
INTISARI

Prarancangan pabrik cresol dari *cracked naphtha* ini diawali dengan proses ekstraksi *cracked naphtha* dengan NaOH di dalam ekstraktor, kemudian hasil ekstraksi direaksikan dengan H₂SO₄ di dalam reaktor, yang selanjutnya dilakukan proses pemisahan dengan menggunakan sebuah decanter untuk memisahkan antara senyawa organik dan anorganik, serta dua buah menara destilasi untuk pemisahan komponen organiknya. Pabrik ini menghasilkan produk utama yaitu o-cresol sebanyak 12.550,39 ton/tahun; m,p-cresol sebanyak 37.449,61 ton/tahun; serta produk samping berupa xyleneol sebanyak 12.513,6 ton/tahun. Bahan dasar yang digunakan yaitu *cracked naphtha* sebanyak 11.772,34 ton/tahun; H₂SO₄ 98% sebanyak 67.296,24 ton/tahun; dan NaOH pellet sebanyak 52.319,68 ton/tahun. Selain itu, kebutuhan air pada pabrik ini sebesar 623.757,74 kg/jam; kebutuhan udara instrumen sebesar 6,6712 kmol/jam; serta kebutuhan listrik sebesar 520 kW.

Pabrik ini memiliki 127 karyawan dan 44 orang di bagian manajerial. Pabrik ini membutuhkan tanah seluas 25200 m² yang berlokasi di Cilegon, Jawa Barat, tepatnya di sebelah PT Chandra Asri Petrochemical (PT CAP). Pabrik ini membutuhkan modal tetap sebesar \$33.341.406,41 dan Rp136.052.756.503,68; serta modal kerja sebesar \$37.672.124,47 dan Rp834.143.645.618,48. Hasil analisis ekonomi menunjukkan bahwa nilai *Return on Investment* sebelum pajak sebesar 64,27%; *Pay Out Time* sebelum pajak selama 1,5 tahun; *Break Even Point* sebesar 56,46%; serta *Discounted Cash Flow Rate of Return* sebesar 19,54%. Maka, dari hasil evaluasi ekonomi, pabrik ini dapat disimpulkan layak dan menarik untuk didirikan

ABSTRACT

Cresol plant design from cracked naphtha begins with the extraction process of cracked naphtha with NaOH in the extractor, then the extract was treated with H₂SO₄ to form cresol in the reactor. The product flows out into a decanter to be separated between the organic and inorganic compounds. Later, the organic components will be separated by using two distillation towers. The main products are o-cresol as much as 12.550.39 ton / year; m,p-cresol as much as 37.449.61 ton / year; and byproducts which is xyleneol as much as 12.513.6 tons / year. The basic ingredients used are cracked naphtha as much as 11.772.34 ton / year; H₂SO₄ 98% as much as 6.7296.24 ton / year; and NaOH pellets as much as 52.319.68 ton / year. This plant also needs water supply as much as 623.757,74 kg/hour; instrument air as much as 6,6712 kmole/hour; and electricity needs as much as 520 kW.

The plant has 127 employees and 44 people at managerial position. This plant requires 25200 m² land area located in Cilegon, West Java, precisely beside PT Chandra Asri Petrochemical (PT CAP). This plant requires a fixed capital of \$ 33,341,406.41 and Rp136.052.756.503,68; also a working capital of \$ 37,672,124.47 and Rp834.143.645.618,48. The results of the economic analysis shows that the return on investment before tax is 64.27%; Pay Out Time before tax is 1.5 years; Break Even Point by 56.46%; and Discounted Cash Flow Rate of Return is 19.54%. Thus, the results of the economic evaluation conclude that this plant is feasible and attractive to set up.