

{Section 4 - CP22K8ME-PFV}

T_evap=5[C]
P_cond=2420[kPa]
superheat=15[C]
subcool=10[C]

{State 1}

T[1]=T_evap
s[1]=entropy(R410A, T=T[1], x=x[1])
P[1]=pressure(R410A, T=T[1], x=x[1])
h[1]=enthalpy(R410A, T=T[1], x=x[1])
x[1]=1.0

{State 2}

T[2]=T[1]+superheat
s[2]=entropy(R410A, T=T[2], P=P[2])
P[2]=P[1]
h[2]=enthalpy(R410A, T=T[2], P=P[2])

{State 3}

T[3]=temperature(R410A, P=P[3], h=h[3])
s[3]=entropy(R410A, P=P[3], h=h[3])
P[3]=P[4]
h[3]=480.9 {This was found using the first law of the compressor}

{State 4}

T[4]=temperature(R410A, P=P[4], x=x[4])
s[4]=entropy(R410A, P=P[4], x=x[4])
P[4]=P_cond
h[4]=enthalpy(R410A, P=P[4], x=x[4])
x[4]=1.0

{State 5}

T[5]=T[4]
s[5]=entropy(R410A, P=P[5], x=x[5])
P[5]=P[4]
h[5]=enthalpy(R410A, P=P[5], x=x[5])
x[5]=0.0

{State 6}

T[6]=T[5]-subcool
s[6]=entropy(R410A, T=T[6], P=P[6])
P[6]=P[5]
h[6]=enthalpy(R410A, T=T[6], P=P[6])

{State 7}

T[7]=T[1]
s[7]=entropy(R410A, T=T[7], h=h[7])
P[7]=pressure(R410A, T=T[7], h=h[7])
h[7]=h[6]

{Dummy State}

T[8]=T_evap
s[8]=entropy(R410A, T=T[1], x=x[1])
P[8]=pressure(R410A, T=T[1], x=x[1])
h[8]=enthalpy(R410A, T=T[1], x=x[1])
x[8]=1.0

Unit Settings: SI C kPa kJ mass deg $P_{\text{cond}} = 2420$ [kPa]

subcool = 10 [C]

superheat = 15 [C]

 $T_{\text{evap}} = 5$ [C]

No unit problems were detected.



