

Chapter9_example3

The area of annulus is 0.01170 sq.ft

The area of inner pipe is 0.00909 sq.ft

Air flows through annulus

The Annulus Equivalent Diameter for friction is 0.0528 ft

The Annulus Equivalent Diameter for heat transfer is 0.1300 ft

The Reynolds Number for water is 5.2e+04

The Reynolds Number for ethylene glycol is 1.07e+04

The Nusselt number for water is 189

The Nusselt number for ethylene glycol is 185

The convective coefficient for water based on inner diameter is 663 BTU/(hr.ft².degree R)

The convective coefficient for water based on outer diameter is 623 BTU/(hr.sq.ft.degree R)

The convective coefficient for ethylene glycol is 213 BTU/(hr.sq.ft.degree R)

The overall exchanger coefficient is 159 BTU/(hr.sq.ft.degree R)

The ratio is 1.47 and area is 7.2 sq.ft

The temperature T₂=173 degree F

The outlet temperature of Ethylene glycol is 99.4 degree F