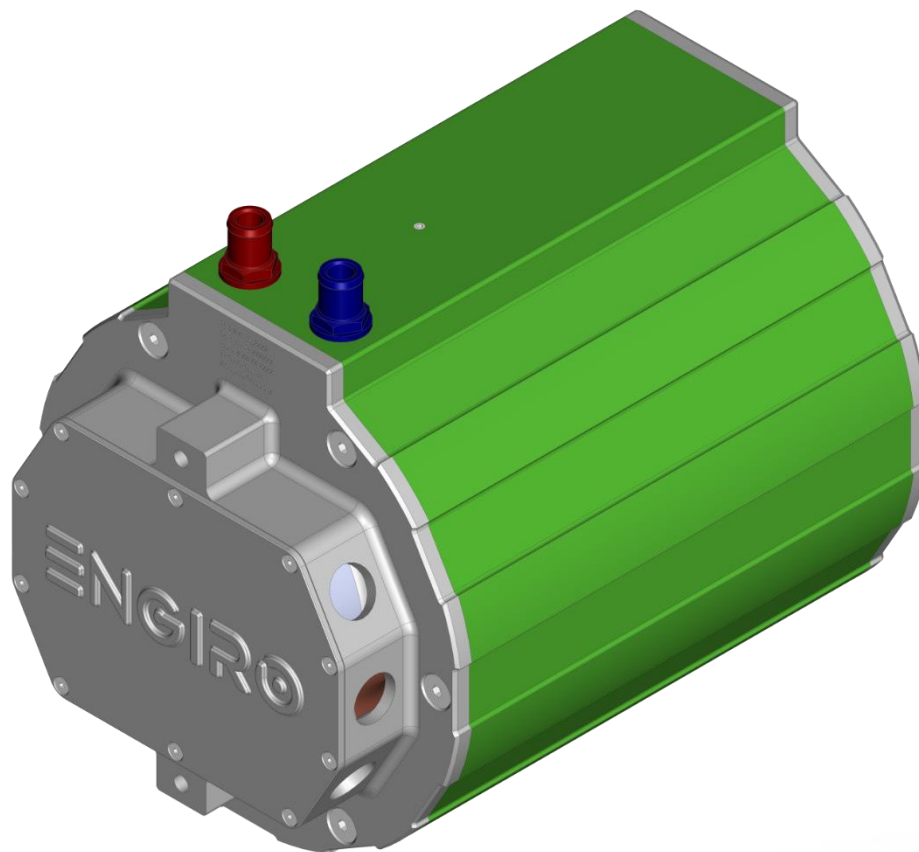


# 205W-16042-P-ABC

water-cooled motor / generator with 90 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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**Note:**

On September 1<sup>st</sup> , 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
4872468	205W_16042_CDF_P	C1	D1	F
4872470	205W_16042_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.

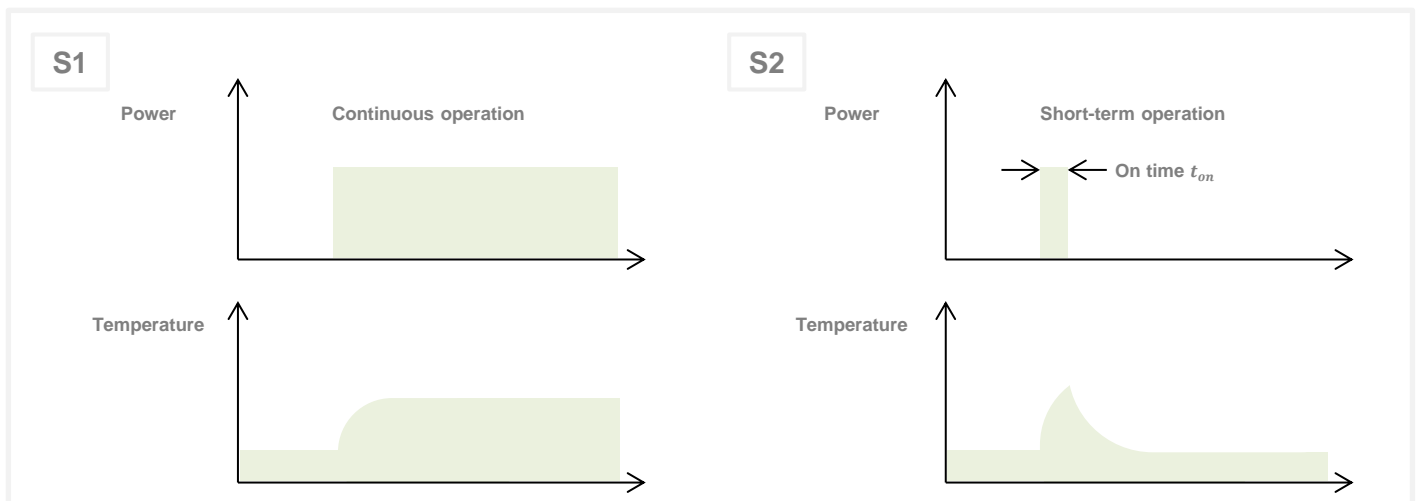
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Characteristic Operating Points<sup>1)</sup>

		S1	S2	S2	
Feasible operation time	$t_{on}$	continuous	30 min	30 sec	
Torque <sup>2)</sup>	$T$	174	174	386	Nm
Power <sup>2)</sup>	$P$	90	90	124	kW
Speed	$n$	4930	4930	3060	rpm
Phase RMS-current (AC) <sup>3)</sup>	$I_{rms}$	113	113	296	A
Battery current (DC) <sup>3)</sup>	$I_{DC}$	191	191	194	A
Battery voltage (DC)	$U_{DC}$	750	750	750	V
Electric frequency	$f_{el}$	329	329	204	Hz
Efficiency	$\eta_{tot}$	95	95	85	%
Power factor	$\cos(\varphi)$	0.91	0.91	0.87	
Cooling	specified in chapter „Additional Data“				

## Maximum Operating Range

Torque <sup>2) 4)</sup>	$T_{max}$	386 @ 3060 rpm			Nm
Power <sup>2) 4)</sup>	$P_{max}$	124 @ 3060 rpm			kW
Speed <sup>5)</sup>	$n_{max}$	9000			rpm
Phase RMS-current (AC) <sup>3) 4)</sup>	$I_{rms,max}$	296			A
Battery current (DC) <sup>3) 4)</sup>	$I_{DC,max}$	194			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. 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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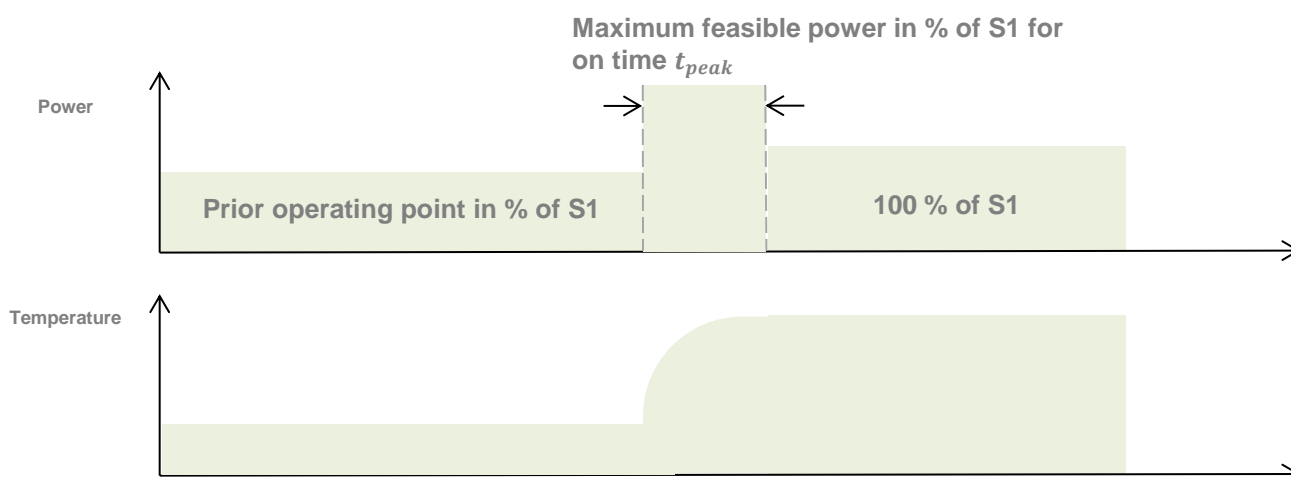
**S9 Operating Points <sup>1)</sup>**  
**Maximum Feasible Power in % of S1**

$U_{\text{nom}} = 750 \text{ V}$		Prior operating point in % of S1				
		0 %	25 %	50 %	75 %	100 %
On time $t_{\text{peak}}$	30s	130 %	130 %	120 %	110 %	100 %
	180s	100 %	100 %	100 %	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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Electrical Data					
Number of phases					3
Number of pole pairs					4
Maximum stationary short circuit current <sup>1)</sup>		159 A (RMS) @ 20 °C @ ≥ 700 rpm			
Maximal efficiency		96			%
T/I constant (I<I <sub>nom</sub> )		1.54			Nm/A <sub>rms</sub>
U/n constant (AC) at temperature 20 °C		rms:	103.04	peak:	166.64 V/(1000rpm)
Ke constant (AC) at temperature 20 °C		rms:	0.98	peak:	1.59 V/(rad*s <sup>-1</sup> )
Additional Data					
Rotor moment of inertia		0.0267 (S1S1), 0.0270 (C1D1)			kg*m²
Allowed range of ambient temperature <sup>2)</sup>		-20 ... +85			°C
Maximal motor temperature <sup>4)</sup>		140			°C
Temperature monitoring		KTY-84-130			
Cooling	Advised medium (OAT Coolants)	water/glycol - 50/50 <ul style="list-style-type: none"><li>TL 774-D/F</li><li>VIN 878389</li><li>MAN 324 SNF</li><li>MTL 5048</li></ul>			
	Flow rate	12			l/min
	Inlet temperature	45			°C
	Pressure drop	0.298			bar
	Maximum pressure	2			bar
	Cooling channel volume	1.03			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 <sup>3)</sup>			
Vibrations		Prepared for ISO 16750-3			
Customs tariff number		8501 5381			

1) Simulated

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

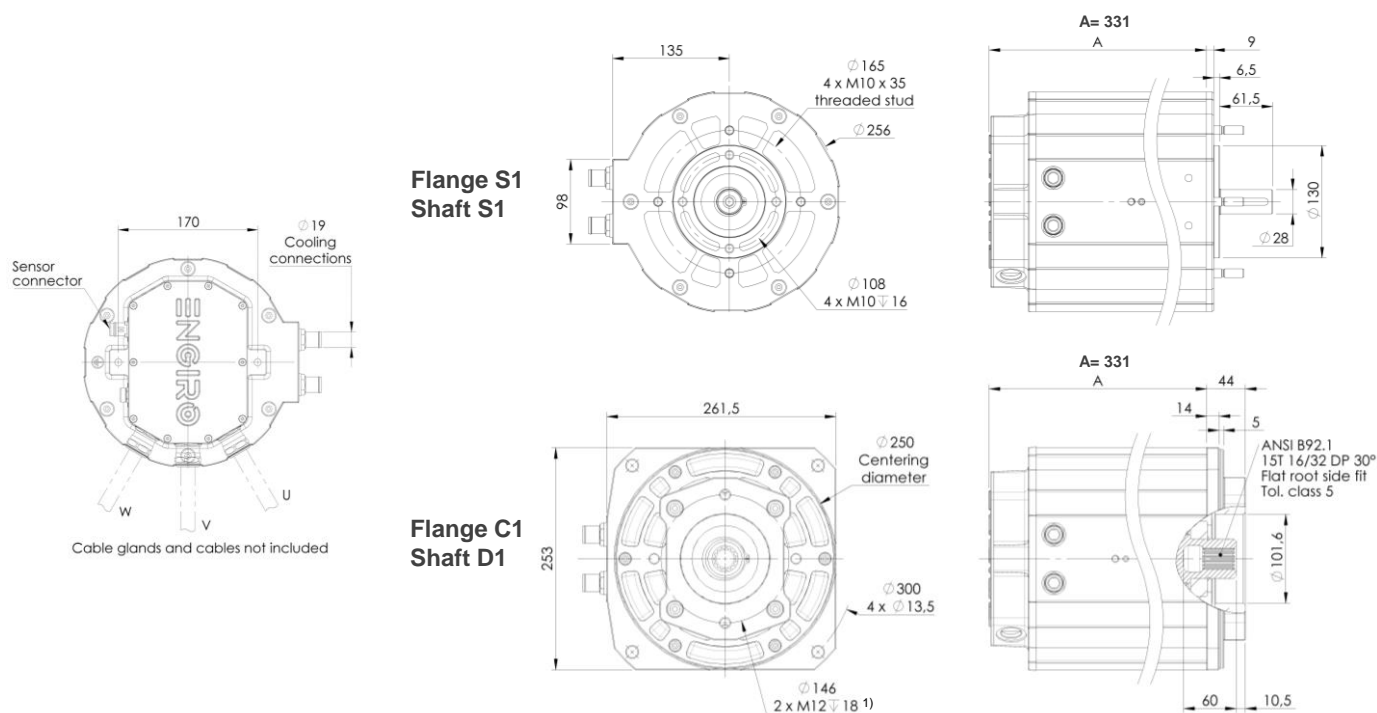
3) Please note that the IP6K9K rating is only valid if the machine is installed with suitable cable glands and an appropriate sealed interface at the drive side of the motor (flange and/or shaft). Please contact ENGIRO for further questions.

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Shaft and Flange Combinations for 205W-16042-ABC		Flange (A)	
		S (Standard)	C (flange for fan with hydraulic pump adapter)
Shaft (B)	S (Cylindrical shaft with keyway Ø 28mm)	● (~56 kg)	
	D (hollow shaft with internal splines ANSI B 92.1)		● (~59 kg)
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.

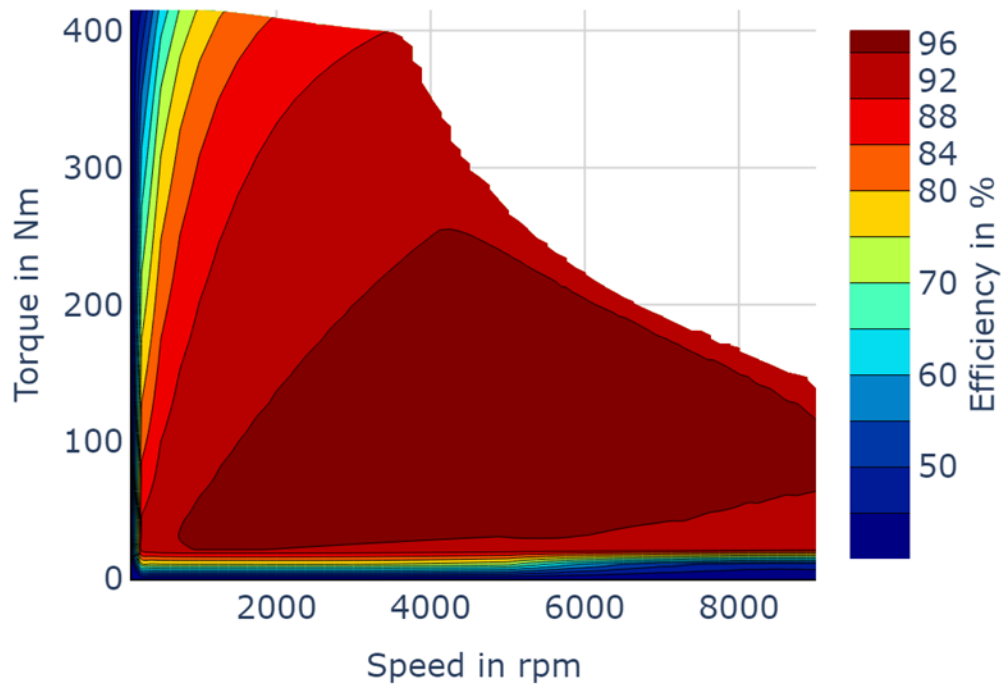
## Technical Drawings



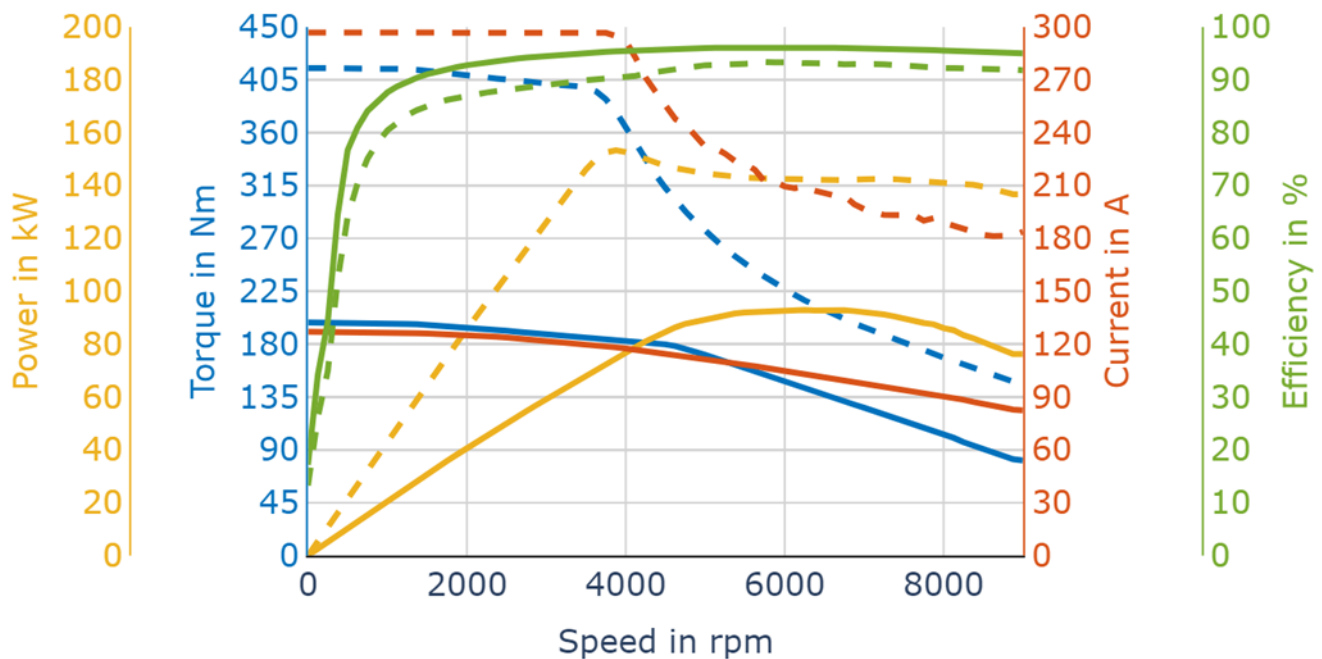
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**750 V**

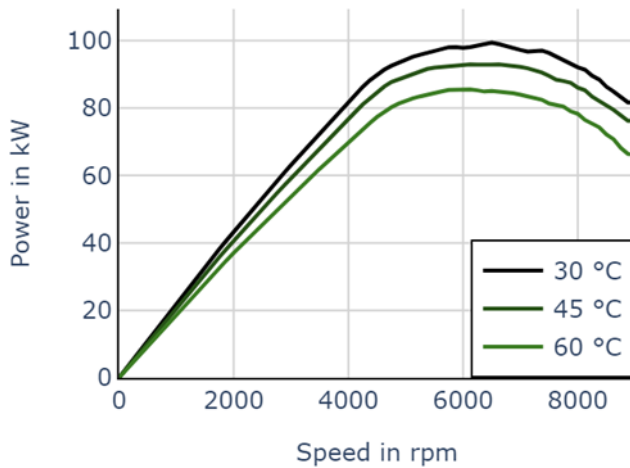
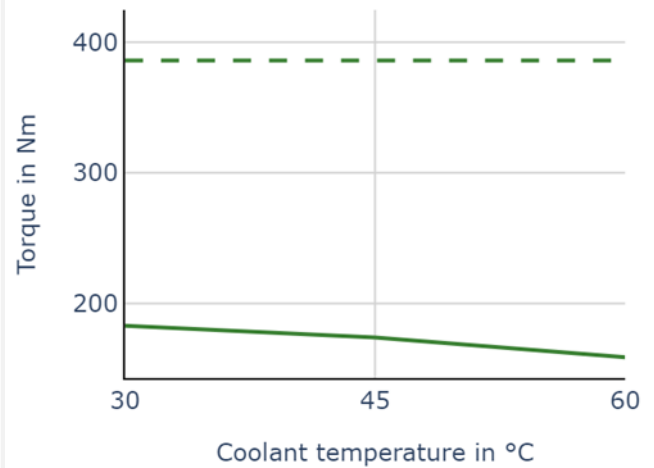
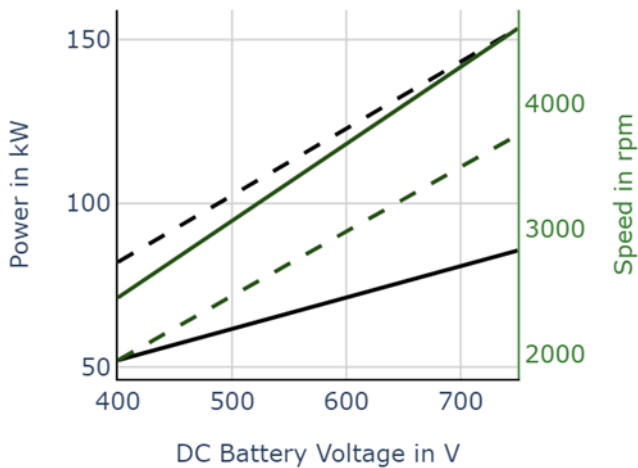
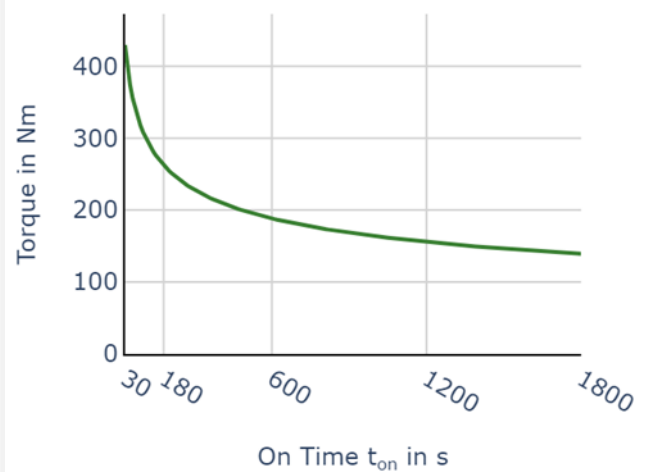
### Simulated Efficiency of Motor Application

(electric machine only;  $U_{nom} = 750 \text{ V}$ )**750 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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Simulated Nominal Power at Different  
 Coolant Temperatures –  $U_{\text{nom}} = 750 \text{ V}$ 

 Available Torque  
 at Different Coolant Temperatures <sup>1)</sup>

 Simulated Power and Corner Speed  
 over Battery Voltage<sup>1)</sup>  
 (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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