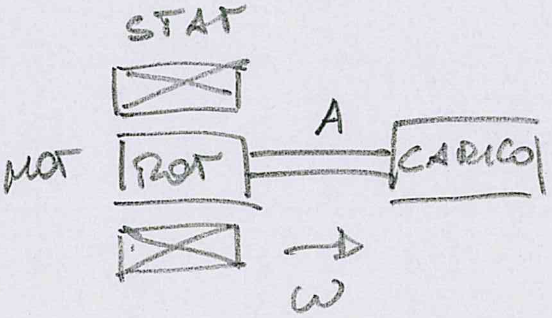
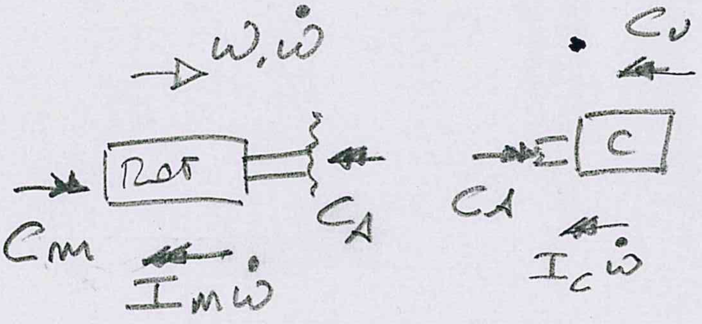
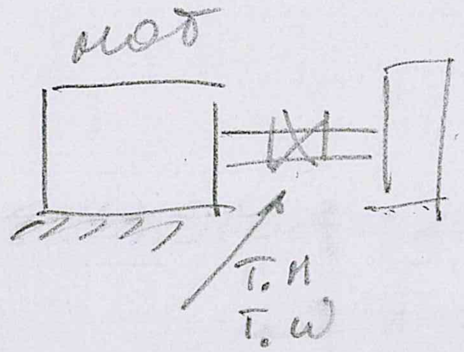
TRANSITORI

- EQ. MOTO INTEGRAZIONI
- EQ. ENERGIA
- QUANTITA' DI MOTO

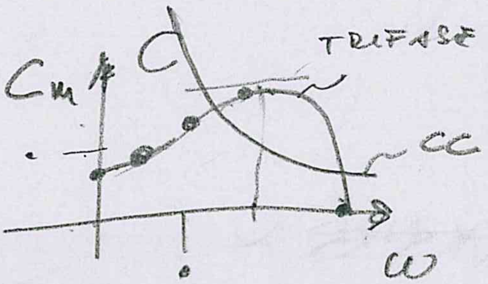
1)

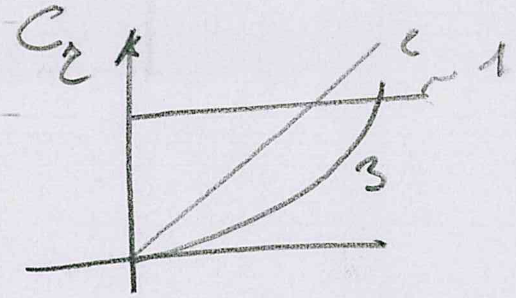




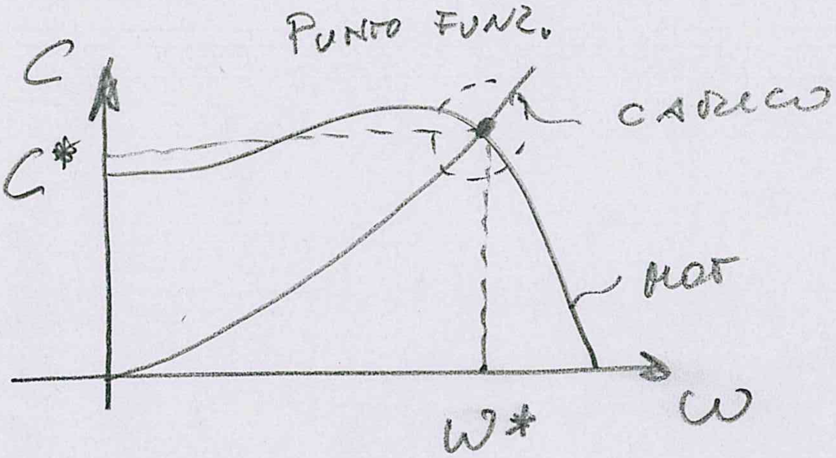


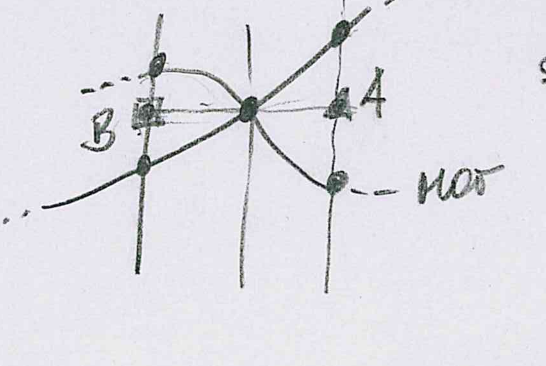
FRENO



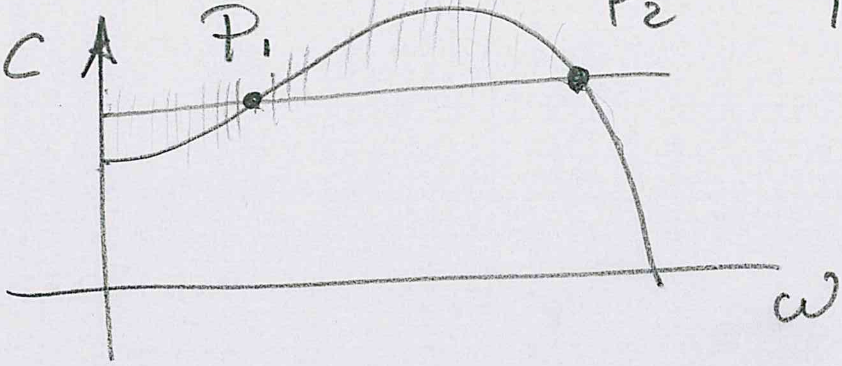


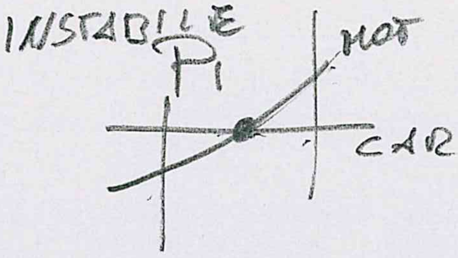
1 ASCENSORE
2 VENTILATORE
3 DISSIP. VISCOSA

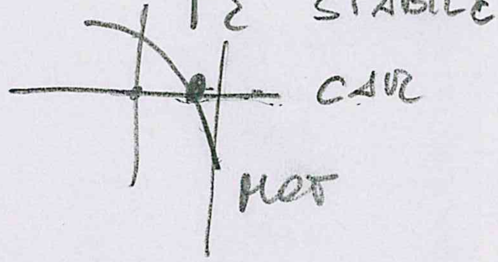


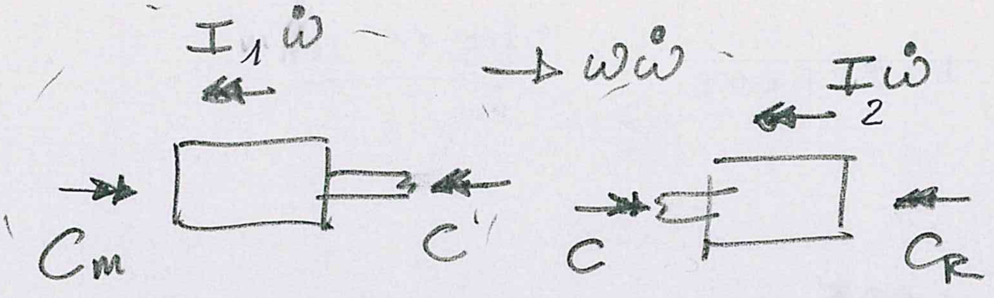


STABILE


C
P1
P2
ω


INSTABILE
P1
MOT
CAR


P2
STABILE
CAR
MOT



$$C_m - C - I_1 \dot{\omega} = 0 \qquad C = C_m - I_1 \dot{\omega}$$

$$C - I_2 \dot{\omega} - C_R = 0 \qquad C = C_R + I_2 \dot{\omega}$$

$$C_m - \underline{I}_1 \dot{\omega} - C_R - I_2 \dot{\omega} = 0$$

$$C_m - C_R = \dot{\omega} (I_1 + I_2) \qquad I = I_1 + I_2$$

$C_R = K\omega$ A REGIME $\dot{\omega} = 0$ $C_m = C_R = K \omega_R$

$$C_m - K\omega = I \dot{\omega} \qquad \dot{\omega} = \frac{d\omega}{dt}$$

$$dt = \frac{I}{C_m - K\omega} d\omega$$

$$\int_0^t dt = \int_0^\omega \frac{I}{C_m - K\omega} d\omega = I \int_0^\omega \frac{d\omega}{C_m - K\omega} = \left[-\frac{I}{K} \lg (C_m - K\omega) \right]_0^\omega$$

$$t = -\frac{I}{K} \lg \frac{C_m - K\omega}{C_m} ; \qquad \lg \frac{C_m - K\omega}{C_m} = -\frac{K}{I} t$$

$$\frac{C_m - K\omega}{C_m} = e^{-\frac{K}{I} t}$$

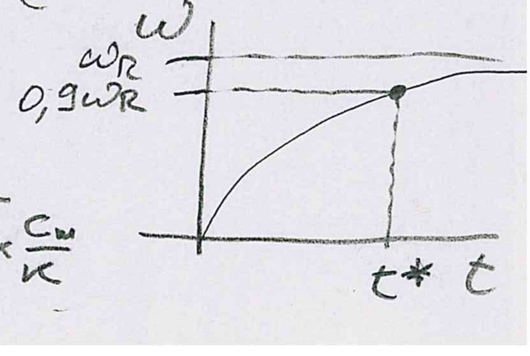
$$\frac{C_m}{C_m - K\omega} = e^{\frac{K}{I} t} \qquad \omega = \frac{C_m}{K} \left(1 - e^{-\frac{K}{I} t} \right)$$

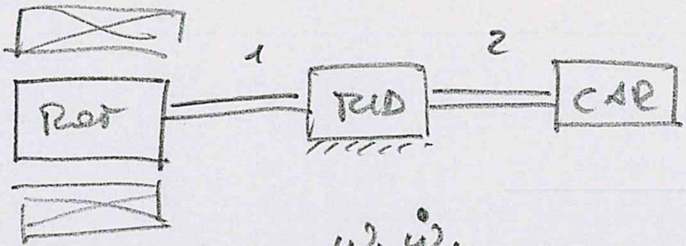
$$\omega = \omega_R \left(1 - e^{-\frac{K}{I} t} \right)$$

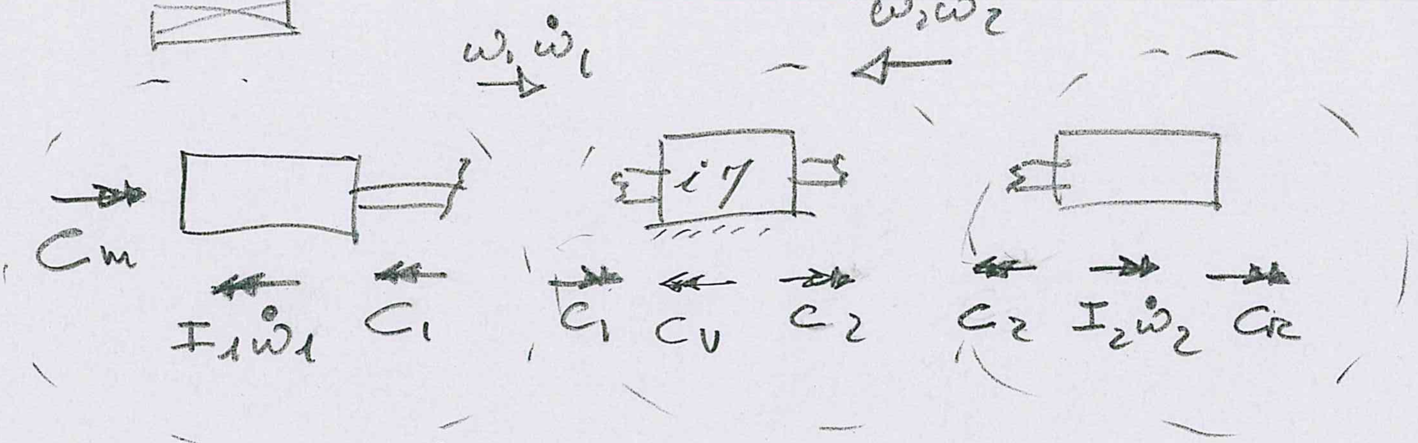
$$\lim_{t \to \infty} \omega = \omega_R = \frac{C_m}{K}$$

$$t^* = \frac{I}{K} \lg \frac{C_m}{C_m - 0{,}9 K \frac{C_m}{K}}$$

$$t^* = \frac{I}{K} \lg_e 10$$







$$\begin{cases} C_m - C_1 - I_1 \dot{\omega}_1 = 0 \\ C_2 - C_R - I_2 \dot{\omega}_2 = 0 \\ \eta = \dfrac{C_2 \omega_2}{C_1 \omega_1} \quad i = \dfrac{\omega_1}{\omega_2} \end{cases} \qquad C_2 = \eta i C_1$$

$$\begin{cases} C_1 = C_m - I_1 \dot{\omega}_1 \\ C_2 = \eta i C_1 \\ C_2 = C_R + I_2 \dot{\omega}_2 \end{cases} \qquad \begin{aligned} C_1 &= \frac{1}{\eta i}\left(C_R + I_2 \dot{\omega}_2\right) \\ C_1 &= C_m - I_1 \dot{\omega}_1 \end{aligned}$$

$$\frac{1}{\eta i} C_R + \frac{1}{\eta i} I_2 \dot{\omega}_2 = C_m - I_1 \dot{\omega}_1 \; ; \quad \dot{\omega}_2 = \frac{\dot{\omega}_1}{i}$$

$$C_m - I_1 \dot{\omega}_1 - \frac{1}{\eta i} I_2 \frac{\dot{\omega}_1}{i} - \frac{1}{\eta i} C_R = 0$$

$$C_m - \frac{C_R}{\eta i} - \dot{\omega}_1 \left(I_1 + \frac{I_2}{\eta i^2} \right) = 0$$

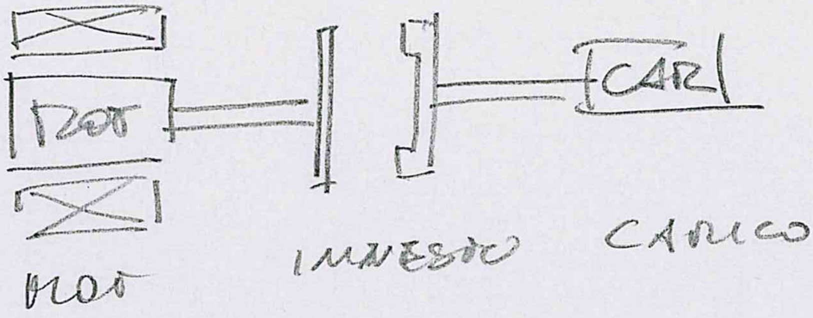
$$C_R' = \frac{C_R}{\eta i}$$

$$I' = \left(I_1 + \frac{I_2}{\eta i^2} \right)$$

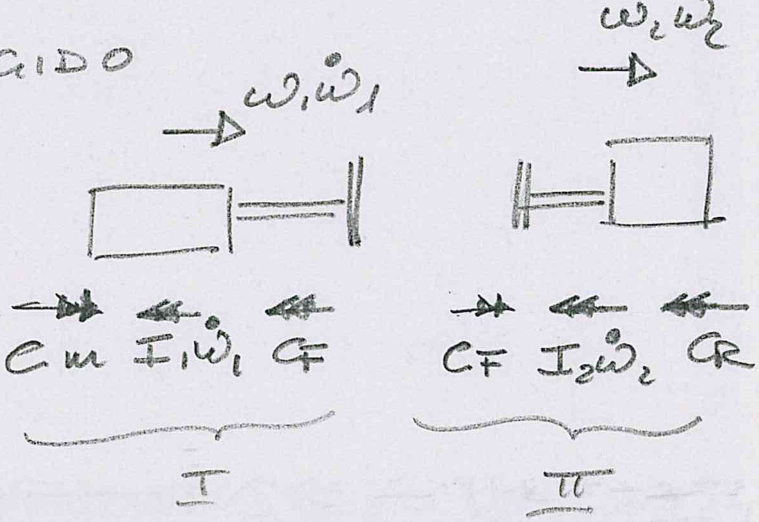
$$C_m - C_R' - \dot{\omega}_1 I' = 0$$

$$\dot{\omega}_1 = \frac{C_m - C_R'}{I'}$$

MOTORE - FRIZIONE - CARICO



1) STRISCIAMENTO INNESTO
2) ACCOPPIAMENTO RIGIDO



1) STRISCIAMENTO

I) $C_m - I_1\dot{\omega}_1 - C_F = 0$

$$\dot{\omega}_1 = \frac{C_m - C_F}{I_1}$$

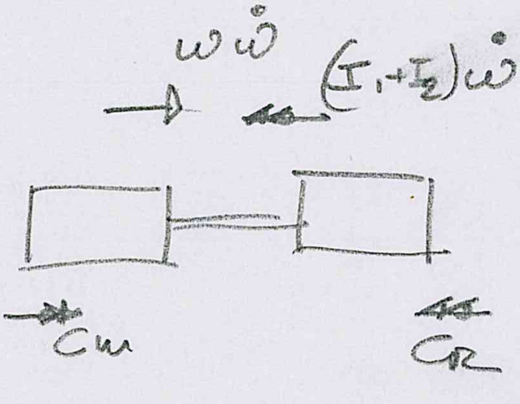
II) $C_F - I_2\dot{\omega}_2 - C_R = 0$

$$\dot{\omega}_2 = \frac{C_F - C_R}{I_2}$$

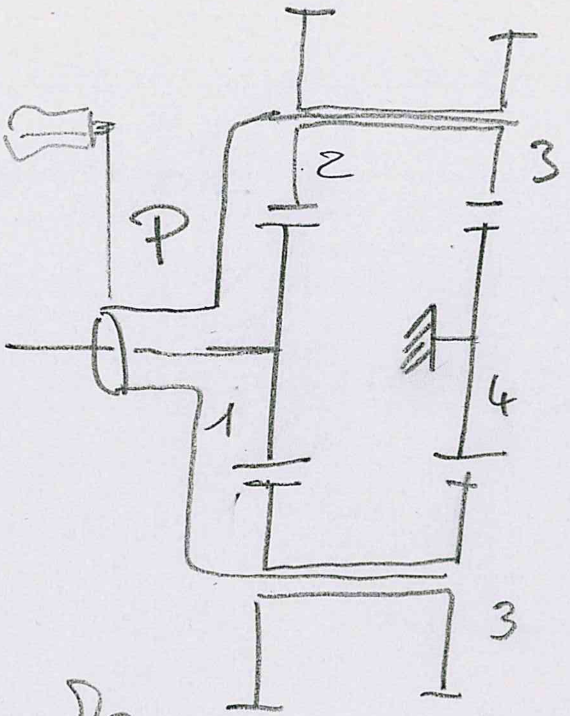
$\omega_1 = \omega_1(t)$; $\omega_2 = \omega_2(t)$

$\omega_1 = \omega_2 = \omega^*$

$C_m - (I_1 + I_2)\dot{\omega} - C_R = 0$



RIDUTTORE



$\omega_4 = 0$

$z_1 = 49$ DENTI

$z_2 = z_3 = 40$

$z_4 = 50$

$$i = \frac{\Omega_P}{\omega_1}$$

ASS.	ω_1	$\omega_{2,3}$	$\omega_4 = 0$	Ω_P
REL. P	$\omega_1 - \Omega_P$	$\omega_{2,3} - \Omega_P$	$-\Omega_P$	0

$$\tau = \frac{\omega_{1REL}}{\omega_{4REL}} = \frac{\omega_1 - \Omega_P}{-\Omega_P} = \left(-\frac{z_2}{z_1}\right)\left(-\frac{z_4}{z_3}\right) = 1{,}02$$

$$\frac{\dfrac{\omega_1 - \Omega_P}{\Omega_P}}{\dfrac{-\Omega_P}{\Omega_P}} = \frac{\dfrac{1}{i} - 1}{-1} = \tau$$

$$\frac{1}{i} = 1 - \tau \qquad i = \frac{1}{1-\tau} = \frac{-1}{0{,}02} = -48{,}99$$