

ABSTRACT

Hydrogen Peroxide factory designed capacity of 50,000 tons / year , using raw materials obtained from the 2 - Ethylantraquinone China , Hydrogen from PT.Petrokimia Gresik, and the air from nature . The company will be established as a legal entity Limited Liability Company (PT) with the number of employees 200 people. Based on the aspect of availability of raw materials , the location of the factory was established in the industrial area Gresik , East Java . The factory operated for 330 days a year , with the production process for 24 hours and the required land area of 30.000 m² .

Fresh feed consisting of 2-ethylanthraquinone, ethylbenzene and trybutylphospat fed into the mixer tank-01 (TP-01) together with recycle of tower Extraction (ME). Then the solution will be fed into the hydrogenation reactor (R-01) together with hydrogen gas. In the Hydrogenation Reactor (R-01) working solution reacts with hydrogen gas and Raney Nickel catalyst at a temperature of 55 °C and a pressure of 4 atm. The results of the liquid Hydrogenation Reactor (R-01) then pass it to the Oxidation Reactor (R-02). While the results of the hydrogen gas in the recycle back to Reactor-01 (R-01). The results of the liquid Hydrogenation Reactor (R-01) react together with oxygen at a temperature of 55 °C and a pressure of 4 atm in Oxidation Reactor (R-02). Hydrogen peroxide is formed and then separated with other solutions in the Extraction Tower (ME) using water as absorbent media. Under the results of tower Extraction (ME) are then purified in distillation tower (MD), while the top results in the recycle tank to the mixer-01 (TP-01) as a feed recycle. The yield on the distillation tower streamed to UPL, while the bottom results Tower Distillation (MD) is a product of hydrogen peroxide solution with a concentration of 70% is cooled from 65 °C to 35 °C. Then the solution is stored in the storage tank at 1 atm pressure and temperature is 35 °C. To support the production process and the passage of plant operations, it needed support unit for the supply of water by 187.361m³/h, fuel Fuel Oil 2018.02 m³/year, fuel generator 1064 m³/year, and the need for electrical power 1951.59 kW. Compressed air is used in Hydrogen Peroxide plant is as much as 24 m³/hour.

This plant requires Fixed Capital Investment \$ 20042704 + Rp 70,222,303,000 , Working Capital \$ 615,045.08 + Rp 79,036,691,000 . Hydrogen Peroxide plant economic analysis shows the ROI before tax of 29.66 % and ROI after tax of 17.80 % . POT value before tax is 2,521 years old and POT after tax was 3,598 years old . DCF amounted to 26 813 % . BEP amounted to 42.7 % of production capacity and SDP for 17.7 % of production capacity . Based on data from the economic analysis , the Hydrogen Peroxide plant deserves to be studied further.