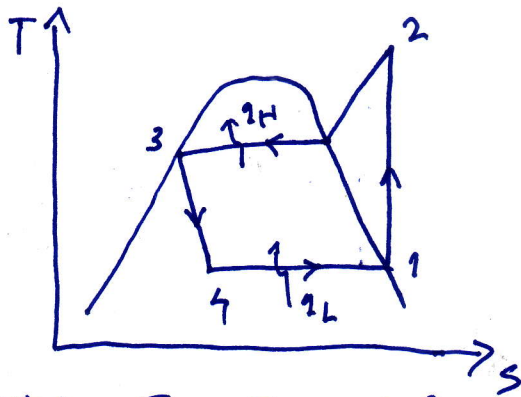


6.4



diket : $T_{ev} = T_1 = -14^\circ\text{C}$
 $T_{kond} = T_3 = 44^\circ\text{C}$

dimita : COP bila refrigeran Ammonia dan Freon 12

Solusi :

Refrigeran Ammonia

Titik 1. (uap jenuh) dari tabel A.2.1

$T_1 = -14^\circ\text{C} \rightarrow h_g = h_1 = 1427 \text{ kJ/kg}$
 $s_g = s_1 = 5,5305 \text{ kJ/kgK}$

Titik 2. UDL ~~dari tabel A.2.2~~

$P_{jenuh} \text{ pada } (T_3 = 44^\circ\text{C}) = 1734,09 \text{ kPa}$

$P_3 = P_2 = P_{jenuh} = 1734,09 \text{ kPa}$

$s_1 = s_2 = 5,5305 \text{ kJ/kgK}$

Dari tabel A.2.2 diperoleh

P [kPa]	s	h	s	h
1600	s_x	5,5004	5,5305	s_y
	h_x	1698,5		h_y
1734,09	s_x	s_x	5,5305	s_y
	h_x	h_x	h_2	h_y
1800	s	5,4409		5,5699
	h	1693,1		1745,1

- * interpolasi ① diperoleh $s_x = 5,4631$
 $h_x = 1694,9$
- * " ② " $s_y = 5,5915$
 $h_y = 1746,6$
- * " ③ " $h_2 = 1722,0 \text{ kJ/kg}$

titik 3. Cair jenuh dari tabel A.2.1

$T_3 = 44^\circ\text{C} \rightarrow h_f = h_3 = 391,5 \text{ kJ/kg}$

titik 4. throttling $\rightarrow h_3 = h_4 = 391,5 \text{ kJ/kg}$

$COP = \frac{q_L}{w_c} = \frac{h_1 - h_4}{h_2 - h_1} = \frac{1427 - 391,5}{1722 - 1427} = 3,51$

Refrigeran Freon 12

Titik 1. dari tabel A.3.1

$T_1 = -14^\circ\text{C} \rightarrow$ dari hasil interpolasi diperoleh
 $h_g = h_1 = 181,288 \text{ kJ/kg}$
 $s_g = s_1 = 0,7040 \text{ kJ/kgK}$

Titik 2 UDL

$P_{jenuh} \text{ pada } (T = 44^\circ\text{C}) = 1,0596 \text{ MPa}$

$P_3 = P_2 = P_{jenuh} = 1,0596 \text{ MPa}$

$s_1 = s_2 = 0,7040 \text{ kJ/kgK}$

Dari tabel A.3.2 diperoleh

1,00 MPa		1,0596 MPa		1,20 MPa	
s	h	s	h	s	h
0,7021	210,162	s_x	h_x	0,6812	206,661
s_y	h_y	0,7040	h_2	s_g	h_g
0,7254	217,810	s_y	h_y	0,7060	214,885

- * interpolasi ① diperoleh $s_x = 0,6959$
- * " ② " $h_x = 209,119$
- * " ③ " $s_y = 0,7196$
- * " " $h_y = 216,980$
- * " ④ " $h_2 = 211,78 \text{ kJ/kg}$

titik 3 Cair jenuh dari tabel A.3.1

$T_3 = 44^\circ\text{C} \rightarrow$ dari hasil interpolasi diperoleh
 $h_f = h_3 = 78,623 \text{ kJ/kg}$

titik 4. Throttling $\rightarrow h_3 = h_4 = 78,623 \text{ kJ/kg}$

$COP = \frac{q_L}{w_c} = \frac{h_1 - h_4}{h_2 - h_1} = \frac{181,288 - 78,623}{211,78 - 181,288} = 3,37$