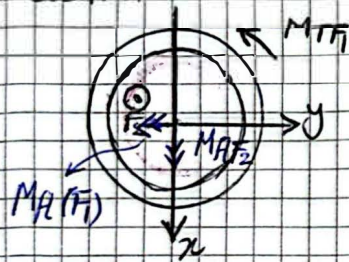


Verifica statica:

Sez. H-H



$$M_{TF1} = F_1 \cdot a = 720 \text{ N.m}$$

$$M_{AF1} = F_1 \cdot b = 1680 \text{ N.m}$$

$$M_{AF2} = F_2 \cdot a = 1800 \text{ N.m}$$

$$M_{AF_{tot}} = \sqrt{M_{AF1}^2 + M_{AF2}^2} = 2462.19 \text{ N.m}$$

$$\sigma_{H-H}^* = \frac{1.3 \times 10^4 F_2}{\pi(D^2 - d^2)} + \frac{1.3 \times 32 M_{AF_{tot}} \cdot D}{\pi(D^4 - d^4)} = 1.77 + 93.20 = 94.97 \text{ MPa}$$

$$\tau_{H-H}^* = \frac{1.3 \times 16 M_{AF1} \cdot D}{\pi(D^4 - d^4)} = 13.62 \text{ MPa}$$

prima plasticizzazione: $\sigma_{VM} = \sqrt{(K_{tF} \cdot \sigma_{HH}^*)^2 + 3(K_{tT} \cdot \tau_{HH}^*)^2} = 169.23 \text{ MPa} \rightarrow y_{VM} = \frac{R_{Sn}}{\sigma_{VM}} = 2.66$

$\sigma_{GT} = \sqrt{(K_{tF} \cdot \sigma_{HH}^*)^2 + 4(K_{tT} \cdot \tau_{HH}^*)^2} = 170.22 \text{ MPa} \rightarrow y_{GT} = \frac{R_{Sn}}{\sigma_{GT}} = 2.64$

Verificato ✓

Verifica a fatica

$$73.05 \text{ MPa} = \sigma_{HH} = \sigma_a$$

$$10.48 \text{ MPa} = \tau_{HH} = \tau_a$$

$$\sigma_m = \tau_m = 0$$

$$\sigma_{lim} = \frac{0.5 R_m b_2 b_3}{K_{tF}} = \frac{0.5 R_m \times 0.85 \times 0.85}{1.67} = 150.97 \text{ MPa}$$

$$\tau_{lim} = \frac{0.3 R_m b_2 b_3}{K_{tT}} = \frac{0.3 R_m \times 0.85 \times 0.85}{1.31} = 115.38 \text{ MPa}$$

$$\sigma_{Gp} = \sqrt{\sigma_a^2 + \frac{\sigma_m^2}{\tau_{lim}^2} \cdot \tau_a^2} = 74.33 \text{ MPa}$$

$$y_{Gp} = \frac{\sigma_{lim}}{\sigma_{Gp}} = 2.03 \checkmark$$