CHAPTER V
CONCLUSIONS AND RECCOMMENDATIONS

The column targeting analysis of design case can analyze the energy efficiency of each column based on the plant designer and found that only deethanizer column still have the energy loss 5.0068 MJ/sec. Demethanizer and depropanizer are found pinch point in the column. After use column modification method that suggested by reduce reflux ratio with 1.4 and install side condenser at tray no. 4 the main condenser duty can reduce to 2.2 MJ/sec., the side condenser duty is 6.6 MJ/sec and the energy loss gap has the trend to reduce with the same product quality at 93.78 % In the heat exchanger network analysis of the background process, there are the energy consumption in 2 main parts; cool utility requirement is 20.0143 MJ/sec. and hot utility requirement is 1.95586 MJ/sec. This represents the process consuming more energy in cooling part that is propylene refrigerant causing high operating cost. The HENs in the process needs to be modified but the LNG heat exchanger, which is multi-stream exchanger, is the limitation and constraint of the process.

For column targeting analysis of the actual case that operated at nowadays. There are only demethanizer column that had a pinch point. Deethanizer and depropanizer are still had the excess energy in the column system and need to modified the columns based on the economic consideration without the effect to the product purification.

This work is based on the theoretical and practical approach that can be applied as a suggestion to the real industrial system for saving the energy consumption in the process. Furthermore, this work can be used as the guideline to study the higher step of the process integration that is huge topic in the process system.

The recommendation of this work are the FSC method that based on the pseudo-binary model can be error when use the more tray number and more product purity. This is the reason of some error from the calculation that called cumutative error in the reboiler duty, QH, of the FSC method compared to one from PRO/II simulation results.