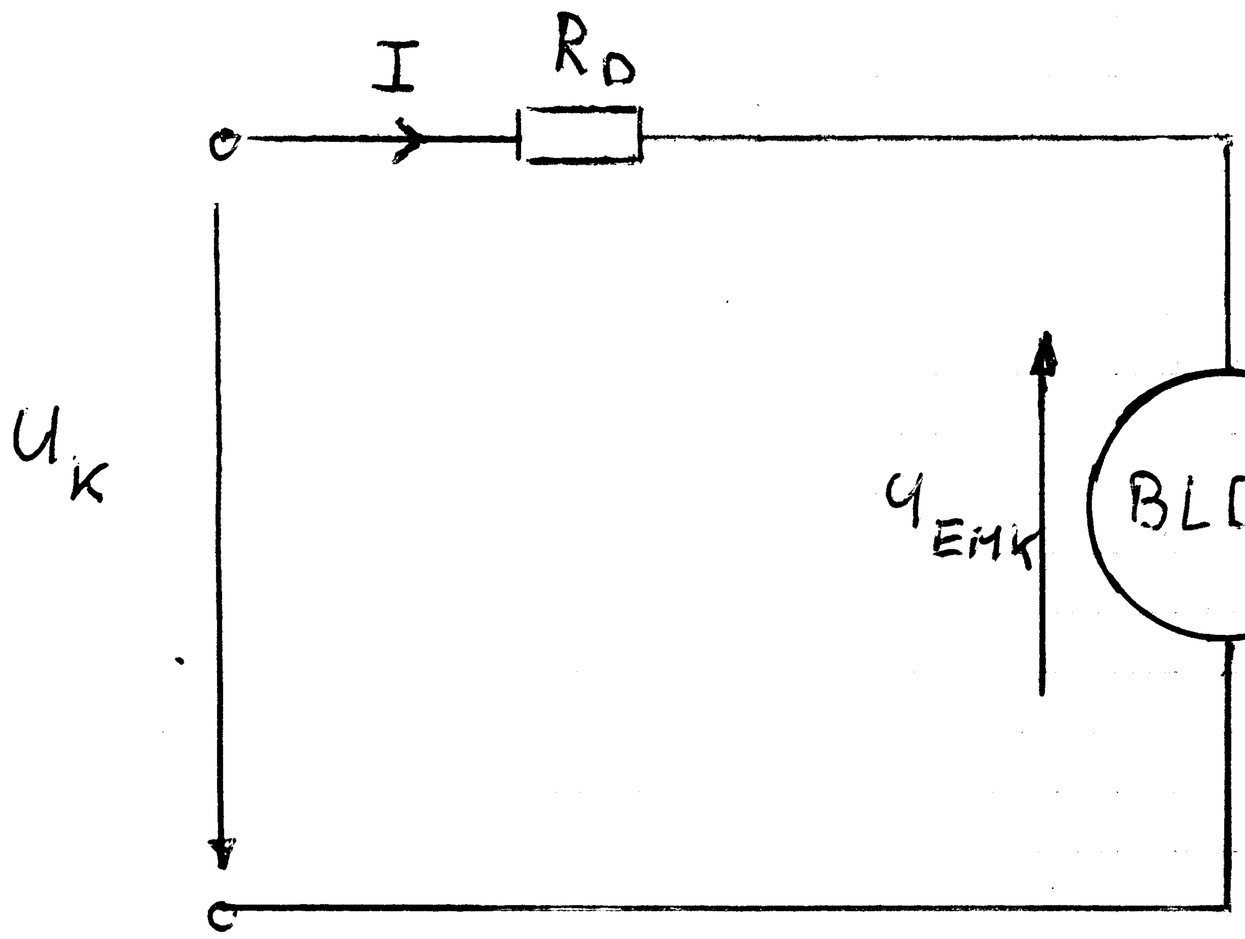
· Gleichstrommotor, BLDC

M. Schulz, 17.06.20



$$U_{EMK} = \frac{1}{kV} \cdot rpm$$

kV ... [rpm/V]

$$kT = \frac{1}{kV} \cdot \frac{30}{\pi} \quad [Nm/A]$$

R_D = Summe (R_{IM}, R_{Esc}, Schaltverluste)

$R_D \approx R_{IM} \cdot 1.5$

$M = kT \cdot I$, Drehmoment [Nm]

$\omega = 2\pi \cdot \frac{rpm}{60}$, Winkelgeschwindigkeit [1/sec]

$$I = \frac{U_K - U_{EMK}}{R_D}$$

Propeller

$P_{Prop} = 100\,W \cdot \left(\frac{rpm}{n_{100}}\right)^3$, n_{100} ... Drehzahl bei 100 W

$P_{Prop} = P_{mech}$

$$\boxed{P_{mech} = \left(U_K - \frac{rpm}{kV}\right) \cdot \frac{rpm}{kV} \cdot \frac{1}{R_D}}$$