

From Kakac 3ed edition

**7.10 Modified with  $\dot{m}_h = 24,000$  kg/h instead of 20,000 kg/hr for annulus flow**

$v_t$ [m/s]	$Re_t$ [-]	$f_t$ [-]	$h_t$ [W/m <sup>2</sup> .K]	$v_a$ [m/s]	$Re_a$ [-]	$f_a$ [-]	$h_a$ [W/m <sup>2</sup> .K]	$U_f$ [W/m <sup>2</sup> .K]
3.233	758781	0.00348	16724	0.8756	18235	0.006695	1953	825

$\Delta p_t$ [Pa]	$\Delta p_a$ [Pa]	$N_{hp}$	$D_e$ [m]	$D_h$ [m]					
31694	4068	4	0.0434	0.0176					

**Iterative solution for double pipe heat exchanger**

	$V_t$	$V_a$	$d_i$	$Re_{d_i}$	$Re_{D_h}$	$h_t$	$h_a$	$U_f$	$A_o$	$L$	$\Delta P_t$	$\Delta P_a$	$R_{ss}$
	[m/s]	[m/s]	[m]	[-]	[-]	W/m <sup>2</sup> .K	W/m <sup>2</sup> .K	W/m <sup>2</sup> .K	[m <sup>2</sup> ]	[m]	[Pa]	[Pa]	[Pa]
1	2.5	2.5	0.0277	319368	37757	15185	4946	1430	1.104	11.08	1.6*10 <sup>4</sup>	7.38*10 <sup>4</sup>	73881
2	0.7524	0.3563	0.0505	175205	19096	5153	702	490	3.223	18.82	1571	849	655
3	0.7352	0.4735											317
4	0.8277	0.474											170
5	0.7849	0.4704	0.0496	178948	20380	5353	958	604	2.612	15.6	1437	1489	64