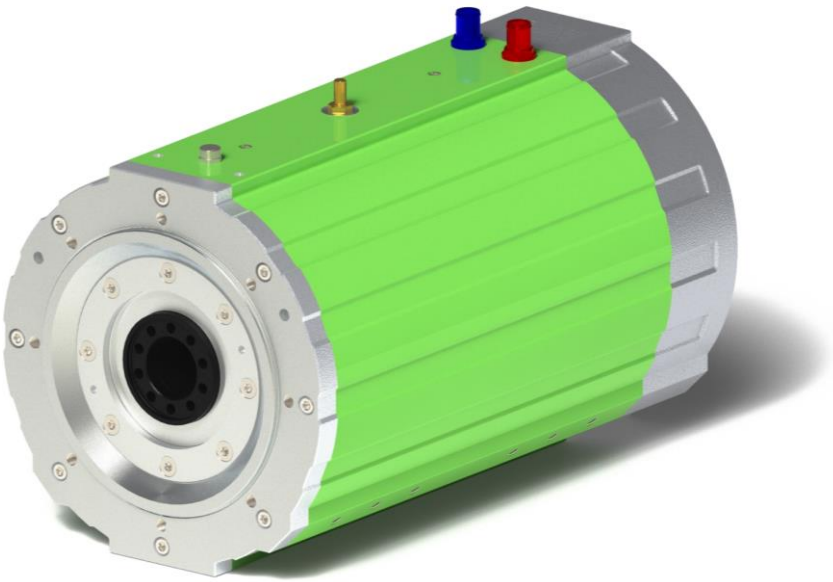
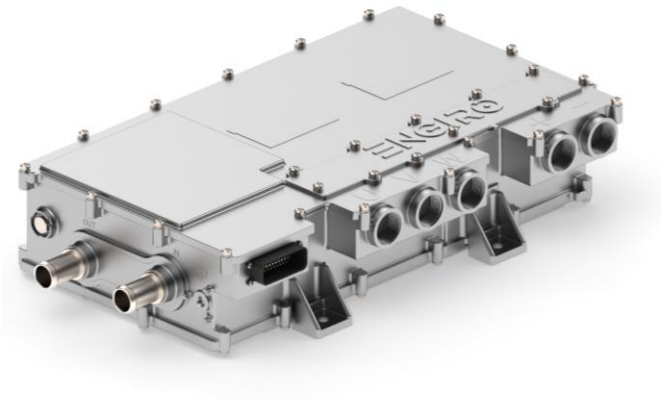
260W-20014-ABC-P

water-cooled motor / generator with 218 kW continuous power





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

ENGIRO GmbH · Avantisallee 51 · 52072 Aachen · Germany
Tel. +49 (0)241 99798-0 · E-Mail: engineering@engiro.de · www.engiro.de

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**
4843045	260W_20014_SFR_P	S1	F1	R	…S11

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.

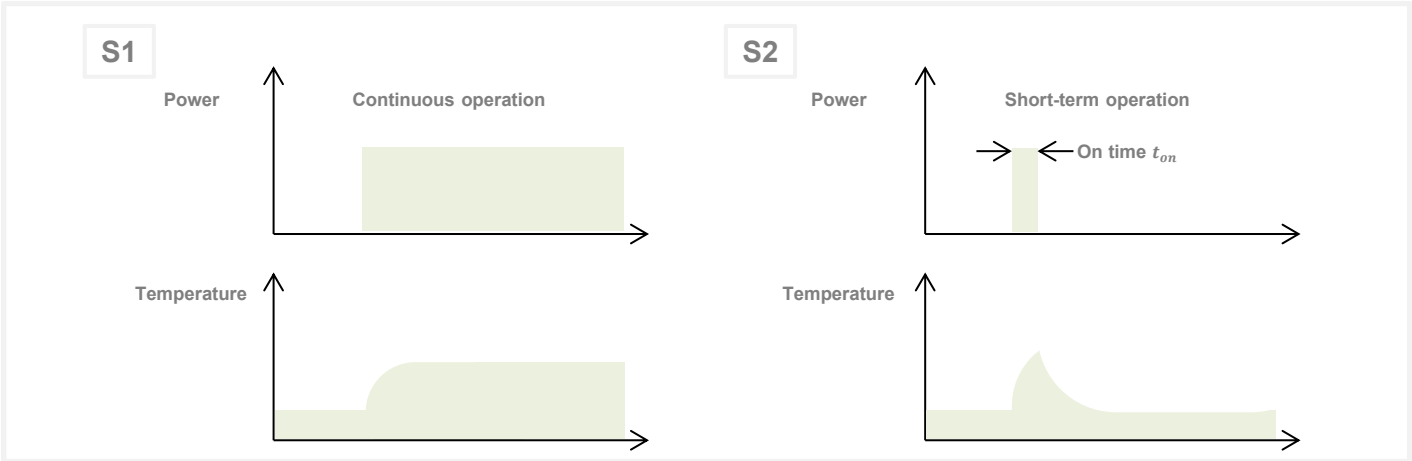
ENGIRO GmbH · Avantisallee 51 · 52072 Aachen · Germany
Tel. +49 (0)241 99798-0 · E-Mail: engineering@engiro.de · www.engiro.de

Operating Range

ENGIRO HYDAC INTERNATIONAL

Characteristic Operating Points[1]					
		S1	S2	S2	
Feasible operation time	t_{on}	continuous	30 min	30 sec	
Torque	T	538	538	1107	Nm
Power	P	218	218	377	kW
Speed	n	3750	3750	3250	rpm
Phase rms-current (AC)	I_{rms}	293	293	702	A
Battery current (DC)	I_{nom}	302	302	567	A
Battery voltage (DC)	U_{nom}	750	750	750	V
Electric frequency	f_{el}	312	312	270	Hz
Efficiency	η_{tot}	96	96	91	%
Power factor	$cos(\varphi)$	0.86	0.86	0.61	
Cooling	specified on page 5				

Maximum Operating Range			
Torque	T_{max}	1107 @ 3250 rpm [2]	Nm
Power	P_{max}	386 @ 3500 rpm	kW
Speed	n_{max}	6000	rpm
Phase rms-current (AC)	$I_{rms,max}$	702 [3] [4]	A
Battery current (DC)	I_{max}	616 [3] [4]	A
Battery voltage (DC)	U_{max}	850	V
Electric frequency	f_{el}	500	Hz



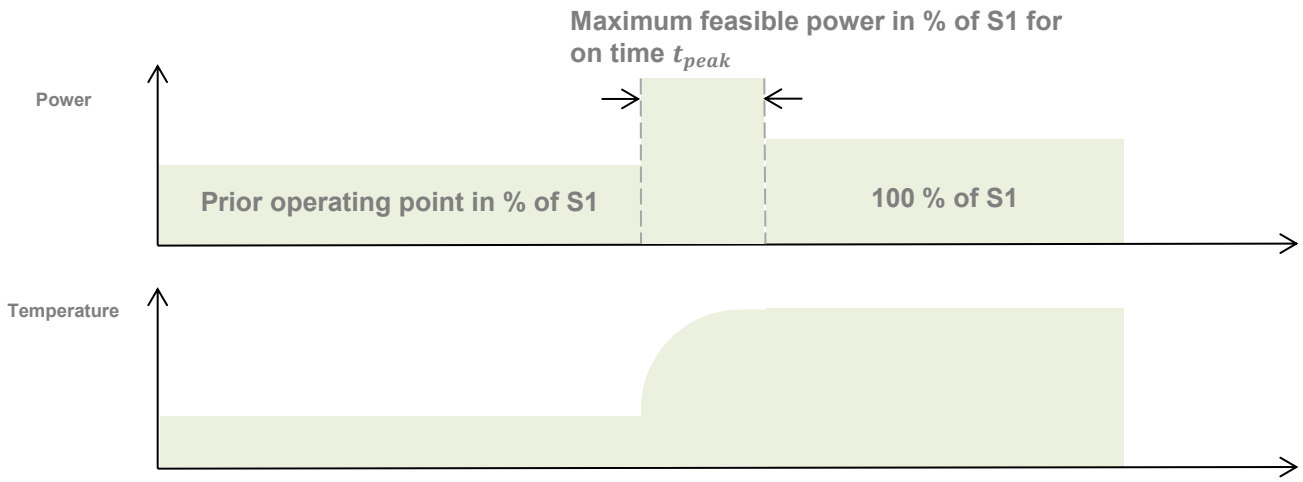
1) Defined Range only valid for a power factor of 1 at DC input
2) Torque rating is dependent on rotor temperature
3) The cables must not exceed a temperature of 140 °C at any time. Temperature and service life depend on the installation condition.
4) Peak rating for max. 60 seconds on time

ENGIRO GmbH · Avantisallee 51 · 52072 Aachen · Germany
Tel. +49 (0)241 99798-0 · E-Mail: engineering@engiro.de · www.engiro.de

Operating Range

S9 Operating Points Maximum Feasible Power in % of S1						
U_{nom} = 750 V		Prior operating point in % of S1				
		0 %	25 %	50 %	75 %	100 %
On time t_{peak}	30 s	180%	170%	160%	140%	100%
	180 s	130%	120%	120%	110%	100%
	420 s	110%	100%	100%	100%	100%

S9 Overload capability for subsequent continuous operation depending on preceding operation



ENGIRO GmbH · Avantisallee 51 · 52072 Aachen · Germany
Tel. +49 (0)241 99798-0 · E-Mail: engineering@engiro.de · www.engiro.de

Additional Data

ENGIRO HYDAC INTERNATIONAL

Electrical Data						
Number of phases					3	
Number of pole pairs					5	
Maximal efficiency					96	%
T/I constant (I<Inom)					1.83	Nm/A_{rms}
U/n constant (AC) at temperature 30°C	rms:	120	peak:	177.8		V/(1000rpm)
Ke constant (AC) at temperature 30°C	rms:	0.286	peak:	0.424		$V/(rad*s^{-1})$

Additional Data			
Rotor moment of inertia		0.1327	$kg*m^2$
Allowed range of ambient temperature		-20 … +85	°C
Maximal motor temperature		operating point dependent[1)]	
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	0.5	bar
	Maximum inlet pressure	2	bar
	Cooling channel volume	1.91	l

Connectors	
Power terminals	3 x M25 cable gland
Signal connectors	M16, Hummel 10 Pin connector
Cooling connectors	2 x ¾" / 19 mm

Certifications	
Type approval	CE, EN 60034
Environmental	Prepared for ISO 9227
Protection grade	IP6K9K[2)]
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. / Only applies to variants with closed B-side /

ENGIRO GmbH · Avantisallee 51 · 52072 Aachen · Germany
Tel. +49 (0)241 99798-0 · E-Mail: engineering@engiro.de · www.engiro.de

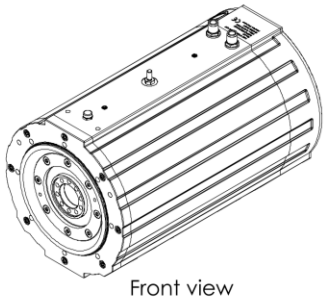
Available Type Variants

ENGIRO HYDAC INTERNATIONAL

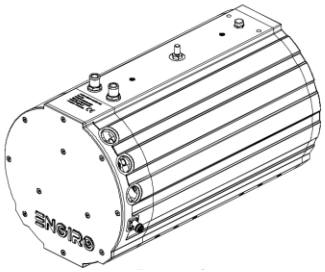
Available Type Variants				
Flange	Shaft	Pos. sensor	B-side interface	Weight (kg)
S1 Flange with mounting threads (Ø230 mm centering, Ø250 PCD 8 x M10)	**F1** Hollow shaft with screw flange (Ø90 and Ø50 mm centering, Ø66 mm PCD 10 x M10)	**R** Resolver	**S11** Closed B-side	≈ 119 kg

Other individual combinations are also possible on request.

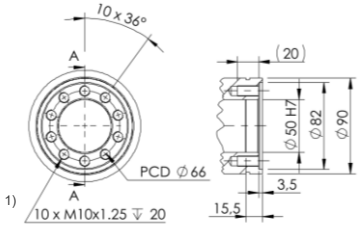
Technical Drawings



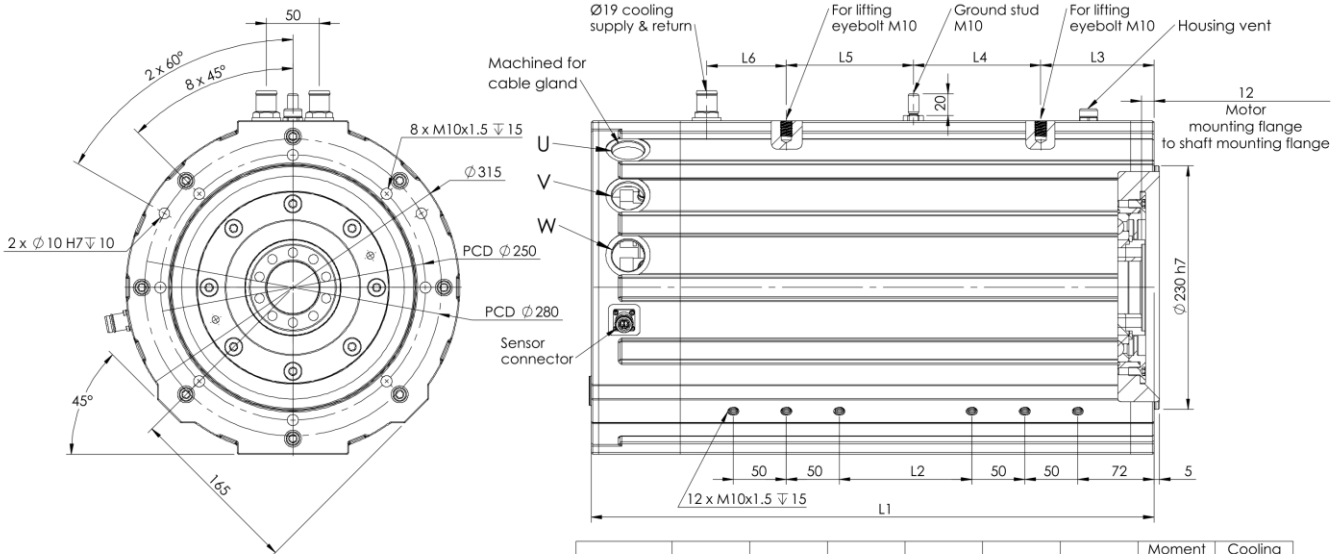
Front view



Rear view



Shaft end



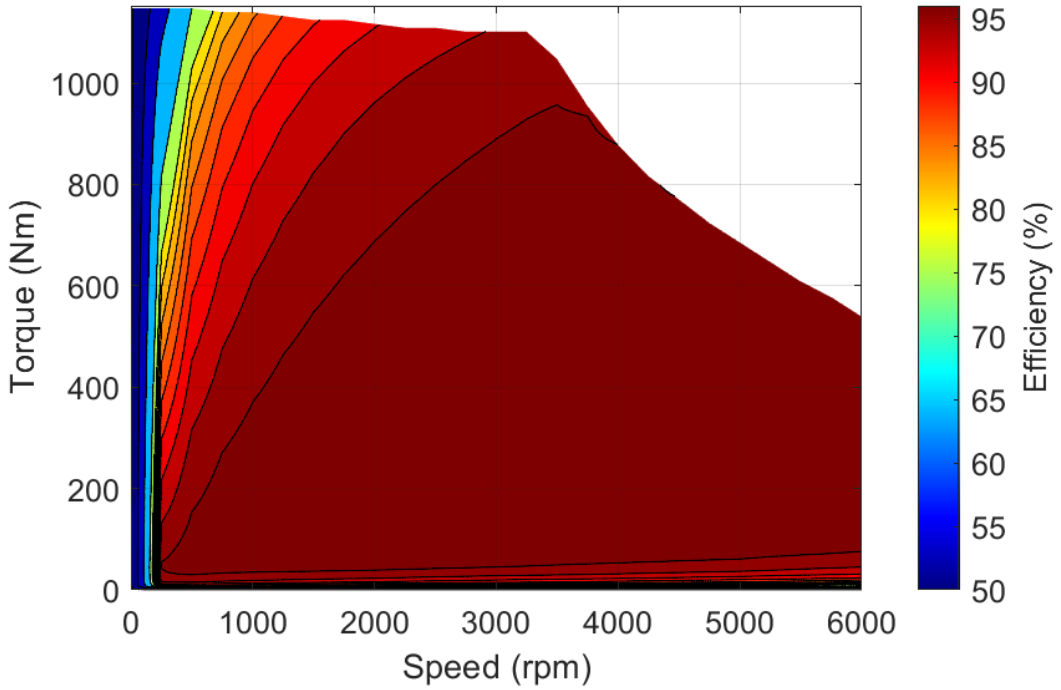
Model	L1	L2	L3	L4	L5	L6	Moment of Inertia [kg.m²]	Cooling channel volume [L]
260W_200xx	453	45	87	115	65	155	0,1327	1,91
260W_250xx	503	95	97	115	115	65	0,1677	2,17
260W_280xx	531	125	107	120	120	75	0,1892	2,32

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.

ENGIRO GmbH · Avantisallee 51 · 52072 Aachen · Germany
Tel. +49 (0)241 99798-0 · E-Mail: engineering@engiro.de · www.engiro.de

Simulated Efficiency of Motor Application

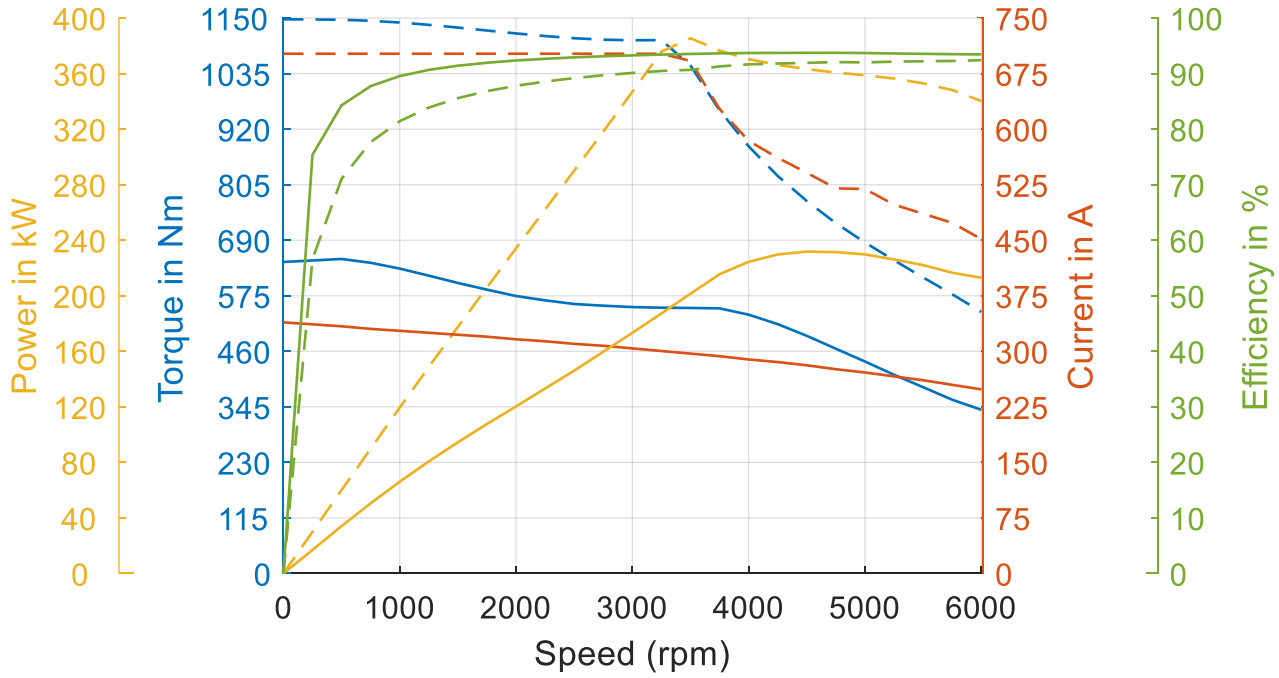
(electric machine only; U_{nom} = 750 V)



Simulated Characteristic Motor Parameters

U_{nom} = 750 V

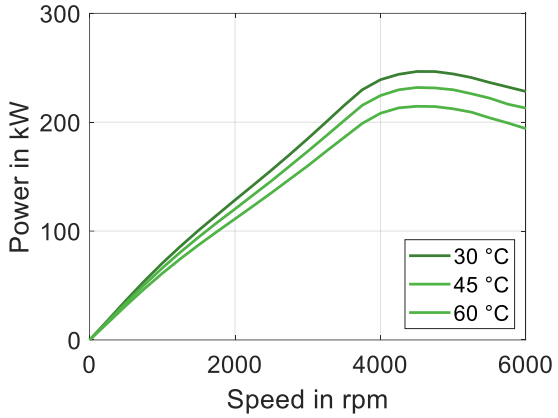
solid lines: continuous; dashed lines: maximum;



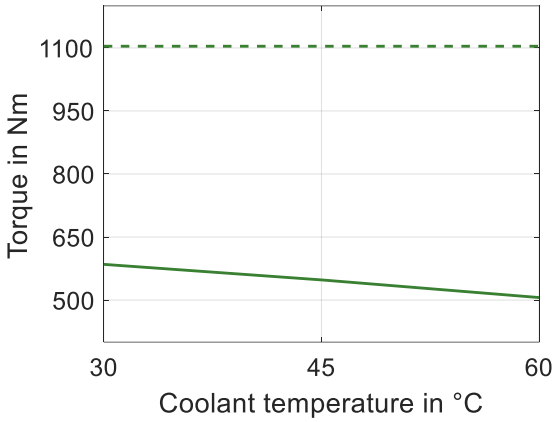
ENGIRO GmbH · Avantisallee 51 · 52072 Aachen · Germany
Tel. +49 (0)241 99798-0 · E-Mail: engineering@engiro.de · www.engiro.de

Additional Characteristics

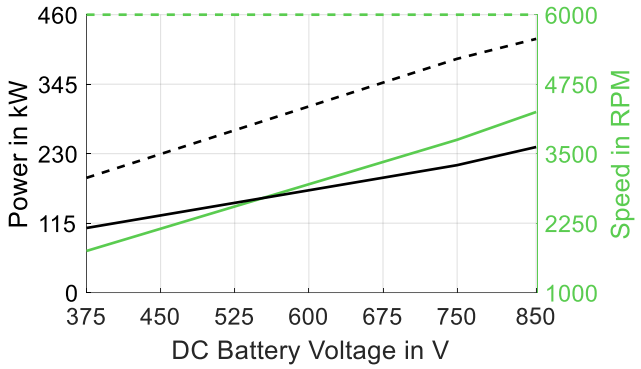
Simulated nominal power at different coolant temperatures - U_{nom} = 750 V



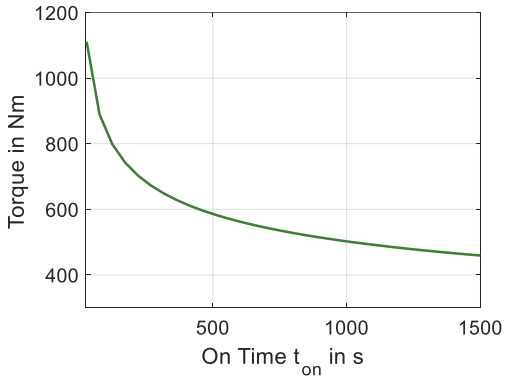
Available torque at different coolant temperatures[1)]



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;

ENGIRO GmbH · Avantisallee 51 · 52072 Aachen · Germany
Tel. +49 (0)241 99798-0 · E-Mail: engineering@engiro.de · www.engiro.de