CHAPTER III
EXPERIMENTAL

3.1 Materials and Equipment

3.1.1 Equipment

Computer laptop model: Intel(R) Core(TM) i7-3610QM at CPU 2.3GHz, RAM: 4 GB and 64-bit Operating system

3.1.2 Software

GAMS (General Algebraic Modeling System) version 24.2.1

Microsoft office excel 2010

3.2 Research Procedures

3.2.1 Grassroots Design for HEN with the Assumption of Isothermal Mixing

a. Design the grassroots model with isothermal mixing assumption.
b. Run the grassroots model by GAMS.
c. Interpret the result from GAMS and generate HEN.
d. Analyze HEN.

3.2.2 Grassroots Design for HEN without the Assumption of Isothermal Mixing

e. Design the grassroots model without isothermal mixing assumption.
f. Run the grassroots model by GAMS.
g. Interpret the result from GAMS and generate heat exchanger network.
h. Analyze heat exchanger network.

3.2.3 Retrofit Design for HEN with the Assumption of Isothermal Mixing

i. Design the retrofitting model with isothermal mixing assumption.
j. Prepare the data for the case study.

k. Input the streams data such as inlet and outlet temperature, flow rate, specific heat capacity into the retrofit model.

l. Run the retrofitting model by GAMS.

m. Interpret the result from GAMS and generate HEN.

n. Analyze HEN.

o. Compare the results of the retrofitting model with other models in terms of computational time, network configuration, utility cost, capital cost and total annualized cost.

3.2.4 Retrofit Design for HEN without the Assumption of Isothermal Mixing

p. Design the retrofitting model without isothermal mixing assumption.

q. Prepare the data for the case study.

r. Input the streams data such as inlet and outlet temperature, flow rate, specific heat capacity into the retrofit model.

s. Run the retrofitting model by GAMS.

t. Interpret the result from GAMS and generate HEN.

u. Analyze HEN.

v. Compare the results of the retrofitting model with other models in terms of computational time, network configuration, utility cost, capital cost and total annualized cost.