Rechungen:

Gesamtträgheitsmoment:

Motor:

$$2 * J_{Motor} = 2 * 9.45 * 10^{-7} kgm^2 = 1.89 * 10^{-6} kgm^2$$

Tacho:

$$J_{Tacho} < 3 * 10^{-7} kgm^2$$

Schwungrad:

$$J_{Schwungrad} = \frac{1}{2} * m * r^2 = \frac{1}{2} * 0.37 kg * (0.048m)^2 = 4.26 * 10^{-4} kgm^2$$

$$m = \rho * V = \rho * t * \pi * r^2 = 8500 \frac{kg}{m^3} * 0.006m * \pi * (0.048m)^2 = 0.37 kg$$

Schwungraddurchmesser: 96mm

Schwungradbreite: t=6mm

Material: Messing

Gesamt:

$$J_{Gesamt} = 2 * J_{Motor} + J_{Tacho} + J_{Schwungrad}$$
$$= 1.89 * 10^{-6} kgm^2 + 3 * 10^{-7} kgm^2 + 4.26 * 10^{-4} kgm^2 = 4.28 * 10^{-4} kgm^2$$

Dämpfung:

$$U = k_M * \omega \; ; M = d * \omega \; ; M = k_M * I$$

$$d = \frac{M}{\omega} = \frac{k_M * I}{\frac{U}{k_M}} = \frac{k_M^2 * I}{U} = k_M^2 * \frac{1}{R} = \left(0.0163 \frac{Nm}{A}\right)^2 * \frac{1}{1.26\Omega} = 2.1087 * 10^{-4} Nms$$

Drehmomentkonstante: 0.0163Nm/A

Anschlusswiderstand: 1.26Ohm