

## ABSTRAK

DimethylAniline adalah suatu produk antara ( intermediate product ) yang penting dalam industri warna dan sebagai stabilisator dalam industri polyester. Dimethyl Anilin juga dapat digunakan untuk vulkanisasi karet dan pengisi dalam industri cat. Dalam pra prancangan pabrik Dimethyl Anilin ini, Dimethyl Anilin dihasilkan dengan cara mereaksikan Anilin dan Metanol fase gas dalam Reaktor Fixed Bed Multitube dengan suhu masuk 325 °C, tekanan 1 atm dan keluar pada suhu 332 °C, tekanan 1 atm, secara non-isotermal non-adiabatis. Pabrik Dimethyl Aniline ini dirancang dengan kapasitas 20.000 ton/tahun dan direncanakan berlokasi di Bontang, Kalimantan Timur. Untuk mendapatkan kapasitas tersebut maka dibutuhkan bahan baku Anilin sebanyak 2020.20 kg/jam dan Metanol sebanyak 1359.5 kg/jam. Sedangkan kebutuhan untuk utilitas antara lain berupa air untuk steam sebanyak 12091 kg/jam, sedangkan kebutuhan air sanitasi sebanyak 700 kg/jam dan daya listrik dengan daya terpasang 533.53 kW. Pabrik ini menyerap tenaga kerja sebanyak 200 orang dan membutuhkan areal 5 Ha dengan bangunan sebesar 2 Ha dimana sisanya untuk areal perluasan dan penghijauan. Pabrik ini direncanakan beroperasi dengan menggunakan modal tetap sebesar Rp 1.613.934.106.608 dan modal kerja sebesar Rp 4.174.093.868.771. Dari analisis ekonomi terhadap pabrik ini menunjukkan keuntungan sebelum pajak Rp Rp 698.227.334.781 /tahun setelah dipotong pajak 50 % keuntungan mencapai Rp Rp342.131.394.043 /tahun. Percent Return On Investment (ROI) sebelum pajak 43,26% dan setelah pajak 21,20%. Pay Out Time (POT) sebelum pajak selama 2 tahun dan setelah pajak 3,4 tahun. Break Even Point (BEP) sebesar 42,63 %, dan Shut Down Point (SDP) sebesar 29,37 %. Discounted Cash Flow Rate (DCFR) terhitung sebesar 7,25 %. Berdasarkan evaluasi ekonomi tersebut maka pabrik Dimethyl Anilin layak didirikan.

Kata-kata kunci : Dimethyl Aniline, Metanol, Anilin, Fixed-bed Multitube.

## **ABSTRACT**

*Dimethyl Aniline is an intermediate product which is one of important ingredients in paint industries and as a stabilizer in the polyester industry. Dimethyl Aniline can also be used to vulcanize rubber and fillers in the paint industry. In this pre-design of Dimethyl Aniline plant, Dimethyl Aniline was produced by reacting the Aniline and Methanol gas phases in the Fixed Bed Multitube Reactor with temperature input at 325 °C, pressure 1 atm and temperature output at 332 °C, pressure 1 atm, non-isothermal non-Adiabatic. The Dimethyl Aniline plant was designed with a capacity of 20,000 tons / year in Bontang, East Kalimantan. For that, Aniline was needed at 2020.20 kg / hour and Methanol 1359.5 kg / hour. And for the utilities needs water for steam as much as 12091 kg /hour, And water for sanitation needs 700 kg / hour and electric power with installed power 533.53 kW. This factory need employee of 200 people and requires area of 5 Ha with buildings of 2 Ha where the area for expansion area and afforestation area. This factory have financial capital as much as Rp.1,613,934,106,608 and working capital Rp. 4,174,093,868,771. From the economic results of this factory it shows before a tax is Rp. 698,227,334,781 / year and after 50% tax reached Rp. Rp. 342,131,394,043 / year. The percentage of return on investment (ROI) before tax is 43.26% and after tax is 21.20%. Pay Out Time (POT) before tax for 2 years and after tax 3,4 years. Break Even Point (BEP) of 42.63%, and Shut Down Point (SDP) of 29.37%. Discounted Cash Flow Rate (DCFR) of 7.25%. Based on economic analysis, then the pre-designed Dimethyl Aniline factory is suitable to be established.*

*Keywords: Dimethyl Aniline, Methanol, Aniline, Fixed-bed Multitu*

