Problem statement:

lem Assignment

Stream #	2	4	19/20	3	13	16/17	14
TS (°C)	115	61	94	156	175	243	121
TT (°C)	182	106	122	40	40	158	121
P(MW/K)	0.128	0.009	0.053	0.008	0.022	0.029	— ΔH

where ΔH (MW) = −(4 + 0.2 * Gr No) × 0.6

consider $\Delta T_{min} = 10°C$

Calculate T_{pinch} and design a HE network

Make graphical construction & tabular calculati

eam dat[illegible] are given in Table 1

Assignment

Stream #	2	4	12/20	3	13	14/17	14
TS (°C)	115	61	94	156	175	243	121
TT (°C)	182	106	122	40	40	158	121
m (kW/°C)	0.008	0.009	0.053	0.008	0.022	0.029	— ΔH

where $\Delta H = -(4 + 0.2 \times Gr\,No) \times 0.64$

Consider $\Delta T_{min} = 10^{\circ}C$

Calculate T_{pinch} and design a HE network

Make graphical construction & tabular calculatio

am data for a process are given in Table 1

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→	19/20	3	13	14/17	14
51	94	156	175	243	121
06	122	40	40	158	121
009	0.053	0.008	0.022	0.029	$-\Delta H$

where $\Delta H = -($...

consider $\Delta T_{min} = 10^\circ C$

Calculate T_{pinch} and design a HE network

raphical construction & tabular calculation

process are given in Table 1

	Supply Temperature, T_s(°C)	Target Temperature, T_T(°C)	CP (MW/K)
		182	0.128
		106	0.009
		122	0.053
		[illegible]	-0.008

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Group-1 Heat exchanger network

TS	TT	TS*	TT*	Cp (MW/K)
115	182	120	187	0.128
61	106	66	111	0.009
94	122	99	127	0.053
156	40	151	35	0.008
175	40	170	35	0.022
243	158	238	153	0.029
121	121	116	116	—

$\Delta T_{min} = 10°C$

$\Delta H = -(4 + 0.2 \times 1) \times 0.64 = -2.688$ MW

$T_C^* = T + 5$ / $T_H^* = T - 5$

Table: on next page →

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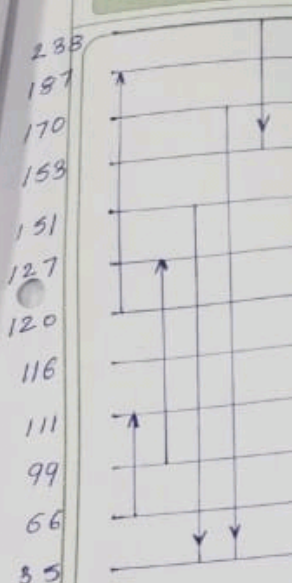


ΔH	QMW	5.226MW
-1.479	1.479	6.705
1.633	-0.204	5.022
1.309	-1.513	3.713
0.212	-1.725	3.501
2.352	-4.077	1.149
1.057	-5.134	0.092
0.092	-5.226	0
~~-2.688~~	~~-2.538~~	~~2.688~~
0.115	-2.653	2.573
0.384	-3.037	2.189
-0.693	-2.344	2.832
-0.93	-1.414	3.812MW

For $\Delta T_{min} = 10°C$

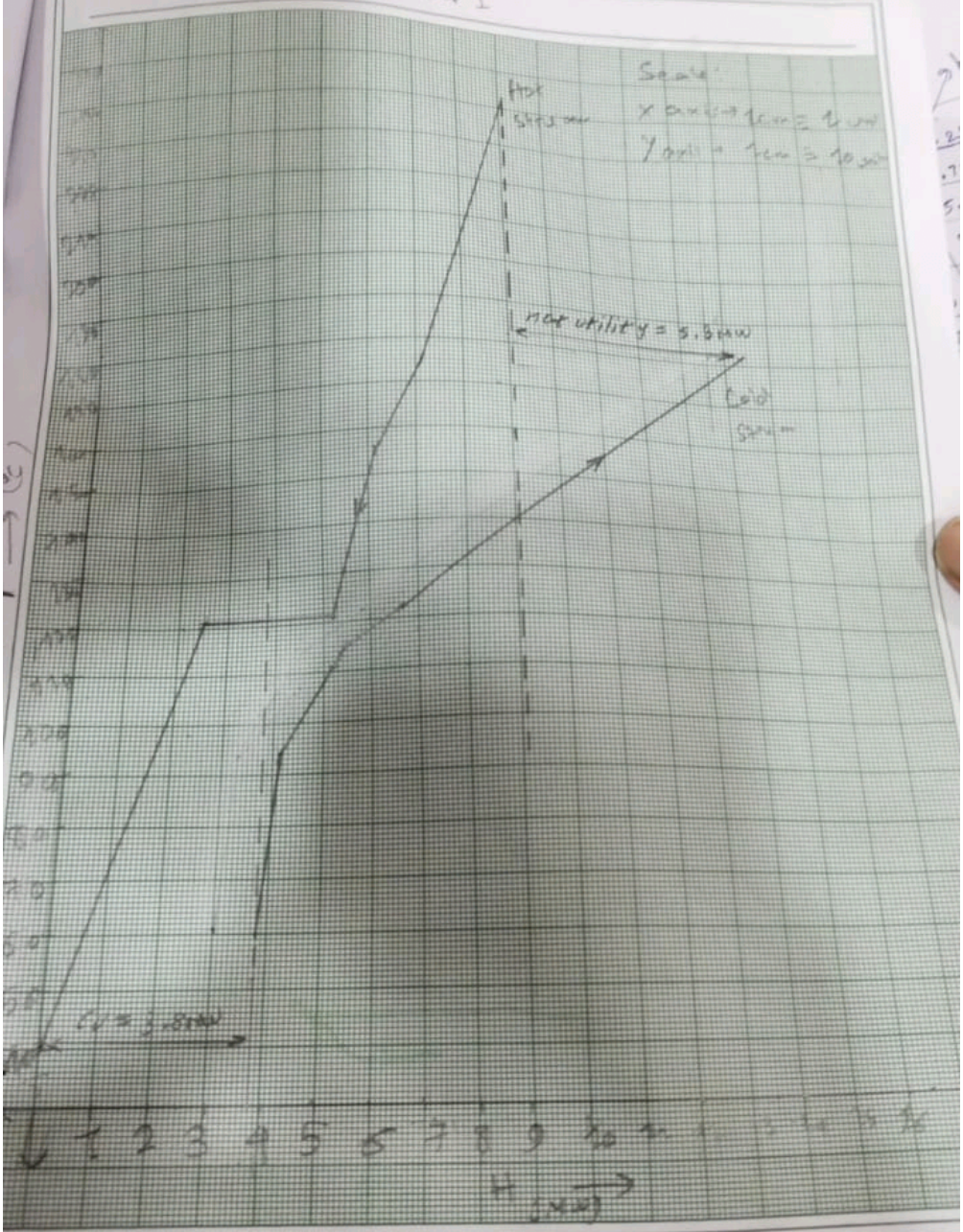
$T_{pinch} = 116°C$

$\therefore$ hot side T_{pinch} = ~~120°C~~ 121°C

cold side $T_{pinch} = 111°C$

$$\boxed{\begin{array}{l}\text{Hot utility} = 5.226\,MW \\ \text{Cold utility} = 3.812\,MW\end{array}}$$

Graph 1



H → (MW)