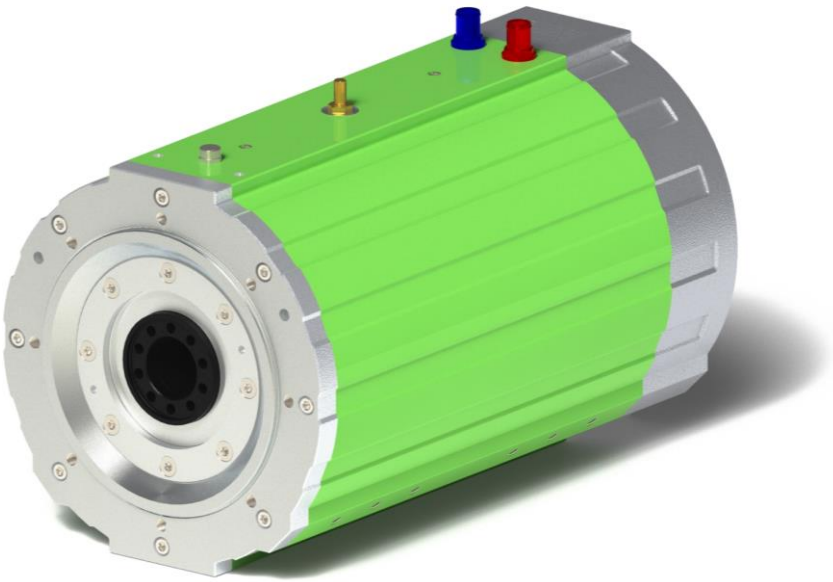
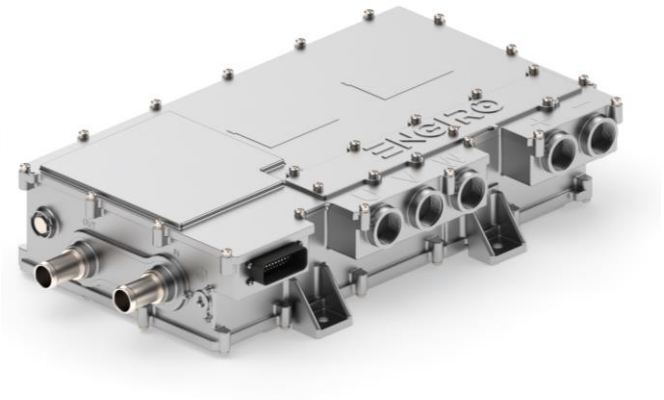
260W-15031-ABC

water-cooled motor / generator with 111 kW continuous power

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





Part no.: 4843401
Article Name: EN1_800V_900A_W

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**.

From now on, configurations regarding the rear interface of the motor (e.g., accessible rear shaft end, closed, …) will be specified in a separate part of the motor naming. Therefore, all 260W **D1-flanges will be renamed to S1-flanges** with the according B-side specification.

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**	**B-side interface**
4807369	260W_15031_SFR	S1	F1	R	…S11
4807370	260W_15031_DFR	S1	F1	R	…D01

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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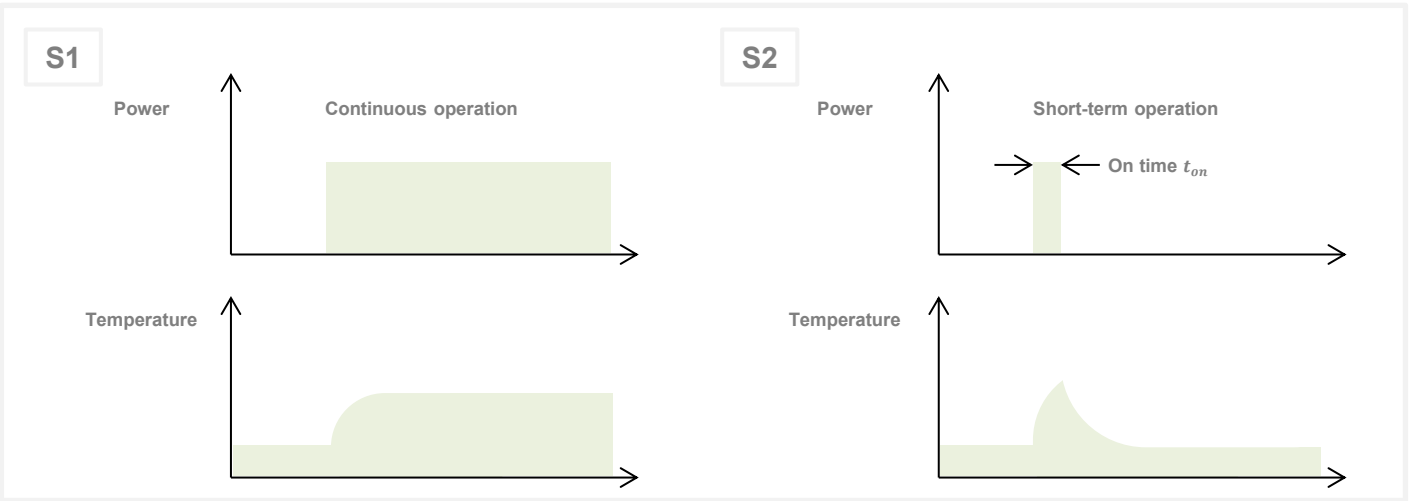
Characteristic Operating Points[1]					
		S1	S2	S2	
Feasible operation time	t_{on}	continuous	30 min	30 sec	
Torque [2]	T	480	495	816	Nm
Power [2]	P	111	115	165	kW
Speed	n	2230	2225	1945	rpm
Phase rms-current (AC)	I_{rms}	154	153	316	A
Battery current (DC)	I_{DC}	150	155	239	A
Battery voltage (DC)	U_{DC}	800	800	800	V
Electric frequency	f_{el}	186	186	162	Hz
Efficiency	η_{tot}	94	94	86	%
Power factor	$cos(\varphi)$	0.83	0.81	0.64	
Cooling	specified in chapter „Additional Data“				

Maximum Operating Range			
Torque [2] [4]	T_{max}	816 @ 1945 rpm	Nm
Power [2] [4]	P_{max}	176 @ 2250 rpm	kW
Speed [5]	n_{max}	6000 (S11: B-side interface) 3500 (D01: B-side interface)	rpm
Phase RMS-current (AC) [3] [4]	$I_{rms,max}$	316	A
Battery current (DC) [3] [4]	$I_{DC,max}$	255	A
Battery voltage (DC)	U_{max}	850	V
Electric frequency	f_{el}	500	Hz



1) Defined Range only valid for a power factor of 1 at DC input
2) Torque rating is dependant 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 seconds 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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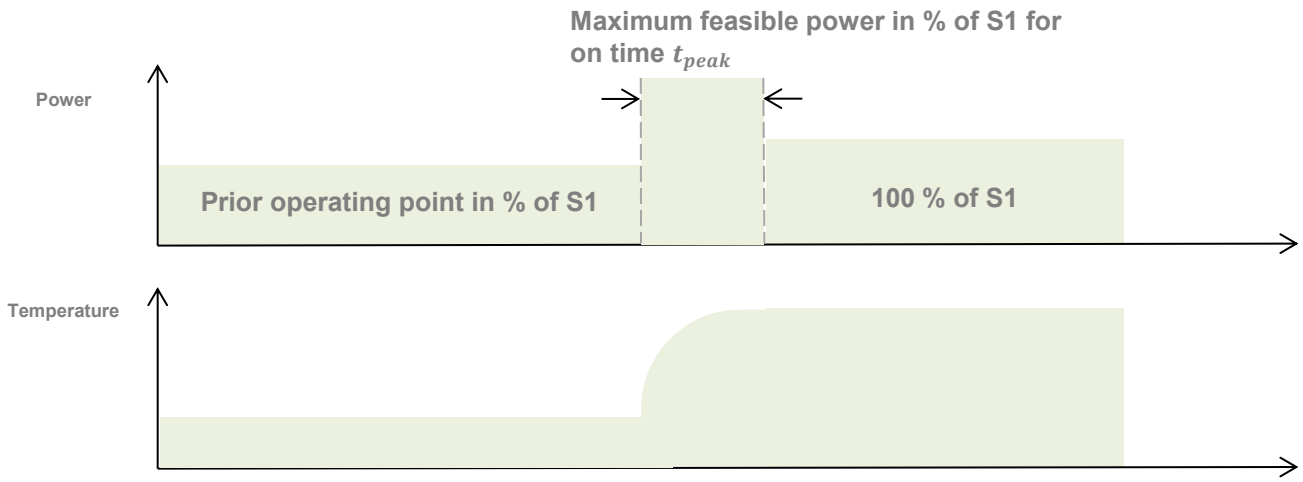
Operating Range

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	165%	160%	150%	130%	100%
	180s	135%	130%	120%	110%	100%
	420s	110%	100%	100%	100%	100%

S9 Overload capability for subsequent continuous operation depending on preceding operation



1) Theoretical rounded assumption

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Additional Data

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Electrical Data						
Number of phases					3	
Number of pole pairs					5	
Maximal efficiency					96	%
T/I constant (I<Inom)					3.11	Nm/A_{rms}
U/n constant (AC) at temperature 30 °C	rms:	194.6	peak:	281.5		V/(1000rpm)
Ke constant (AC) at temperature 30 °C	rms:	1.85	peak:	2.69		$V/(rad*s^{-1})$

Additional Data			
Rotor moment of inertia		0.1006	$kg*m^2$
Allowed range of ambient temperature		-20 … +85	°C
Maximal motor temperature		operating point dependent[1)]	°C
Temperature monitoring		1 x KTY84-130	
Cooling	Advised medium (OAT Coolants)	water/glycol - 50/50 ▪ TL 774-D/F ▪ VIN 878389 ▪ MAN 324 SNF ▪ MTL 5048	
	Flow rate	20	l/min
	Inlet temperature	45	°C
	Pressure drop	< 0.7	bar
	Maximum pressure	2	bar
	Cooling channel volume	1.64	l

Connectors	
Power terminals	3 x M25 cable gland
Signal connectors	Hummel 10 Pin connector, M16
Cooling connectors	inner Ø 12 mm, outer Ø 19 mm

Certifications	
Type approval	CE, EN 60034
Environmental	Prepared for ISO 9227
Protection grade	ISO 20635 IP6K9K[2)] Only applies to variants with closed B-side (S11)
Vibrations	Prepared for ISO 16750-3
Customs tariff number	8501 5381

1) Please contact ENGIRO for the parametrization of third-party inverters
2) 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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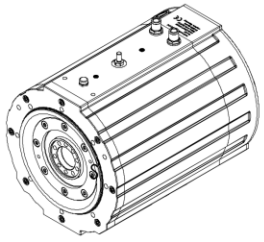
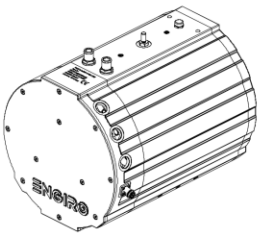
Available Type Variants				
Flange	**Shaft**	**Pos. sensor**	**B-side interface**	**Weight (kg)**
S1 Flange with mounting threads (Ø230 mm centering, Ø250 PCD 8 x M10)	**F1** Hollow shaft with screw flange (Ø90 and Ø50 mm centering, Ø66 mm PCD 10 x M10)	**R** Resolver	**S11** Closed B-side	≈ 97 kg
			D01 Shaft interface on b-side (Ø90 and Ø50 mm centering, Ø66 mm PCD 10x M10)	

Other individual combinations are also possible on request.

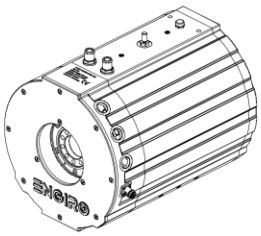
Technical Drawings



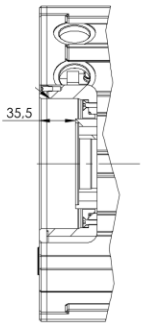
Front view



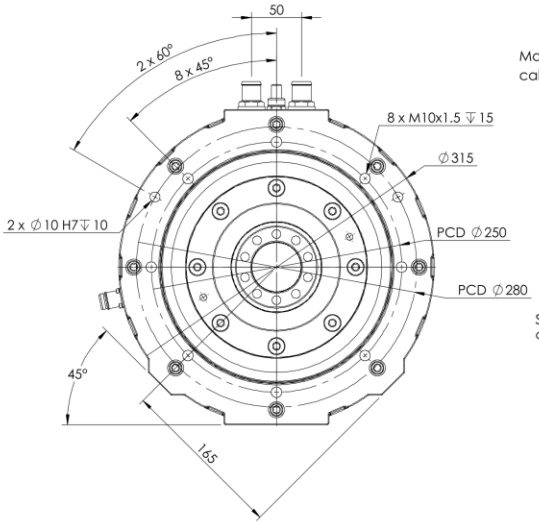
Rear view

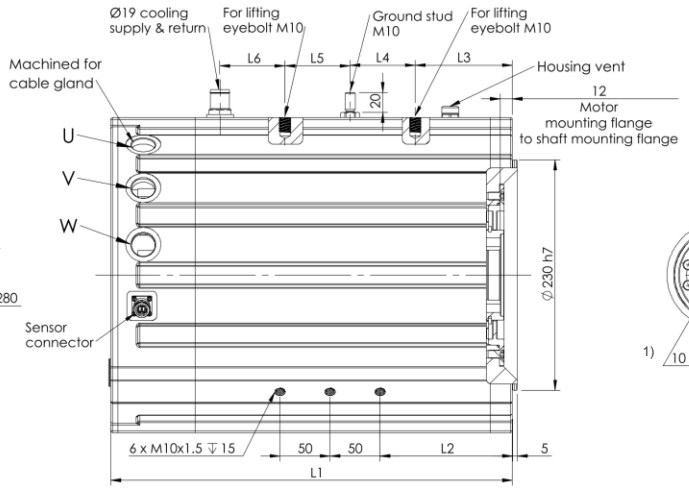


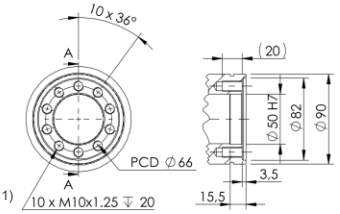
Accessible rear shaft



Rear shaft detail







Shaft end
both sides identical

Model	L1	L2	L3	L4	L5	L6	Moment of Inertia [kg.m²]	Cooling channel volume [L]
260W_080xx	331	97	92	40	30	60	0,0671	1,28
260W_100xx	351	107	97	45	35	65	0,0899	1,38
260W_130xx	381	112	107	55	35	75	0,0944	1,53
260W_150xx	401	132	97	65	65	65	0,1006	1,64

1) Depending on the operating points and load conditions, measures may be required to increase the coefficient of friction in the flange connection. Please contact ENGIRO for further questions.

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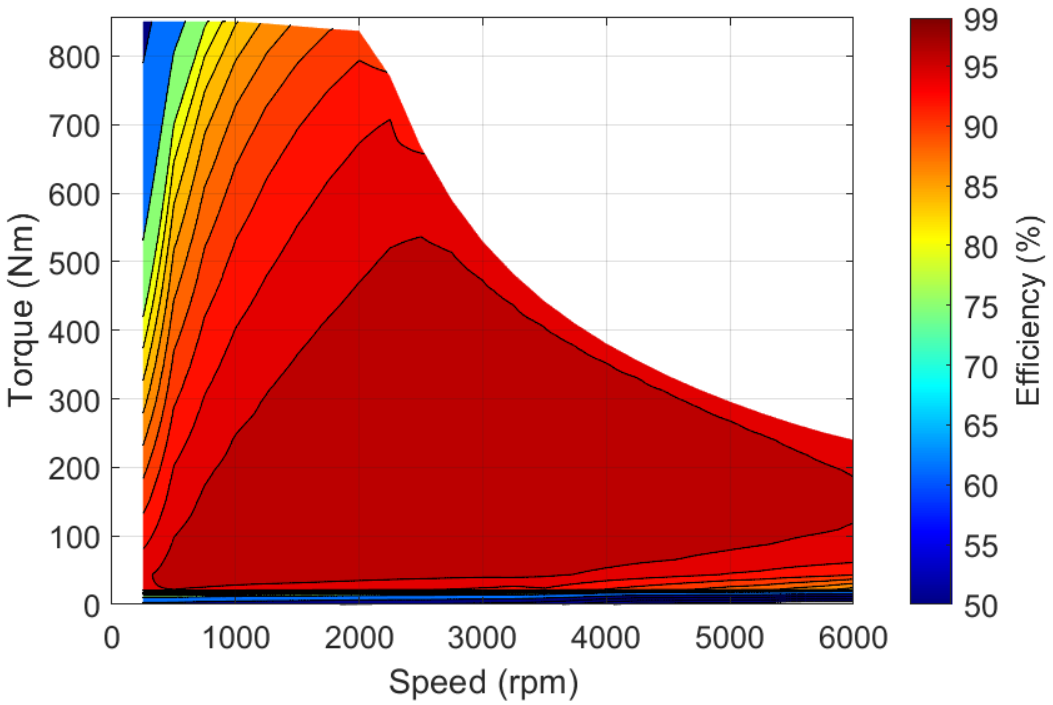
Performance Plots

800 V

Simulated Efficiency of Motor Application

(electric machine only; U_{nom} = 800 V; T_{inlet} = 45 °C)

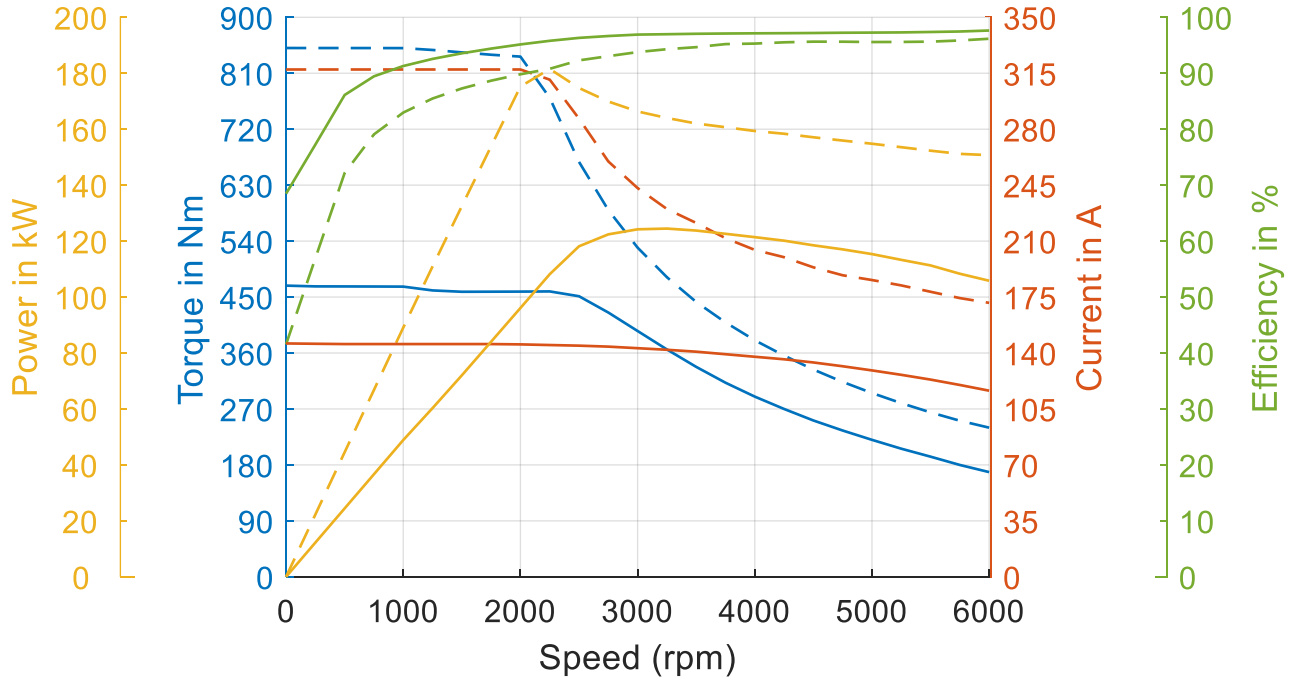


800 V

Simulated Characteristic Motor Parameters

U_{nom} = 800 V; T_{inlet} = 45 °C

solid lines: S1 continuous; dashed lines: maximum



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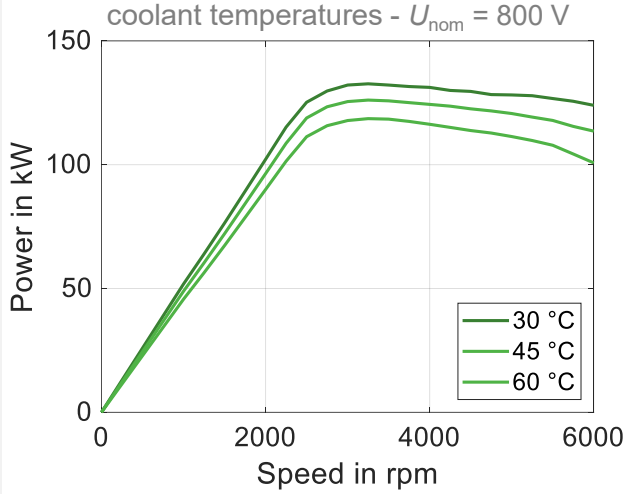
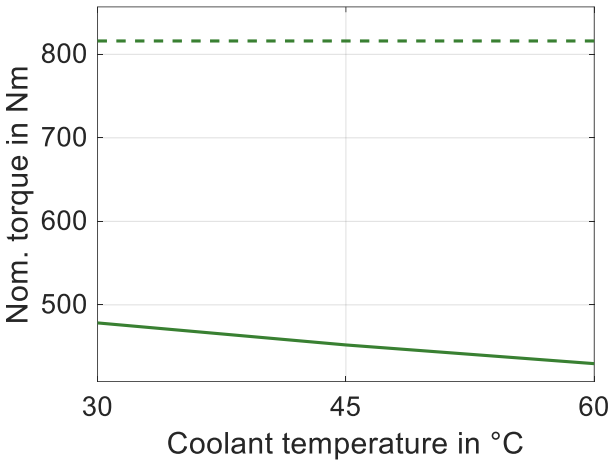
Additional Characteristics

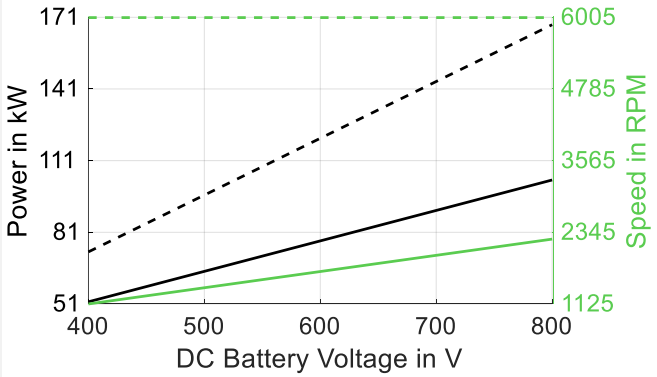
Simulated Nominal Power at different coolant temperatures - U_{nom} = 800 V



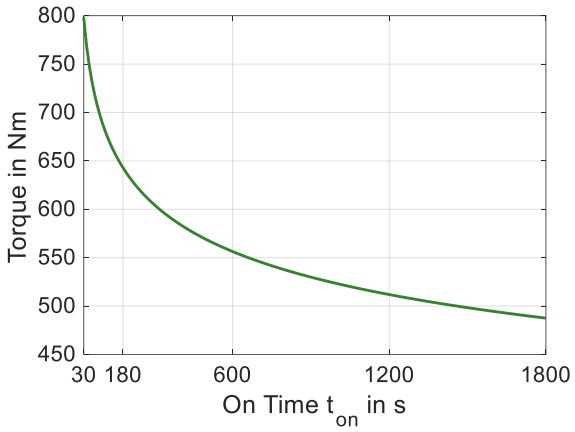
Available Torque at different coolant temperatures [1)]



Simulated Power and Speed over Battery Voltage[1)]



Torque over feasible maximum On Time, S2 operation cycles (45°C coolant temperature)



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

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