

Calculation Process

Step 1

Record incoming temperatures and fluid flows

Example: (based on performance of SP300)

Temp. of incoming boiler water=60°C(140°F)

Temp. of incoming pool water=10°C(50°F)

Flow of boiler water=37.80 l/min (10 USGPM)

Flow of pool water=302.4 l/min (80 USGPM)

Step 2

Calculate

Calculate temp. difference between incoming fluids: 60°C-10°C=50°C

From Specification Table Calculate percentage of nominal hot water flow: $37.80/42 \times 100\% = 90\%$

From Specification Table Calculate percentage of nominal cold water flow: $302.4/325 \times 100\% = 93\%$

From Specification Table Obtain nominal capacity of heat exchanger (c.g. SP300=88kW)

Step 3

A=85 for temperature difference 50°C

B_{hot}=89 for 90% of hot flow

B_{cold}=92 for 93% of cold flow

Both hot and cold fluids are F_{hot}=F_{cold}=1.00×10⁻²

Step 4

Solution

Corrected Thermal Output=Nominal Capacity×A×F_{hot}×F_{cold}× $\sqrt{B_{hot} \times B_{cold}}$

Corrected Thermal Output=88×85×0.01×0.01× $\sqrt{89 \times 92}$ =67.70kW(231,143BT/h)

Note:°C=(°F-32)×5/9, 1 USGPM=3.78 l/min

Chart I Temperature (°C) and Flow Rate
Correction Factors

