

ABSTRAK

Dalam mendesain Etanol dengan Kapasitas 50.000 Ton/Tahun diperlukan lahan area industri di Tangerang-Banten, yang mencakup area 30.000 m². Dalam produksinya diperlukan operasi selama 330 hari/tahun atau 24 jam/hari dengan 110 pekerja.

Bahan baku yang dibutuhkan adalah Etilen sebanyak 14148.4848 kg/jam, Air sebanyak 18181.8182 kg/jam. Proses produksi akan beroperasi pada temperatur 300°C, pada tekanan 68 atm menggunakan *Fixed Bed Multitube* dengan konversi 25%. Dibutuhkan juga utilitas sebanyak 6482,9269 kg/jam untuk kg/jam air proses, 2558,8474 kg/jam kebutuhan air rumahan, 1104,167 kg/jam untuk air pemanas (*steam*), 9796,4071 kg/jam kebutuhan bahan bakar alat proses, dimana 79,9829 kW berasal dari PLN. Pabrik kimia ini menggunakan generator yang di atur terbalik.

Pada analisa ekonomi diketahui bahwa pabrik kimia dibutuhkan modal sebesar Rp. 207.552.239.538 , gaji pegawai Rp. 1.112.500.000 , dengan keuntungan sebelum pajak sebesar Rp. 201.582.526.938 , dibandingkan keuntungan setelah pajak sebesar Rp. 151.186.895.204 . Persentase *Return on Investment Tax* (ROI) sebelum pajak sebesar 53,33 % dibandingkan setelah pajak sebesar 40,00 % . *Pay out time* (POT) sebelum pajak selama 1,63 Tahun dibandingkan dengan setelah pajak selama 2,08 Tahun. Persentase *Discounted cash flow rate* (DCFR) sebesar 18,85 % . Nilai *Break Even Point* (BEP) sebesar 48,28 % dan *Shut Down Point* (SDP) sebesar 38,58 % . Dengan basis ekonomi seperti ini dalam membuat desain pabrik Etanol dengan kapasitas 50.000 ton/tahun bisa dibangun.

ABSTRACT

In designing Ethanol with a Capacity of 50,000 Tons / Year, industrial land in Tangerang-Banten is needed, which covers an area of 30,000 m². In production, operations are needed for 330 days / year or 24 hours / day with 110 workers.

The raw materials needed are Ethylene 14148.4848 kg / hour, Water as much as 18181.8182 kg / hour. The production process will operate at a temperature of 300°C, at a pressure of 68 atm using a Fixed Bed Multitube with a conversion of 25%. Utility is also needed as much as 6482.9269 kg / hour for kg / hour of process water, 2558.8474 kg / hour of demand for home water, 1104.167 kg / hour for heating water (steam), 9796.4071 kg / hour of fuel needs of the tool process, where 79.9829 kW comes from PLN. This chemical plant uses a generator that is set upside down.

In the economic analysis it is known that the chemical plant needed a capital of Rp. 207,552,239,538, employee salaries of Rp. 1,112,500,000, with a profit before tax of Rp. 201,582,526,938, compared to the profit after tax of Rp. 151,186,895,204. The percentage of Return on Investment Tax (ROI) before tax of 53.33% compared to after tax of 40.00%. Pay out time (POT) before tax for 1.63 Years compared to after taxes for 2.08 Years. The percentage of Discounted cash flow rate (DCFR) is 18.85%. Break Even Point (BEP) value is 48.28% and Shut Down Point (SDP) is 38.58%. With an economic base like this in making an Ethanol plant design with a capacity of 50,000 tons / year can be built.