Process Integration Using Block Superstructure

Jianping Li, Salih Emre Demirel, and M. M. Faruque Hasan*

Artie McFerrin Department of Chemical Engineering, Texas A&M University

College Station, TX 77843-3122, USA

Supporting Information Available

The supporting information provides the problem parameters for case study 3 on simultaneous water and heat integration, which is adapted from the work of Ahmetović and Kravanja.[1]

Table S1: Cost and operating parameters for case study 3: simultaneous water and heat integration.

Parameter	Value
Feed cost CC_f	0.375 \$/t
Cold utility cost CC^{CU}	189 \$/(KW yr)
Heat utility cost CC^{HU}	377 \$/(KW yr)
Fixed charge of heat exchangers $CF_{x,xx}$, CF_x^{CU}, CF_x^{HU}	8000 \$
Unit capital cost of heat exchangers $CC_{x,xx}$, CC_x^{CU}, CC_x^{HU}	1200 \$/m^2
Cost exponent for heat exchangers $B_{x,xx}$, B_x^{CU}, B_x^{HU}	0.6
Water source temperature T^f	20°C
Waste stream temperature $T_s^{min} = T_s^{max}$	30°C
Operating hours within a full year OH	8000 hr
Overall heat transfer coefficient U^{phex}=U^{HU}=U^{CU}	0.5(KW /(m^2 °C)
Heat capacity of water Cp_k	4.2 kJ/(kg °C)
Inlet and outlet temperature of cooling water	10°C and 20°C
Inlet and outlet temperature of steam	120°C

References

(1) Ahmetović, E.; Kravanja, Z. Simultaneous synthesis of process water and heat exchanger networks. *Energy* **2013**, *57*, 236–250.