

im_36s28r_rect_tooth - Machine Report

Topology: IM
Generated: 2026-08-23 13:58:27 by Nabla

Operating point

Mechanical speed: 1418 RPM
Electrical frequency: 47.25 Hz
Slip: 0.05500
Simulated steps: 361 (field step 361)

All values are read from the selected completed simulation. Missing or non-finite quantities are shown as "-".

Machine Parameters

Operating Point

Parameter	Value	Unit	Comments
Mechanical Speed	1417.50	RPM	
Electrical Frequency	50.0000	Hz	
Slip	0.0550000	-	

Winding Quantities

Parameter	Value	Unit	Comments
Phase Inductance	30528.0	uH	
Phase Resistance	444.152	mOhm	

Flux and Voltage

Parameter	Value	Unit	Comments
Flux Linkage 1st Harmonic Peak	0.293094	Wb	
Phase Voltage 1st Harmonic Peak	95.3977	V	peak of the fundamental
Phase Voltage RMS	68.4497	V	fundamental + harmonics

Torque and Mechanical Performance

Parameter	Value	Unit	Comments
Average Torque	4.67253	N.m	
Torque Constant (Kt)	0.00000	N.m/A	

Power and Efficiency

Parameter	Value	Unit	Comments
Apparent Power	2.85919	kVA	$S = V * I$ (RMS)
Active Power	1.01524	kW	$P = V * I * \cos(\phi)$
Reactive Power	2.67288	kVA	$Q = V * I * \sin(\phi)$
Mechanical Power	0.693591	kW	from average torque
Efficiency	67.0770	%	
Power Factor	0.355078	-	

Losses

Parameter	Value	Unit	Comments
Joule Losses (Winding)	266.491	W	
Joule Losses (Rotor Bars)	51.0968	W	
Current Density	3.99912	A/mm^2	
Slot Fill Factor	0.420000	-	
Iron Losses (Stator)	21.9477	W	
Iron Losses (Rotor)	0.895430	W	
Total Losses	340.431	W	

Flux Density Values

Parameter	Value	Unit	Comments
Max Flux Density (Stator Core)	1.70702	T	

Parameter	Value	Unit	Comments
Max Flux Density (Stator Tooth)	1.99714	T	
Max Flux Density (Rotor Core)	1.41376	T	
Max Flux Density (Rotor Tooth)	1.94962	T	

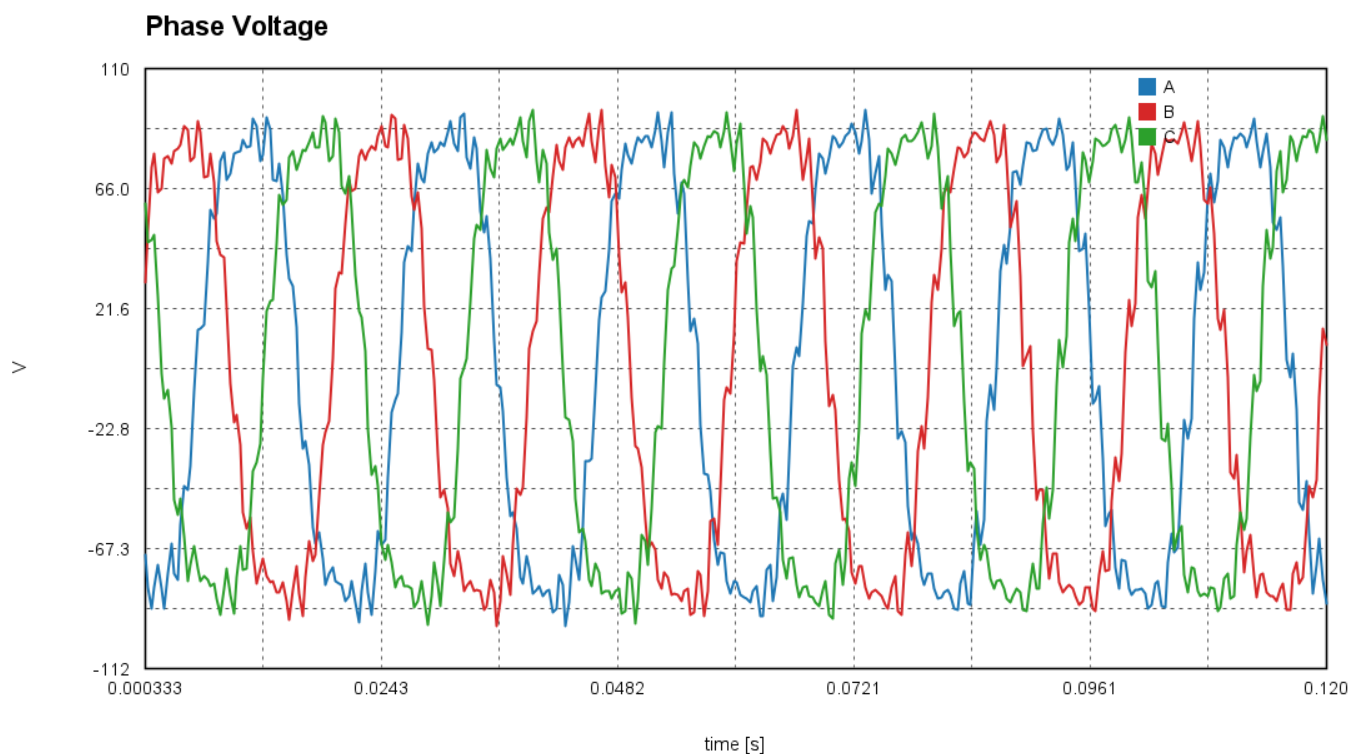
Mass Estimation

Parameter	Value	Unit	Comments
Stator Core Mass	3.89483	kg	area x axial length x density
Rotor Core Mass	1.60843	kg	
Winding Mass (In-Slot)	0.630326	kg	slot area x fill factor
End-Winding Mass	0.834957	kg	analytical, both axial ends
Rotor Cage Mass (Bars)	0.192723	kg	active bar length only
Shaft Mass	0.430466	kg	
Sleeves / Wedges / Spacers Mass	0.0130920	kg	
Total Mass	7.60482	kg	sector scaled to full machine

Equivalent Circuit Parameters (Time-Harmonic)

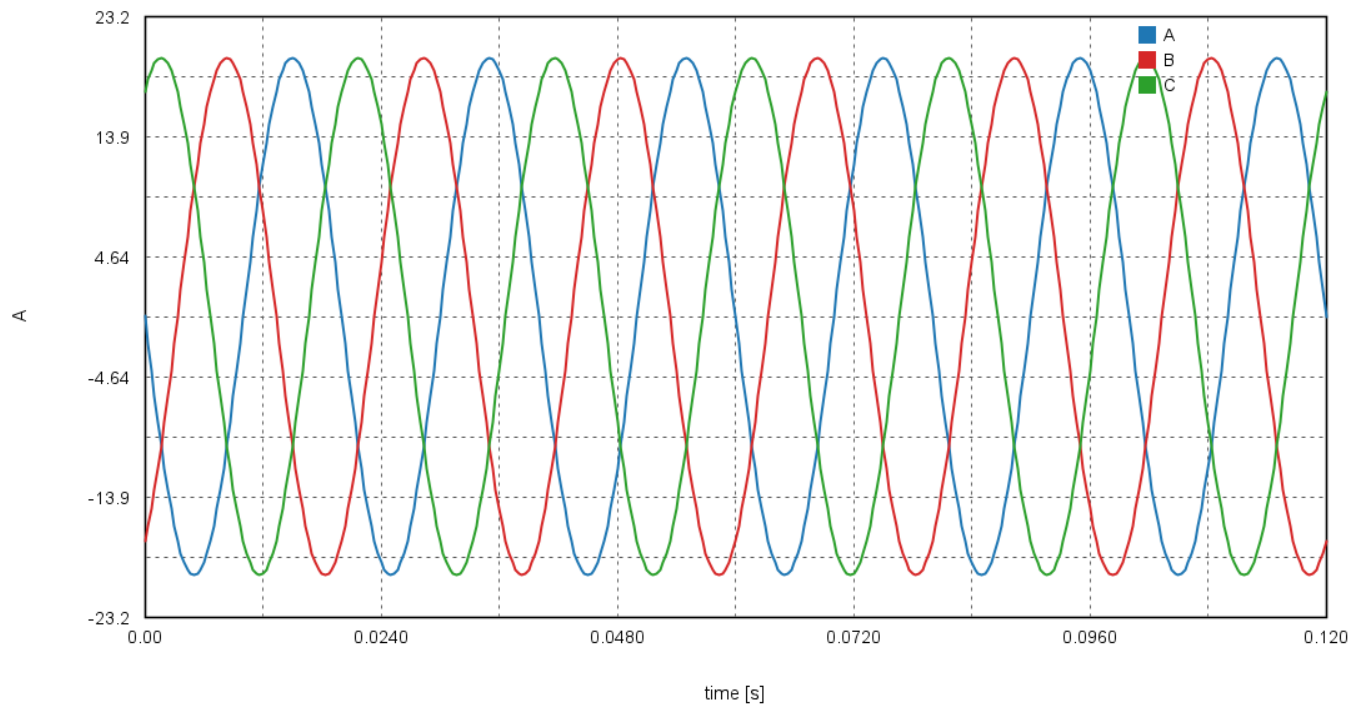
Parameter	Value	Unit	Comments
Stator Resistance (Rs)	444.152	mOhm	per-phase stator winding
Rotor Resistance (Rr)	379.819	mOhm	referred to stator
Magnetizing Inductance (Lm)	9985.01	uH	
Stator Leakage Inductance (Lls)	6560.08	uH	
Rotor Leakage Inductance (Llr)	6560.08	uH	referred

Key Waveforms



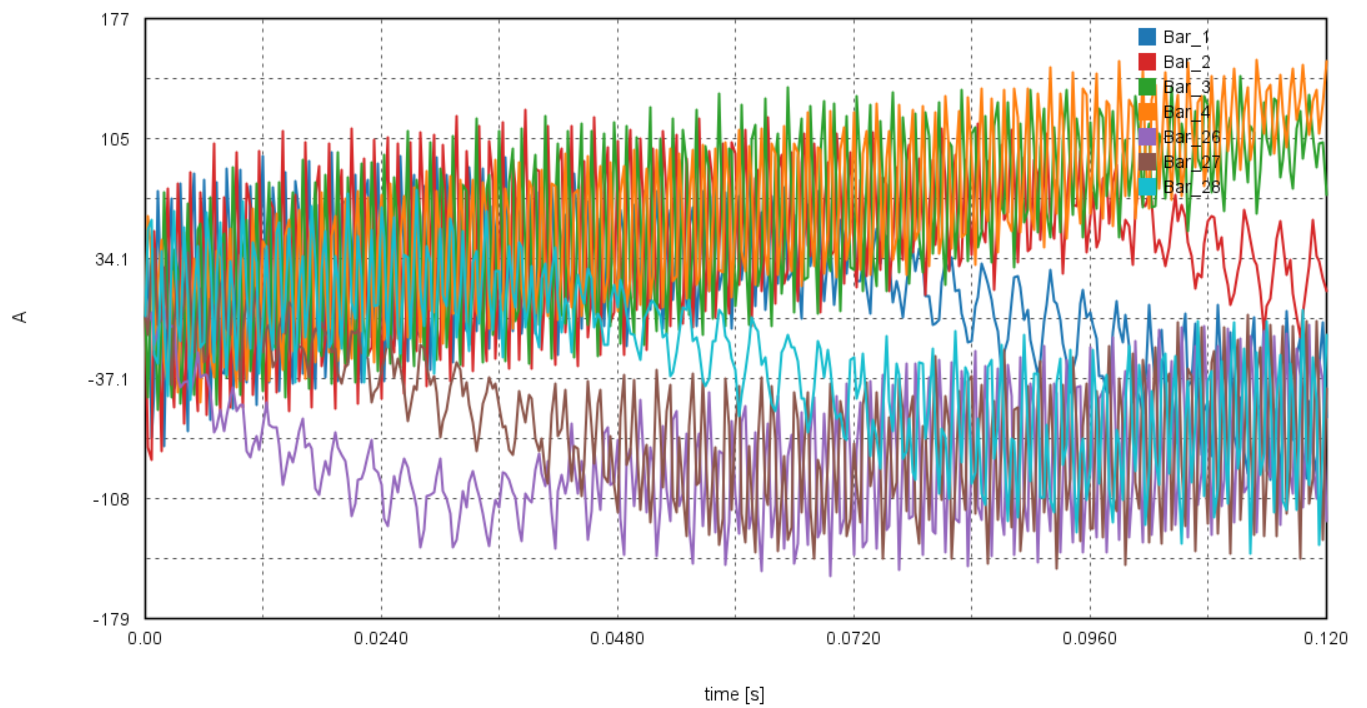
Full simulated range (360 samples). y-axis: V.

Phase Current

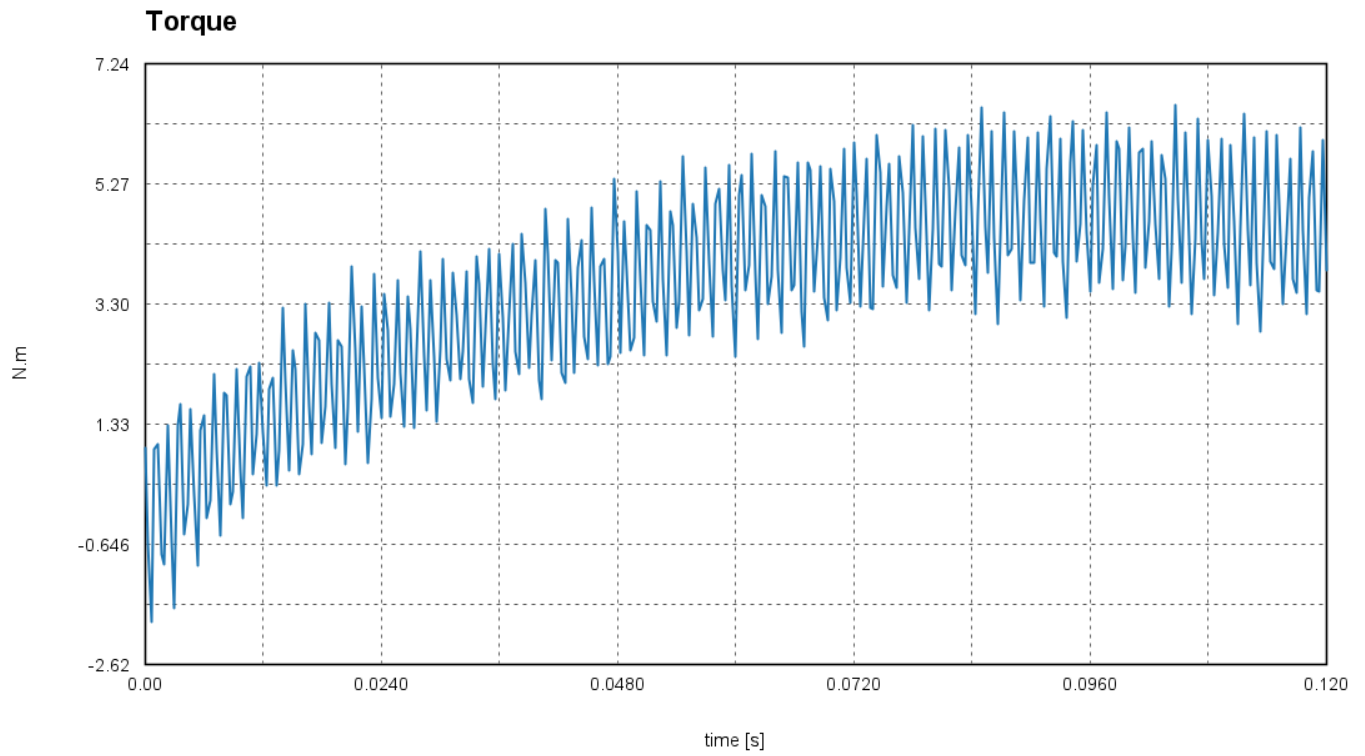


Full simulated range (361 samples). y-axis: A.

Rotor Bar Currents



Full simulated range (361 samples). y-axis: A.

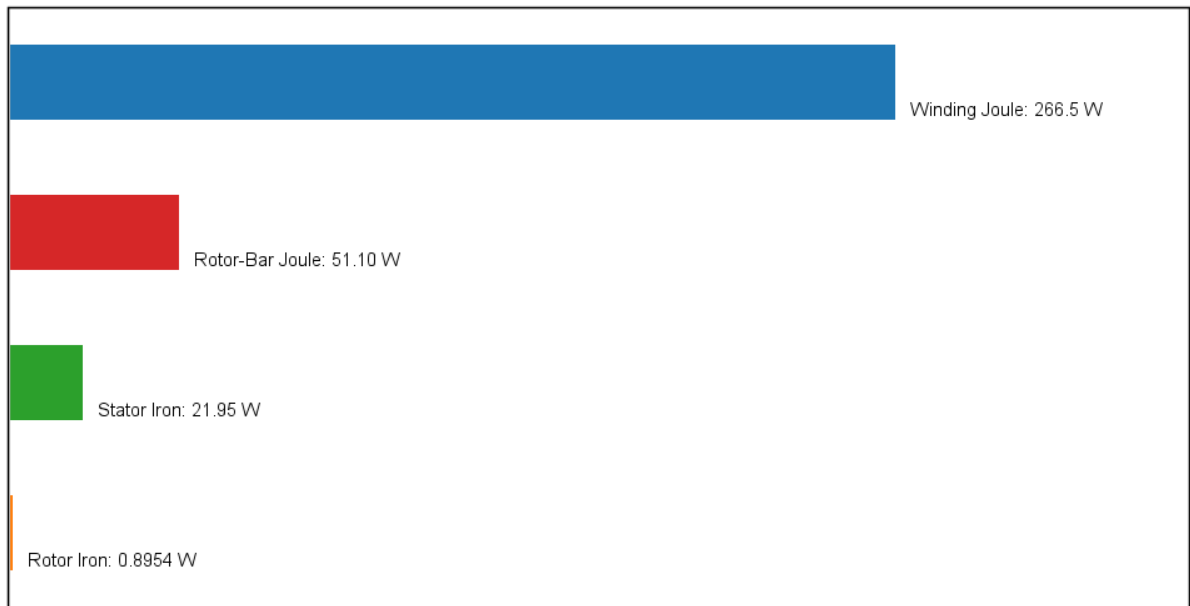


Full simulated range (361 samples). y-axis: N.m.

Loss Summary

Parameter	Value	Unit	Comments
Winding Joule	266.491	W	
Rotor-Bar Joule	51.0968	W	
Stator Iron	21.9477	W	
Rotor Iron	0.895430	W	
Total Losses	340.431	W	
Efficiency	67.0770	%	
Power Factor	0.355078	-	

Loss Breakdown

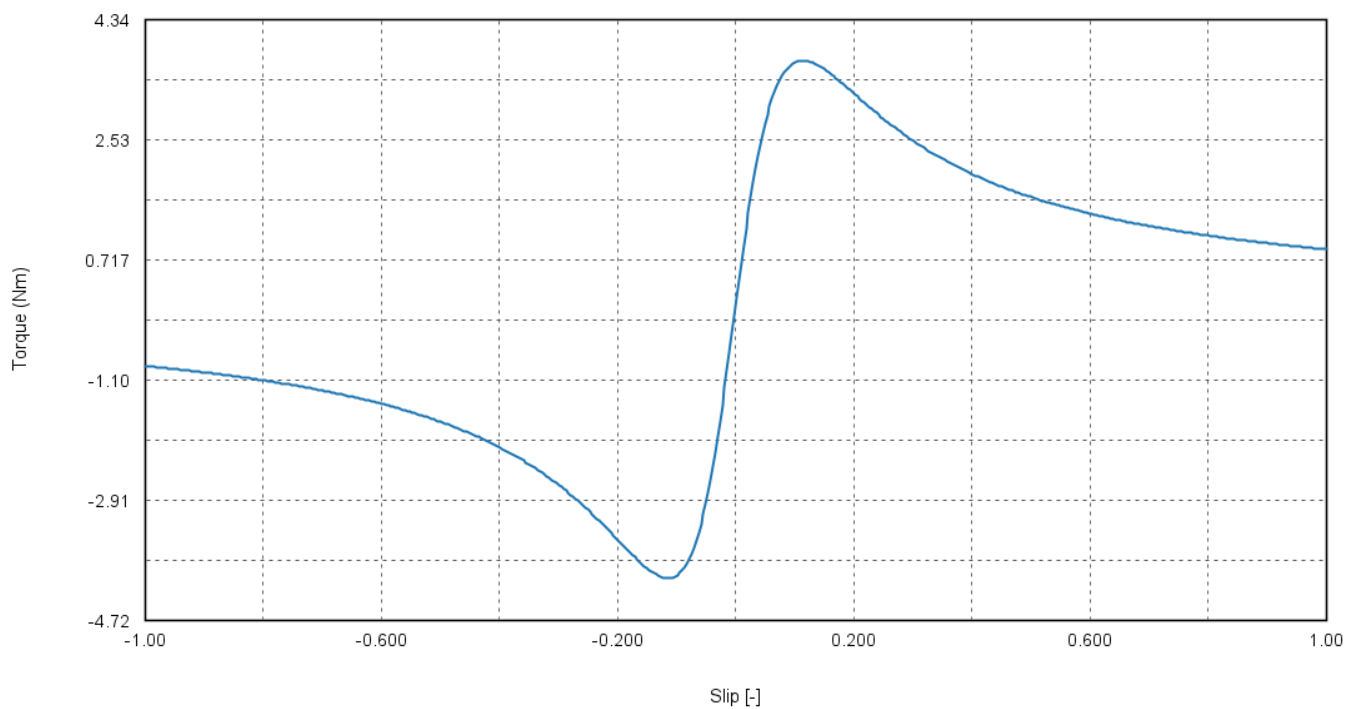


Total losses: 340.43 W

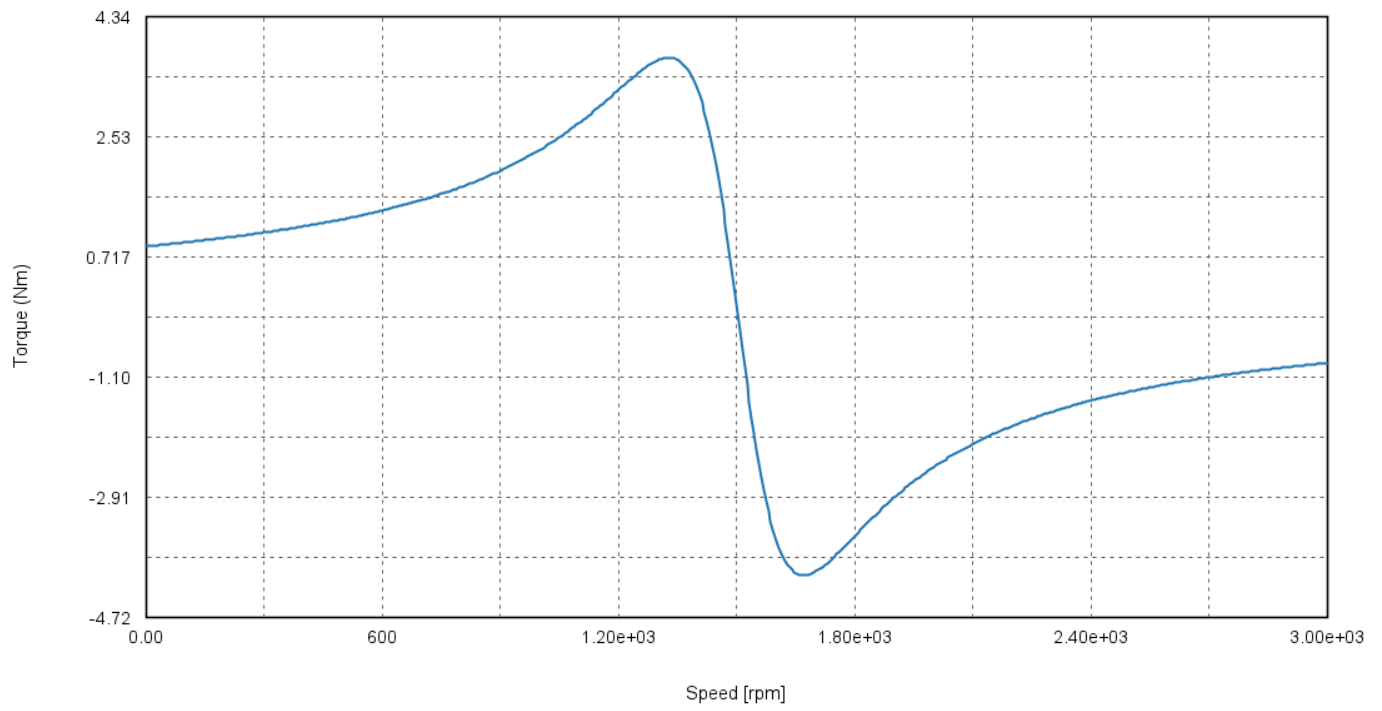
Performance Analysis

Computed from the performance-analysis parameters as currently set in the Graphs panel.

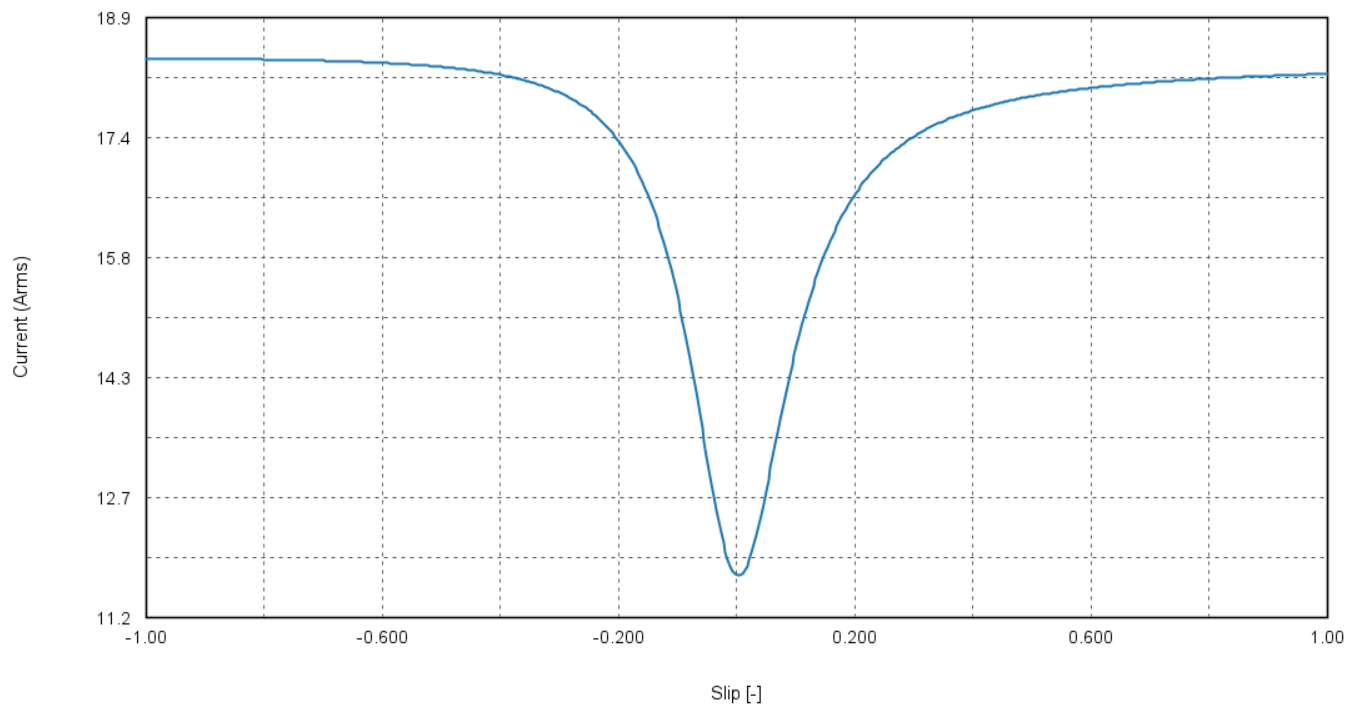
Torque vs Slip



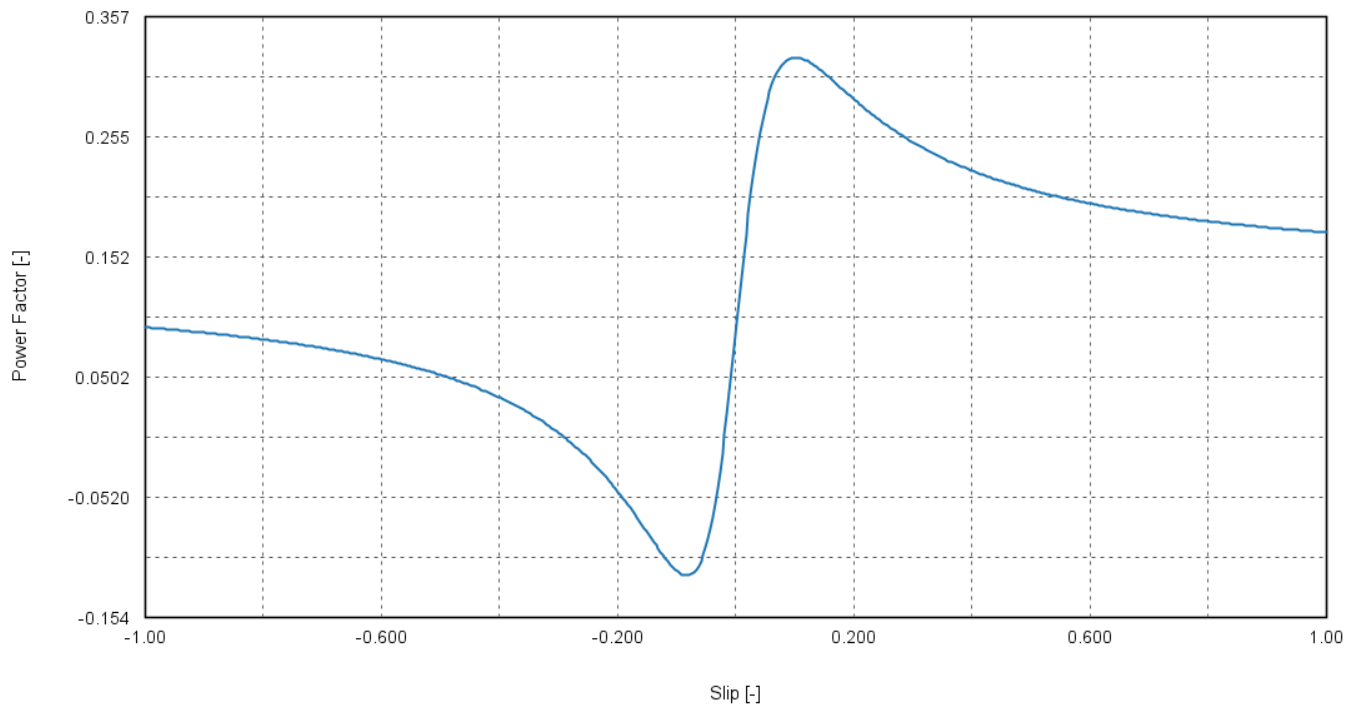
Torque vs Speed



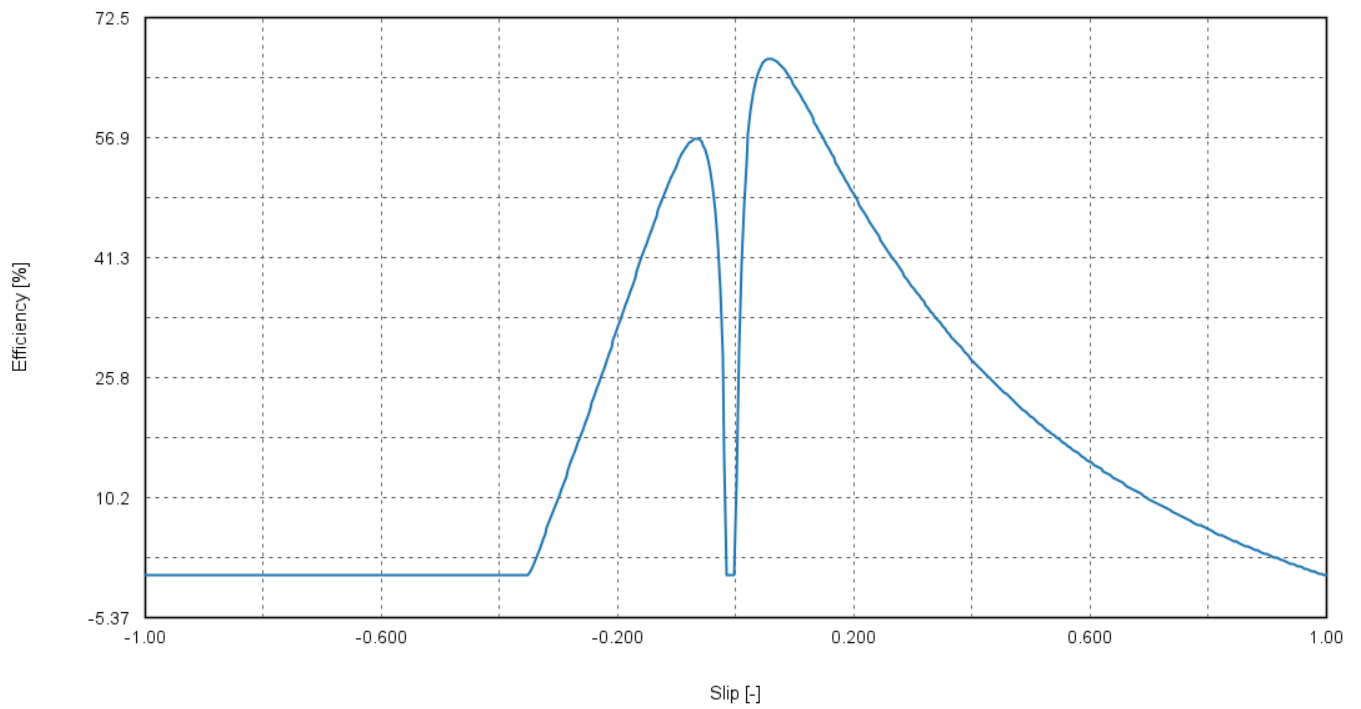
I_{ph} vs Slip



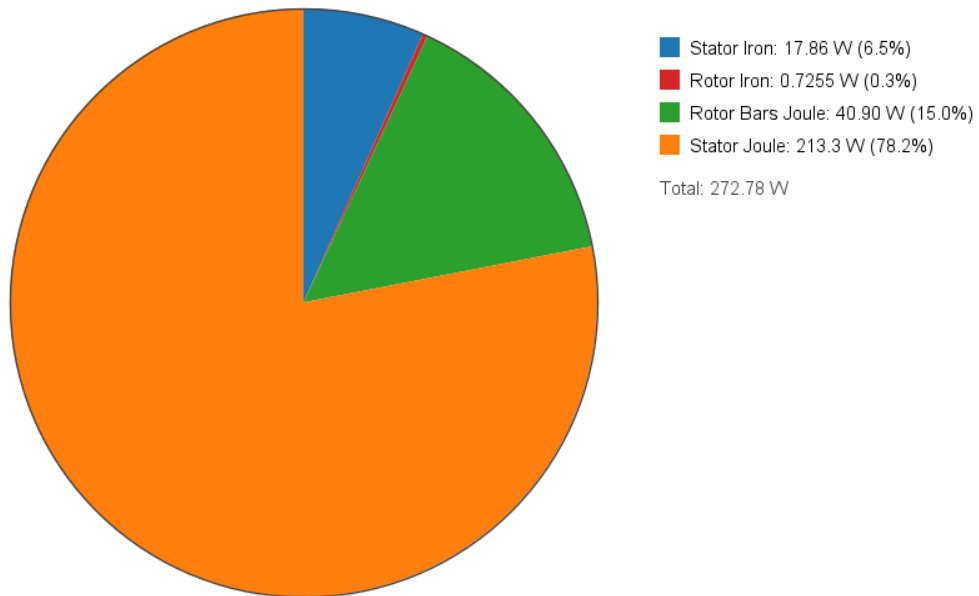
Power Factor vs Slip



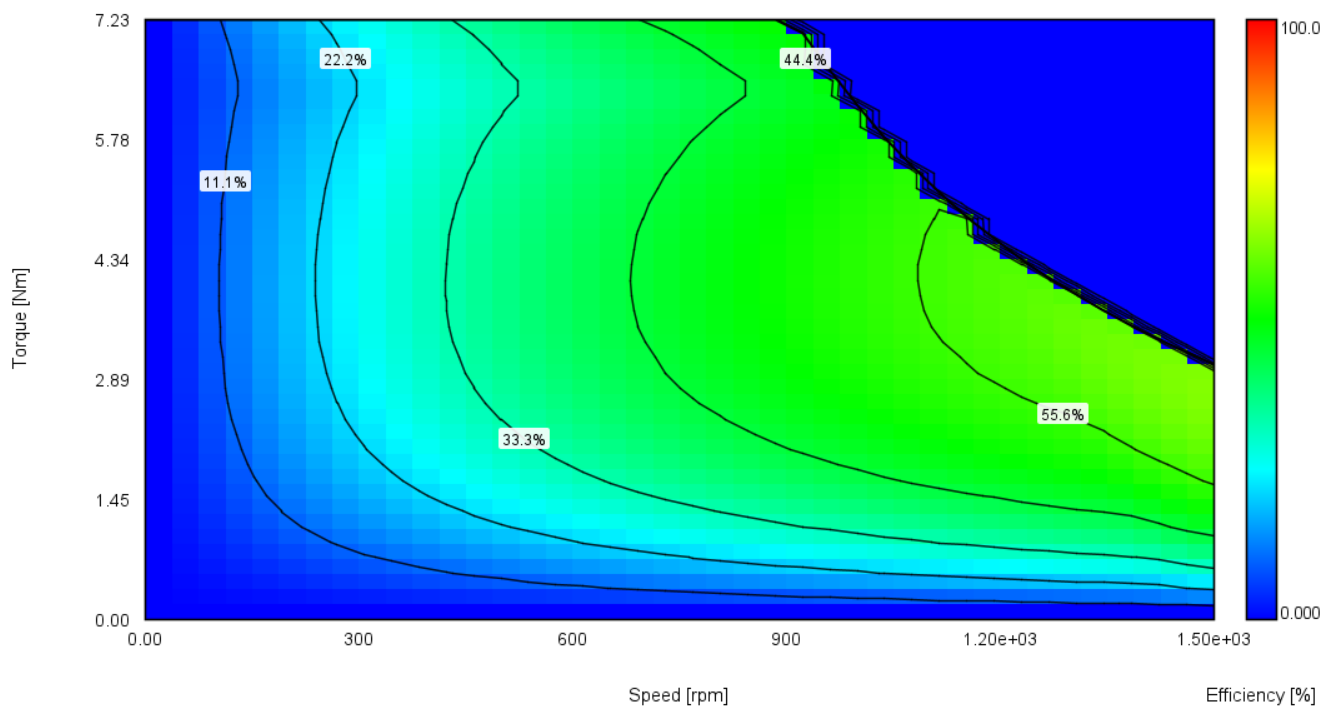
Efficiency vs Slip



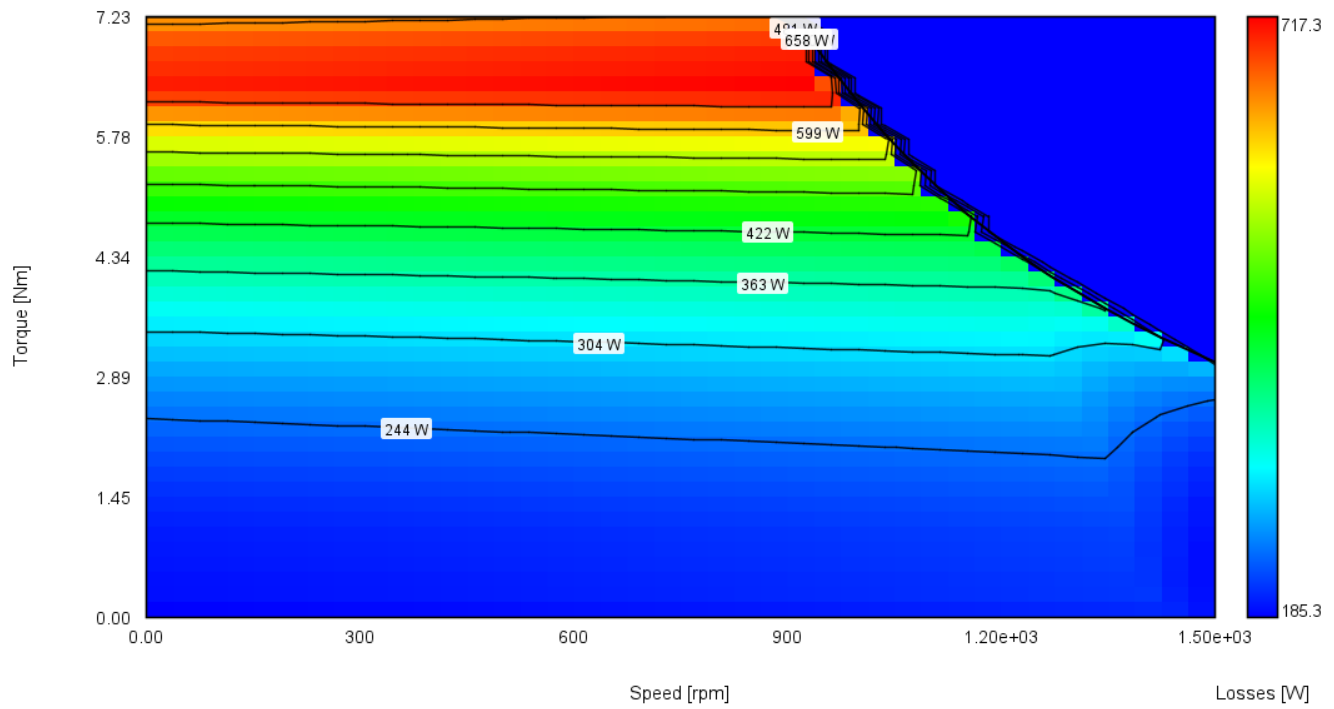
Loss Breakdown vs Slip



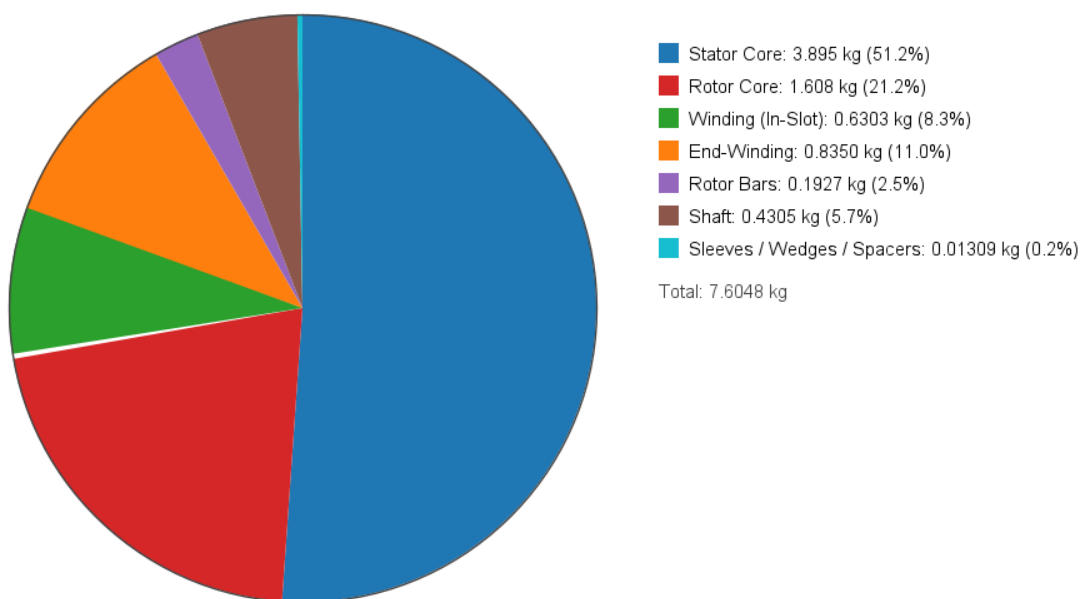
Efficiency Map



Loss Map

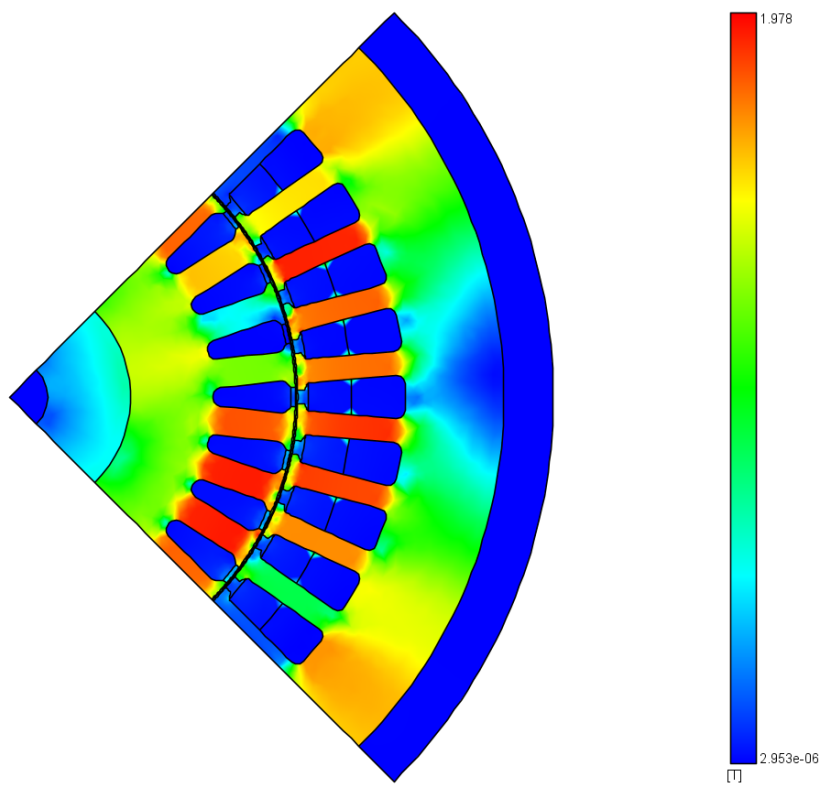


Machine Mass



Field Images

Flux Density Magnitude |B|



step 361/361 | t = 0.120000 s | rotor position = 0.00 deg