

TMKS0700 STATIIKKA JA LUJUUSOPPI

Tehtävä L4-6

Määritä akselin ulkohalkaisija

$$P = 6 \text{ MW}$$

$$n = 100 \text{ r/min}$$

$$D/d = 2$$

$$\tau = 35 \text{ MPa}$$

$$P = 2T\pi n$$

$$T = P/(2\pi n) = 572958 \text{ Nm}$$

$$\tau = T/W_v$$

$$W_v = \pi(D^4 - d^4)/(16D) \quad d = D/2$$

sym

$$\tau = (P/(2\pi n))/(\pi(D^4 - (D/2)^4)/(16D))$$

$$D = (16P/\tau(2\pi n(\pi - \pi/2^4)))^{(1/3)} = 446 \text{ mm}$$