Modeling and simulation

TITLE: Model a BLDC

Roll No: 2022MC58

Important parameters we must include are

- Impedance of the coil
- Radius of the motor
- Voltage
- Current
- Temperature
- Phase
- Duty cycle
- Frequency
- Motor-Velocity constant(kv)
- Back emf constant(1/kv)
- No of Poles

Rpm = kv*current

V = (I*Z)+Back emf

$\omega = \frac{I*I*(r+l)cos\varphi}{\sqrt{3}t}$(100-temp)/100

$v = r\omega$

$$\omega = \frac{I * V * cos\varphi}{\sqrt{3}t}$$

I get these formulas by idealy comparing electrical power with mechanical power and as losses I used temp to match the real world