

ABSTRACT

Preliminary design of Phthalic Anhydride for 45000 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 35000 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 5390.10 kg/hour of O-xylene and 96074.01 kg/hour of air, whereas utility unit needs 133223.9788 kg/hour water for cooling, 1152,576 kg/hour water for domestic, 97589,69147 kg/hour of steam, 194,403 KW electricity, 476,394 kg/hour of fuel oil.

Economic evaluation shows that Fixed Capital of Rp 165.474.829.874,14, profit before taxes Rp. 75.563.373.262,23 profit after taxes Rp.52.894.361.283,56,.From feasibility studies result Break Even Point (BEP) of 45,33% (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 (ROI_b) 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 (POT_b) 2,7 years (POT_b requires for high risk plant < 2 years) and Pay Out Time After Taxes (POT_a) 3,472% in a row. Based on this economic evaluation it can be concluded that Phthalic Anhydride Plant of 45000 ton/year is economically feasibility.