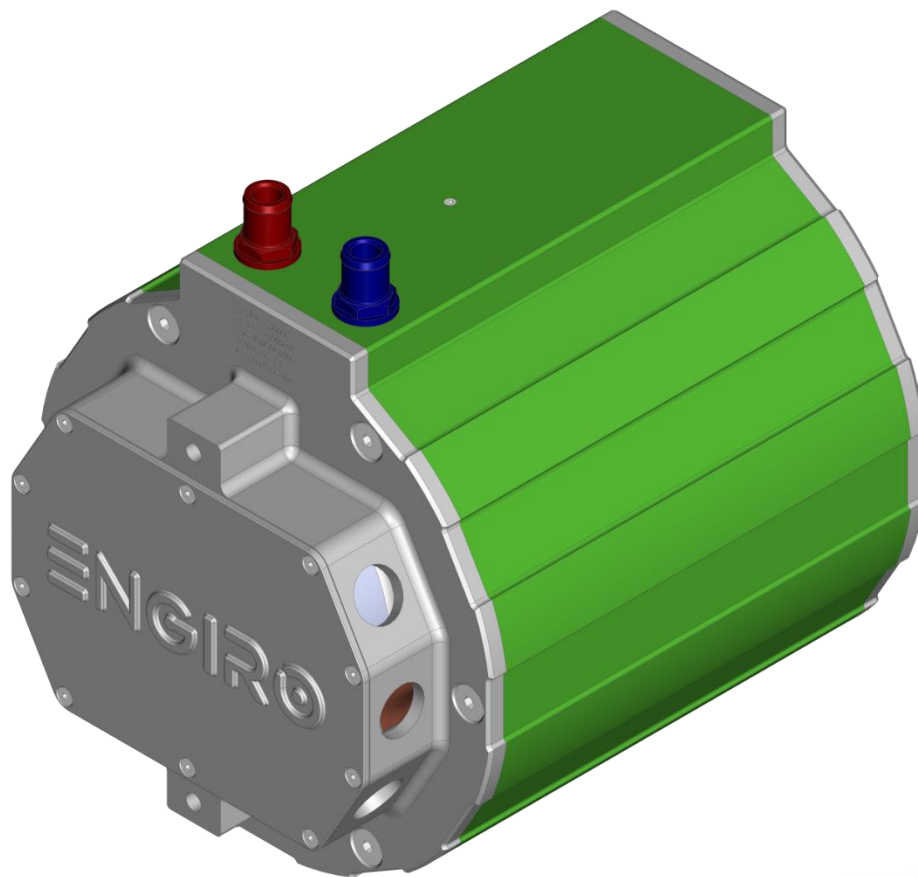


205W-12023-ABC-P

water-cooled motor / generator with 79 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
- various mechanical interfaces available

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Available Type Variants	8
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Performance Plots	9
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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
4872383	205W_12023_SSE_P	S1	S1	E
4872385	205W_12023_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.

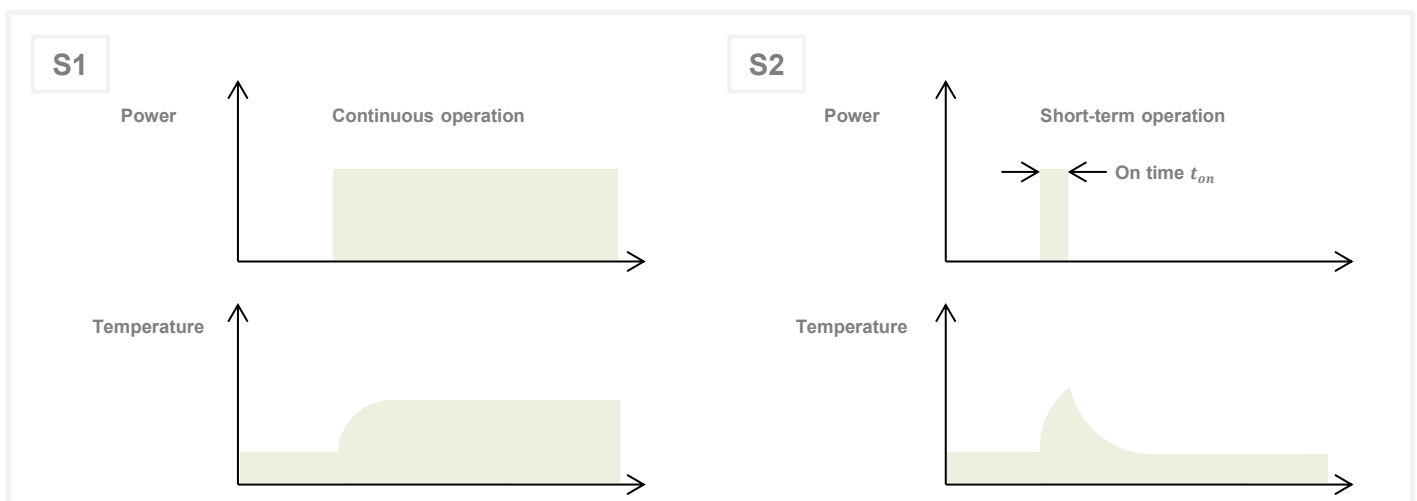
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Characteristic Operating Points¹⁾

		S1	S2	S2	
Feasible operation time	t_{on}	continuous	30 min	60 sec	
Torque ²⁾	T	130	134	193	Nm
Power ²⁾	P	79	81	108	kW
Speed	n	5820	5820	5360	rpm
Phase RMS-current (AC) ³⁾	I_{rms}	213	206	298	A
Battery current (DC) ³⁾	I_{DC}	212	216	292	A
Battery voltage (DC)	U_{DC}	400	400	400	V
Electric frequency	f_{el}	388	388	357	Hz
Efficiency	η_{tot}	94	94	93	%
Power factor	$\cos(\varphi)$	0.95	0.95	0.95	
Cooling	specified in chapter „Additional Data“				

Maximum Operating Range

Torque ^{2) 4)}	T_{max}	201 @ 500 rpm			Nm
Power ^{2) 4)}	P_{max}	125 @ 8000 rpm			kW
Speed ⁵⁾	n_{max}	9000			rpm
Phase RMS-current (AC) ^{3) 4)}	$I_{rms,max}$	298			A
Battery current (DC) ^{3) 4)}	$I_{DC,max}$	338			A
Battery voltage (DC)	U_{max}	850			V
Electric frequency	f_{el}	600			Hz



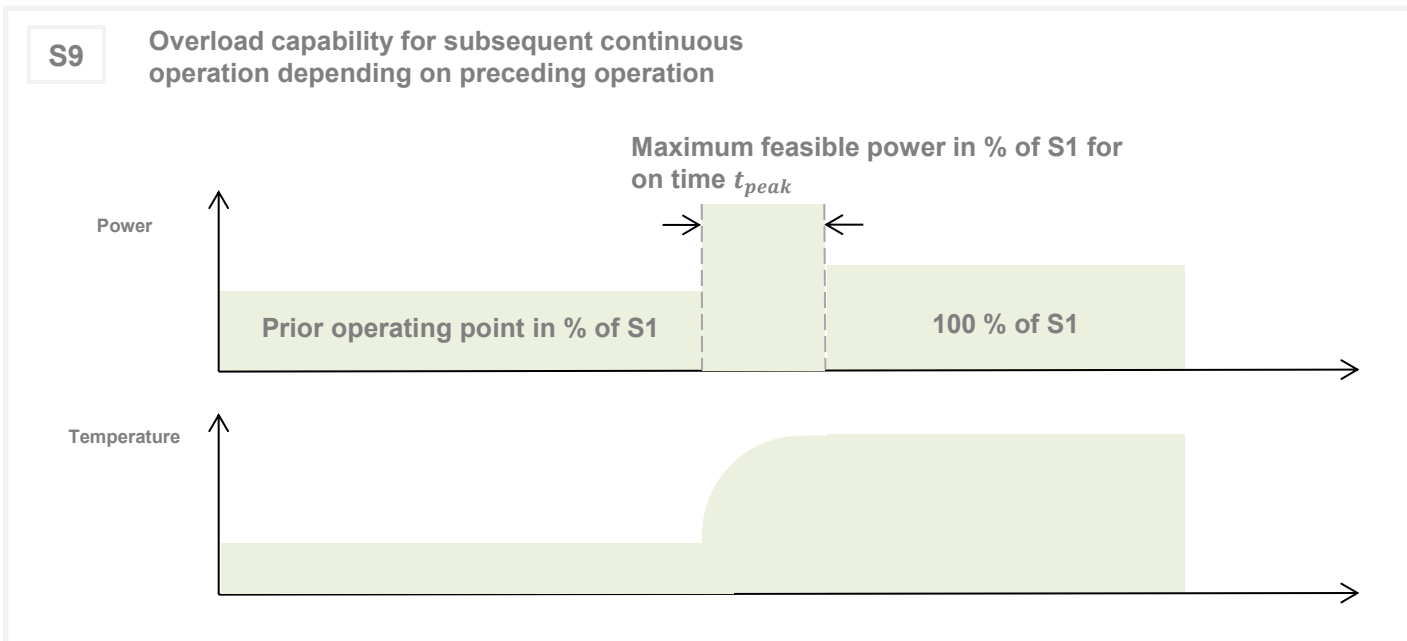
- 1) Defined Range only valid for a power factor of 1 at DC input
- 2) Torque / Power rating is dependent on rotor temperature
- 3) The cables must not exceed a temperature of 140 °C at any time. Temperature and service life depend on the installation condition.
- 4) Peak rating for max. 60 sec on time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

$U_{nom} = 400\text{ V}$		Prior operating point in % of S1				
		0 %	25 %	50 %	75 %	100 %
On time t_{peak}	30s	130 %	130 %	120 %	110 %	100 %
	180s	120 %	120 %	120 %	110 %	100 %
	420s	110 %	110 %	100 %	100 %	100 %

1) Cooling conditions as specified in chapter "Additional Data"



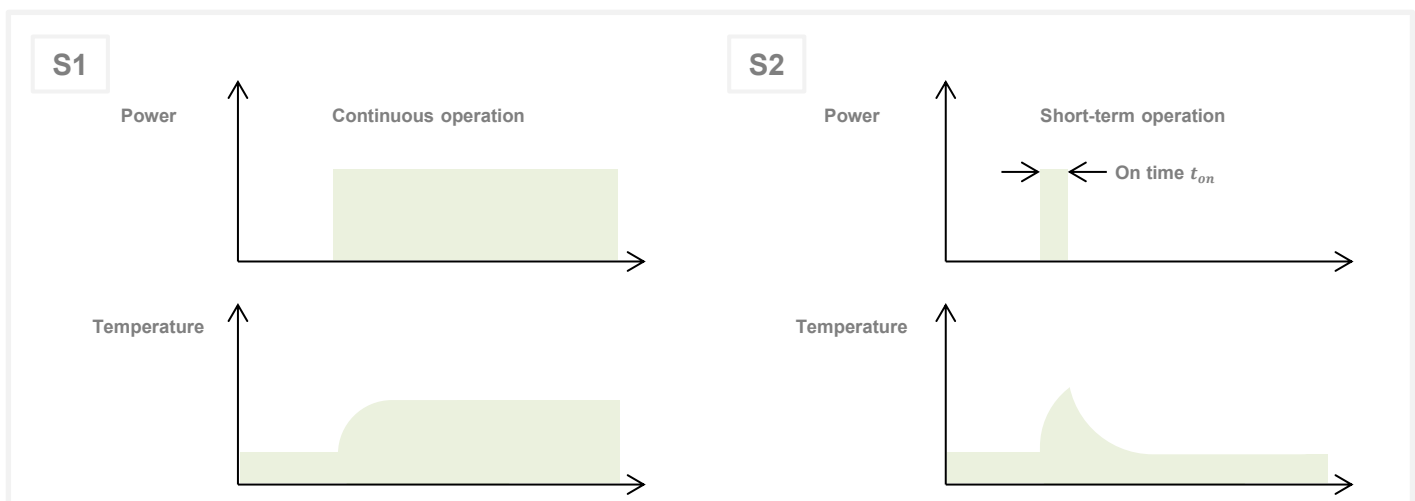
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Characteristic Operating Points¹⁾

		S1	S2	S2	
Feasible operation time	t_{on}	continuous	30 min	60 sec	
Torque ²⁾	T	59	59	184	Nm
Power ²⁾	P	56	56	173	kW
Speed	n	9000	9000	9000	rpm
Phase RMS-current (AC) ³⁾	I_{rms}	104	104	287	A
Battery current (DC) ³⁾	I_{DC}	76	76	235	A
Battery voltage (DC)	U_{DC}	800	800	800	V
Electric frequency	f_{el}	600	600	600	Hz
Efficiency	η_{tot}	92	92	92	%
Power factor	$\cos(\varphi)$	0.95	0.95	0.95	
Cooling	specified in chapter „Additional Data“				

Maximum Operating Range

Torque ^{2) 4)}	T_{max}	199 @ 500 rpm			Nm
Power ^{2) 4)}	P_{max}	173 @ 9000 rpm			kW
Speed ⁵⁾	n_{max}	9000			rpm
Phase RMS-current (AC) ^{3) 4)}	$I_{rms,max}$	297			A
Battery current (DC) ^{3) 4)}	$I_{DC,max}$	235			A
Battery voltage (DC)	U_{max}	850			V
Electric frequency	f_{el}	600			Hz



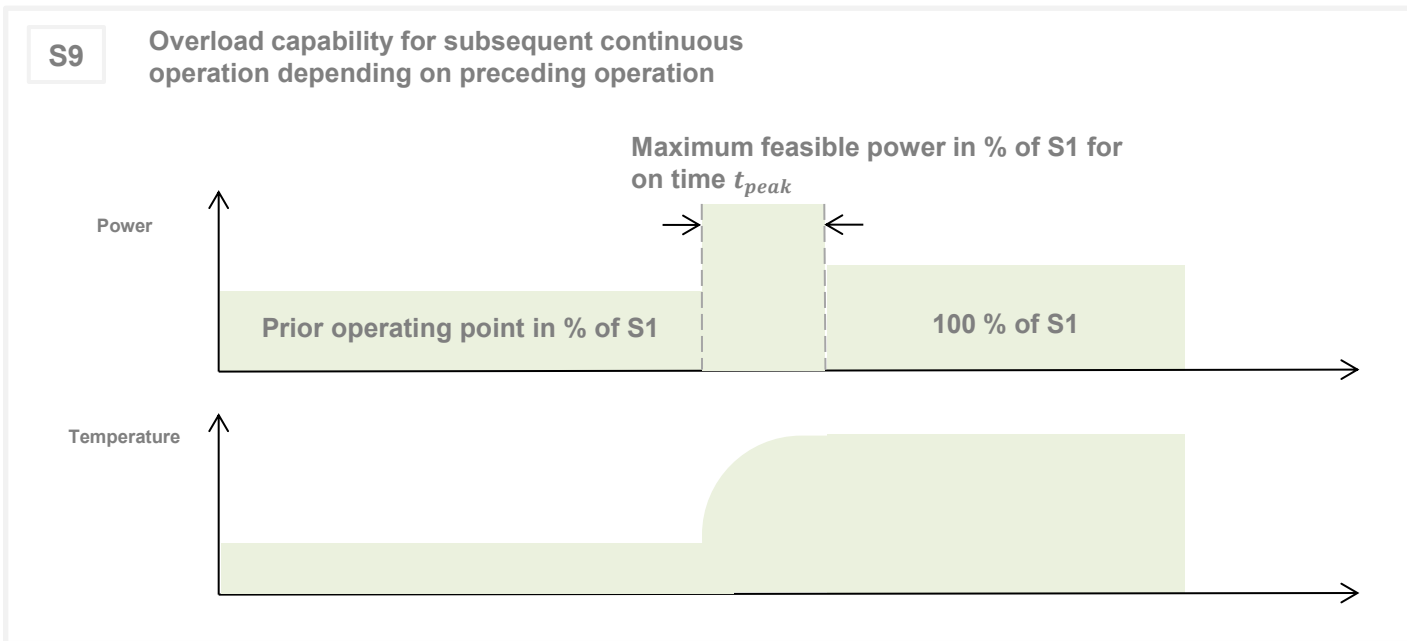
- 1) Defined Range only valid for a power factor of 1 at DC input
- 2) Torque / Power rating is dependent on rotor temperature
- 3) The cables must not exceed a temperature of 140 °C at any time. Temperature and service life depend on the installation condition.
- 4) Peak rating for max. 60 sec on time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

$U_{nom} = 800\text{ V}$		Prior operating point in % of S1				
		0 %	25 %	50 %	75 %	100 %
On time t_{peak}	30s	310 %	300 %	270 %	210 %	100 %
	180s	230 %	220 %	200 %	170 %	100 %
	420s	150 %	140 %	140 %	120 %	100 %

1) Cooling conditions as specified in chapter "Additional Data"



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Electrical Data				
Number of phases				3
Number of pole pairs				4
Maximum stationary short circuit current ¹⁾	261 A (RMS) @ 20 °C @ ≥ 800 rpm			
Maximal efficiency				95 %
T/I constant (I<I _{nom})				0.61 Nm/A _{rms}
U/n constant (AC) at temperature 20 °C	rms:	41.51	peak:	69.01 V/(1000rpm)
Ke constant (AC) at temperature 20 °C	rms:	0.4	peak:	0.66 V/(rad*s ⁻¹)

Additional Data				
Rotor moment of inertia				0,0208 kg*m ²
Allowed range of ambient temperature				-20 ... +85 °C
Maximal motor temperature 400 V / 800 V				170 / 130 °C
Temperature monitoring				KTY 84-130
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	8 l/min		
	Inlet temperature	45 °C		
	Pressure drop	0.186 bar		
	Maximum pressure	2 bar		
	Cooling channel volume	0.89 l		

Connectors	
Power terminals	Power Terminal for M8 cable lugs, 6xM25 cable glands
Signal connectors	Hummel sensor connector – 10 pins
Cooling connectors	inner Ø 12 mm, outer Ø 19 mm

Certifications	
Type approval	CE, EN 60034
Salt spray test	ISO 9227
Protection grade	ISO 20653 IP6K9K ²⁾
Vibrations	Prepared for ISO 16750-3
Customs tariff number	85015381

1) Simulated

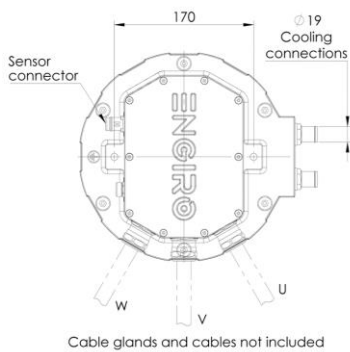
2) Please note that the IP6K9K rating is only valid if the machine is installed with suitable cable glands and an appropriate sealed interface at the drive side of the motor (flange and/or shaft). Please contact ENGIRO for further questions.

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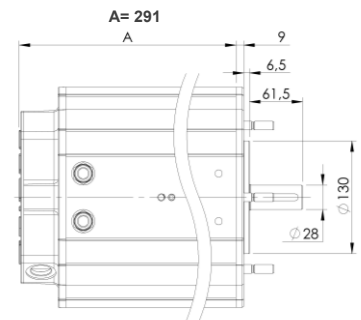
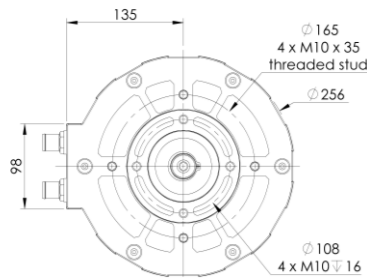
Available Type Variants			
Flange	Shaft	Pos. sensor	Weight (kg)
<p>S1 Standard with 4xM10x35 threaded stud</p>	<p>S1 Cylindrical shaft with keyway \varnothing 28mm</p>	<p>E Encoder</p>	<p>≈ 46 kg</p>
<p>S1 Standard with 4xM10x35 threaded stud</p>	<p>S1 Cylindrical shaft with keyway \varnothing 28mm</p>	<p>F Resolver 0,29 Gain</p>	<p>≈ 46 kg</p>

Other individual combinations are also possible on request.

Technical Drawings



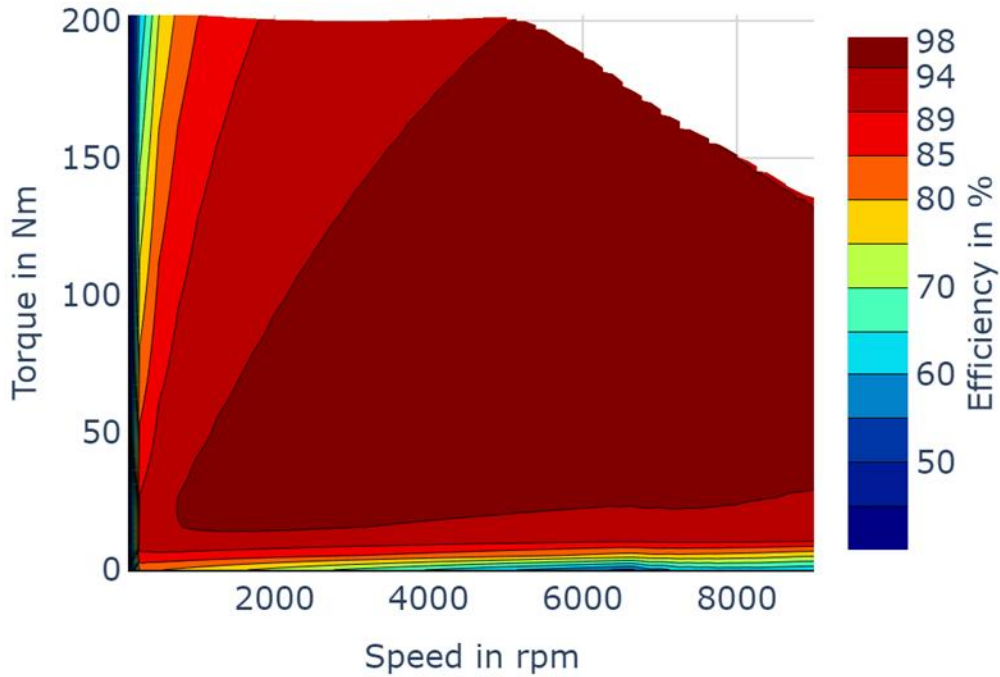
**Flange S1
Shaft S1**



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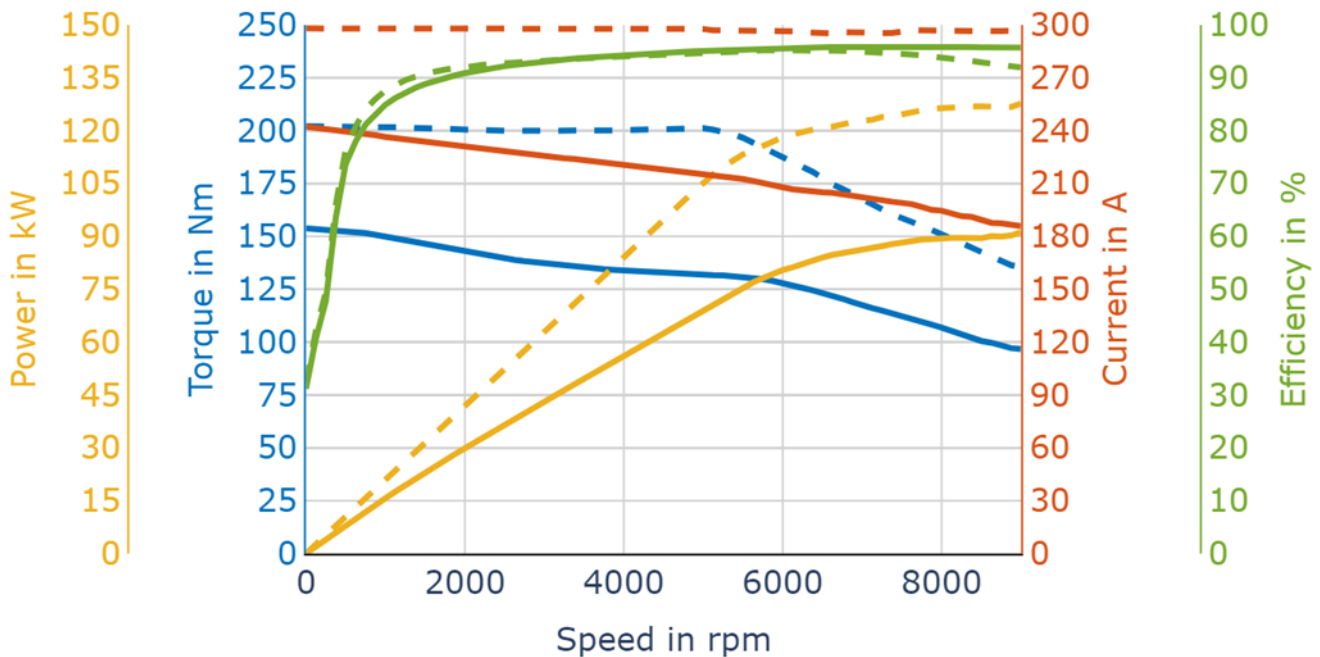
400 V

Simulated Efficiency of Motor Application
(electric machine only; $U_{nom} = 400\text{ V}$)



400 V

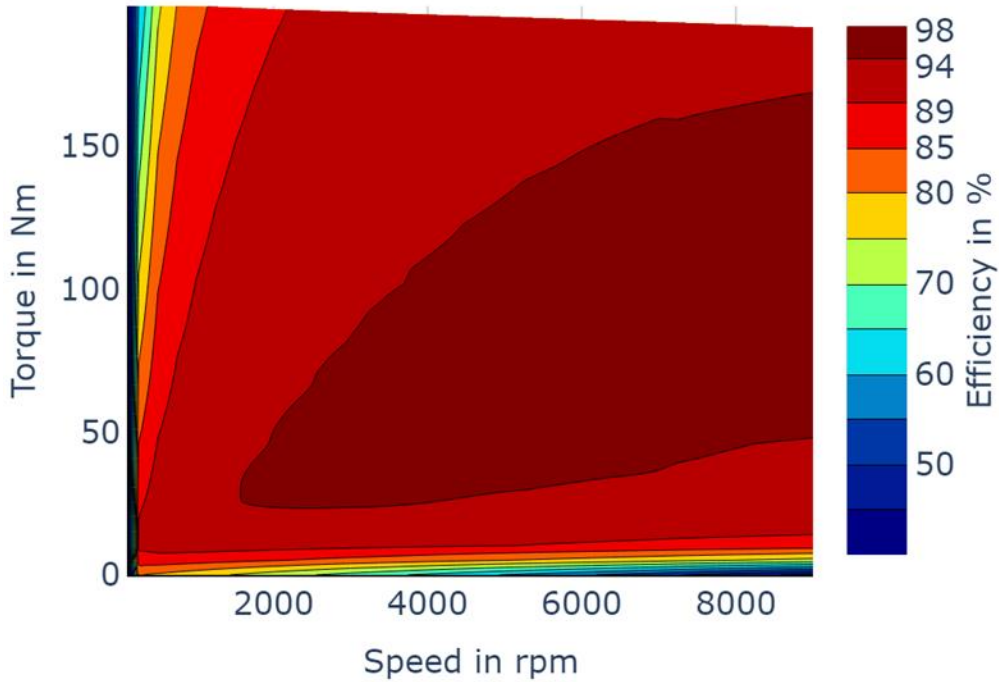
Simulated Characteristic Motor Parameters
solid lines: S1 continuous; dashed lines: S2 (60 sec) maximum
(cooling as specified in chapter "Additional Data")



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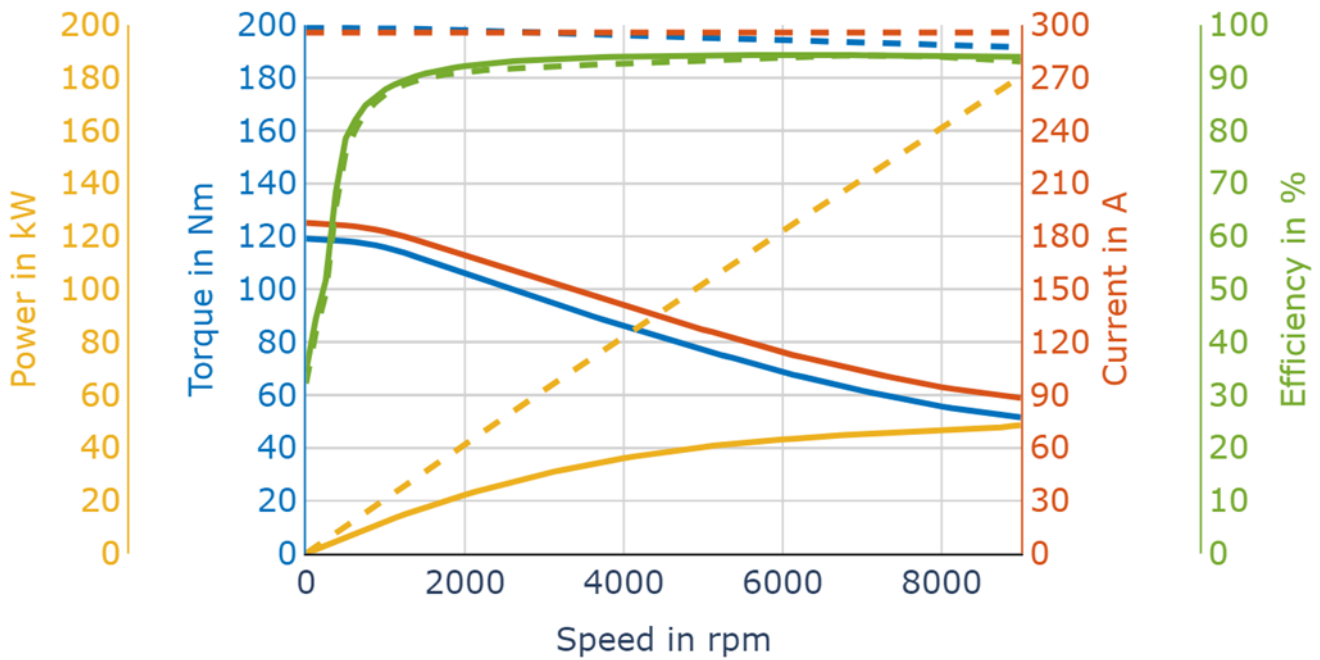
800 V

Simulated Efficiency of Motor Application
(electric machine only; $U_{nom} = 800\text{ V}$)

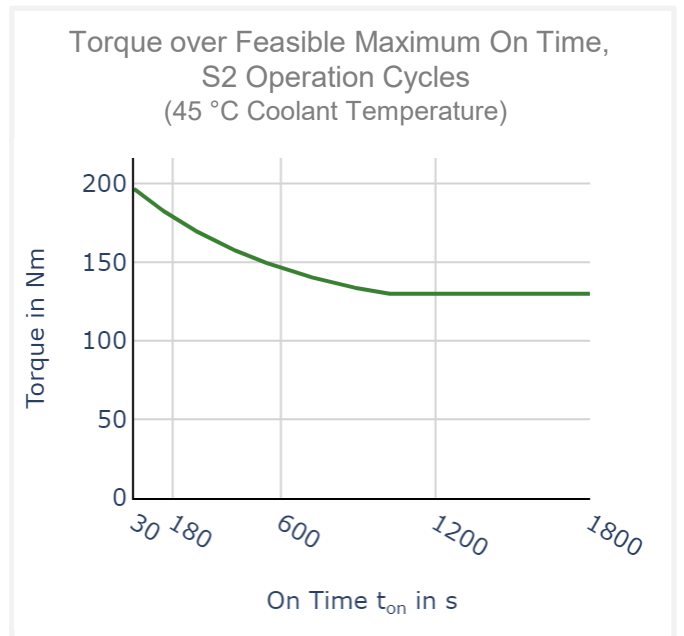
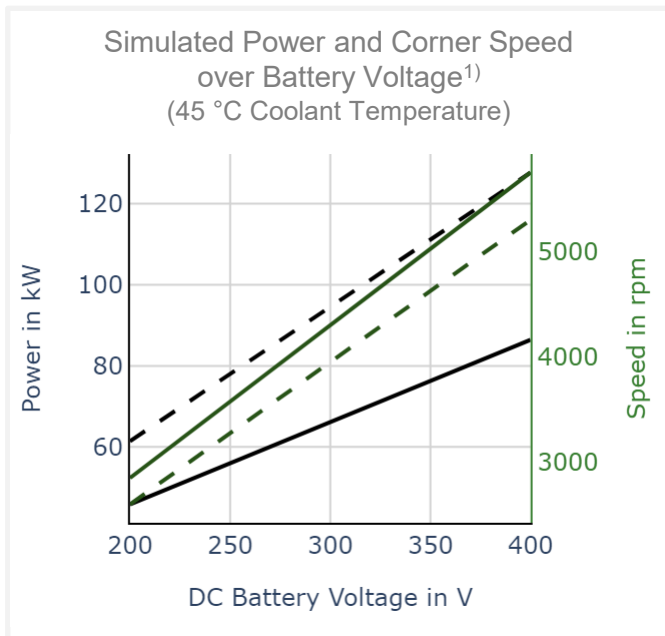
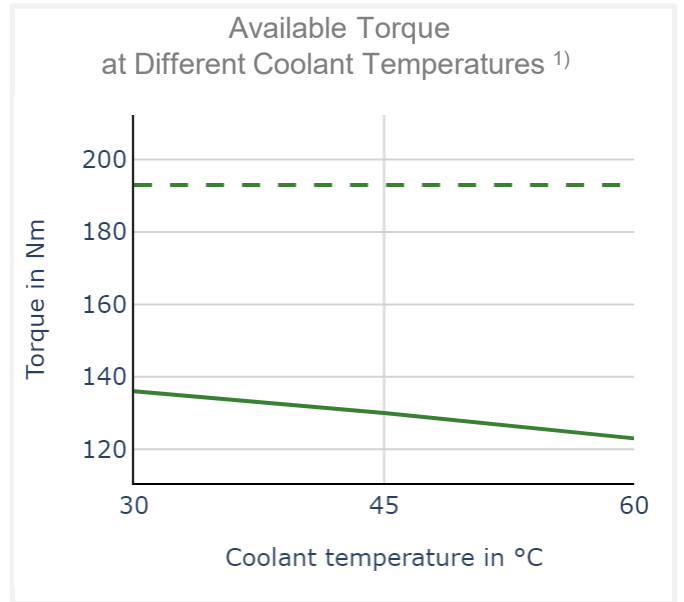
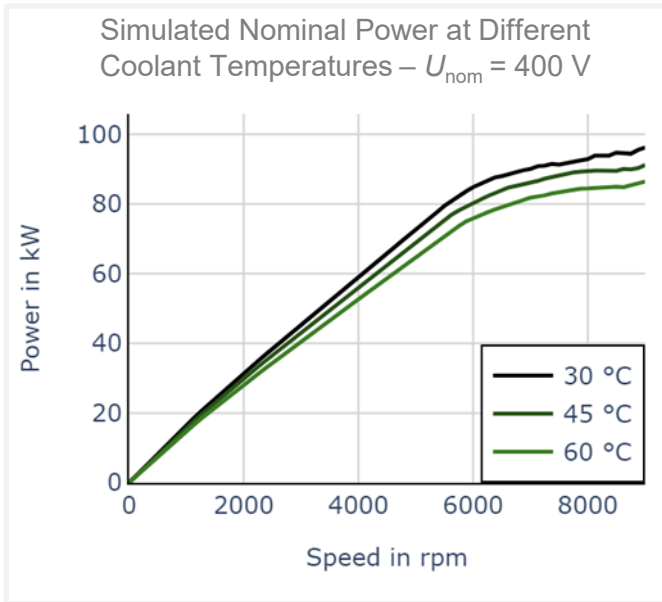


800 V

Simulated Characteristic Motor Parameters
solid lines: S1 continuous; dashed lines: S2 (60 sec) maximum
(cooling as specified in chapter "Additional Data")

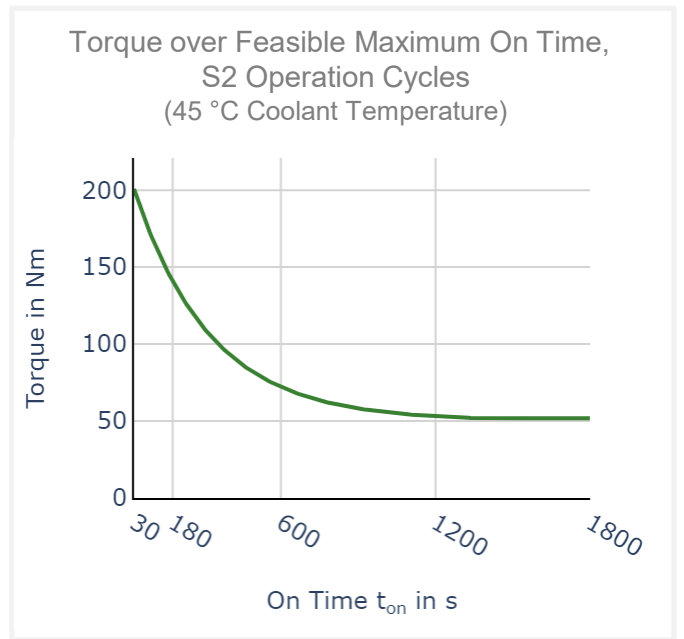
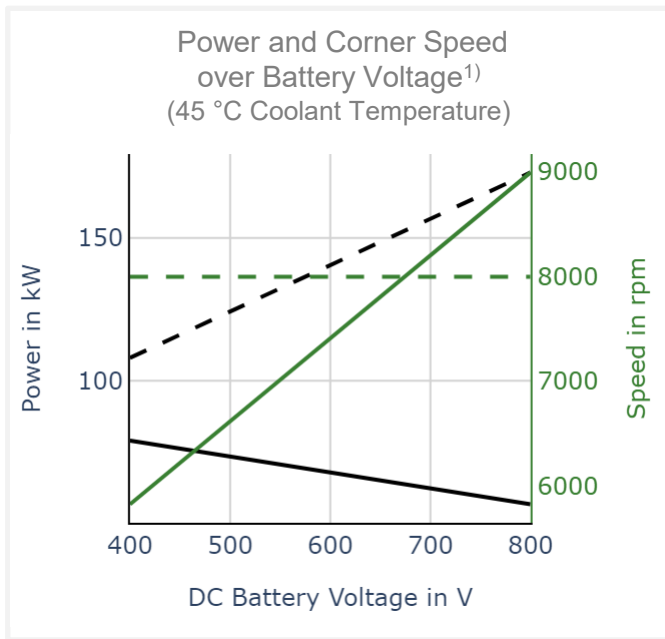
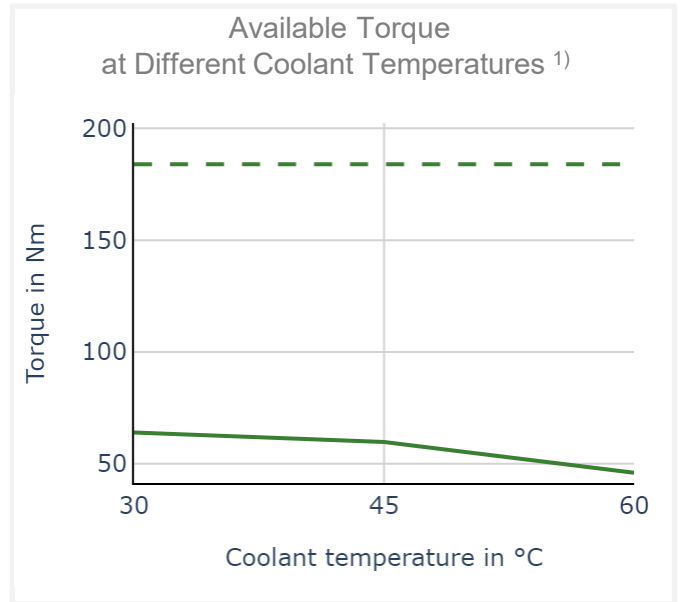
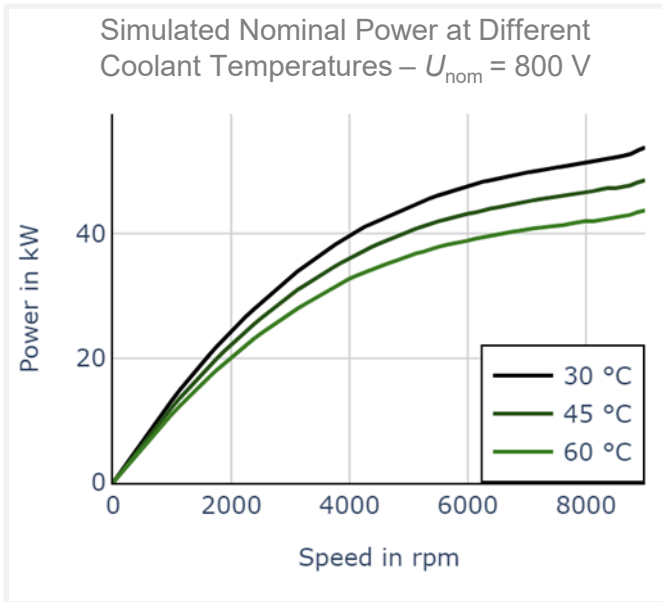


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1) solid lines: continuous; dashed lines: maximum;

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