

EXERCISE 6

1 LP TRANSSHIPMENT MODEL

We have the following streams:

<i>stream #</i>	<i>type</i>	<i>cp · ṁ [kJ/K · s]</i>	<i>T_{start} [°C]</i>	<i>T_{target} [°C]</i>
1	hot	3.5	180	60
2	hot	1.5	140	30
3	cold	2.0	45	115
4	cold	5.0	70	160

With a global $\Delta T_{min} = HRAT = 10 \text{ }^\circ\text{C}$. Steam is available at 220°C and cooling water at 10°C .

a)

Partition the temperatures into intervals.

b)

Calculate the heat content of each stream for each interval.

c)

Formulate a linear programming (LP) transshipment model, minimising the utility consumption.

d)

Solve the LP model developed in c).