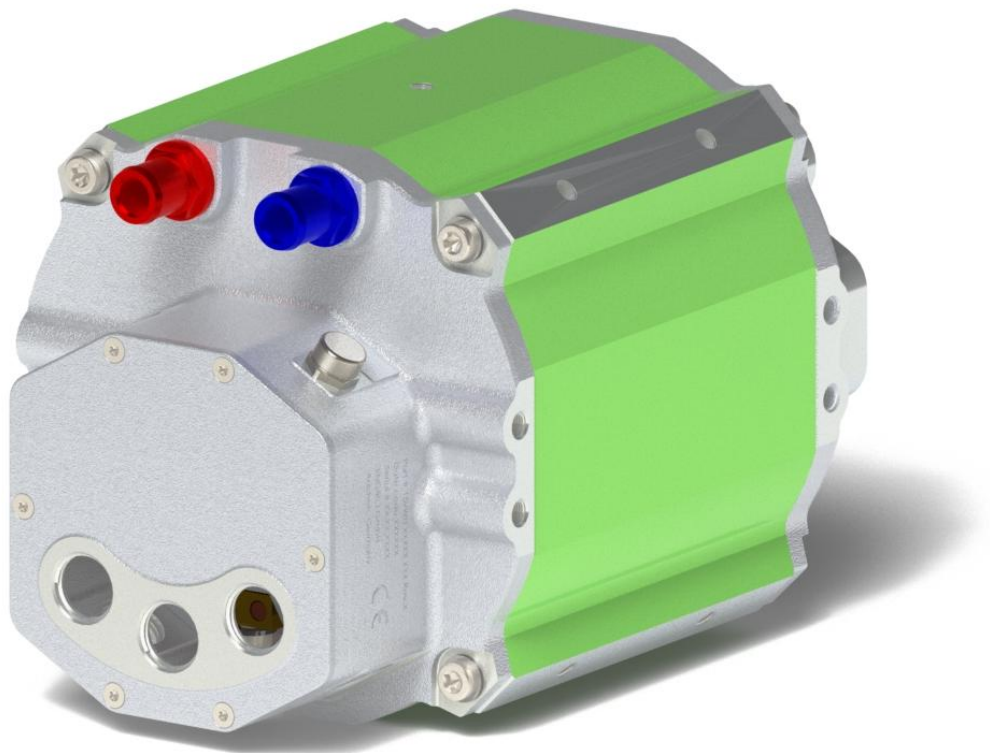


159WH-07026

water-cooled motor / generator with 14 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 48 V to 200 V
- delivery with controller possible

Section	Page
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Additional Data	5
Available Type Variants	6
Technical Drawings	7
Performance Plots	8
Additional Characteristics	9

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
4663926	159WH_07026_CGE	C1	G1	E
4670540	159WH_07026_SHE	S1	H1	E

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.

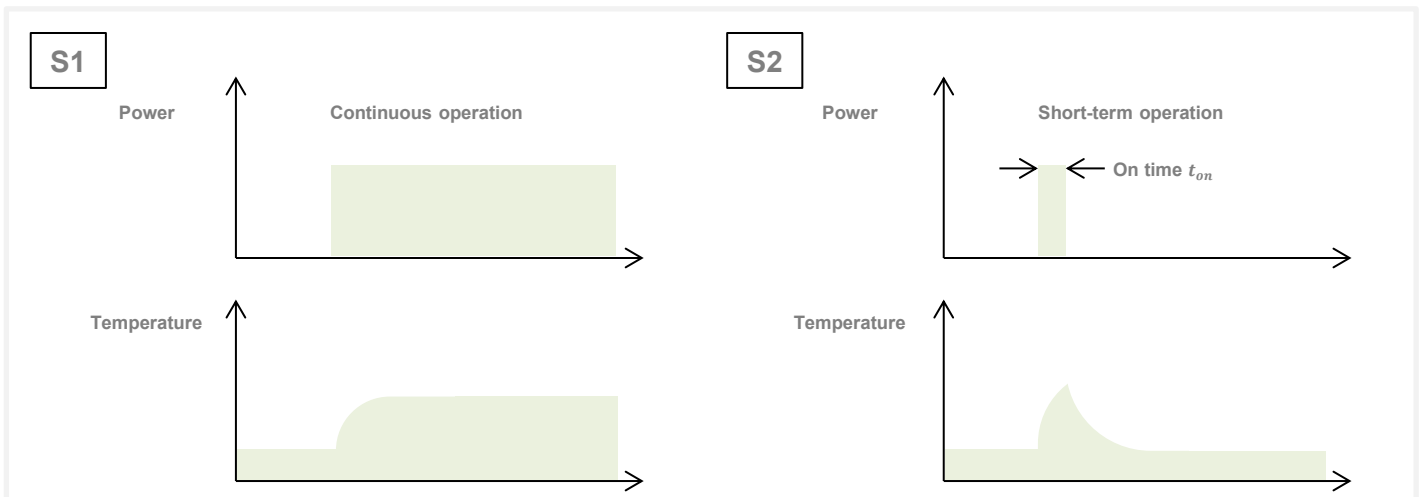
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Characteristic Operation Points¹⁾

		S1	S2	S2	
Feasible operation time	t_{peak}	continuous	30 min	60 sec	
Torque	T	52 ²⁾	52 ²⁾	91	Nm
Power	P	14	14	19	kW
Phase rms-current (AC)	I_{rms}	187 ³⁾	187 ³⁾	380 ³⁾	A
Battery voltage (DC)	U_{DC}	96	96	96	V
Speed	n	2500	2500	2000	rpm
Electric frequency	f_{el}	208	208	166	Hz
Efficiency	η_{tot}	93	93	83	%
Power factor	$\cos(\varphi)$	0.88	0.88	0.62	
Cooling	specified on page 5				

Maximum Operating Range

		Max.	
Torque	T_{max}	91 @ 2000 rpm	Nm
Power	P_{max}	20 @ 2250 rpm	kW
Phase rms-current (AC)	$I_{rms,max}$	400 ³⁾⁴⁾	A
Battery voltage (DC)	U_{max}	200	V
Speed	n_{max}	8000	rpm
Electric frequency	$f_{el,max}$	666	Hz

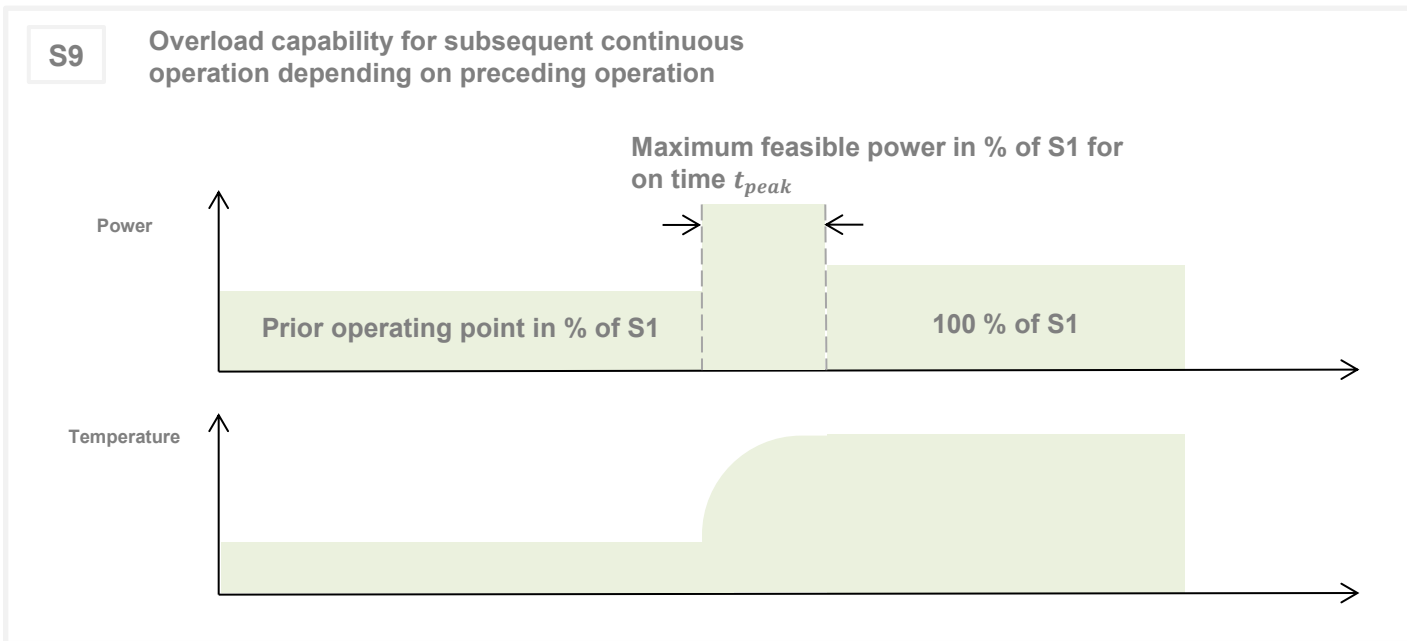


- 1) Defined Range only valid for a power factor of 1 at DC input
- 2) Torque rating is dependant on rotor temperature
- 3) The cables must not exceed a temperature of 140 °C at any time. Temperature and service life depend on the installation condition.
- 4) Peak rating for max. 60 seconds on time

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S9 Operating Points Maximum Feasible Power in % of S1

$U_{nom} = 96\text{ V}$		Prior operating point in % of S1				
		0 %	25 %	50 %	75 %	100 %
On time t_{peak}	30 s	135%	130%	120%	110%	100%
	180 s	115%	110%	110%	100%	100%
	420 s	100%	100%	100%	100%	100%



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Electrical Data			
Number of phases			3
Number of pole pairs			5
Maximal efficiency			94 %
T/I constant ($I < I_{nom}$)			0.28 Nm/A _{rms}
U/n constant (AC) at temperature 20 °C	rms:	17	peak: 25 V/(1000rpm)
Ke constant (AC) at temperature 20 °C	rms:	0.16	peak: 0.24 V/(rad*s ⁻¹)
Additional Data			
Rotor moment of inertia			0.006 kg*m ²
Allowed range of ambient temperature ¹⁾			-20 ... +85 °C
Maximal motor temperature			140 °C
Temperature monitoring			1 x KTY84-130
Cooling	Advised medium (OAT Coolants)	water/glycol - 50/50 <ul style="list-style-type: none"> ▪ TL 774-D/F ▪ VIN 878389 ▪ MAN 324 SNF ▪ MTL 5048 	
	Flow rate		6 l/min
	Inlet temperature		45 ¹⁾ °C
	Pressure drop		< 0.15 bar
	Maximum pressure		2 bar
	Cooling channel volume		0.53 l
Connectors			
Power terminals			3 x M25 cable glands
Signal connectors			Deutsch DTM04-08PA
Cooling connectors			inner Ø 12 mm, outer Ø 19 mm
Certifications			
Type approval			CE, DIN EN 60034
Salt mist			ISO 9227 (salt-spray test)
Protection grade			ISO 20653 IP6K9K ²⁾
Vibrations			ISO 16750-3
Customs tariff number			8501 5230

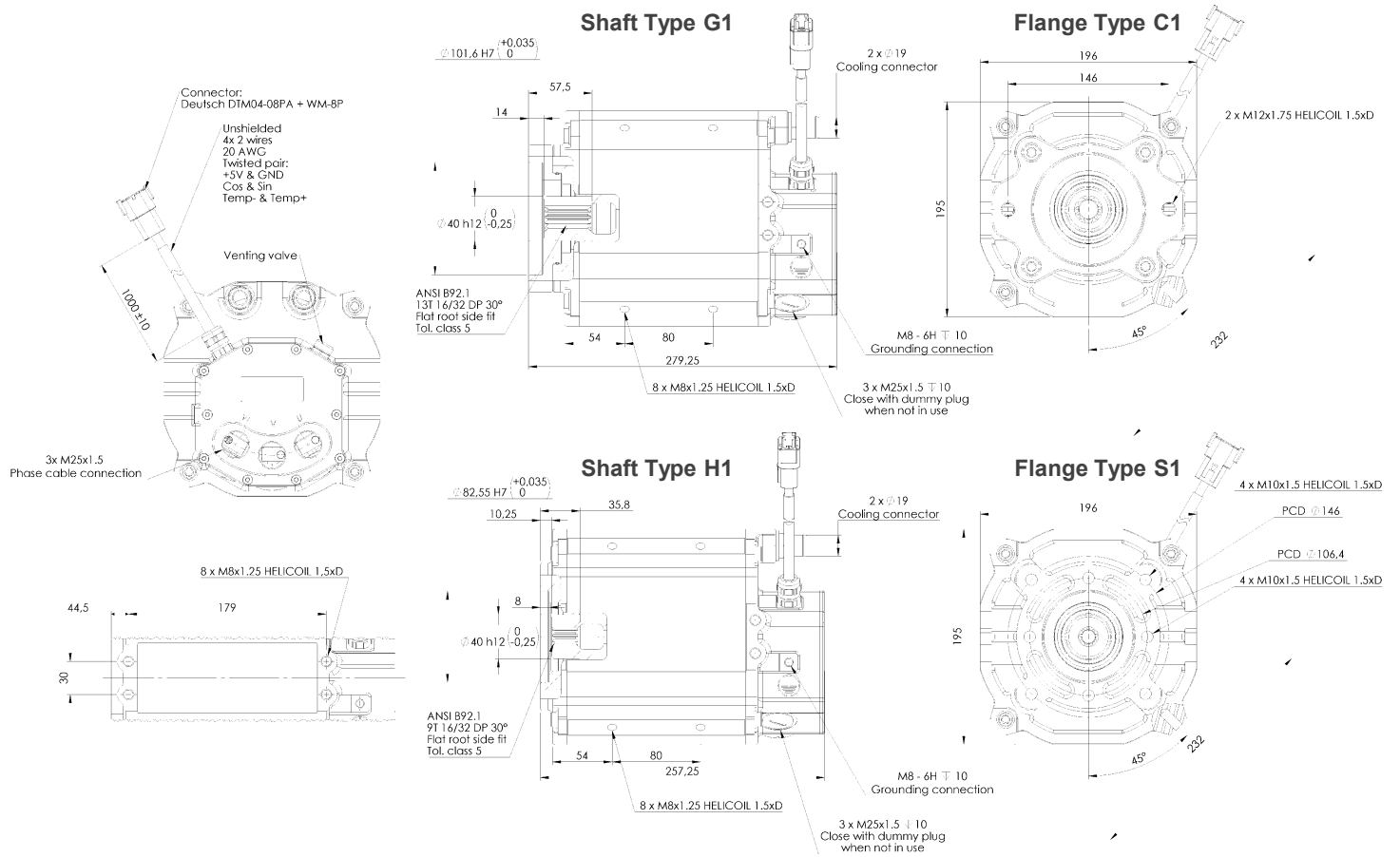
1) Linear derating from 70 °C to 0 A at 85 °C

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			
Flange	Shaft	Pos. sensor	Weight (kg)
C1 SAE J744 101-2 (B) flange, Ø101,6 mm hydraulic pump	G1 Hollow shaft with internal splines, 13T ANSI B 92.1	E Encoder	≈ 21 kg
S1 SAE J744 82-2 (A) flange, Ø82,55 mm hydraulic pump	H1 Shaft with internal spline, ANSI B92.1 9T 16/32 DP 30° flat root side fit, Tol. Class 5	E Encoder	≈ 21 kg

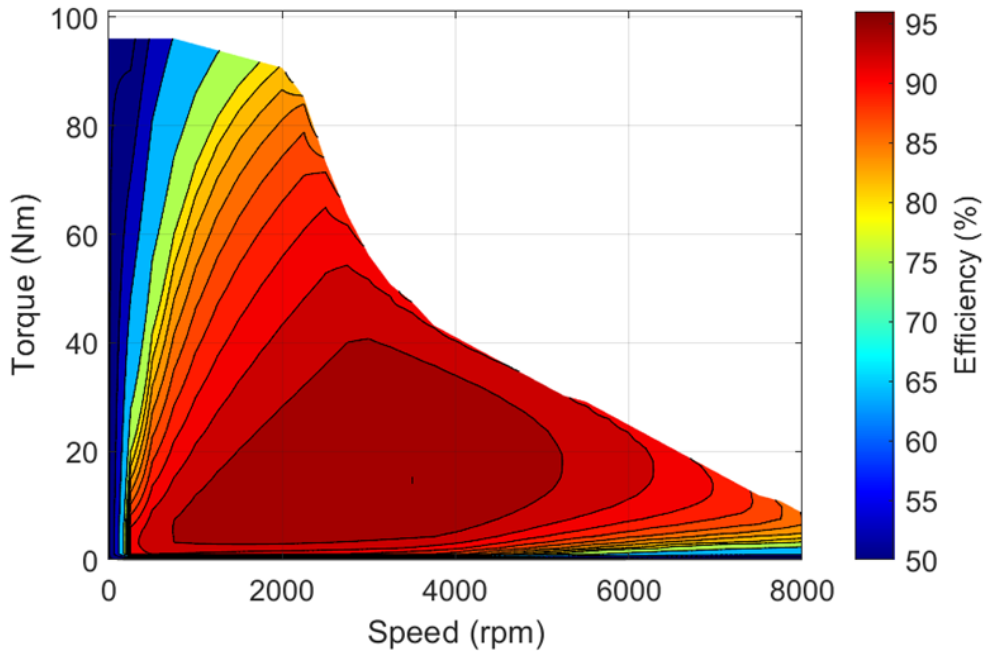
Other individual combinations are also possible on request.



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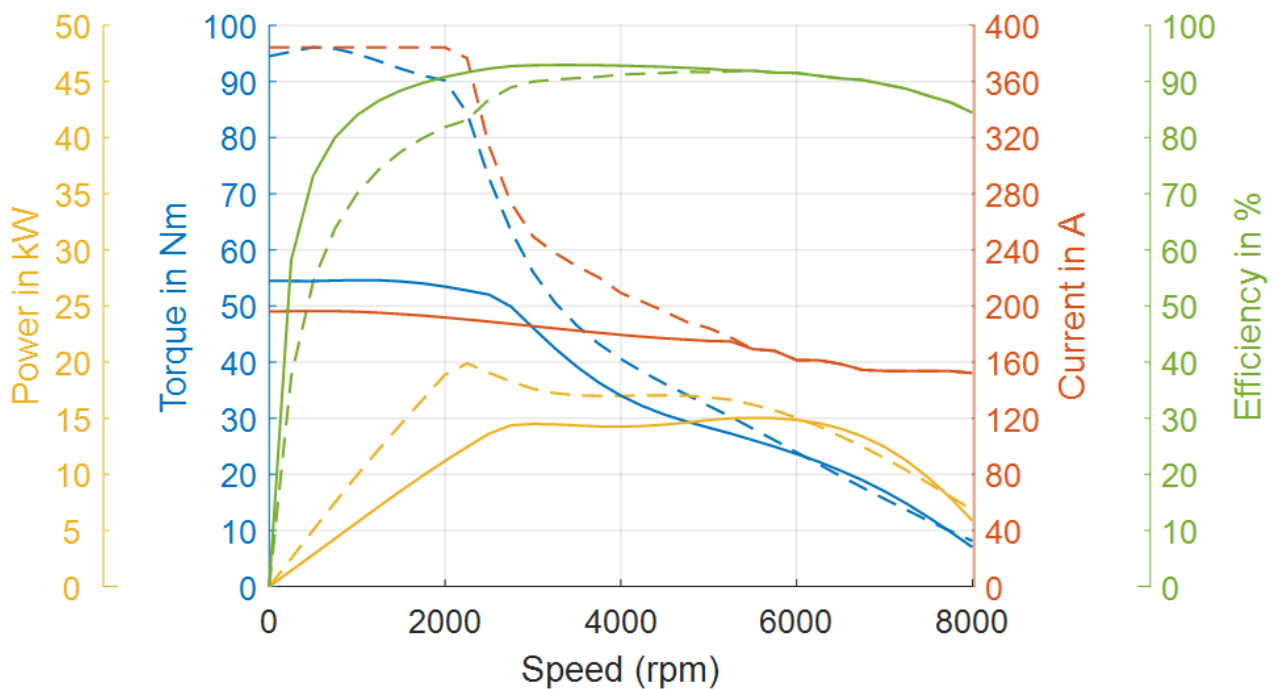
96V

Simulated Efficiency of Motor Application
(electric machine only)



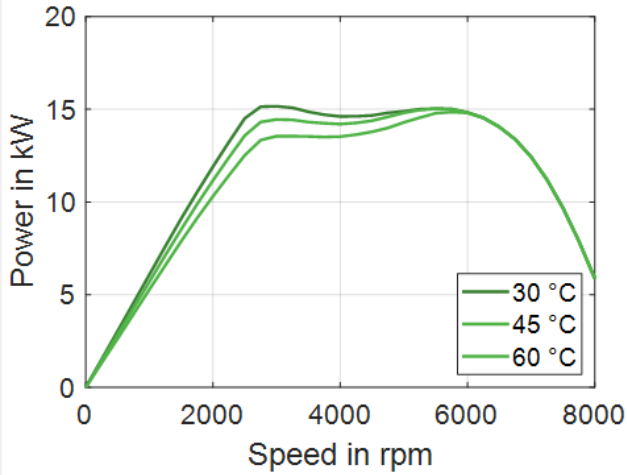
96V

Simulated Characteristic Motor Parameters
solid lines: continuous; dashed lines: maximum

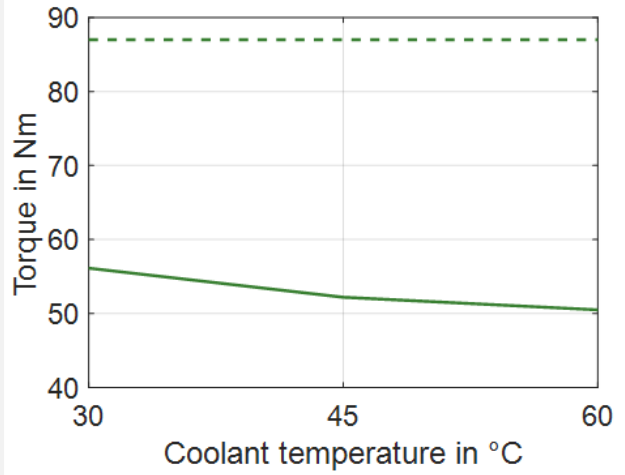


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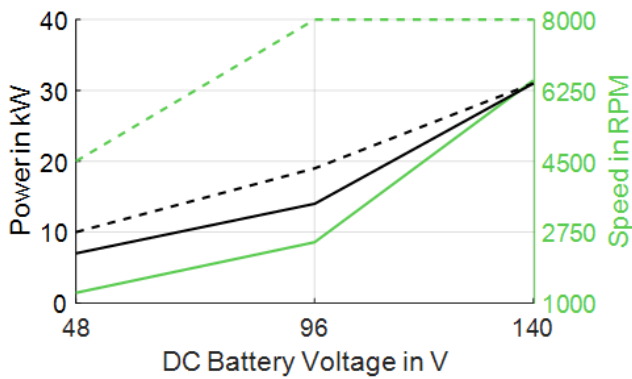
Simulated Nominal Power at different coolant temperatures - $U_{nom} = 96\text{ V}$



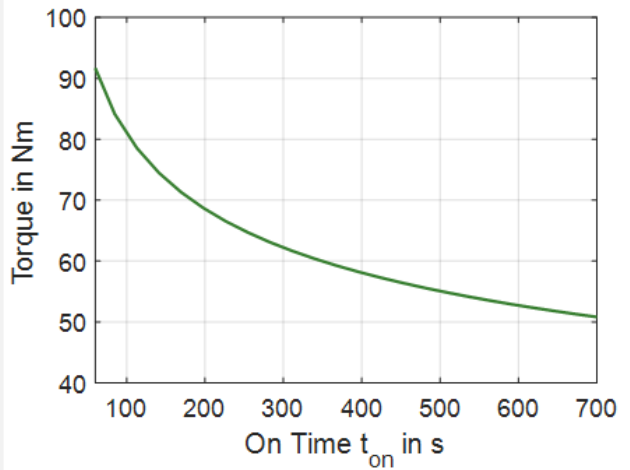
Available Torque at different coolant temperatures ¹⁾



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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