

ABSTRACT

Isopropylamine is an organic compound, an amine. This compound is a colorless, hygroscopic liquid with a smell like ammonia. This compound is soluble with water and is flammable. Isopropylamine is a valuable intermediary in the chemical industry. Isopropylamine is mostly used in agriculture, as a raw material in the manufacturing industry of herbicides and insecticides. It is also used for: pure solvents, the synthetic rubber industry, the pharmaceutical sector, the textile industry, the detergent industry, but in quite small amounts. . Until now the needs of isopropylamine in Indonesia are still importing from abroad, therefore the establishment of an isopropylamine factory in Indonesia is one of the efforts to reduce isopropylamine imports from abroad. The raw materials for making isopropylamine are acetone, ammonia, and hydrogen which will be reacted in a fixed bed multitube reactor operating at 105 °C and a pressure of 0.39 atm, with a nickel catalyst. The pre-designed isopropylamine plant with a capacity of 10,000 tons / year and the location of the plant was chosen in the area of Cilegon, Banten with an area of 43,200 m². One important plant unit is the utility unit, which is to support the smooth running of the production process. The utility unit includes the need for cooling water, steam and electricity, with the breakdown of the cooling needs (Dowtherm A) of 81748.35 kg / hour, the steam needs of 823,195 kg / hour, the electricity needs of 280.64 kw. The company plan is a Limited Liability Company (PT) with the highest leadership held by the director and assisted by managers with 132 employees. Based on the results of an economic analysis of the design of the Isopropilamin plant, the amount of Percent Return of Investment (ROI) before and after tax is 28% and 14%. Pay Out Time (POT) before and after tax of 2.61 years and 4.14 years. Break Even Point (BEP) of 45% and Shut Down Point (SDP) of 20% and Discounted Cash Flow Rate (DCFR) of 38%. Based on economic calculations and various other considerations, it can be concluded that the Isopropilamin plant is feasible to be established.

Keywords: isopropylamine, acetone, ammonia, hydrogenation.