

## ABSTRAK

Akrilonitril merupakan salah satu bahan kimia dalam industri sebagai bahan tambahan dalam industri resins, termoplastik, bahan tambahan dalam sintesa organik, akrilamida, dan ABS resins. Pada saat ini kebutuhan akrilonitril di Indonesia masih import dari luar negeri, oleh sebab itu pendirian pabrik akrilonitril di Indonesia sangatlah penting untuk mengurangi import akrilonitril dari luar negeri. Bahan baku pembuatan akrilonitril adalah propilen, amonia, dan udara yang akan direaksikan dalam reaktor *fixed bed* yang beroperasi pada suhu 400 °C dan tekanan 1,32 atm dengan katalis *Alumunium oxide*. Pra rancangan pabrik akrilonitril ini berkapasitas 16.000 ton/tahun dan lokasi pabrik dipilih di daerah Cilegon, Banten dengan luas area 40.000 m<sup>2</sup>. Pabrik juga membutuhkan utilitas diantaranya adalah kebutuhan air pendingin, steam, dan listrik yaitu kebutuhan air pendingin sebanyak 13.443 kg/jam, kebutuhan steam sebanyak 628,044 kg/jam, kebutuhan listrik sebanyak **59,135 kw**. Bentuk perusahaan yang dipilih adalah Perseroan Terbatas dengan pimpinan tertinggi dipegang oleh direktur dan dibantu oleh para *manager* dengan jumlah karyawan sebanyak 132 orang. Berdasarkan hasil analisis ekonomi terhadap perancangan pabrik *Acrylonitrile* diperoleh besarnya *Percent Return of Investment* (ROI) sebelum dan sesudah pajak sebesar 23% dan 11%. *Pay Out Time* (POT) sebelum dan sesudah pajak sebesar 3,61 tahun dan 6,73 tahun. *Break Even Point* (BEP) sebesar 44,63% dan *Shut Down Point* (SDP) sebesar 25,81% serta *Discounted Cash Flow Rate* (DCFR) sebesar 16,23%. Berdasarkan perhitungan ekonomi, maka dapat disimpulkan bahwa Pabrik *Acrylonitrile* cukup layak untuk didirikan.

**Kata - kata Kunci** : Akrilonitril, Propilen, Pra rancangan pabrik, Analisis Ekonomi

## ABSTRACT

Acrylonitrile is one of the chemicals in the industry as an additive in the resin, thermoplastic, additive industries in organic synthesis, acrylamide, and ABS resins. At this time the need of acrylonitrile in Indonesia is still imported from abroad. Therefore the establishment of acrylonitrile plant in Indonesia is very important to reduce the import of acrylonitrile from abroad. The raw material for the production of acrylonitrile is propylene, ammonia, and air which will be reacted in a fixed bed reactor at the temperature of 400 ° C and pressure of 1.32 atm with Aluminum oxide catalyst. Pre design acrylonitrile plant has a capacity of 16,000 tons/year and the plant location is selected in Cilegon, Banten, with an area of 40,000 m<sup>2</sup>. This plant also need utilities to cooling water, steam, and electricity. The need of cooling water is 13,443 kg/hour, steam requirement 628,044 kg/hour, and electricity requirement is 59,135 kw. The form of company selected is Limited Company with the highest leadership is held by the director and assisted by the manager with the number of employees as many as 132 people. The results of economic analysis on the design of Acrylonitrile showed that Percent Return of Investment (ROI) before and after tax of 23% and 11%. Pay Out Time (POT) before and after taxes of 3.61 years and 6.73 years. Break Even Point (BEP) of 44.63% and Shut Down Point (SDP) of 25.81% and Discounted Cash Flow Rate (DCFR) of 16.23%. Based on economic calculations, it could be concluded that Acrylonitrile Factory was quite feasible to be established.

**Keywords :** Acrylonitrile, Propylene, Pre Design Factory, Economic Analysis