Chapter6_example4

Summary of Results

Assmued V (ft/hr)	1/Gz	Nu(fig 8.8)	hL BTU/(hr. sq.ft. degree R)	V (ft/hr)
100	0.0909	4.7	5.61	246
246	0.0369	5.8	6.93	304
304	0.0299	6.2	7.40	325
325	0.0279	6.3	7.52	330
330	0.0275	6.4	7.64	335
335	0.0271	6.4	7.64	335

The final velocity is 335 ft/hr = 0.0932 ft/s

The final convective coefficient is 7.64 BTU/(hr. sq.ft. degree R)

The Reynolds number is 1148

The mass flow rate of Freon-12 is 7.64e-03 lbm/s = 27.49 lbm/hr

The heat gained by Freon-12 is 208.9 BTU/hr

On checking the heat transferred we find almost equal to the heat gained by Freon-12

The mass of water in the prescribed volume is 13.0 lbm

The required time is 9.0 hr

Summary of Data for Example 6.4

1/Gz	Nu_D	z (ft)	hz, BTU/(hr. sq.ft.degree R)	Tbz,degree F
0.0010	19.3	0.18	23.04	-34.7

0.0040	12.1	0.74	14.45	-27.3
0.0100	8.9	1.85	10.63	-18.5
0.0150	7.7	2.77	9.19	-13.4
0.0200	7.1	3.69	8.48	-8.8
0.0271	6.4	5.00	7.64	-4.0