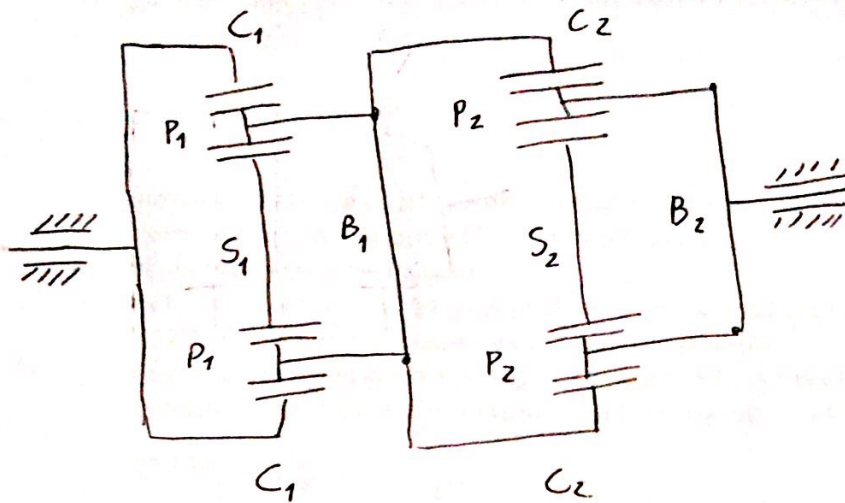


P3 | 1b) Tren de engranajes



- Det. # dientes Z_{P1} (1)
- ω_{B2} sentido (1)
y modulo (1)

$$\begin{aligned} \omega_{C1} &= 5000 \text{ rpm} & Z_{C1} &= Z_{C2} = 150 \\ \omega_{S1} &= 0 \text{ rpm} & Z_{S1} &= Z_{S2} = 100 \\ \omega_{S2} &= 0 \text{ rpm} & m &= 4 \end{aligned}$$

↳ B_1 y C_2 solidarios $\rightarrow$ misma velocidad

Por geometría se tiene:

$$2d_{P1} + d_{S1} = d_{C1} \quad \text{con} \quad \left[m = \frac{d}{Z} \right]$$

$$\text{Entonces, } 2 \cdot m \cdot Z_{P1} + m \cdot Z_{S1} = m \cdot Z_{C1}$$

$$Z_{P1} = \frac{Z_{C1} - Z_{S1}}{2} \rightarrow [Z_{P1} = 25]$$

El tren tiene dos etapas, primero

$$\text{recordar } \left[\frac{\omega_1 - \omega_B}{\omega_2 - \omega_B} = \frac{-Z_2}{Z_1} \right]$$

P3 | Primero,

$$\frac{\omega_{c1} - \omega_{B1}}{\omega_{s1} - \omega_{B1}} = \frac{-z_{s1}}{z_{c1}} \Rightarrow \frac{5000 - \omega_{B1}}{-\omega_{B1}} = \frac{-100}{150}$$

$$\left[\omega_{B1} = 3000 \text{ rpm} \right]$$

luego, $\omega_{B1} = \omega_{c2}$

La segunda etapa:

$$\frac{\omega_{c2} - \omega_{B2}}{\omega_{s2} - \omega_{B2}} = \frac{-z_{s2}}{z_{c2}} \Rightarrow \frac{3000 - \omega_{B2}}{0 - \omega_{B2}} = \frac{-100}{150}$$

$$\left[\omega_{B2} = 1800 \text{ rpm} \right]$$

→ sentido
antihorario (> 0)