

ABSTRACT

The hydrogen peroxide plant gives very good prospect, considering the requirement of hydrogen peroxide in Indonesia which progressively increase. Preliminary design of hydrogen peroxide plant from isopropanol (isopropyl alcohol) with oxidation process is planned to built in Gresik, the province of East Java, in the area of land of 26,000 m² with production capacity 20,000 tons/year. This chemical plant will be operated for 330 days or 24 hours a day with total 116 employees. Raw materials needed are isopropanol (isopropyl alcohol) 17.942,549 tons/year and oxygen from air 15686,2745 tons/year. The production process will be operated at temperature 130°C and pressure about 10 atm using a bubble reactor, as a reactor cooler is used cooler coil. The convert reaction is 90%, resulting product hydrogen peroxide 50% and acetone 98.75% as by-product. This plant are needed 32928,0896 kg/hour of water from Brantas river which proceded in utility unit, 16,6683 litres/hour of fuel, 155,2244 kg/hour of steam, and 84 KWH of electricity power provided by PLN and also need a generator as reserve. A parameter of appropriatness uses an economic analysis with total capital investment Rp 135.611.703.245 and \$ 3.099.879,08 consisted of Rp 18.420.204.857,98 and \$ 3.041.014,71 as a Fixed Capital Investment, and Rp 117.191.498.387,50 and \$ 58.864,37 as a Working Capital. Total Cost Rp 433,474,048,795.17 and Annual Sales Rp 471.392.707.612,4570 thus it can get profit Rp 37.909.283.240,87 before taxes, and Rp 18.954.641.620,43 after taxes. A count result of parameter after taxes is percentage of Return On Investment (ROI) 42.70%, Pay Out Time (POT) 1.90 year, Discounted Cash Flow (DCF) 17.35%, Break Event Point (BEP) 40.11%, while Shut Down Point (SDP) 30.99%. From the analyses above it showed that the result was satisfied so the plant are interesting and appropriate to build.