



AKADEMIA EDUKACYJNO - INŻYNIERSKA

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MATURA STUDIA PRAKTYKA STAŻ PRACA BIZNES PRZEMYSŁ STEAM

KOMPLEKSOWE WSPARCIE EDUKACYJNE ON – LINE NA KAŻDYM ETAPIE KSZTAŁCENIA INŻYNIERSKIEGO

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MECHANIKA PŁYNÓW

"STATYKA PŁYNÓW – PRAWO PASCALA"

PROJEKT

Oblicz:

– siłę nacisku

dla układu mechanicznego wygenerowaną na powierzchni cylindra "3".

DANE:

$$1) L_1, l_1, F_1 = OK \quad ; \quad \varnothing D_3 > \varnothing d_2$$

$$2) \varnothing d_2 = OK$$

$$3) \varnothing D_3 = OK$$

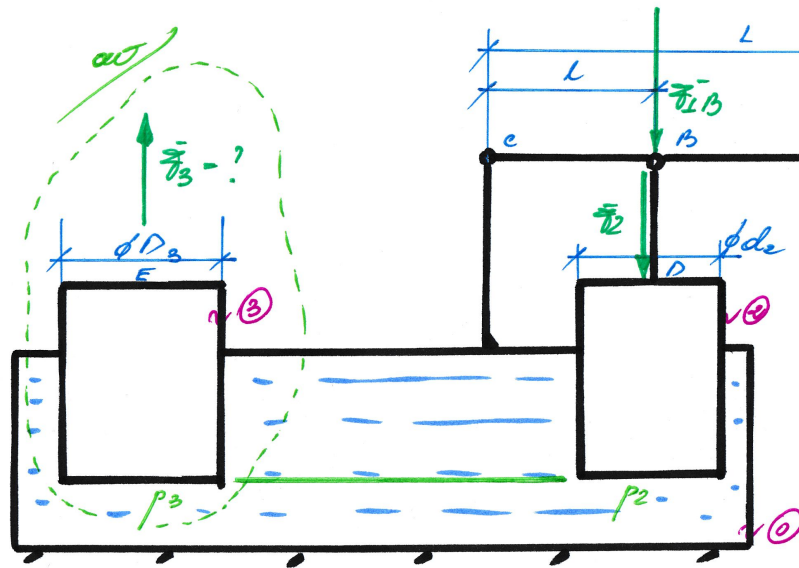
SZUKAM:

$$F_3 = ?$$

$$L, l, d_2, D_3, \bar{T}_L = \checkmark$$

$$D_3 > d_2$$

$$\bar{T}_3 = ?$$



$$\bar{T} = m \cdot g$$

$$p = \frac{\bar{T}}{A}$$

$$\Rightarrow \bar{T}_{1A} = m \cdot g$$

$$p_2 = \frac{\bar{T}_2}{A_2}$$

$$A_2 = \pi \cdot \left(\frac{d_2}{2}\right)^2 \Rightarrow A_2 = \pi \cdot \left(\frac{d_2}{2}\right)^2 = \pi \cdot \frac{d_2^2}{4}$$

$$\Rightarrow p_2 = \frac{\bar{T}_2}{A_2} = \frac{\frac{L}{l} \bar{T}_{1A}}{\frac{\pi}{4} d_2^2} = \frac{L \bar{T}_{1A}}{l} \cdot \frac{4}{\pi d_2^2} =$$

$$= \frac{4L}{\pi l d_2^2} \bar{T}_{1A}$$

$$p_3^{(2)} = p_3^{(3)}$$

$$\Rightarrow p_3 = p_2 = \frac{4L}{\pi l d_2^2} \bar{T}_{1A}$$

$$\frac{4L \bar{T}_{1A}}{\pi l d_2^2} = \frac{4 \bar{T}_3}{\pi d_3^2}$$

$$p_3 = \frac{\bar{T}_3}{A_3}$$

$$\Rightarrow p_3 = \frac{\bar{T}_3}{\frac{\pi d_3^2}{4}} = \frac{4 \bar{T}_3}{\pi d_3^2}$$

$$\Rightarrow \bar{T}_3 = \frac{L}{l} \cdot \left(\frac{d_3}{d_2}\right)^2 \bar{T}_{1A}$$

$$M_1^{(c)} = \bar{T}_{1A} \cdot L = \bar{T}_{1B} \cdot l \quad | : l$$

$$\bar{T}_{1B} = \frac{L}{l} \bar{T}_{1A}$$

$$\bar{T}_2 = \bar{T}_{1B} = \frac{L}{l} \bar{T}_{1A}$$

