

1 Consider the SAT on PTA that you attempted.

If your roll number ends in an even number use $\Delta T_{\min} = 9\text{ C}$,

If your roll number ends in an odd number use $\Delta T_{\min} = 11\text{ C}$,

Design a HEN using

1. spaghetti design
2. MER using PDM rules

Compare the cost/area that you get with the cost/area that you calculated in HW 1

You may use the following information

$U = 0.001\text{ MW/m}^2\text{ C}$

Heating is available at 300 C (Steam)

cooling is provided by cooling water at 15 C with a maximum return temperature of 30 C

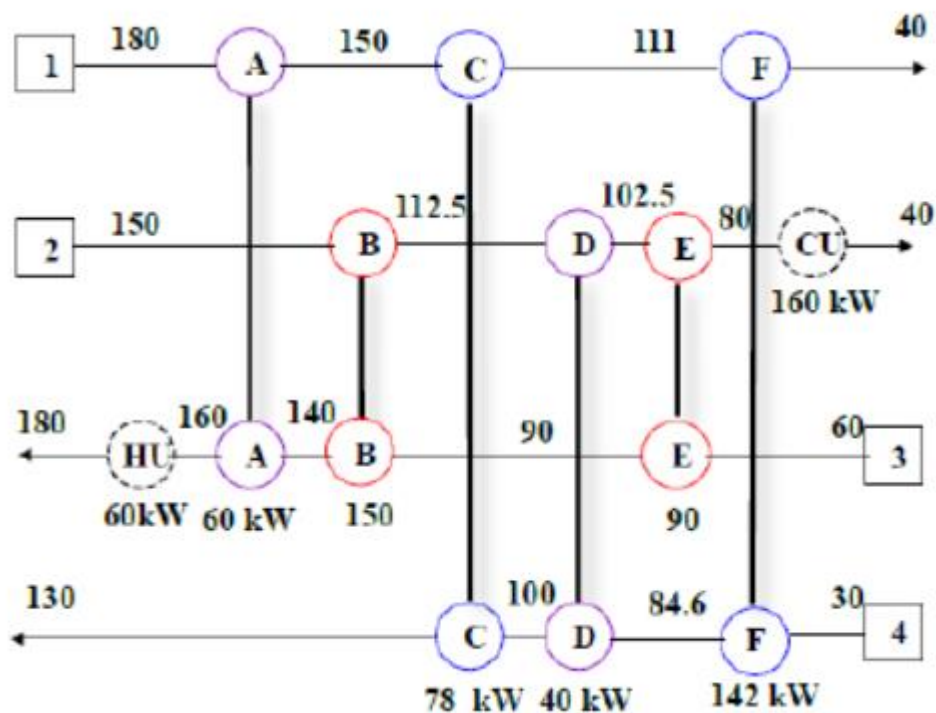
Cost of heat exchanger $40000 + 500 A$, where A is area in sq m

Cost of steam = $1,20,000\text{ (/MW/y)}$

Cost of cooling water = $10,000\text{ (/MW/y)}$

Use annualization factor = 0.25

Q2 Refer to the figure below. Evolve the HEN and reduce it to the absolute minimum number of HENs.



Legend: Process heat exchangers: A-A, B-B, C-C, D-D, E-E, F-F

Cooling utility: CU

Heating utility : HU

Heat duties in kW

Temperatures in °C are shown over the respective segments

Upload a single, neatly written/formatted pdf file. If you have scanned a file using a cell phone camera, make sure the final version is readable.

Name the file rollnumber_hw2.pdf.

eg. if your roll number is CH18B001, name your file as

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