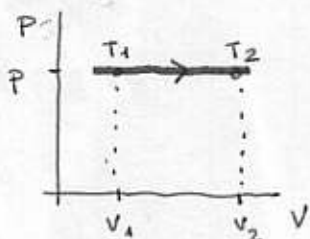


TRANSFORMACIONES DE UN SISTEMA GASEOSO

$$R = 0.082 \frac{\text{atm} \cdot \text{l}}{\text{mol} \cdot \text{K}} = 8.314 \frac{\text{J}}{\text{mol} \cdot \text{K}} \approx 2 \frac{\text{cal}}{\text{mol} \cdot \text{K}}$$

1. - TRANSF. ISOBÁRICA ($p = \text{cte}$)



$$\frac{V_1}{V_2} = \frac{T_1}{T_2} \quad (\text{Ley Gay-Lussac})$$

$$P(V_2 - V_1) = nR(T_2 - T_1)$$

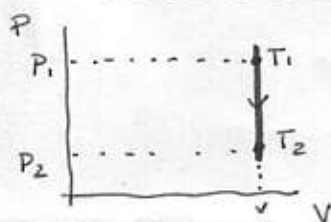
$$W = p \cdot \Delta V = nR \cdot \Delta T \quad (\text{Trabajo realizado})$$

$$Q = nC_p \cdot \Delta T \quad (\text{Calor Recibido})$$

$$\Delta U = Q - W = nC_v \cdot \Delta T \quad (\text{Variac. E. interna})$$

$$(R = C_p - C_v)$$

2. - TRANSF. ISOCÓRICA ($V = \text{cte}$)



$$\frac{P_1}{P_2} = \frac{T_1}{T_2} \quad (\text{Ley Gay-Lussac})$$

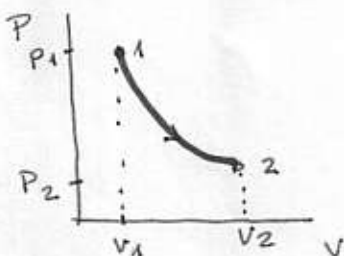
$$V(P_2 - P_1) = nR(T_2 - T_1)$$

$$W = 0 \quad \text{ya que } \Delta V = 0$$

$$Q = n \cdot C_v \cdot \Delta T \quad (\text{Calor transferido}) \quad (\text{calor recibido})$$

$$\Delta U = Q \quad (\text{Variac. E. interna})$$

3. - TRANSF. ISOTÉRMICA ($T = \text{cte}$)

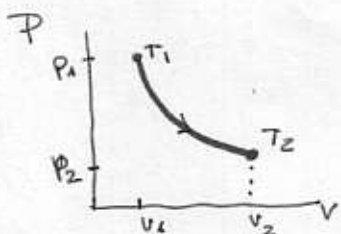


$$P_1 \cdot V_1 = P_2 \cdot V_2 = nRT = \text{cte} \quad (\text{Ley Boyle-Mariotte})$$

$$W = nRT \cdot \ln \frac{P_1}{P_2} = P_1 \cdot V_1 \cdot \ln \frac{P_1}{P_2} \quad (\text{Trabajo realizado})$$

$$\Delta U = 0 \quad \text{ya que la temp} = \text{cte} \Rightarrow Q = W$$

4. - TRANSF. ADIABÁTICA ($Q = 0$)



$$P V^\gamma = \text{cte} = P_1 V_1^\gamma = P_2 V_2^\gamma \quad (\text{Ec. de Poisson}) \quad (\gamma = \text{coef. adiabático})$$

$$\frac{T_1}{T_2} = \left(\frac{V_2}{V_1} \right)^{\gamma-1} \quad \gamma = \frac{C_p}{C_v} \neq R = C_p - C_v \neq \frac{C_v}{R} = \frac{1}{\gamma-1}$$

$$W = \frac{P_1 V_1 - P_2 V_2}{\gamma - 1} \quad (\text{trabajo realizado})$$

$$\Delta U = n C_v \Delta T \quad (\text{Variac. E. interna})$$

$$Q = 0$$

$$W = -n C_v \Delta T = -n C_v (T_2 - T_1) = n C_v (T_1 - T_2)$$