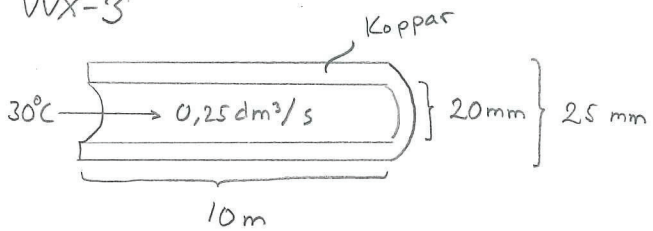


VVX-3



Köldmediet kondenserar vid 50°C,
 $h_o = 1100 \text{ W/m}^2 \cdot \text{K}$

$$v = \frac{0,25 \cdot 10^{-3}}{\pi \cdot \frac{0,02^2}{4}} = 0,796 \text{ m/s}$$

$$Q_f = UA \Delta T_{lm} \quad , \quad \frac{1}{UA} = \frac{1}{A_i h_i} + \frac{\ln r_o/r_i}{2\pi l k} + \frac{1}{A_o h_o}$$

Vet inte vilken medeltemperatur vi ska ta vatten-data vid - Iteration!

Gissa T_{ut} → Beräkna ΔT_{lm} → Beräkna nytt T_{ut} : mha:

$$\dot{m}_v c_{p,v} \cdot (T_{ut} - T_{in}) = \left(\frac{1}{A_i h_i} + \frac{\ln r_o/r_i}{2\pi l k} + \frac{1}{A_o h_o} \right)^{-1} \Delta T_{lm}$$

1. $T_{ut} = 50^\circ\text{C} \Rightarrow \Delta T_{lm} = 10^\circ\text{C} \quad , \quad T_{m,v} = 40^\circ\text{C}$

$$\frac{1}{UA} = \frac{1}{A_i h_i} + 0,0011665$$

Vid 40°C: $\rho = 992,2 \text{ kg/m}^3$, $c_p = 4175 \text{ J/kg} \cdot \text{K}$, $\mu = 656 \cdot 10^{-6} \text{ Pa} \cdot \text{s}$, $Pr = 4,34$, $k = 0,633 \frac{\text{W}}{\text{mK}}$

$$Re = \frac{\rho v D}{\mu} = 24079$$

$$\Rightarrow Nu_D = 0,023 Re^{0,8} Pr^{0,4} = 132 = \frac{h_i D}{k} \Rightarrow h_i = 4192 \text{ W/m}^2 \cdot \text{K}$$

$$\Rightarrow UA = 647 \text{ W/K} \quad \Rightarrow T_{ut} = \frac{UA \Delta T_{lm}}{\dot{m}_v c_p} + T_{in} = 36,24^\circ\text{C}$$

2. $T_{ut} = 36,24^\circ\text{C} \Rightarrow \Delta T_{lm} = 56,8^\circ\text{C}$, $T_{m,v} = 47,1^\circ\text{C}$

⋮

Herera vidare

⋮