POMPE VOLUMETRICHE ALTERNA

$$V_c = V_1 - V_4 = \pi \frac{D^2}{4} c$$

dove
CORSA del PISTONE
→ CILINDRATA (totale)

——— CICLO IDEALE
- - - - - Effetto dello COMPRE
ΔP_i ····· " INERZIA del
ΔP_l ——— " " LAMINAZI (TRAFILAMEN
ΔP_v ——— " " PERDITE di
——— CICLO REALE

$V = i V_c$
$\eta_c = i \eta$

NB i → n° PISTONI o CAMER

$$L_{c_{ciclo}}^{id} = (P_2 - P_1) V_c$$

$$L_{g\,ciclo}^{id} = (P_2 - P_1) V_c \cdot i = (P_2 - P_1)$$

$$\eta_v = \frac{L_c^{id}}{L_c} \rightarrow L_{c_{(P)}} = \frac{L_c^{id}}{\eta_v}$$

$$L_a^{ciclo} = \frac{L_c^{id}}{\eta_v \eta_m}$$

GL_i (P)

$$P_{a_{(P)}} = L_a^{ciclo} \eta_c = \frac{(P_2 - P_1) V_{(P)} \eta_{(P)}}{\eta_{m_{(P)}} \eta_{v_{(P)}}}$$

$$\frac{\gamma H_t Q}{\eta_P} = \frac{\gamma H_t Q}{\eta_{ciclo} \eta_P}$$

$\eta_P = \eta_o \eta_m \eta_v$

- REGOLAZIONE di Q
  - Variazione di η
  - RIFLUSSO M→
  - NO ON/OFF alte

NB $V_c \eta_c = V_c \cdot i \eta_v$

POMPE VOLUMETRICHE ROTATIVE e R

(a PALETTE) ... eccentr

$$Q_{(P)} = \eta_{v_{(P)}} V_{c_{(P)}} n_{c_{(P)}} \overset{n_c = 1}{=} \eta_{v_{(P)}} V n$$

NB i → n° di CICLI / GIRO

$$P_{2_{(P)}} = \frac{V_c \eta_c (P_2 - P_1)}{\eta_m \eta_v} = \frac{V \eta_v (P_2 - P_1)}{\eta_{m_{(P)}} \eta_{v_{(P)}}} = \frac{Q_{(P)} (P_2 - P_1)}{\eta_m \eta_v \eta_v}$$

1D IS FLUX ↑

$c_p T + \frac{c^2}{2} = cost$ $\quad T + \frac{c^2}{2c_p} = cost$ $\quad \frac{T_i^0}{T_u} = \frac{p^0}{p} = \left(1 + \frac{k-1}{2} M^2\right)^{\frac{k}{k-1}}$ $\quad M = \frac{c}{\sqrt{kR}}$

COMPRESSORI ROTATIVI ($V = i V_c$ e $\eta_c =$

ROOTS

$L_{c\,(R)} = V_c(p_2 - p_1) = V_c p_1(\beta - 1)$ $\quad \beta =$

$L_{g\,(R)} = V_R(p_2 - p_1) = i L_{c\,(R)}$ $\quad P_i = L_c \eta$

$P_{a\,(R)} = \frac{P_i''}{\eta_m} = \frac{L_c \eta_c}{\eta_m} = \frac{L_g \eta_R}{\eta_m} = \frac{V_R(p_2 - p_1)}{2\pi \eta_m}$

$\lambda_v \approx 1$ e $\eta_v = f(p, n)$

$G_{(R)} = \eta_v \rho_1 V n$

$L_{i\,(R)} = \frac{P_i}{G} = \frac{V n (p_2 - p_1)}{\eta_v \rho_1 V n} =$ RT

$T_{2\,(R)} = T_1 + \frac{L_i}{c_p} = T_1\left[1 + \frac{k-1}{k \eta_v}(\beta - 1)\right]$

Per SOVRALI… $T_2 \to T_c$; $T_1 =$

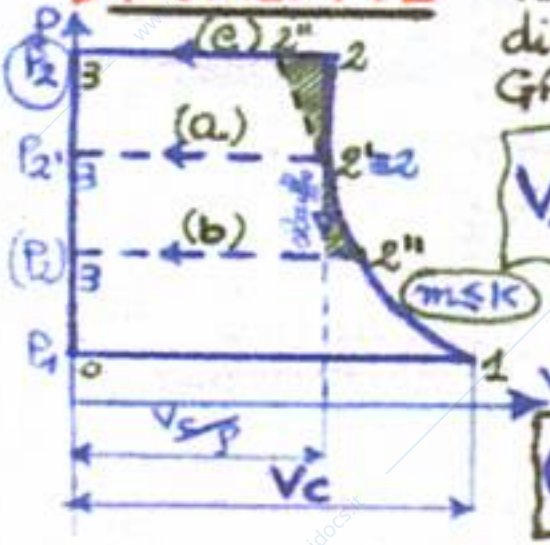
$\eta_{COMP.} = \eta_m \eta_v \eta_{IS}$

$\frac{v_2}{v_1} = \frac{p_2}{p_1} = \frac{T_i}{T_1 \beta_1}$

$\beta_I \underset{\text{SERIE}}{\overset{2}{\underset{\text{ROOTS}}{=}}} \sqrt{\beta_{TOT} \frac{T_1}{T_a}}$ ottimo

dove $\beta_I = \frac{p_{2'}}{p_1}$ $\quad \beta_{TOT} = \frac{p_2}{p_1}$

PALETTE



- RAPPORTO VOLUMET. di COMPRESSIONE GRADUALE → $\rho = \frac{V_{MAX}}{V_\varphi} = \frac{A_{MAX}}{A_\varphi}$ $\quad$ (a) $\overset{m}{\sqrt{\frac{p_2}{p_1}}}$

$V_2 = \frac{V_c}{\rho}$

CASI (a) $p_2 = p_{2'}$ ⇒ COMP. ALTERN…

(b) $p_2 < p_{2'}$ ⇒ "SBUFFO" in…

(c) $p_2 > p_{2'}$ ⇒ COMP. × RI…

$G = \eta_v \rho_1 V_c n_c = \eta_v \rho_1 V n$

$L_{c\,(c)} = \frac{m}{m-1} p_1 V_c (\rho^{m-1} - 1) \underset{(b)}{\overset{(a)\to 0}{+}} \frac{V_c}{\rho}(p_2 - p_1 \rho^m) = \frac{m}{m-1} p_1 V_c [\rho^{m-}$