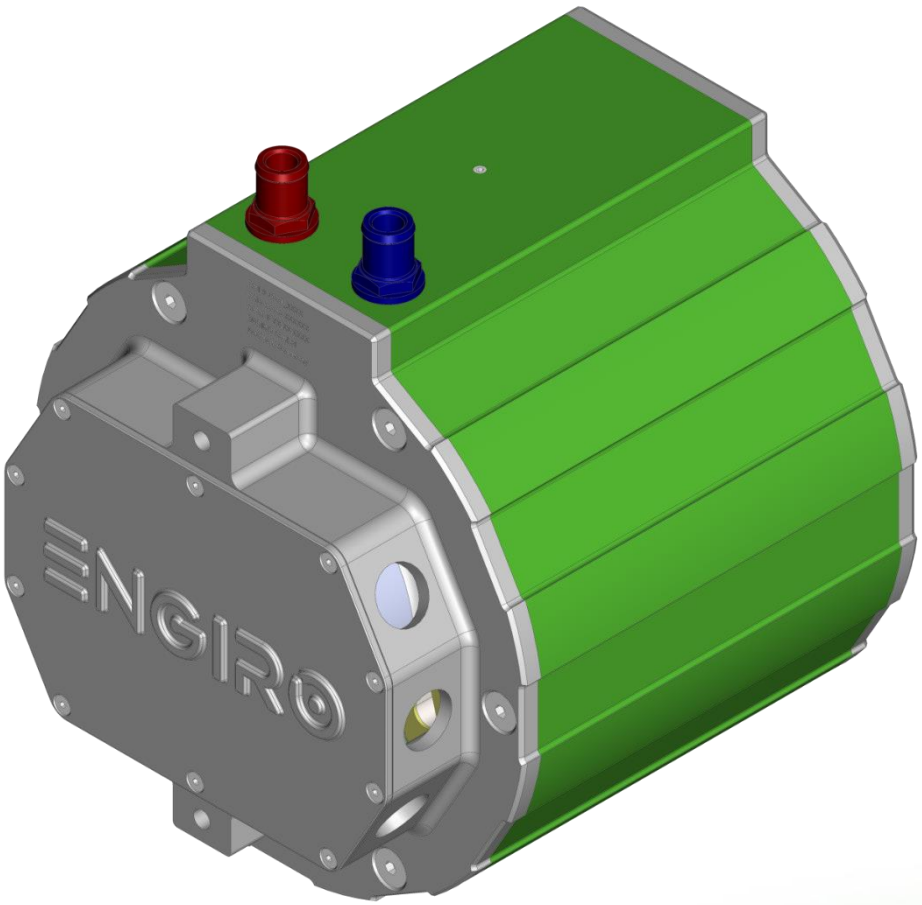
205W-08052-P-ABC

water-cooled motor / generator with 55 kW continuous power

This datasheet refers to art.no.: see page 2



KEY FEATURES

- permanent magnet synchronous machine
- water-cooled
- high peak power for motor applications
- convincing cost-benefit ratio
- recommended voltage range from 350 V to 850 V
- delivery with controller possible

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Table of Content

Note:

On September 1st , 2024, **we transferred our ERP systems to SAP**. Due to this change, **we are altering our current part numbers**. To see how our article numbers and motor naming scheme has changed, please consider the conversion table below:

Article Number Conversion				
Part. No.	**Old Part. No.**	**Flange**	**Shaft**	**Position Sensor**
4872294	205W_08052_CDF_P	C1	D1	F
4872306	205W_08052_CGF_P	C1	G1	F
4872308	205W_08052_SHF_P	S1	H1	F
4872310	205W_08052_SSF_P	S1	S1	F

To be noted:

The information in this technical data sheet is based on our current knowledge and experience. Due to the wide range of possible influences during application, they do not exempt the processor and user from carrying out their own tests and trials. Although the suitability for a specific application can be estimated from our information, a legally binding assurance is by no means possible. Depending on the individual case, we recommend consultation with us. Any industrial property rights and applicable laws must be observed by the recipient of our products on his own responsibility.

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Operating Range

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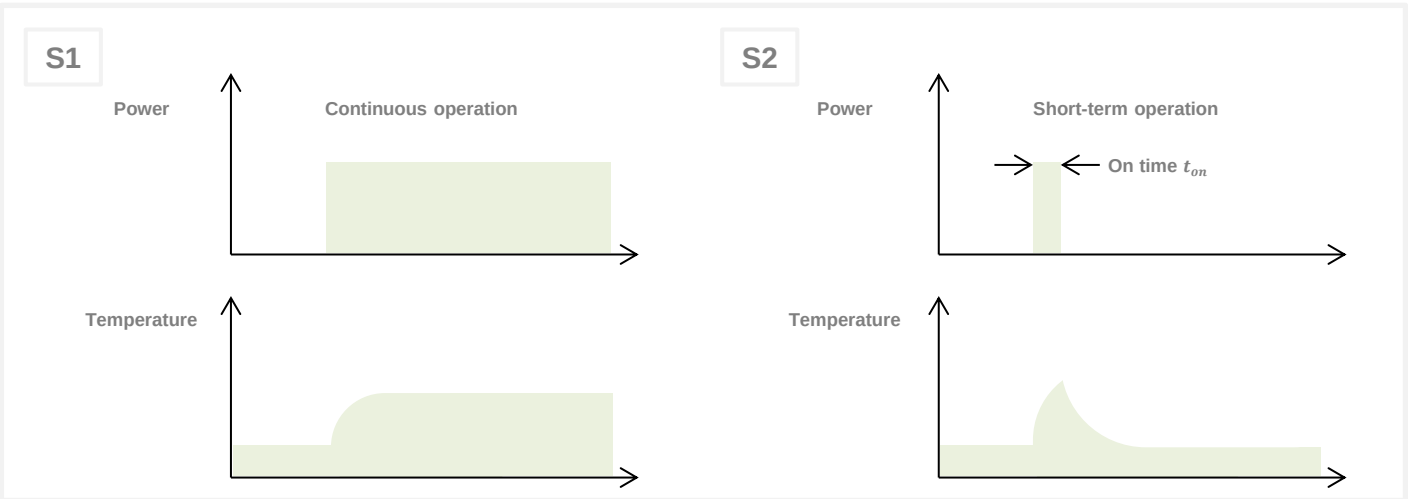
Characteristic Operating Points[1]					
		S1	S2	S2	
Feasible operation time	t_{on}	continuous	30 min	30 sec	
Torque [2]	T	71	71	184	Nm
Power [2]	P	55	55	101	kW
Speed	n	7380	7380	5230	rpm
Phase RMS-current (AC) [3]	I_{rms}	77	77	236	A
Battery current (DC) [3]	I_{DC}	74	74	148	A
Battery voltage (DC)	U_{DC}	800	800	800	V
Electric frequency	f_{el}	492	492	349	Hz
Efficiency	η_{tot}	93	93	85	%
Power factor	$cos(\varphi)$	0.89	0.89	0.88	
Cooling	specified in chapter „Additional Data“				

Maximum Operating Range			
Torque [2] [4]	T_{max}	184 @ 5230 rpm	Nm
Power [2] [4]	P_{max}	101 @ 5230 rpm	kW
Speed [5]	n_{max}	8000	rpm
Phase RMS-current (AC) [3] [4]	$I_{rms,max}$	236	A
Battery current (DC) [3] [4]	$I_{DC,max}$	148	A
Battery voltage (DC)	U_{max}	850	V
Electric frequency	f_{el}	533	Hz



1) Defined Range only valid for a power factor of 1 at DC input
2) Torque / Power rating is dependent on rotor temperature
3) The cables must not exceed a temperature of 140 °C at any time. Temperature and service life depend on the installation condition.
4) Peak rating for max. 30 sec on time
5) Higher speeds available upon request. A detailed discussion of the functional safety concept of the vehicle is required.

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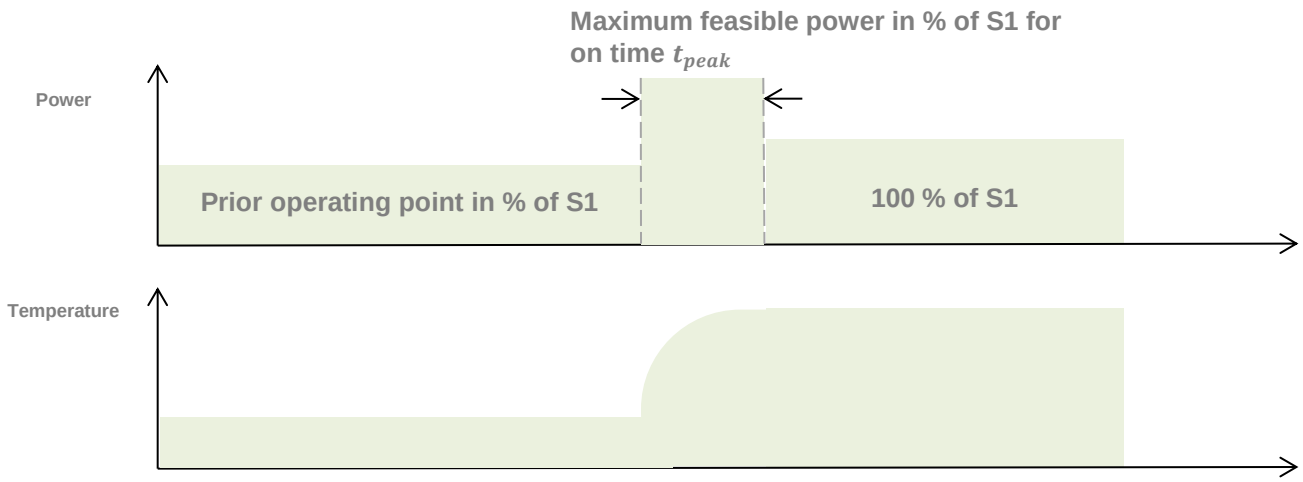
S9 Operating Points [1] Maximum Feasible Power in % of S1						
U_{nom} = 800 V		Prior operating point in % of S1				
		0 %	25 %	50 %	75 %	100 %
On time t_{peak}	30s	170 %	170 %	160 %	130 %	100 %
	180s	110 %	110 %	110 %	100 %	100 %
	420s	100 %	100 %	100 %	100 %	100 %

1) Cooling conditions as specified in chapter “Additional Data”

S9 Overload capability for subsequent continuous operation depending on preceding operation



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Additional Data

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Electrical Data						
Number of phases					3	
Number of pole pairs					4	
Maximum stationary short circuit current [1]					115 A (RMS) @ 20 °C @ ≥ 900 rpm	
Maximal efficiency					94	%
T/I constant (I<Inom)					0.922	Nm/A_{rms}
U/n constant (AC) at temperature 20 °C		rms:	62.89	peak:	102.27	V/(1000rpm)
Ke constant (AC) at temperature 20 °C		rms:	0.6	peak:	0.98	$V/(rad*s^{-1})$
Additional Data						
Rotor moment of inertia					0.0149 (S1S1/S1H1), 0.0152 (C1D1/C1G1)	kg*m²
Allowed range of ambient temperature [2]					-20 … +85	°C
Maximal motor temperature [4]					140	°C
Temperature monitoring					KTY-84-130	
Cooling	Advised medium (OAT Coolants)				▪ water/glycol - 50/50 ▪ TL 774-D/F ▪ VIN 878389 ▪ MAN 324 SNF ▪ MTL 5048	
	Flow rate				8	l/min
	Inlet temperature				45	°C
	Pressure drop				0.186	bar
	Maximum pressure				2	bar
	Cooling channel volume				0.76	l
Connectors						
Power terminals					Prepared for M8 cable lugs; 3x M25 cable glands (not included)	
Signal connectors					1x Hummel 10 Pin Connector, M16	
Cooling connectors					inner Ø 12 mm, outer Ø 19 mm	
Certifications						
Type approval					CE, EN 60034	
Salt mist					ISO 9227	
Protection grade					IP6K9K[3]	
Vibrations					ISO 16750-3	
Customs tariff number					8501 5381	

1) Simulated
2) Linear derating from 70 °C to 0 A at 85 °C
3) Please note that the IP6K9K rating is only valid if the machine is installed with suitable cable glands and an appropriate sealed interface at the drive side of the motor (flange and/or shaft). Please contact ENGIRO for further questions.

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Available Type Variants

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Shaft and Flange Combinations for 205W-08052-P-ABC		Flange (A)	
		S1 (Standard with 4xM10x35 threaded stud)	**C1** (Hydraulic Pump ANSI 101-2 / SAE B - Ø101,6 mm centering hole)
Shaft (B)	**S1** (Cylindrical shaft with keyway Ø 28mm)	● (~36kg)	
	H1 (Hollow shaft with internal splines ANSI B 92.1 9T 16/32DP 30°)	● (~35kg)	
	G1 (Hollow shaft with internal splines ANSI B 92.1 / 13T)		● (~39kg)
	D1 (Hollow shaft with internal splines ANSI B 92.1 15T 16/32DP30°)		● (~39kg)
Position Sensor (C)		F: resolver gain 0.29 R: resolver gain 0.5 (Please note: The R resolver is a phase-out version with a 0.5 gain, which is replaced by the F resolver with a 0.29 gain)	

Other individual combinations are also possible on request.

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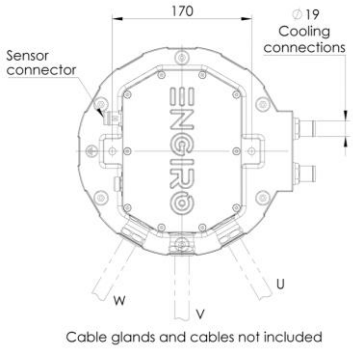
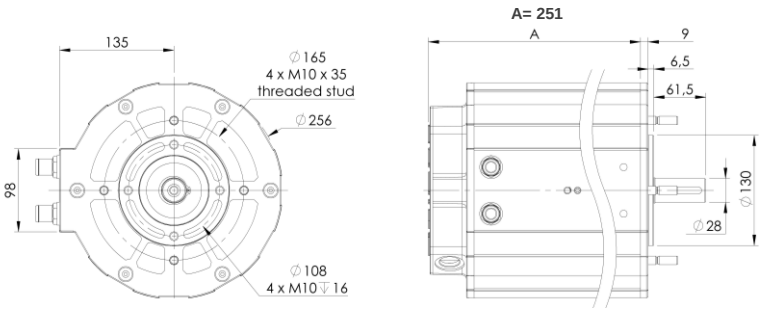
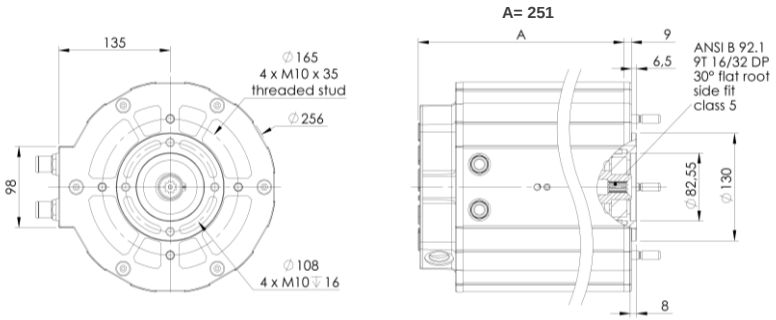
Technical Drawings



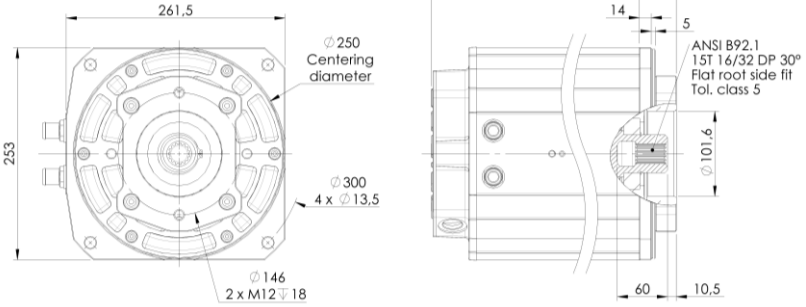
Flange S1
Shaft S1



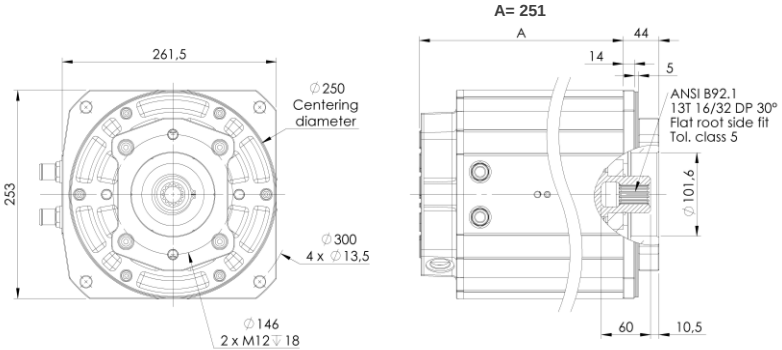
Flange S1
Shaft H1



Flange C1
Shaft D1



Flange C1
Shaft G1



[1)] Machines with C-Flange and a revision number smaller than Rev16 have an M14 Helicoil 1,5*D. Revision number is printed on each machine on the rear flange below the water-cooling hose barbs.

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Performance Plots

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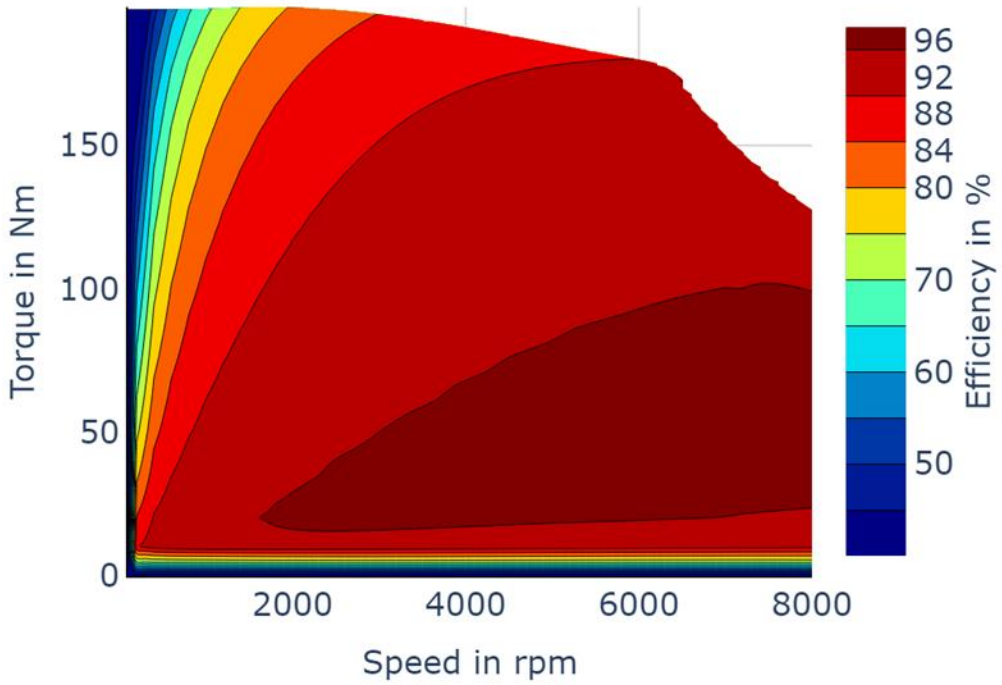
800 V

Simulated Efficiency of Motor Application

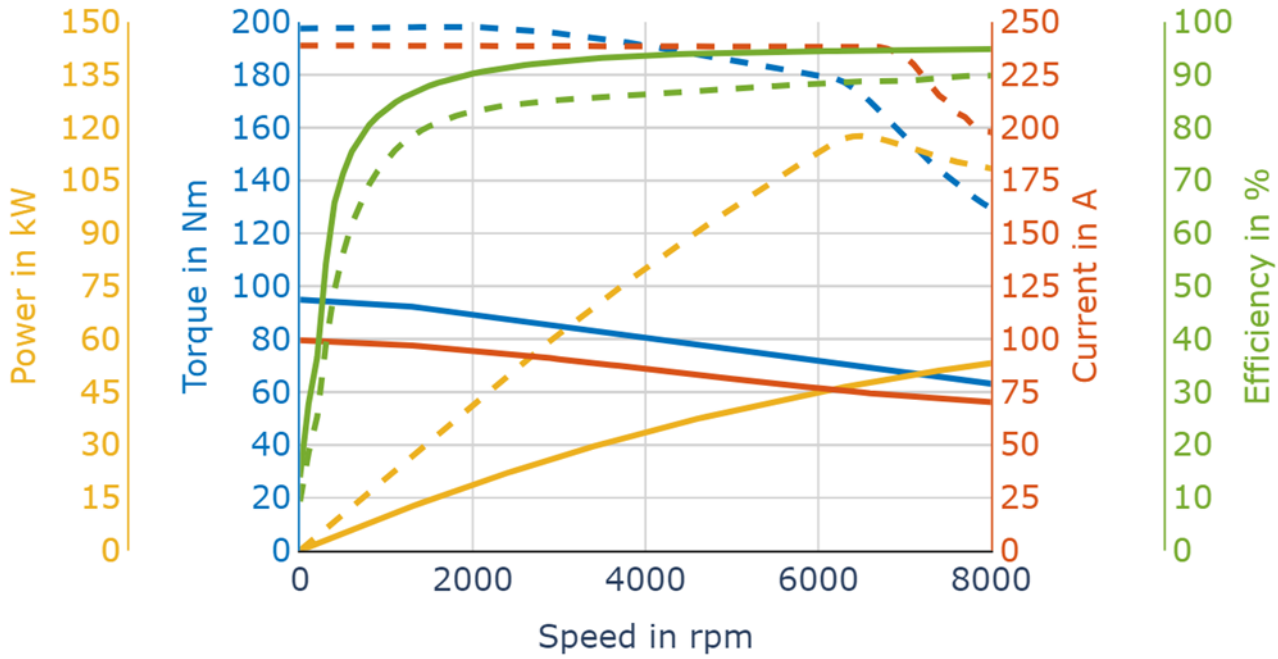
(electric machine only; U_{nom} = 800 V)



800 V

Simulated Characteristic Motor Parameters

solid lines: S1 continuous; dashed lines: S2 (30 sec) maximum
(cooling as specified in chapter “Additional Data”)



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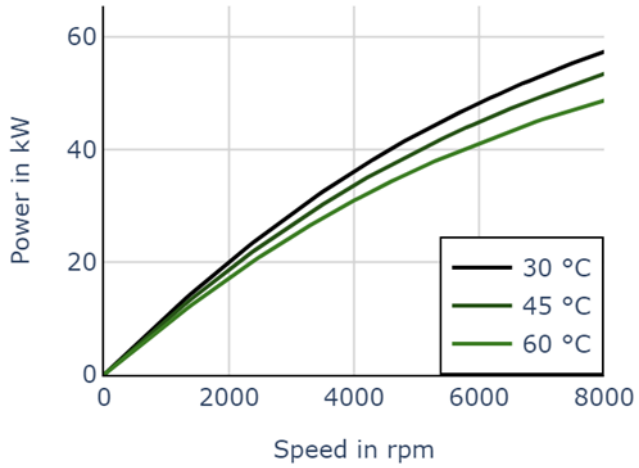
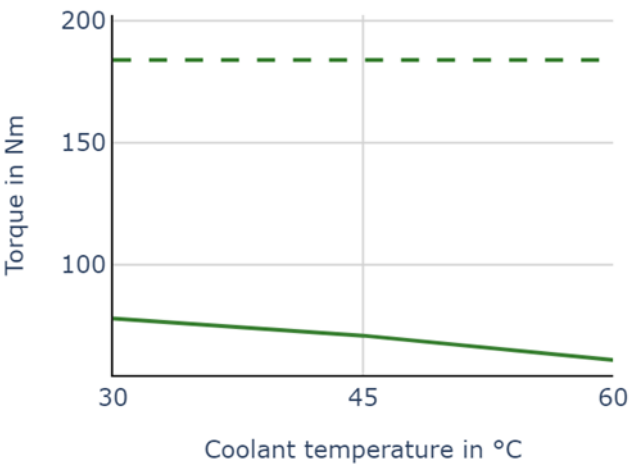
Additional Characteristics

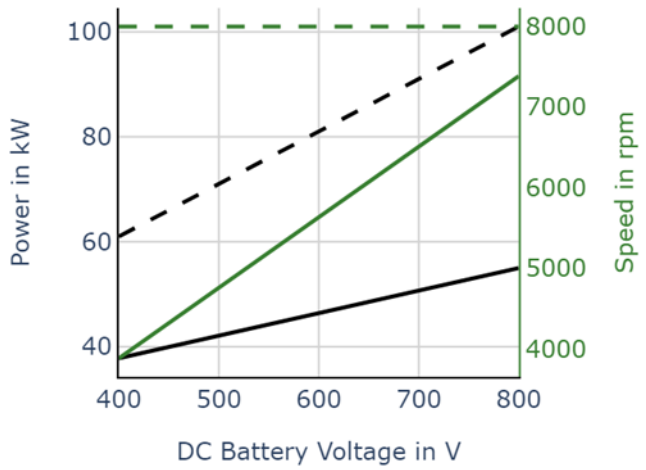
Simulated Nominal Power at Different Coolant Temperatures – U_{nom} = 800 V



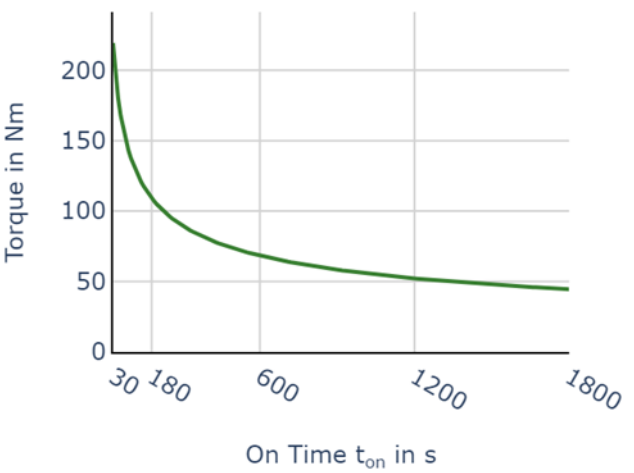
Available Torque at Different Coolant Temperatures [1)]



Power and Corner Speed over Battery Voltage[1)]
(45 °C Coolant Temperature)



Torque over Feasible Maximum On Time, S2 Operation Cycles
(45 °C Coolant Temperature)



1) solid lines: continuous; dashed lines: maximum;

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