MOTORI

$\bar{I}_{1m} = \bar{I}_0 + \bar{I}_{12}$ $\quad \bar{I}_{1\infty} = \bar{I}_0 + \bar{I}_{12\infty}$ $\quad \bar{I}_{1cc} = \bar{I}_0 + \bar{I}_{1cc}$ $\quad I_{12} = \frac{S V_1}{\sqrt{3} R_{12}}$ $\quad I_{12} = \sqrt{\frac{S \cdot P \cdot t}{3 R_{12}}}$

$I_{12} = \frac{\frac{V_{1m}}{\sqrt{3}}}{\sqrt{\left(R_1 + \frac{R_{12}}{S}\right)^2 + X^2}}$ $\quad I_{12} = \sqrt{\frac{P_e P}{3R}}$ $\quad \bar{I}_{12} = \bar{I}_1 - \bar{I}_0$ per $S=1$ $\bar{I}_{12} = \bar{I}_{12\,cc}$

$I_1 = \frac{P_a}{\sqrt{3} V_{1m}}$

$S=\infty \quad I_{12} = I_{12\infty} \Rightarrow R_{12} \to 0 \quad I_{12} = \sqrt{\frac{S \Omega_0 C}{3 R_{12}}}$ $\quad \bar{I}_{12m} = \sqrt{\frac{P_m S_m}{3 R_{12}(1 - S_m)}}$

$R_{12} = \frac{P_m \cdot S_m}{3(1-S_m) \cdot I_{12}^2}$ $\quad R_{12} = Z S_m$ per $S_{cc} 1$ $\quad R_{12} = \frac{V_{1m}^2 (1-S) \cdot S_m}{P_m}$ $\quad R_{12} = \frac{P_{ep1}}{3 I_{12}^2}$

$R_{12} = \frac{P_m \cdot S \Omega_0}{\Omega 3 I_{12}^2}$ $\quad R_{12} = \frac{X - R_1 \operatorname{tg} \varphi_{12}}{\operatorname{tg} 12}$ $\quad R_{12} = \frac{S_m}{1-S_m} R_s = \frac{S_m}{1-S_m}(R_t - R)$ $\quad R_{AB} = \frac{2}{3} R_1$

$R = \frac{P_{ep}}{3 I_{12}^2}$ $\quad Z \Rightarrow Z^2 + R_{12}^2 + 2 R_1 R_{12} = \frac{V_{1m}^2 R_{12}}{\Omega_0 \cdot C_a}$ $\quad R = \frac{P_{cc}}{3 I_{cc}^2}$ $\quad Z = \sqrt{R_1^2 + X^2}$ $\quad X = \left(R_1 + \frac{R_{12}}{S_m}\right) \operatorname{tg} \varphi_{12}$

$\dot{Z}_t = \frac{\bar{V}_{1m}}{\sqrt{3} I_{12m}} = \dot{Z}_{1cc} + R_{12}\left(\frac{1-S_m}{S_m}\right) = \underbrace{R_1 + R_{12} + J X_1 + X_{12} + R_{12}\left(\frac{1-S_m}{S_m}\right)}_{R_t}$

$\dot{Z}_{cc} = \frac{V_{1cc}}{\sqrt{3} I_{1m}}$ $\quad R = Z_{1cc} \cos\varphi_{1cc}$ $\quad X = Z_{1cc} \operatorname{sen} \varphi_{cc}$ $\quad Z = \frac{V_{1m}^2}{2 \Omega_0 C_M} - R_1$

$X = R_1 \operatorname{tang} \varphi_{12\infty}$ $\quad X = \operatorname{tang} \varphi_{1cc}(R_1 + R_{12})$ $\quad Z_{1cc} = \frac{V_{1cc}}{\sqrt{3} I_{1cc}}$ $\quad R_0 = \frac{Z_0}{\cos\varphi_0}$ $\quad X_0 = \frac{Z_0}{\operatorname{sen} \varphi_0}$

$Z_0 = \frac{V_{1m}}{\sqrt{3} I_0}$ $\quad X = \sqrt{\left(\frac{\frac{V_{1m}}{\sqrt{3}}}{3_{12}}\right)^2 - \left(R_1 + \frac{R_{12}}{S}\right)^2}$

$P_e = P_t + P_{ep1} + P_0$ $\quad = \sqrt{3} V_{1m} \cdot I_{1m} \cdot \cos\varphi_{1m}$ $\quad P_m = (1-S) P_t$ $\quad P_{ep2} = P_t - P_m = 3 R_{12} I_{12}^2$ $\quad P_t = \frac{P_m}{(1-S)}$

$P_m = C \cdot \frac{2\pi n}{60}$ $\quad P_t = P_e - P_{ep1}$ $\quad P_e = P_m + P_p$ $\quad P_{0\infty} = R_1 I_{12\infty}^2$

$P_m = 3 R_{12}\left(\frac{1-S}{S}\right) I_{12}^2$ $\quad P_t = \frac{3 R_{12} \cdot I_{12}^2}{S}$ $\quad P_{ep2} = \frac{S}{1-S} P_m$ $\quad P_e = P_a \cos\varphi_1$ (addizionali)

$C_m = \frac{P_m}{\frac{2\pi n_n}{60}}$ $\quad C_{elettro\,m} = \frac{P_m}{\frac{2\pi n}{60}}$ $\quad C_M = \frac{V_{1m}^2}{2\Omega_0 \cdot Z}$ $\quad C_M = \frac{V_{1m}^2}{2 R_0 (R_1 + Z)}$ $\quad C_a = \frac{V_{1m}^2 \cdot R_{12}}{\Omega_0 \left[\left(R_1 + R_{12}\right)^2 + X^2\right]}$

$C = \frac{P_m}{\Omega_0} = \frac{P_m}{\Omega_0(1-S)}$ $\quad C = \frac{60 P_m}{2\pi n}$ $\quad C = \frac{3 \cdot R_{12}}{S \Omega_0} \cdot I_{12}$ $\quad = \frac{V_{1m}^2 \cdot R_{12} \Omega_0}{\Omega_0 \cdot Z^2} = \frac{2\pi f}{P}$

$n_0 = \frac{60 f}{P}$ $\quad n_m = n_0(1 - S_m)$ $\quad f_s = S_m \cdot f$ $\quad S_M = \frac{R_{12}}{Z}$ $\quad S_{M\,addizionale} = \frac{R_{12} + R_{12a}}{Z} \neq 1$

$R_{12\,addizionale} = \frac{n'}{n} \cdot Z - R_{12}$ $\quad S = 1 - \frac{P_m}{60 f}$ $\quad \eta\% = \frac{P_m}{P_e}$ $\quad S^2 = S_m + S(1-S)\frac{P_m}{P_m} = 0$

$\eta = \frac{P_m}{P_m + P_0 + P_{ep} + P_{addiz.}}$ (perdite nell'aria)

$P_{ep} = 3 R I^2$

potenza perdute corrisponde alle perdite nell'aria MACCHINE SINCRONE