Machine Description: 1 Hp PMSM

Rotor radius: $r_r = 3.40$ cm

Air gap: $g = 2.65$ mm

Magnet depth: $d_m = 0.401$ cm

Magnet fraction: $\alpha_{pm} = 0.795$

Magnet Type: NdFeB ($B_{pm} = 1.05$ T, $\mu_{rm} = 1.0$)

Slot depth: $d_s = 1.61$ cm

Winding depth: $d_w = 0.332 d_s \cdot 1.25$

(25% larger than minimum possible value based on slot fill)

Tooth width: $w_t = 0.452$ cm

Backiron depth: $d_b = 1.69$ cm

Active length: $d = 3.81$ cm

Poles: $P = 4$

Number of slots: $N_{slt} = 24$

Number of phases: 3

Effective series conductors per slot:

$$N_{as} = [0 \;\; 0 \;\; 34 \;\; 68 \;\; 34 \;\; 0 \;\; 0 \;\; 0 \;\; -34 \;\; -68 \;\; -34 \;\; 0 \;\; 0 \;\; 0 \;\; 34 \;\; 68 \;\; 34 \;\; 0 \;\; 0 \;\; 0 \;\; -34 \;\; -68 \;\; -34 \;\; 0]^T$$

$n_{as}(\phi_{sm}) = 162 \sin(2\phi_{sm}) - 86.6 \sin(6\phi_{sm})$ (conductors/radian)

Conductor area: $a_c = 6.49 \cdot 10^{-7}$ m^2

$L_{llp} = 2.84$ mH

$L_{llm} = -0.473$ mH