CHE 4253

ASSIGNMENT 2

Due Sep 3

PROBLEM #1(Individual)

Consider the following data

FCp (KW/C)	Initial Temperature	Target Temperature
1.5	170	60
2	45	30
2.7	20	132
1.5	80	140
0.4	160	195
2.5	70	30

a) Construct your Pinch Tableau in Excel so that you can identify minimum utility and pinch temperature

b) Draw composite curves for one selected value of HRAT.

c) Make a graph of the minimum heating utility and pinch temperature as a function of the minimum temperature difference (HRAT) in the network.

d) Choose one value of minimum temperature difference (HRAT) (pick one that will render decent overlap) and draw the grand composite curve. Consider that you have available utility at 100 ºC, at 120 ºC and at 260 ºC where you have increasing price with increasing temperature. Determine the optimum utility usage.

e) Assume that your cooling water is available at 15 ºC. Determine the outlet temperature that will minimize its flowrate. What is the cooling water outlet temperature in that case? Discuss solutions in the case where the cooling water to be returned to the cooling tower cannot exceed 30 ºC.