 3390.10 kg/hour of O-xylene and 96074.01 kg/hour of air, whereas utility unit needs 133223.9788 kg/hour water for cooling, 1152576 kg/hour water for domestic, 9758969147 kg/hour of steam, 194403 KW electricity, 476394 kg/hour of fuel oil.

Economic evaluation shows that Fixed Capital of Rp 165,474,829,874.14, profit before taxes Rp 75,553,373,262.23, profit after taxes Rp 52,894,361,283.56. From feasibility studies result Break Even Point (BEP) of 43.33% (BEP requisite in Indonesia 40-60%), Shut Down Point (SDP) of 20.53% and Discounted Cash Flow Rate of Return (DCFR) of 34%. Meanwhile Return on Investment Before Taxes (ROIb) of 26% (ROI b requisite for high risk plant > 44%) and Return on Investment After Taxes (ROI a) of 18%. Pay Out Time Before Taxes (POTb) 2.7 years (POT b requires for high risk plant < 2 years) and Pay Out Time After Taxes (POT a) 3.47% in a row. Based on this economic evaluation it can be concluded that Phthalic Anhydride Plant of 45,000 ton/year is economically feasibility.