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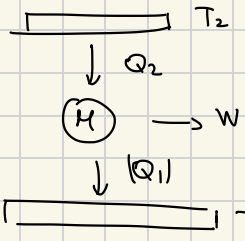


$\ell = 3$

$f = 15\,Hz$ ⇝ 15 cicli al secondo

Ciclo di Carnot

$P = 3{,}9 \cdot 10^3\,W$

$Q_1 = -370\,J$

▸ Q_2, η = ?

$P = \frac{W}{\Delta t}$ ← Lavoro totale; ← Tempo impiegato

P del problema la calcolo con un intervallo di tempo Δt di 1 s

$P = W \cdot f$ ⇝ Ricordarlo con W = lavoro di 1 ciclo

$W = \frac{P}{f}$ e ce l'ho.

$Q_1 + Q_2 = W \Rightarrow Q_2 = W - Q_1 = \frac{P}{f} - Q_1 \approx 6{,}3 \cdot 10^2\,J$

$\eta = 1 - \frac{|Q_1|}{Q_2} \approx 0{,}41$

▸ Di quanto varia la temp. del gas dopo un ciclo? 0°C perché è un ciclo

48 $T_2 = 600\,K$

$T_{1,in} = 350\,K$

Carnot

η_{in} rendimento

Cambio la $T_{1,in}$ ⇝ $T_{1,f}$

$\eta_f = \eta_i + \frac{10}{100}\eta_i$

▸ η_{in} = ? ▸ $T_{1,f}$ = ? ▸ $T_{1,f} - T_{1,i}$ =

▸ $\eta_{in} = 1 - \frac{T_{1,in}}{T_2} = 1 - \frac{350}{600} = \frac{5}{12} = 0{,}416$ (350 → 7, 600 → 12)

▷ $\eta_f = 1 - \frac{T_{1,f}}{T_2}$ $\qquad \frac{11}{10}\eta_i = \frac{11}{10}\left(1 - \frac{T_{1,in}}{T_2}\right)$

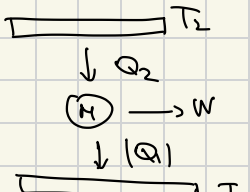
$$1 - \frac{T_{1,f}}{T_2} = \frac{11}{10}\left(1 - \frac{T_{1,i}}{T_2}\right)$$

$$T_2 - T_{1,f} = \frac{11}{10}T_2 - \frac{11}{10}T_{1,i}$$

$$\boxed{T_{1,f} = \frac{11}{10}T_{1,i} - \frac{1}{10}T_2}$$

▷ $\Delta T = T_{1,f} - T_{1,i} = \frac{1}{10}(T_{1,i} - T_2) = \frac{1}{10}(-250\,k) = -25\,k$

50: $T_2 = 100°C = 373\,k$
$T_1 = 25°C = 298\,k$
Carnot



Q_2 in un'ora = ? $\quad P = 1\,kW = 1000\,W$
Agisce per 1h

▷ $P = W \cdot f$ con W lavoro di un ciclo

$$P = \frac{W_{1\,ora}}{1\,ora} \rightsquigarrow W_{1\,ora} = P \cdot 1\,ora = 1000\,W \cdot 3600\,s = \dots$$

$$\eta = \frac{W}{Q_2} = \frac{W_{1\,ora}}{Q_{2\,1\,ora}} \qquad \eta = 1 - \frac{T_1}{T_2} \text{ lo conosco!}$$

$$\Rightarrow Q_{2,1\,ora} = \frac{W_{1\,ora}}{\eta} \text{ e ho tutto quanto}$$

▷ $Q_{1,1\,ora}$ $\qquad Q_{1,1\,ora} = W_{1\,ora} - Q_{2,1\,ora}$

$$\frac{T_1}{T_2} = \frac{|Q_1|}{Q_2} \text{ e ok.}$$