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Homework 10

Problem 1:

In order to cool 120,000 lb/hr of 2,6-dimethyl octane from 80 to 120°F, I propose the following parameters for the heat exchanger.

Tube material	HA steel 304
Tube length	21 ft
# of tubes	480
# of tube passes	2
Shell diameter	31 in
Baffle spacing	10 in
Tube pressure drop	0.172 psi
Shell pressure drop	0.645 psi
Overdesign factor	17.5%

Problem 2:

In order to cool 400,000 lb/hr of benzene from 250 to 150°F, I propose the following parameters for the heat exchanger.

Tube material	HA steel 304
Tube length	40 ft
Fan diameter	20 ft
# of fans	2
# of tubes	350
# of tube passes	1
Fin material	Copper
Fin spacing	10/in
Tube pressure drop	0.389 inH_2O
Air pressure drop	0.493 inH_2O
Overdesign factor	17.8%