

From Kakac 3ed edition book

Problem	Modifications	
6.2	Change the overall heat transfer coefficient from 300 W/m ² .K to 350 W/m ² .K, and total fouling of 0.00070 m ² .K/W. Get the outlet temperatures for fouled HX	
6.3	Change the inlet gas temperature from 150° C to 170 °C, Let h _o =120 W/m ² .K, h _i =1200 W/m ² .K	
6.4	Change the outlet cold temperature after 3 months from 46 °C to 45° C.	
6.5	Let the thickness of calcium carbonate be 1.2 mm and the thickness of magnesium phosphate to be 1.0 mm.	
6.6	Change the outlet temperature from 80 °C to 75 °C. Change U value from 2100 to 2000 W/m ² K	
6.10	Change the outlet temperature after 6 months to 85 °C instead of 95 °C. 6.10b Calculate the outlet water temperature if the heat exchanger fouling factor reached 0.00015 m ² .K/W	
A	List five types of fouling found in heat exchangers	
B	What is the difference between on-line and periodic fouling cleaning? Give example for each	
C	Draw a sketch to show the difference between linear and asymptotic fouling build up.	
D	What are the effects of fouling on heat exchangers?	
F	What is the difference between crystallization and biological fouling.	