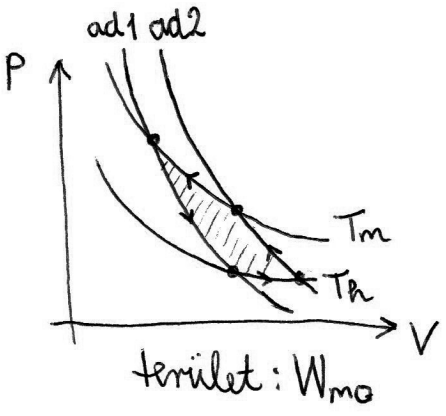
44.) Carnot-féle hűtőgép σ: körfolyamat index

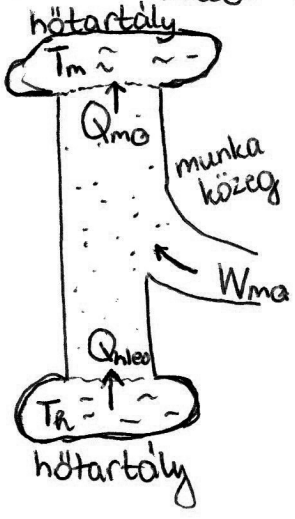
$T_m = 20°C$ $T_h = -10°C$

ciklus: $W_{m\sigma} = 15{,}9\ kJ$ $Q_{hle\sigma} = ?$

$$\eta = 1 - \frac{T_h}{T_m}$$

$$\Delta E_b = Q + W$$



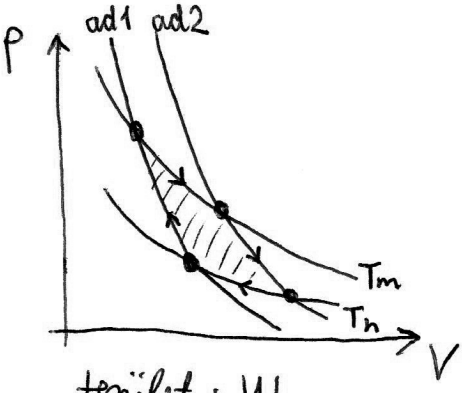


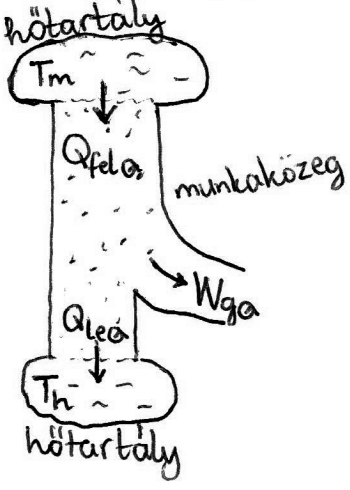
Körfolyamatra: $\Delta E_{b\sigma} = 0$

Energia megmaradás:

$Q_{m\sigma} = Q_{hle\sigma} + W_{m\sigma}$

Ciklus fordítva: Carnot-féle hőerőgép





Körfolyamatra: $\Delta E_{b\sigma} = 0$

Energia megmaradás:

$Q_{fel\sigma} = W_{g\sigma} + Q_{le\sigma}$

Carnot-ciklus hatásfoka:

$$\underline{\underline{\eta = 1 - \frac{T_h}{T_m}}}$$

$$\eta = \frac{W_{g\sigma}}{Q_{fel\sigma}} \qquad W_{g\sigma} = 15{,}9\ kJ!$$

$$Q_{fel\sigma} = \frac{W_{g\sigma}}{\eta} \rightarrow \underline{\underline{Q_{m\sigma}}}$$

Mivel ua. csak fordítva:

$W_{m\sigma} = W_{g\sigma}$

$Q_{m\sigma} = Q_{fel\sigma}$

$Q_{hle\sigma} = Q_{le\sigma}$

$$\underline{\underline{Q_{hle\sigma} = Q_{m\sigma} - W_{m\sigma} = \ldots = 139982\ J}}$$