

*"Calculation Module for Brine Enthalpy"*

```
Function h_sol(t_sol,c)
A=(0.0005+0.0378*c-0.3682*c^2-0.6529*c^3+2.89*c^4)*10^3
B=4.145-4.973*c+4.482*c^2+18.31*c^3-46.41*c^4
D=0.0007-0.0059*c+0.0854*c^2-0.4951*c^3+0.8255*c^4
E=(-0.0048+0.0639*c-0.714*c^2+3.273*c^3-4.85*c^4)*10^(-3)
F=(0.0202-0.2432*c+2.054*c^2-8.211*c^3+11.43*c^4)*10^(-6)
h_sol=A+B*t_sol+D*t_sol^2+E*t_sol^3+F*t_sol^4
End
```

*"Criteria for Additional Heat in Air Bubble Units"*

```
PROCEDURE additional(Q,Q_bubble:Q_add)
x:=Q-Q_bubble
if (x>0) then
Q_add:=0
else
Q_add:=Q_bubble-Q
endif
End
```

*"Air Flow Conversion Module"*

```
m_d=V_d*rho_a0/(60*1000)
rho_a0=density(AirH2O,T=t_a0,R=rh_a0/100,P=101.325)
```

*"Experimental Data Processing Module for Air Bubble Unit"*

```
w_a0=humrat(AirH2O,T=t_a0,R=rh_a0/100,P=101.325)
w_a1=humrat(AirH2O,T=t_a1,R=rh_a1/100,P=101.325)
h_a0=enthalpy(AirH2O,T=t_a0,R=rh_a0/100,P=101.325)
h_a1=enthalpy(AirH2O,T=t_a1,R=rh_a1/100,P=101.325)
h_w0=h_sol(t_w1,c_w0)
h_wx=h_sol(t_w1,c)
m_e_bubble=m_d*(w_a1-w_a0)
Q_bubble=m_d*(h_a1-h_a0)+m_w0*c_w0/c*h_wx-m_w0*h_w0
"m_w0=0"
"Q_bubble=0"
m_w0=c*m_e_bubble/(c-c_w0)
c_w0=0.035
```

*"Experimental Data Processing Module for Process-Heat-Supplied Evaporating Separation Unit"*

```
w_a2=humrat(AirH2O,T=t_a2,R=rh_a2/100,P=101.325)
h_a2=enthalpy(AirH2O,T=t_a2,R=rh_a2/100,P=101.325)
L_av=h_water2-h_water0
h_water0=enthalpy(Water,T=t_a0,x=0)
h_water2=enthalpy(Water,T=t_a0,x=1)
m_w=m_d*(w_a2-w_a1)/(1-c)
m_e=m_d*(w_a2-w_a1)
h_wq0=h_sol(t_w1,c)
h_wq2=0.864*t_a2
Call additional(Q,Q_bubble:Q_add)
Q=((h_a2-h_a1)*m_d-m_w*h_wq0+(m_w-m_e)*h_wq2)
eta_Q=(m_e*L_av)/Q
eta_sys=((m_e+m_e_bubble)*L_av)/(((h_a2-h_a1)*m_d-m_w*h_wq0+(m_w-m_e)*h_wq2)+Q_add)
```