

$$L_{OUT}^{TIR} = \int pdV$$

$$\Delta V = M c_v (T_2 - T_1)$$

$$R=\frac{R^*}{M_m}$$

$$C_v = \frac{N_{GDL}}{2} \cdot R$$

$$\Delta S_{GAS} = M \left(c_v \ln \left(\frac{T_2}{T_1} \right) + R \ln \left(\frac{V_2}{V_1} \right) \right)$$

$$=M\left(c_p\ln\left(\frac{T_2}{T_1}\right)-R\ln\left(\frac{P_2}{P_1}\right)\right)$$

$$S_Q^{OUT} = -\frac{Q^{IN}}{T_{SERB}}$$

$$L_{OUT}=L_{DIL}-L_{DISS}$$

$$X=\frac{v-v_{LC}}{v_{VS}-v_{LS}}$$

$$R_{CONV}=\frac{I}{hA}$$

$$R=\left[\frac{K}{W}\right], \quad r=\left[\frac{Km^2}{W}\right]$$

$$\dot{m} = \rho \omega A$$

$$\dot{m} = \rho V$$

$$T_i = T_0 - \dot{Q} \sum_0^i R$$

$$n=\frac{c_X-c_P}{c_X-c_V}$$

$$pv^n=cost$$

$$L_{OUT}^{ISOBARA} = P\Delta V$$

$$H = PVU$$

$$dh = cdt + v dP$$

$$ds=c\frac{dT}{T}$$

$$T(t)=T_{\infty}+(T_0-T_{\infty})e^{-\frac{t}{\tau}}$$

$$\tau = \frac{Mc}{hA_{SCAMBIO}} = \frac{\rho Vc}{hA}$$

$$t=-\frac{\rho cV}{hA}\ln\left(\frac{T(t)-T_{\infty}}{T(0)-T_{\infty}}\right)$$

$$L_c = \frac{V}{A_{SCAMBIO}}$$

$$M_m^{ARIA} = 29 \quad \left[\frac{Kg}{Kmol}\right]$$

$$M_m^{O_2} = 32 \quad \left[\frac{Kg}{Kmol}\right]$$

$$M_m^{ELIO} = 4 \quad \left[\frac{Kg}{Kmol}\right]$$

$$M_m^{AZOTO} = 28 \quad \left[\frac{Kg}{Kmol}\right]$$

$$M_m^{ACQUA} = 18 \quad \left[\frac{Kg}{Kmol}\right]$$

$$m=\sqrt{\frac{hP}{k_sSez}}$$

1 Liquidi ideali

$$du = C dT$$

$$dh = C dT + v dP$$

$$ds = C \ln \frac{T_2}{T_1}$$

In una trasformazione ISOBARA

$$q_{in} = \Delta h$$

2 Conduzione

Flusso termico

$$\dot{q} = \frac{\dot{Q}}{A}$$

Legge Fourier che descrive flusso termico

$$\dot{q} = -k \frac{dT}{dx}$$

Conducibilità Termica

$$k = \lambda = \frac{\dot{q}L}{\Delta T}$$

Conservazione dell'energia

$$\frac{d\dot{q}}{dx} = -\rho c \frac{dT}{dt}$$

Equazione generale della Conduzione

$$\frac{\partial}{\partial x} \left(k \frac{\partial T}{\partial x} \right) = \rho c \frac{dT}{dt}$$

$$R_{COND}^{LASTRAP.} = \frac{S}{KA}$$

$$R_{COND}^{CIL} = \frac{\ln \left(\frac{r_e}{r_i} \right)}{2\pi K L}$$

Potenza Termica

$$\dot{Q} = \frac{\Delta T}{R_{TOT}} \quad \text{Potenza Termica}$$

$$\dot{q} = \frac{\Delta T}{r_{TOT}} \quad \text{Flusso Termico}$$