

CHAPTER X

CONCLUSION AND RECOMMENDATION

10.1. Conclusion

Nitric acid is one of the strategic materials for defensive industry and also used as an oxidizing agent and as a highly active acid for fertilizer, plastics, pharmaceuticals, dyes, synthetic fibers, insecticides, and fungicides. The development of nitric acid industry in Indonesia has to be noticed so that our country can supply this nitric acid by itself in the future, without importing them.

This nitric acid plant is strategic if established in Cikampek, West Java because there are PT Multi Nitrotama Kimia for market and PT Pupuk Kujang Cikampek for raw material supply.

Total Capital Investment of this preliminary plant is Rp. 25,880,981,250.00 with Rp. 20,704,785,000.00 own investment and Rp. 5,176,196,250.00 from loan.

This preliminary plant design is reasonable to be built because economic analysis using the discounted cash flow method shows that IRR before tax = 41.09% and IRR after tax = 24.48. ROE before tax = 52.81% and 32.71%. POT before tax = 2 years and 7 months, POT after tax = 3 years and 1 month. BEP = 30.796% NPV = Rp.125, 259,394,761.98 ROI = 46.30 %.

10.2. Recommendation

As explained, to support strategic industries in Indonesia, ammonium nitrate is needed. Ammonium nitrate production needs nitric acid as raw material and nitric acid production uses ammonia as the raw material. However, producing ammonium nitrate also needs ammonia as raw material to be reacted with the nitric acid. Because of this relationship, ammonium nitrate plant is better also established right after this nitric acid preliminary plant. This way is more efficient to support defense industries in supplying raw chemical material needed.

There is a need of the further research to the membrane reactor used. It is important to observe what type of catalyst is more suitable for nitric acid production and how to increase the membrane resistance. By this way, the capacity of this preliminary plant can be scaled-up more.

The use of the very high efficient absorber is recommended to reduce significantly the concentration of NO and NO_x in tail-gas if the capacity is scaled-up plentifully. By reducing the concentration of NO and NO₂, the cost of SCR Reactor can be reduced.