

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Crude glycerol obtained from biodiesel production was diluted to 30-70% of water, then pretreated with ultrafiltration and fed to EDI module 5 cycles.

UF membrane was proven to be capable for removing MONG from the glycerol solution.

Viscosity is an important factor that affected the performance of EDI since it was designed to use with water. However, it still work well with glycerol solution and provide shorter residence time compared to eletrodialysis, Although it seem that the %salt removal increase when the % of water increase, but it consume higher energy and time to treat the same amount of pure glycerol at higher water concentration. In the experiment at 30% of water, the flow rate of all stream clearly drop into a little bit lower than that the EDI required even all valves were full opened. Thus, the 20% water content cannot be investigated and the 40% water content was preferable to electrodeionized glycerol.

The energy cost of EDI wasn't much lower than the distillation because EDI's product require water removal unit that consume so much energy. And if the salt content is high, EDI will consume more energy. However, the capital cost of EDI should be further studied to compare with the distillation.

Recommendations

1. The less water content can be tested at higher temperature since the viscosity of solution will be reduce.

2. To get more accurate result, synthetic glycerol can be used instead of crude glycerol from biodiesel production that the composition has changed every day.