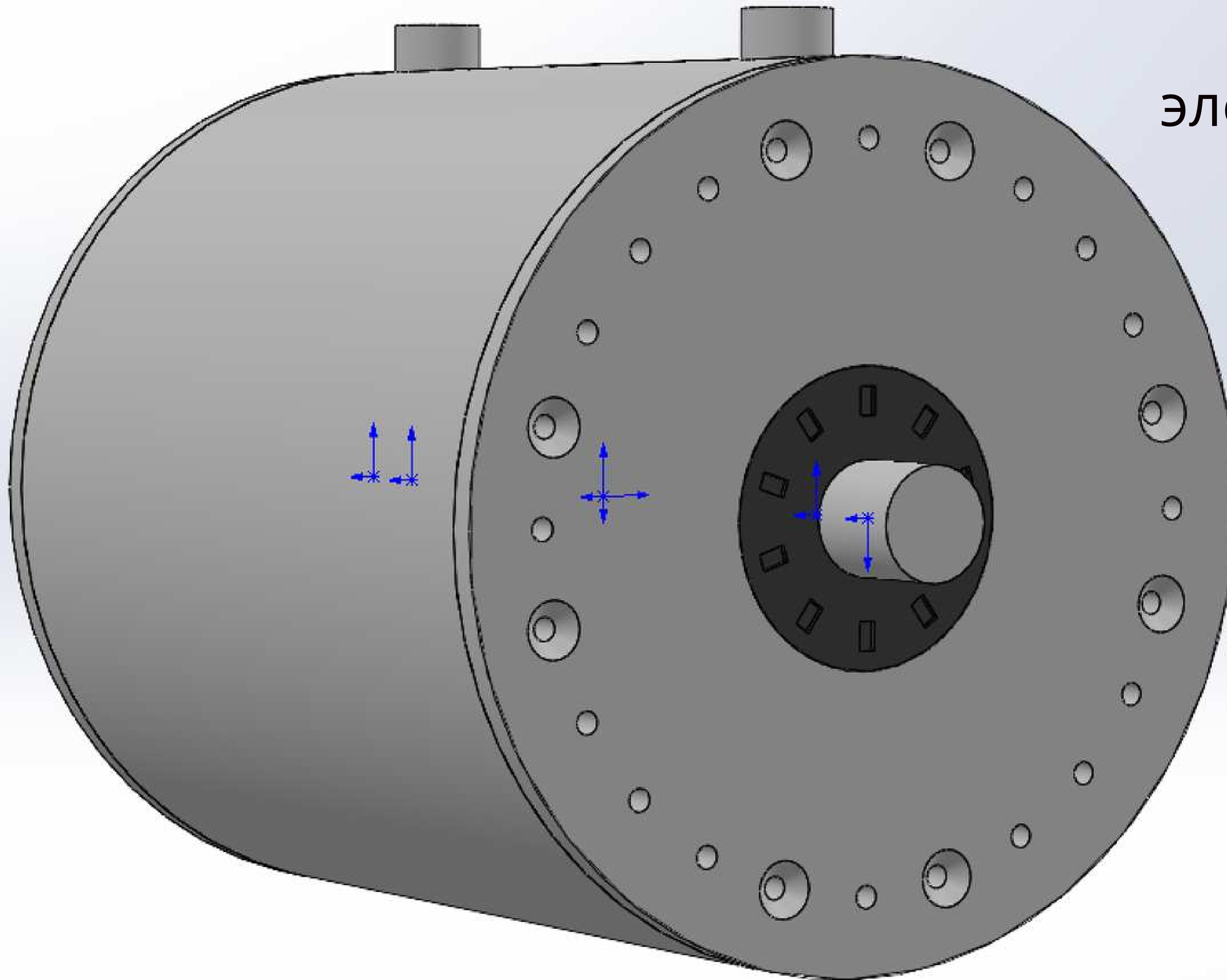
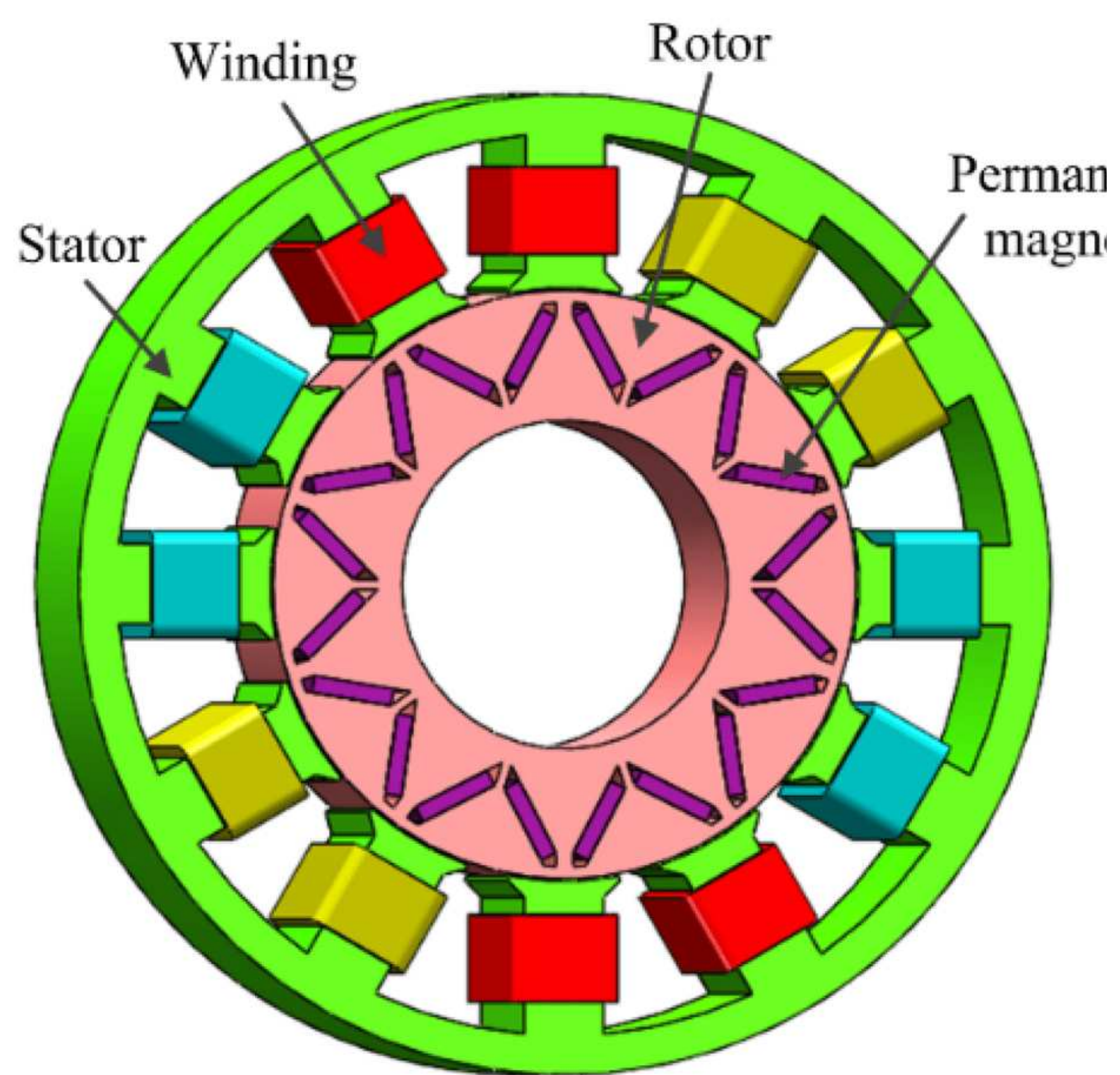
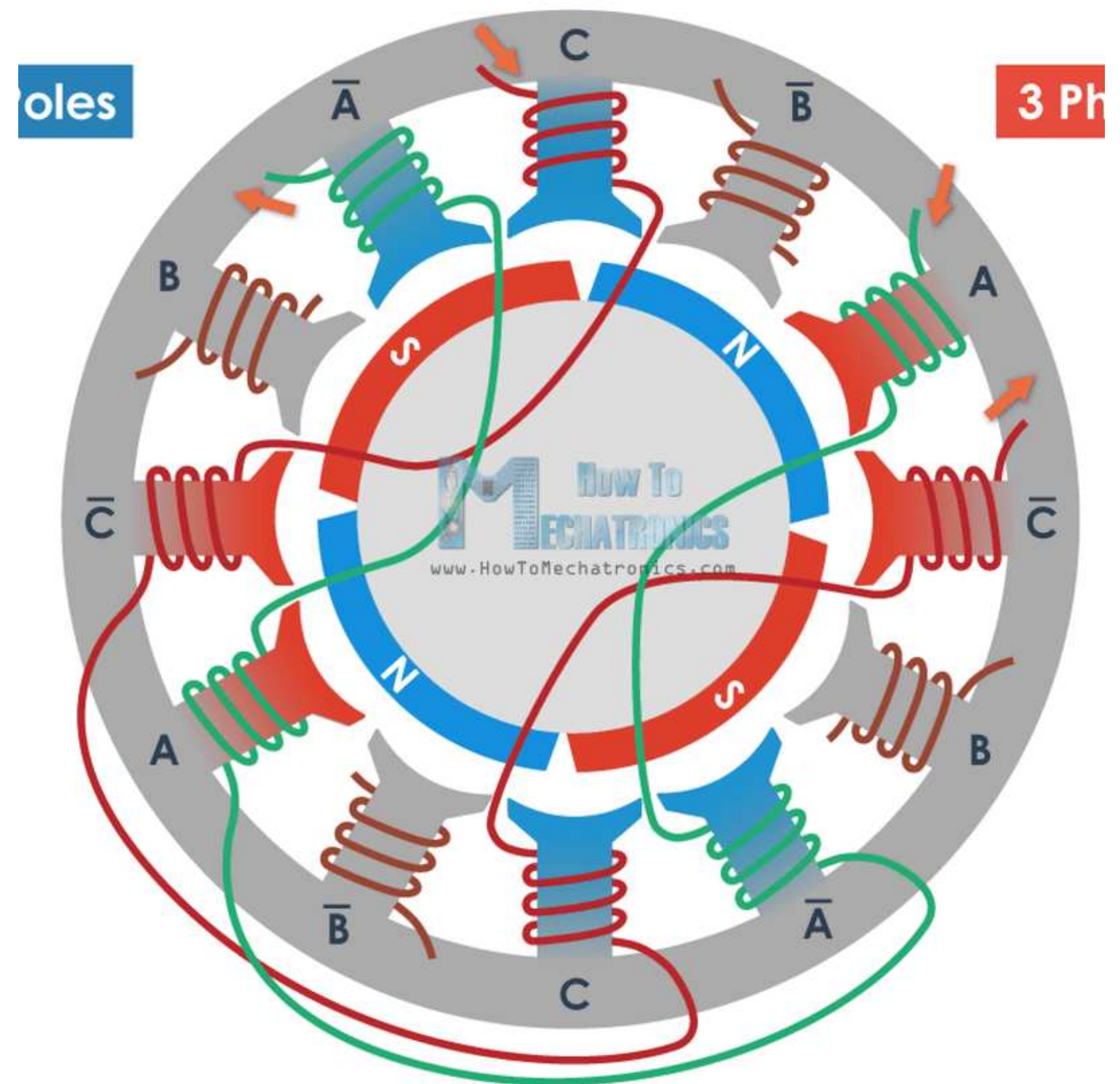


Ірм synrm
электродвигатель





ipm synrm



blcdc

Motor Classification – BLDC vs PMSM

Brushless D.C. Motor



Permanent magnet synchronous motor



versus

BLDC

PMSM

HIGH

Level of torque ripple

LOW

HIGH

Vibration and noise as a consequence of the torque ripple

LOW

HIGH

Electromagnetic compatibility (EMC)

LOW

LOW

Control structure complexity level

HIGH

SHORTER

Execution time of the control approach

LONGER

SIMPLE

Sensorless control

MORE COMPLEX

HIGHER

Heating

LOWER

LOWER

Price

HIGHER

Prius 2003



Prius 2004



Prius 2010



Ford



Chevy VOLTS



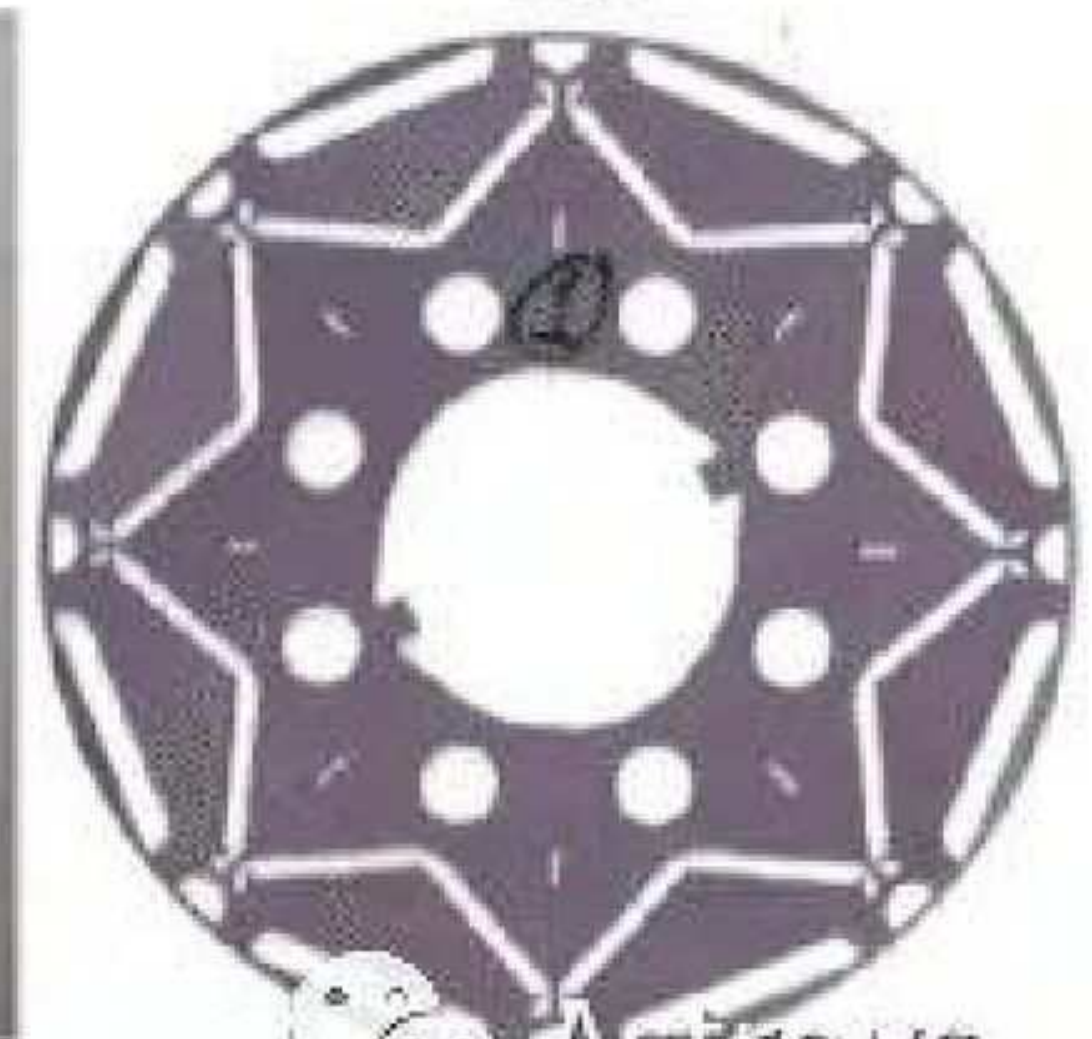
Honda Accord



Camry 2007



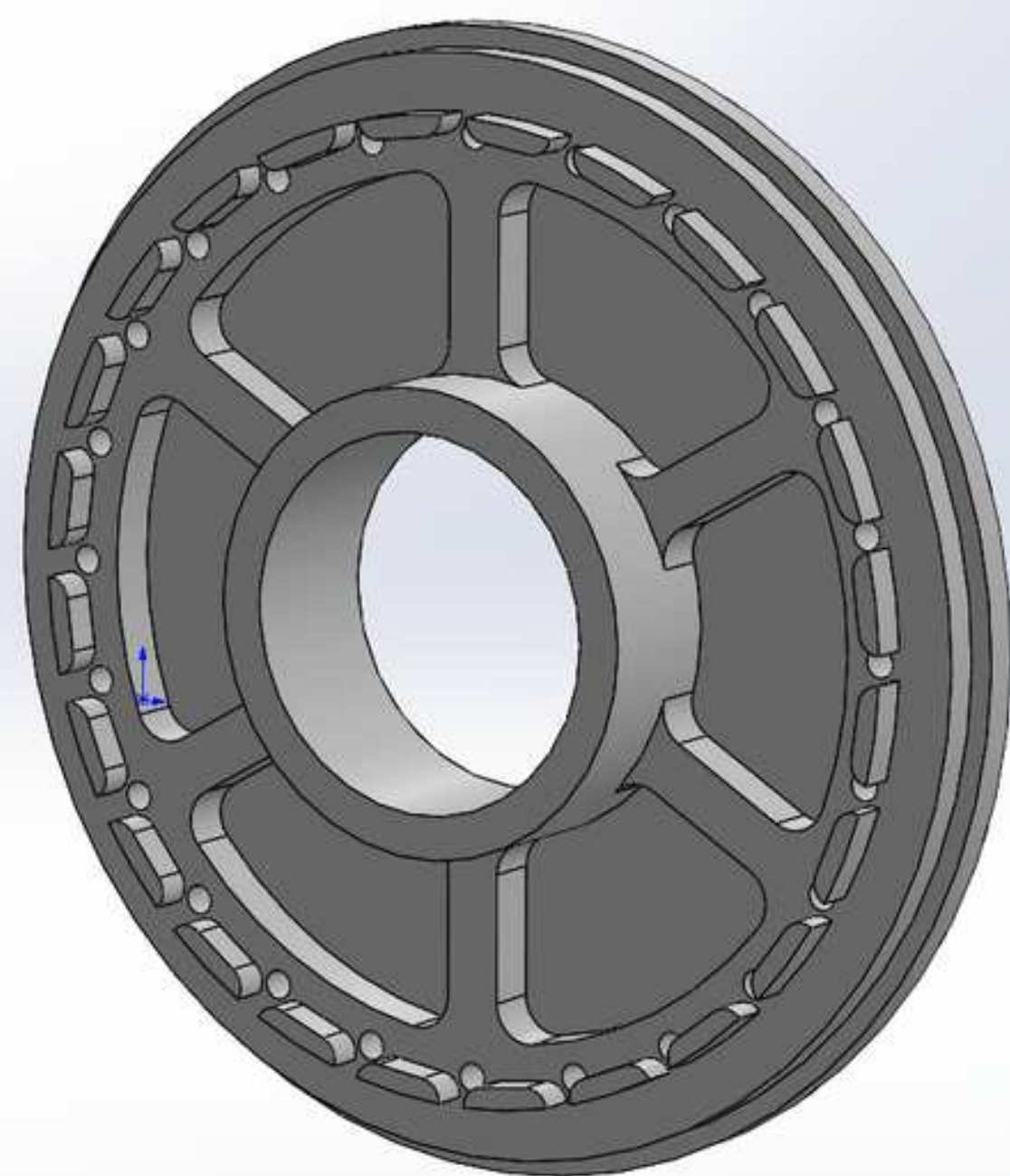
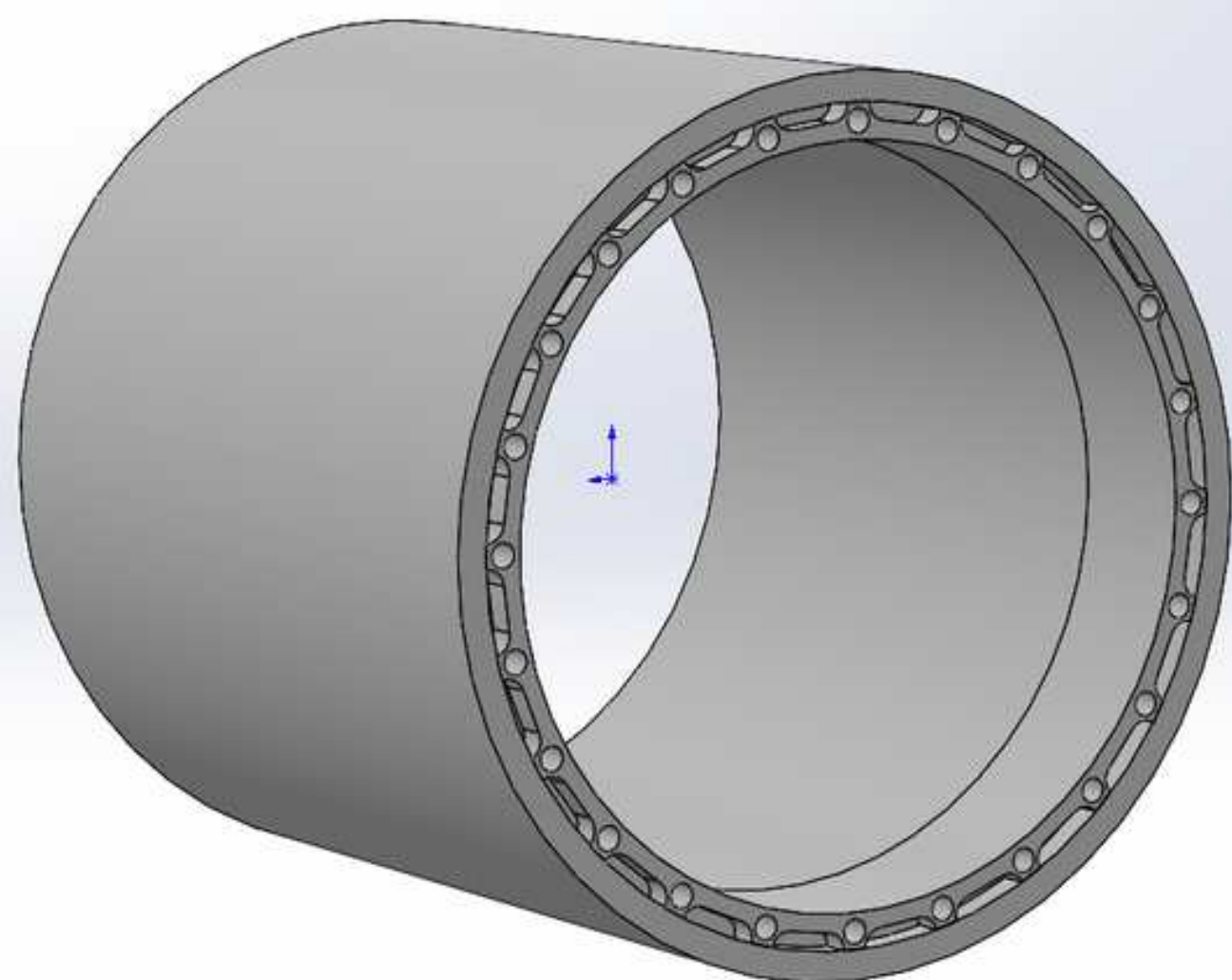
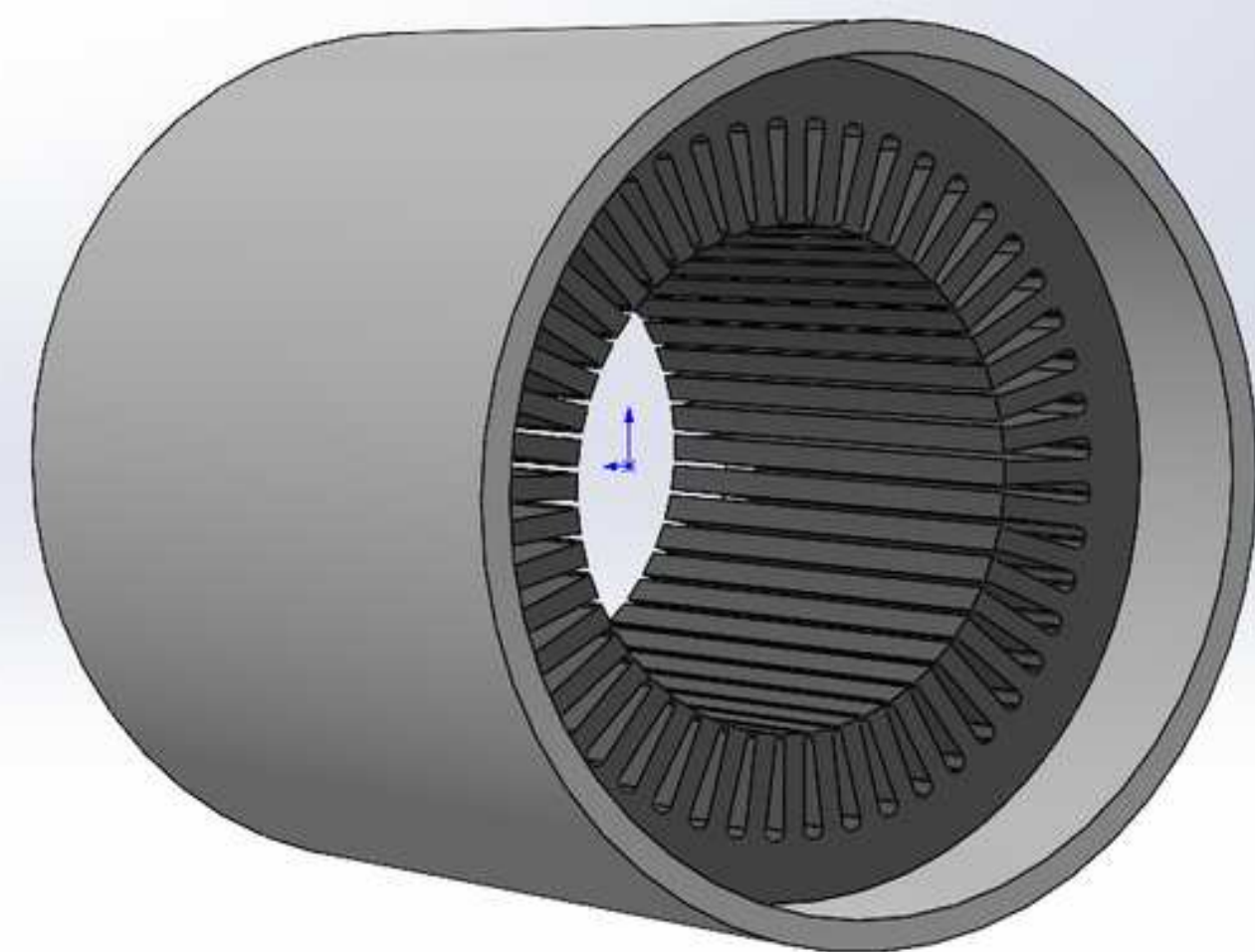
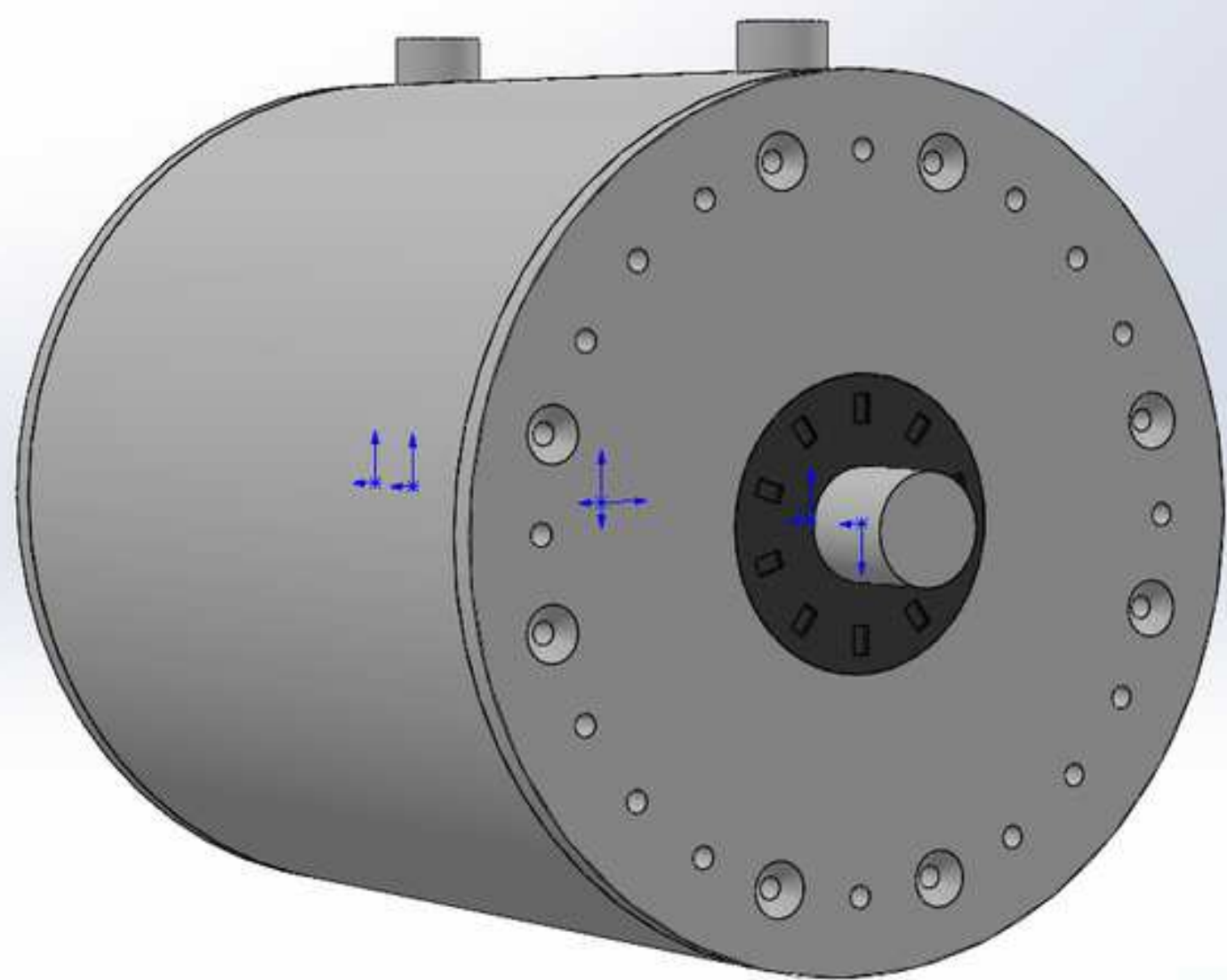
Lexus 2008

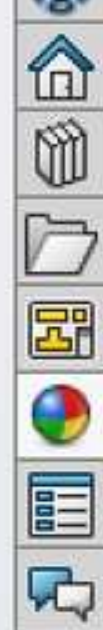
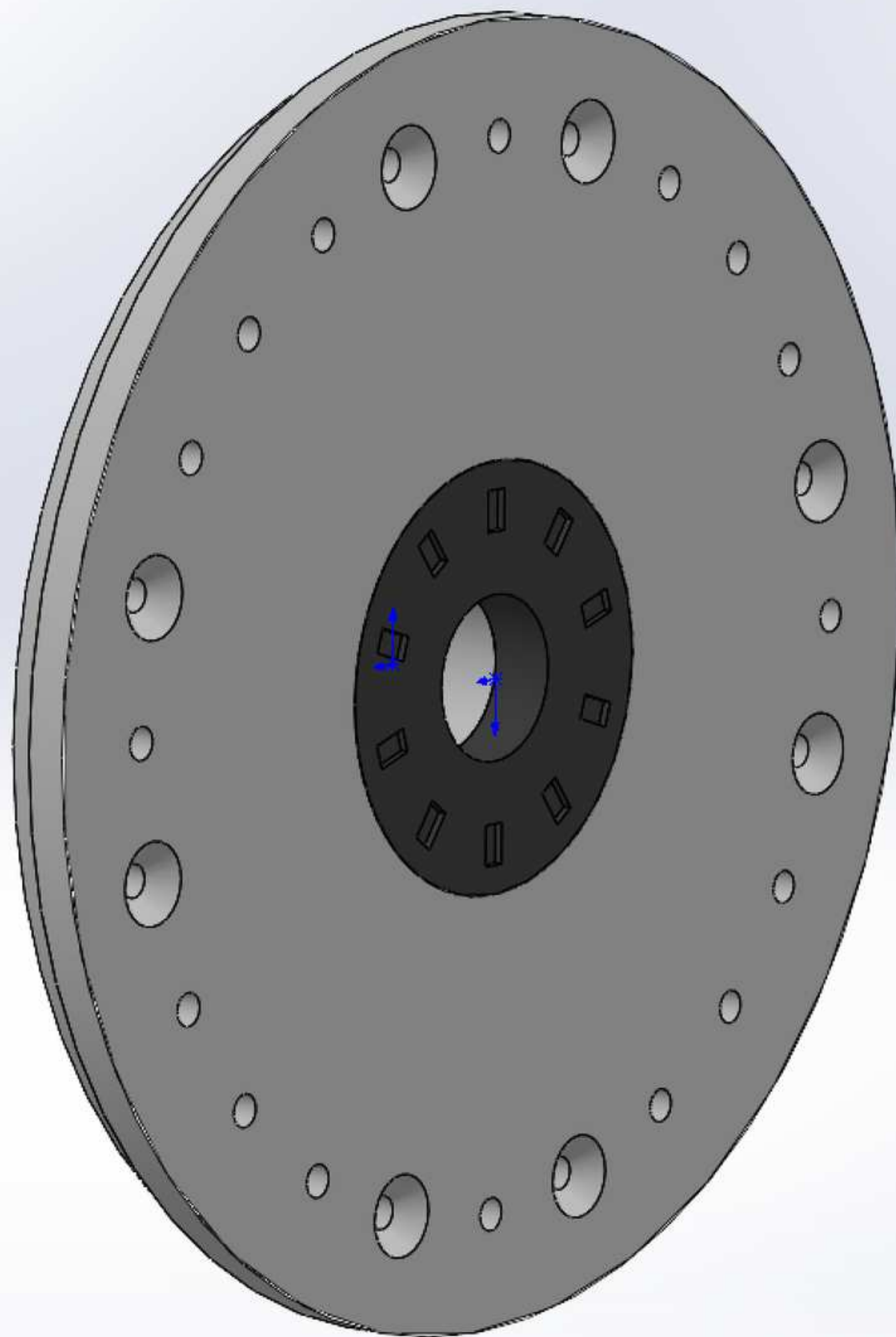
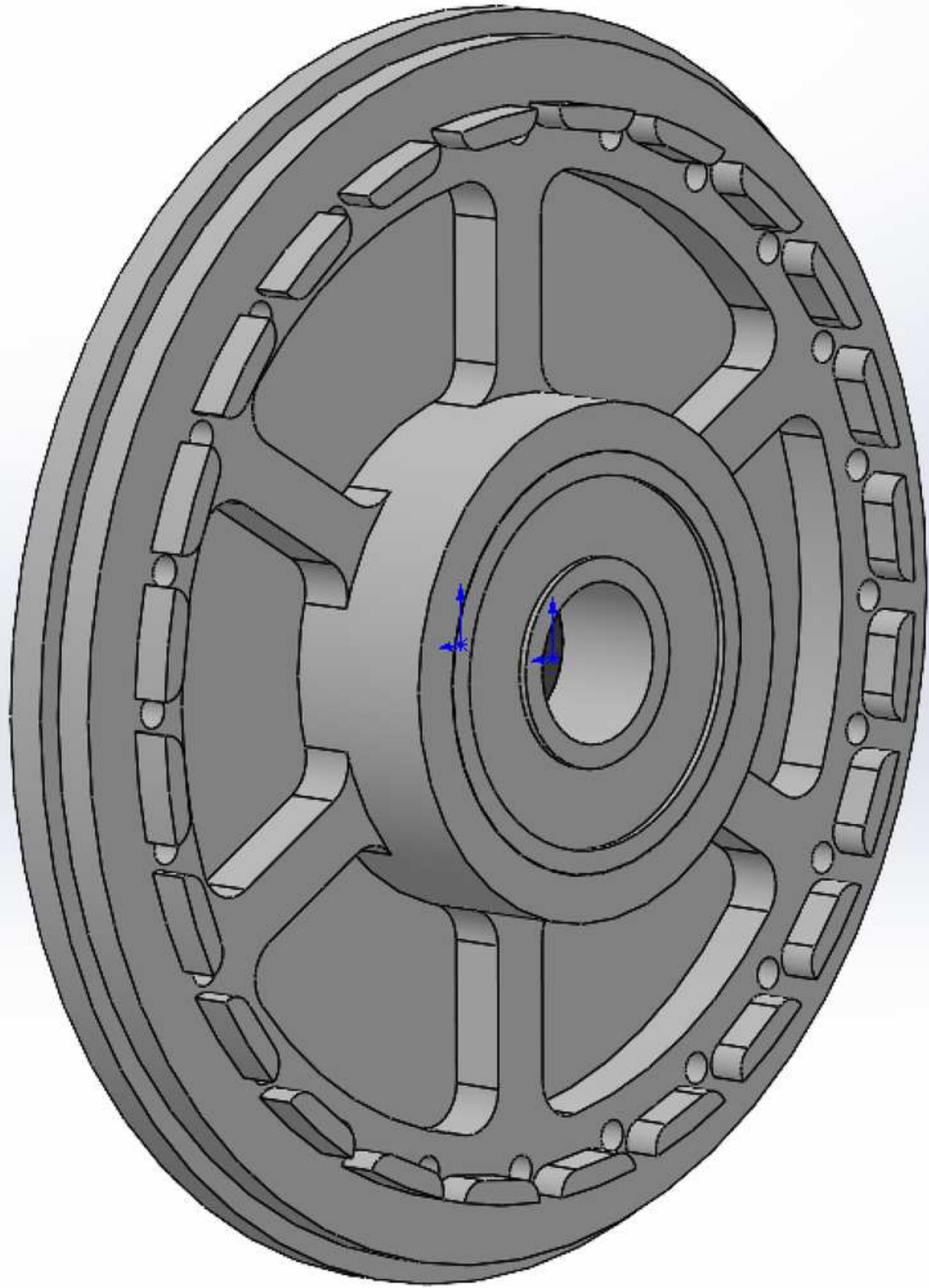


Leaf

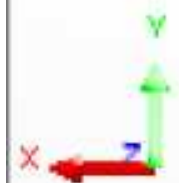
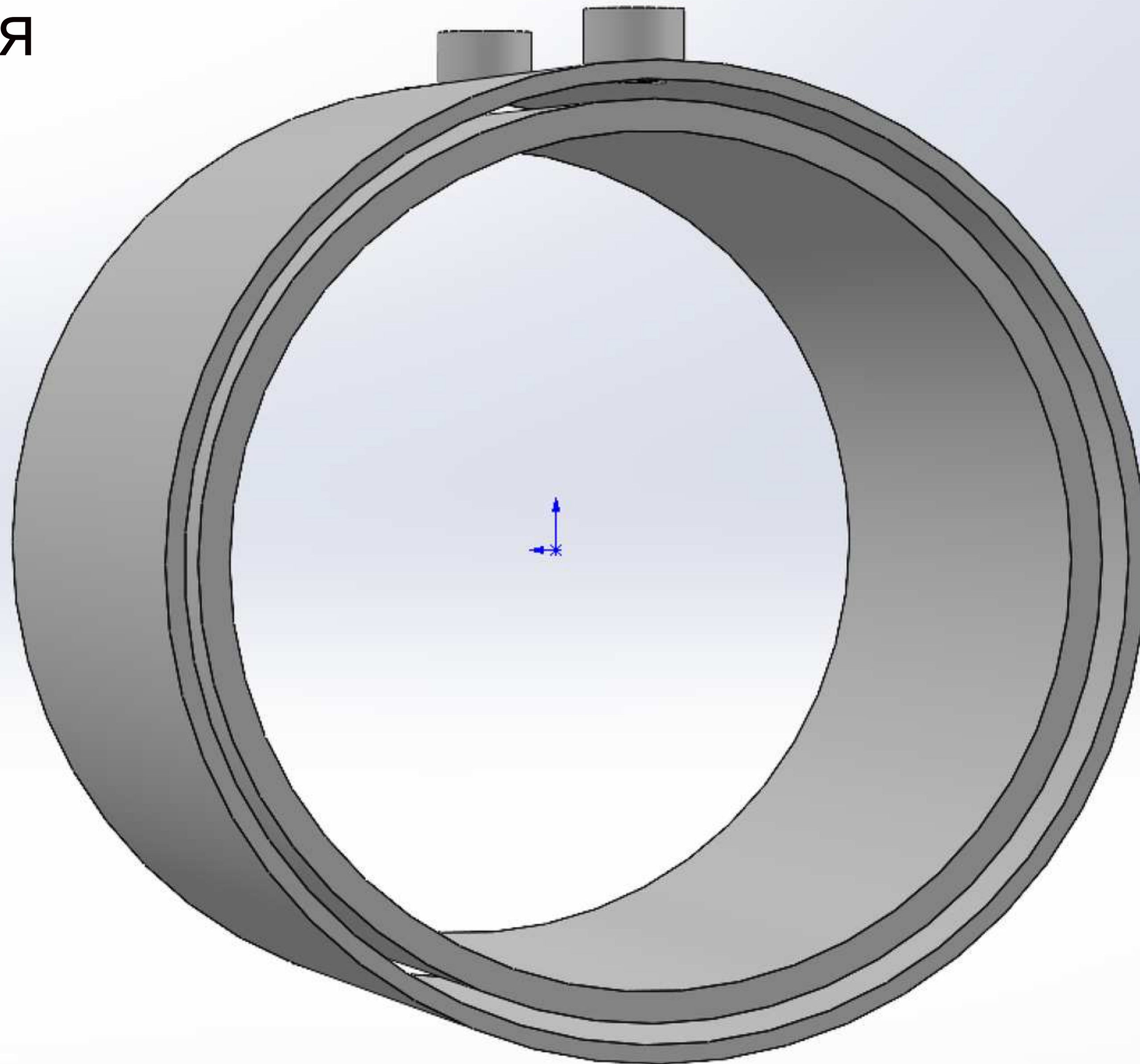


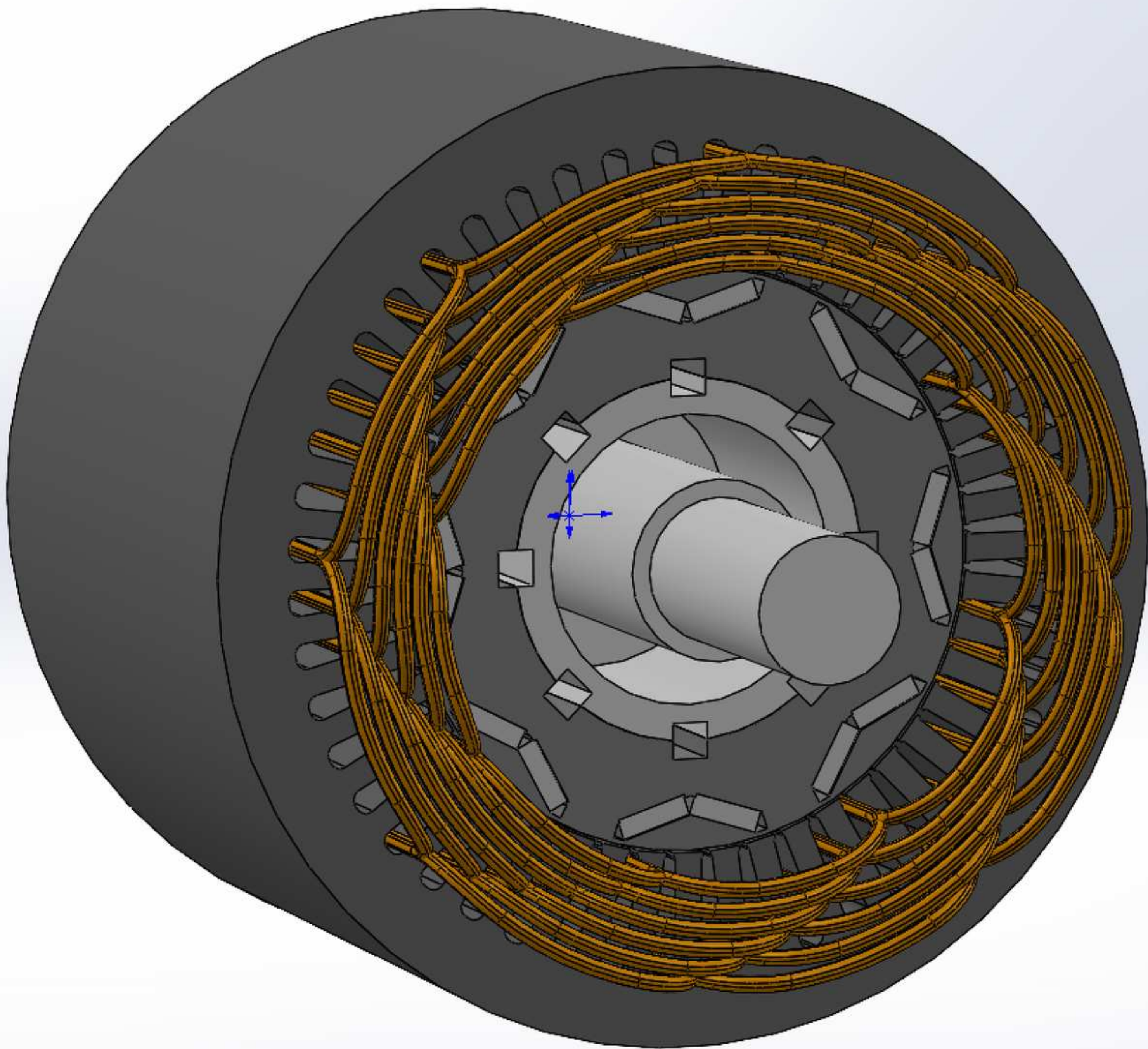
A sampling of Internal Permanent Magnet (IPM) rotors. Image from Researchgate.net

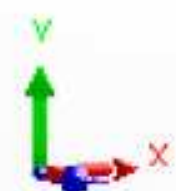
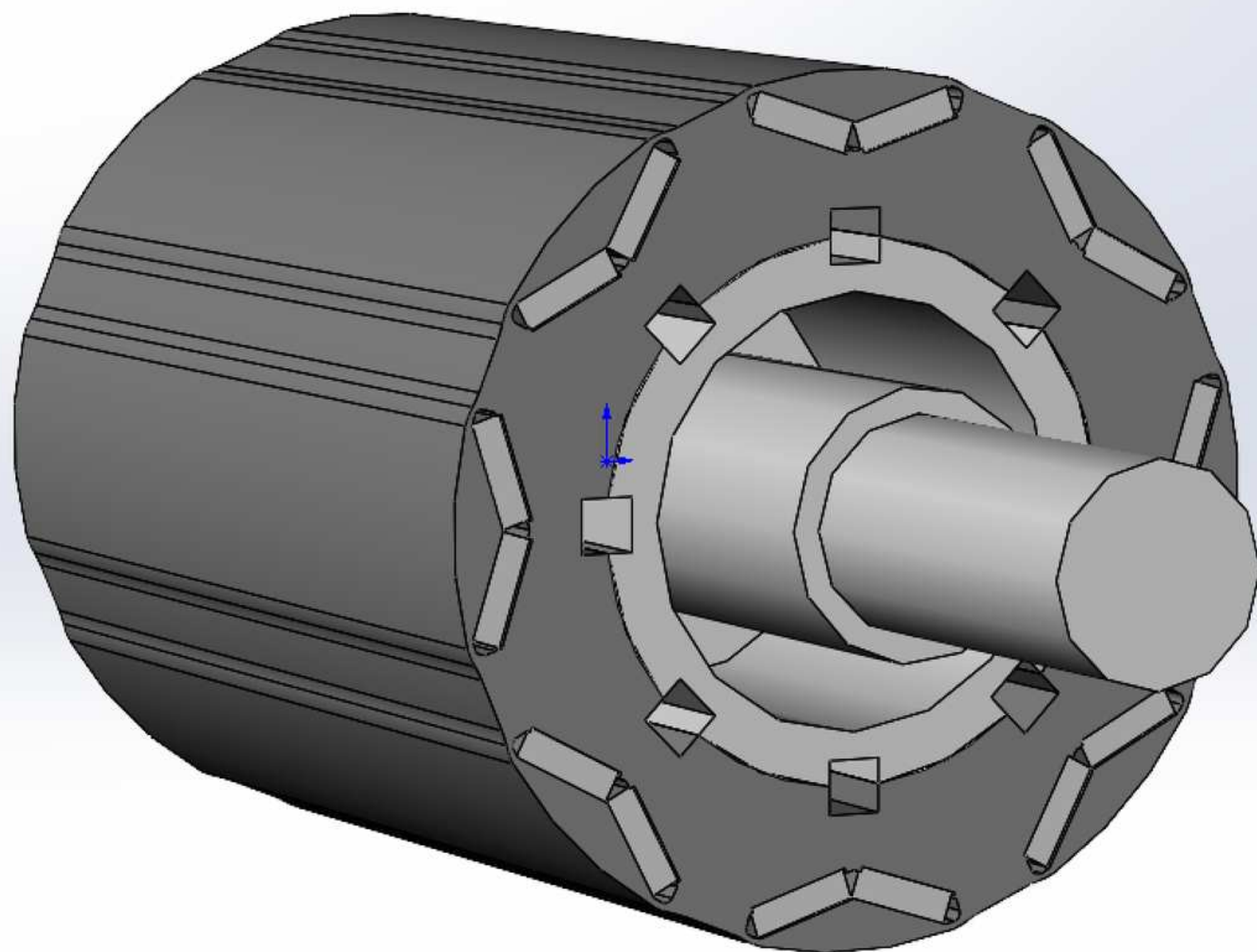


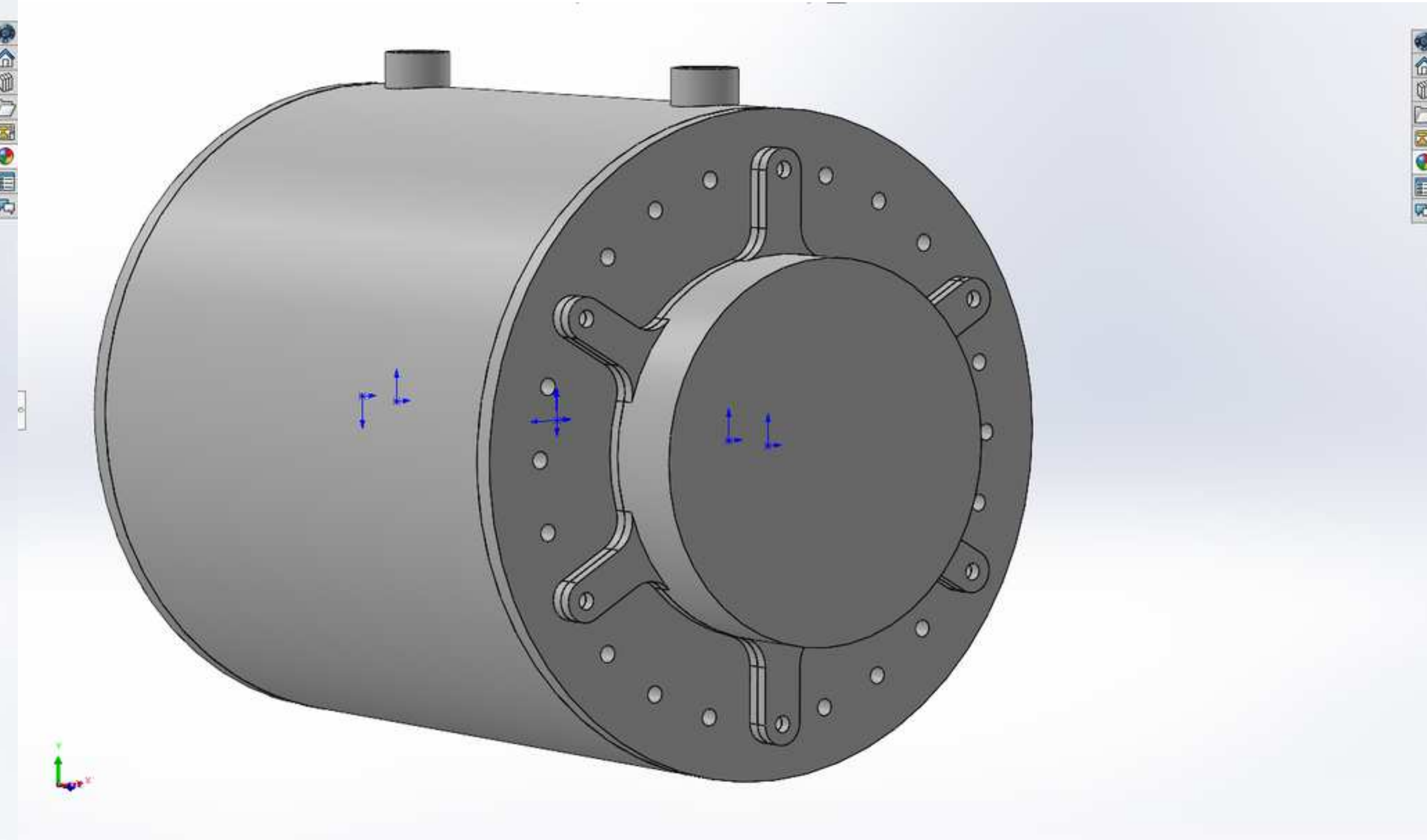
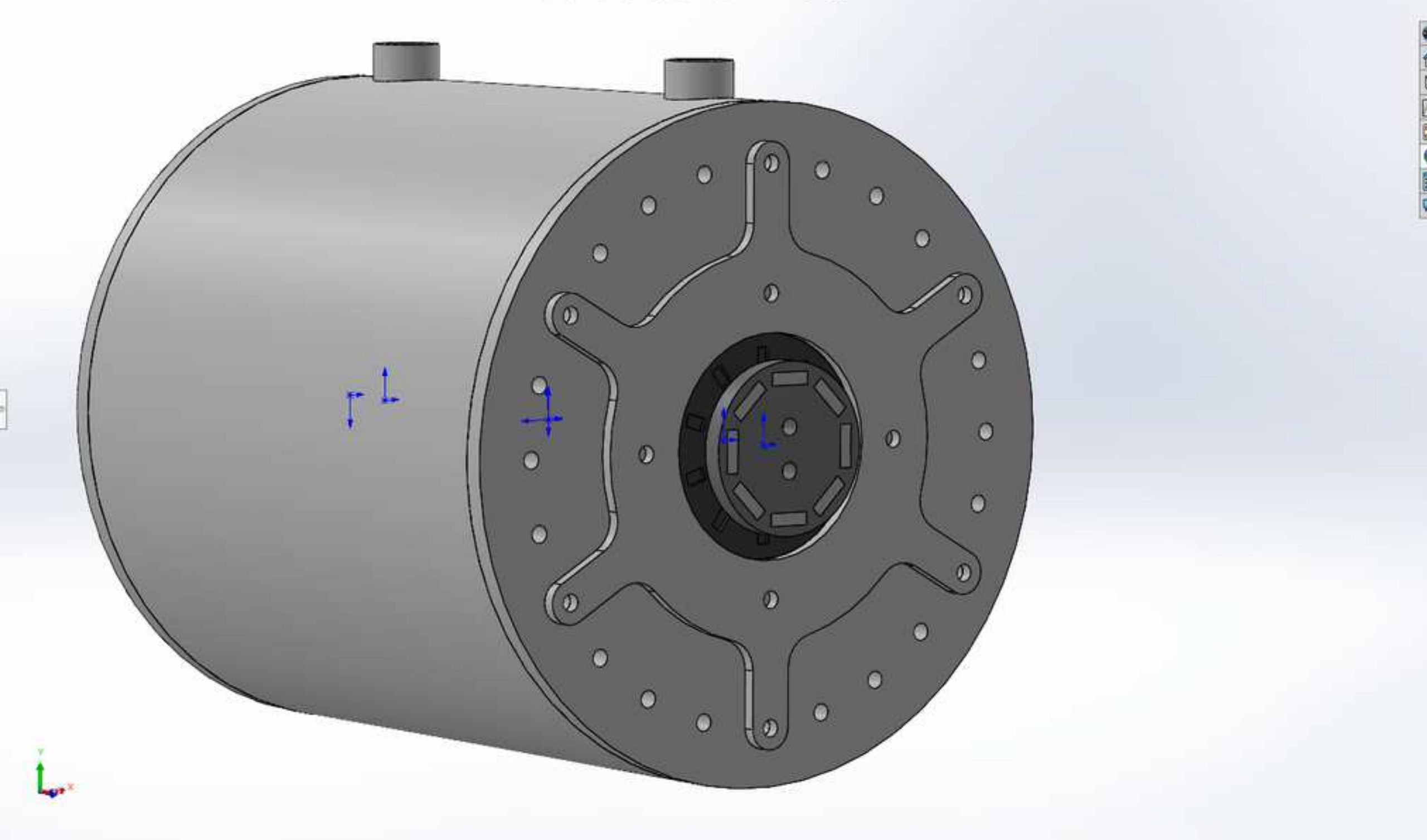


Кожух водяного охлаждения









отдельная пластина с
магнитами для датчиков
холла

Desktop About Help

Project file name: 48 8 konkurs.mxp **Activated**

D-Q Analysis **Finite Element Analysis**

Steady State Dynamic **Magnetostatic** Dynamic

Magnetostatic Finite Element Analysis

Solver type: Nonlinear Convergence tolerance: 0.001

Current waveform: Sinusoidal Advance angle: 0° (el.deg.)

Current input method: RMS supply current Mechanical speed: 8000 <-rated RPM

RMS supply current: 45 <-rated A

Simulation setup: Single point (FEA+D-Q based) - fastest Number of points: 1

Simulation time: One electrical period

☒ Compute cogging torque

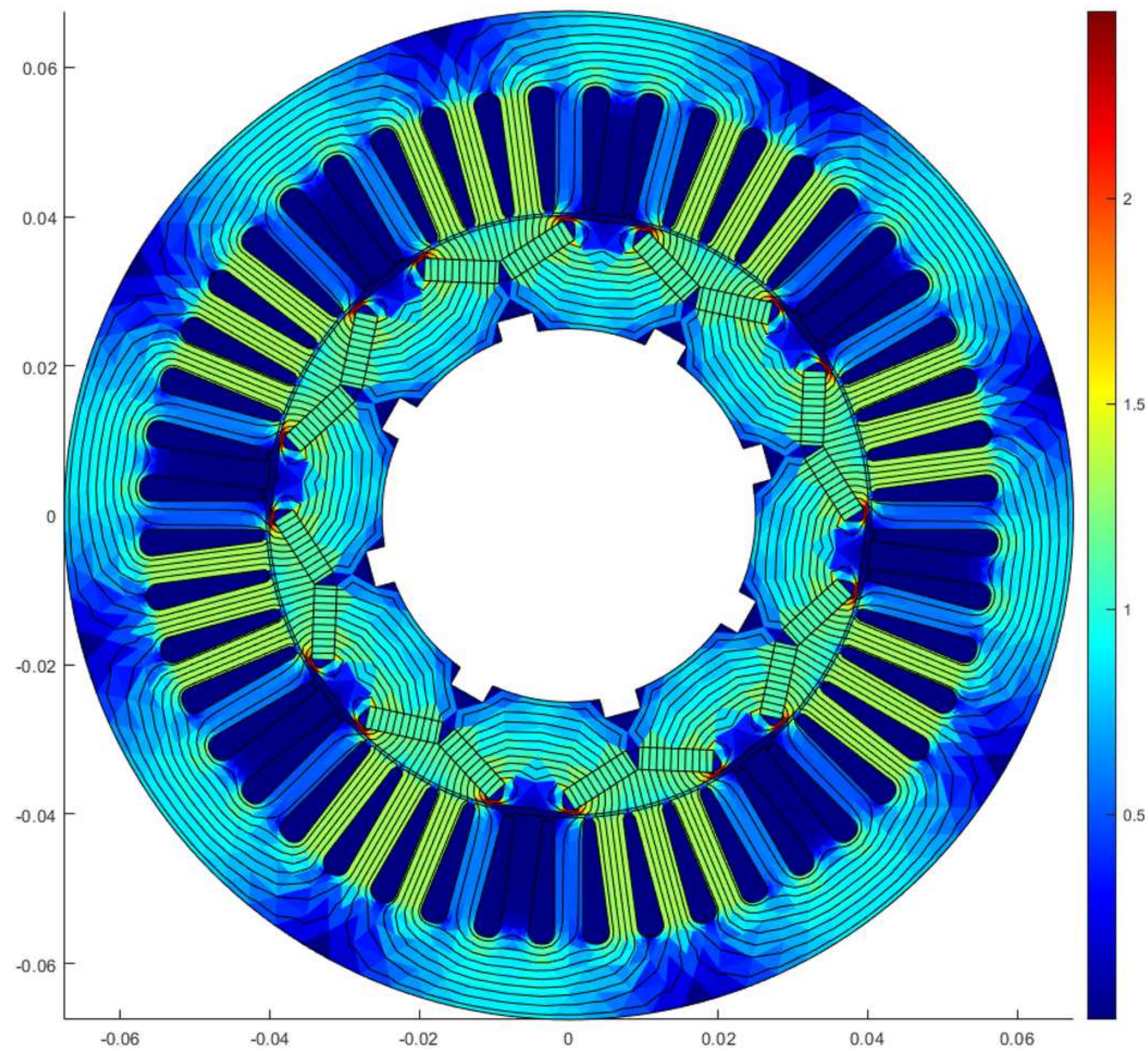
☐ Save each field solution

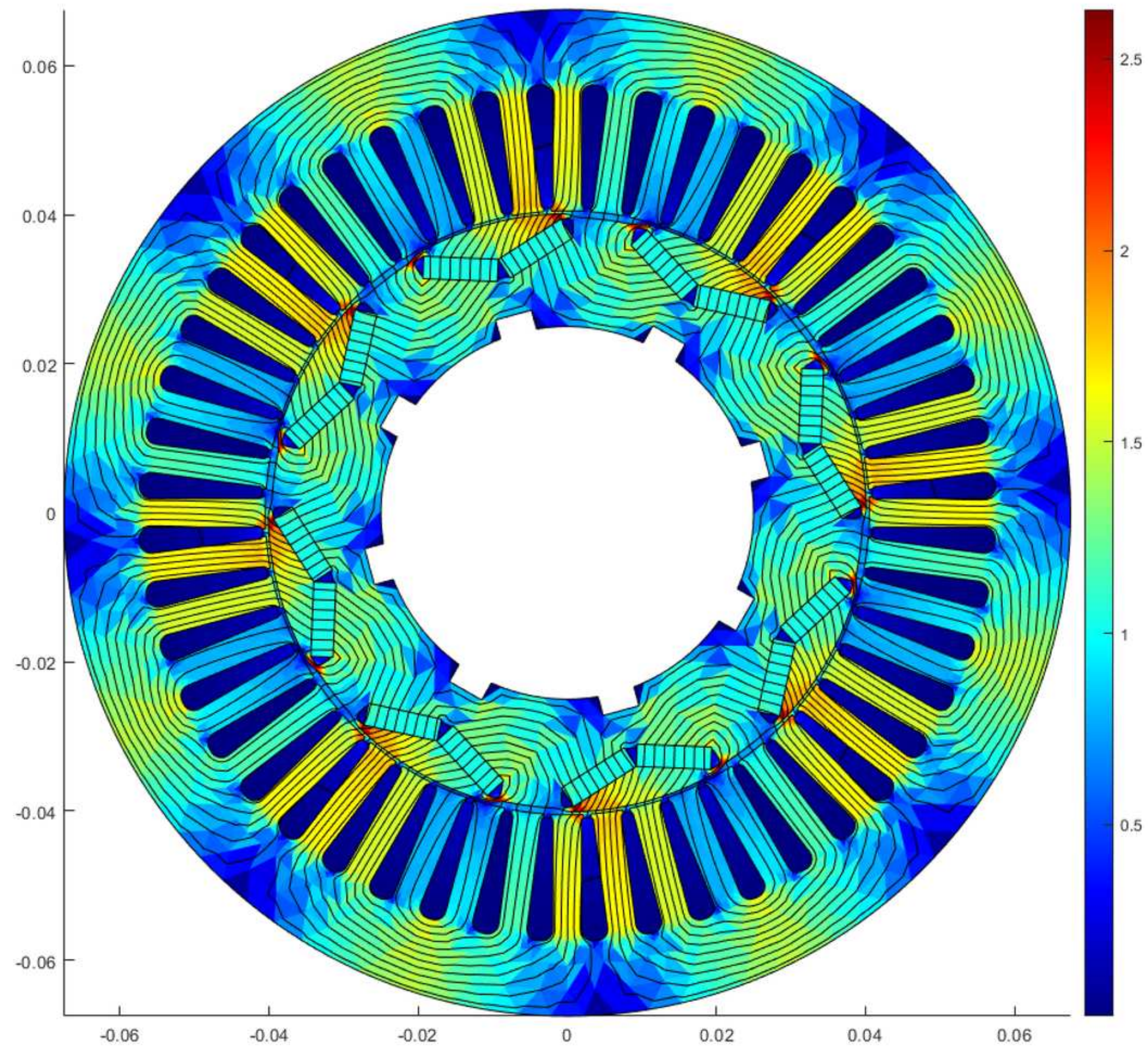
Results:

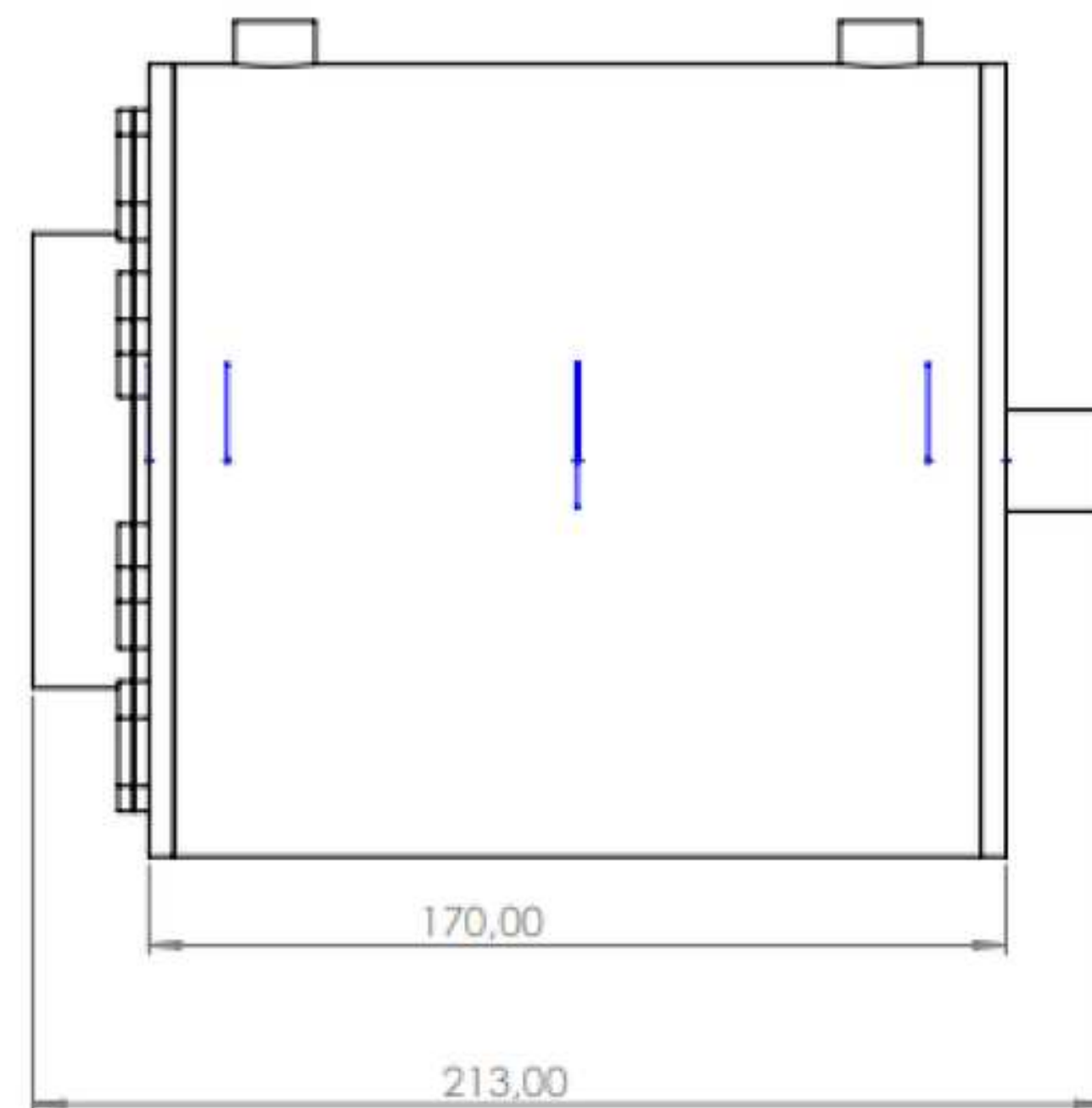
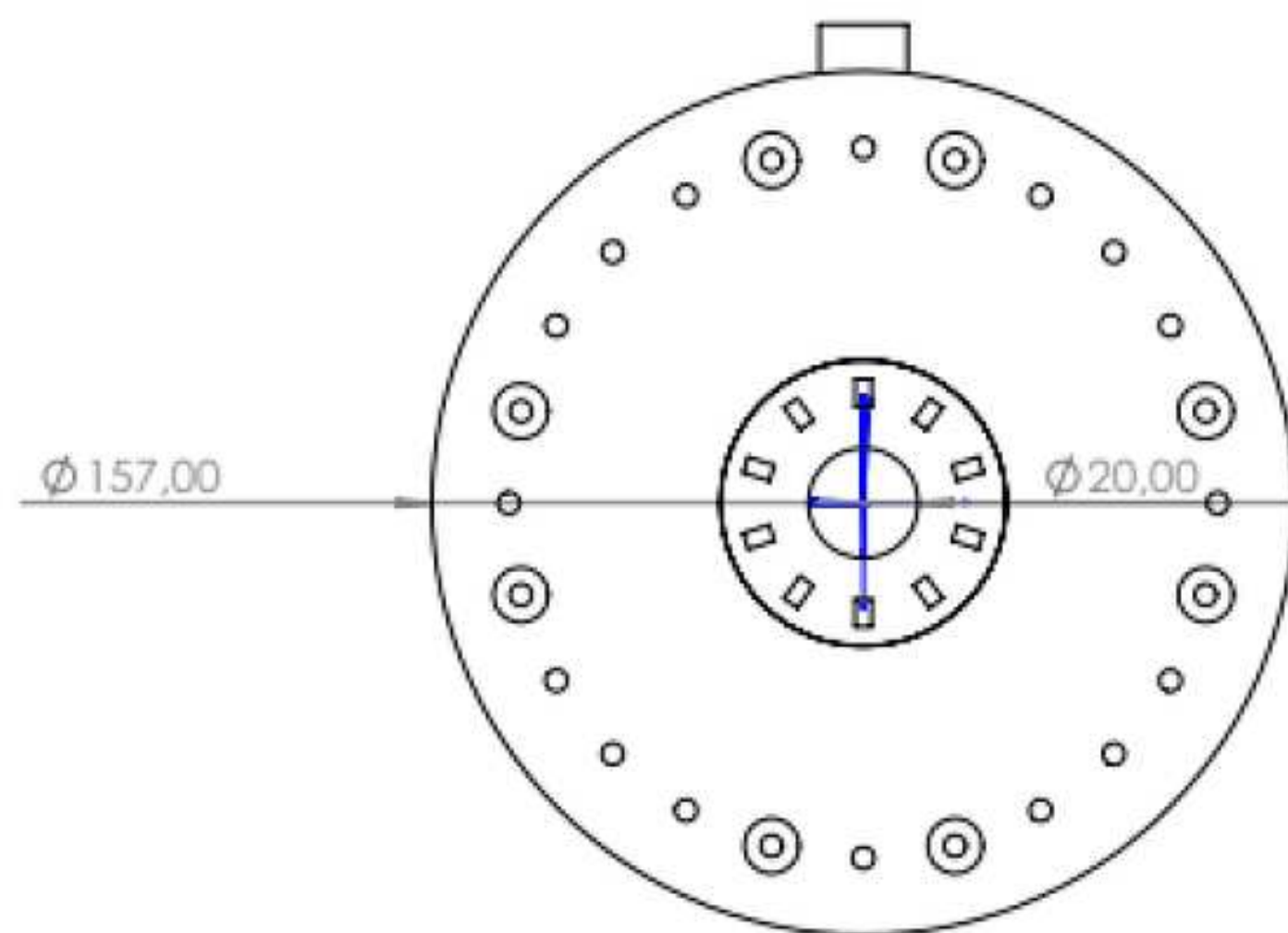
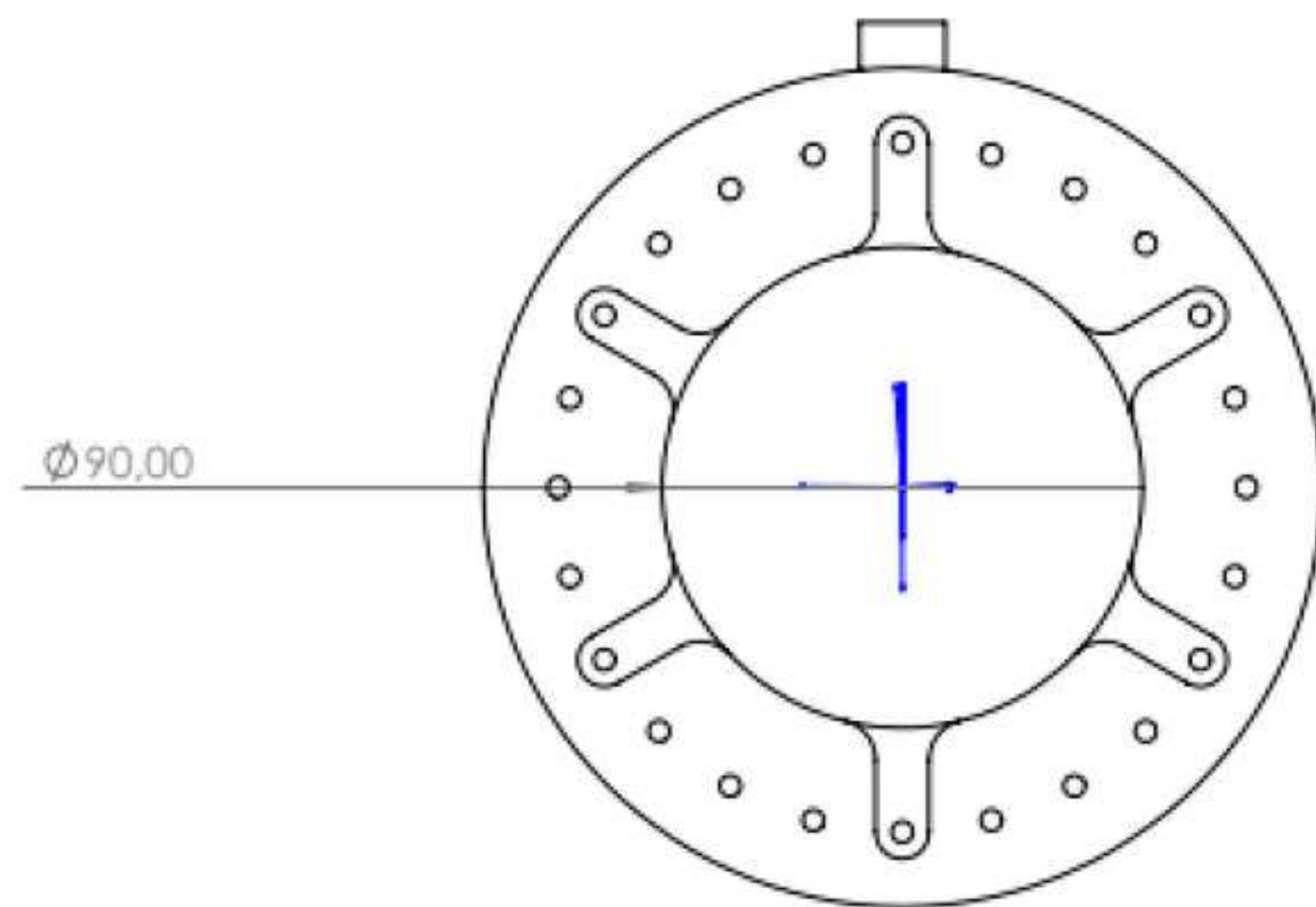
			General Results		
Rotor speed:	8000	RPM	RMS phase back-EMF:	176.072	V
Advance angle:	0	° (el.deg.)	Input electrical power:	25391.5	W
Supply frequency:	533.333	Hz	Output mechanical power:	24183.3	W
RMS phase current:	45	A	Efficiency:	95.242	%
RMS phase voltage:	254.283	V	Power factor:	0.739668	
Total torque:	28.8667	N·m	Stator winding loss:	1208.13	W
Reluctance torque:	1.34162	N·m	Total iron core loss:	0	W
Magnet torque:	27.5251	N·m	Eddy current iron core loss:	0	W
Torque ripple:		%	Hysteresis iron core loss:	0	W
RMS current density:	45.8855	A/mm ²	Magnet eddy current loss:	0	W
Average d-axis current:	0	A	Other eddy current loss:	0	W
Average q-axis current:	63.6396	A	Max. demag. field:	262941	A/m
Average d-axis voltage:	-242.008	V	Max. demag. field (% of Hcj):	39.3331	%
Average q-axis voltage:	265.992	V	Discretization error:		%

эффективность при
25кВт - 95%

обмотка проводом 0.5,
6 жил в пучке 5 витков







ПО УМОЛЧЕНИЮ: РАЗМЕРЫ В МИЛЛИМЕТРАХ ШЕРШЕВАТОСТЬ: ДОПУСК: ЛИНЕЙНЫЕ: УГОЛЫ:		ОБРАБОТКА:		СТАНДАРТ: ЗАУСЕНКИ И ОСТРЫЕ КРОМКИ:		НЕ МАШТАБНОВАТЬ ЧЕРТЕЖ	РЕДАКТОР
Разраб.		ПОДПИСЬ	ДАТА			НАЗВАНИЕ:	
Пров.							
Утв.							
Маш.							
Техн.						ЧЕРТЕЖ №	
						ipm synrm 48n8p разме	
						A3	