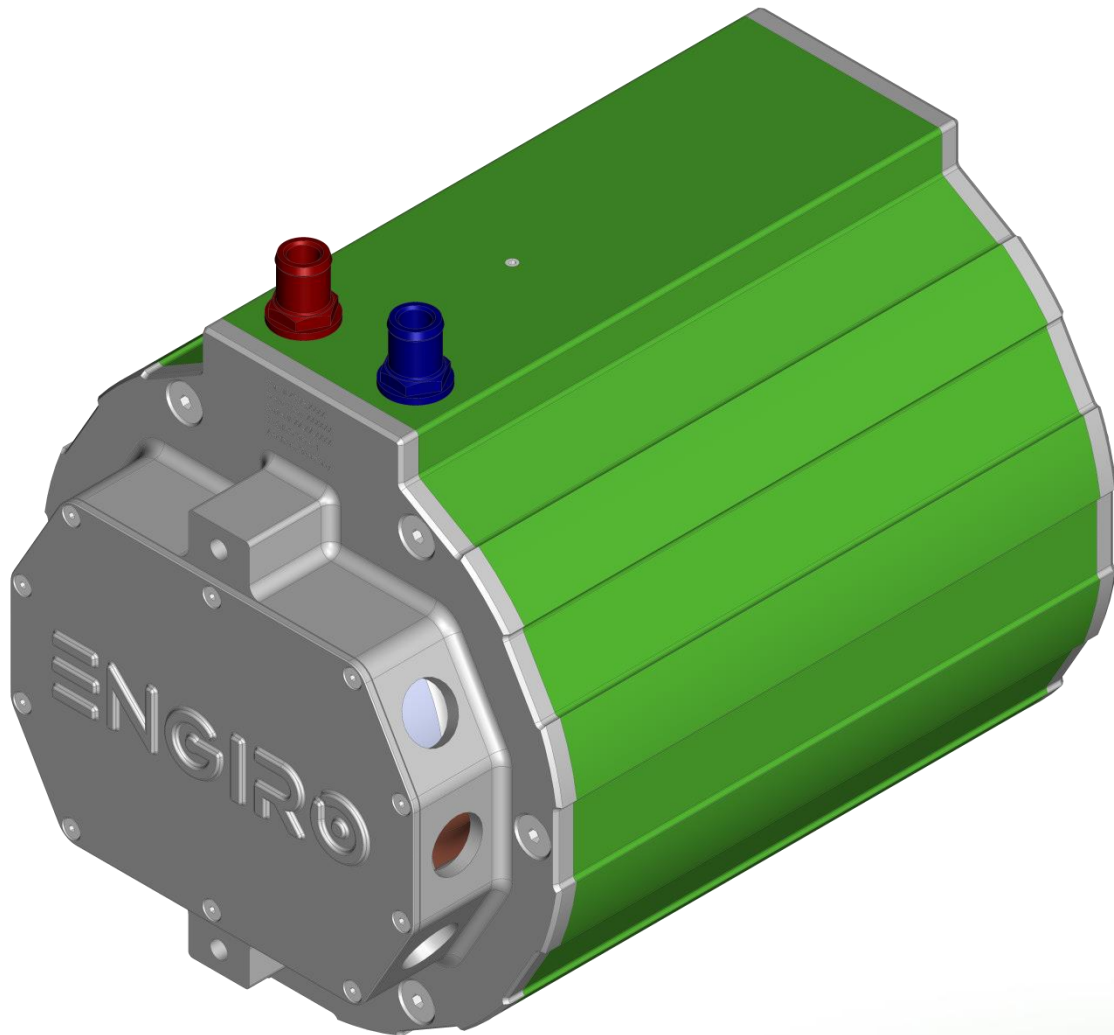


# 205W-12013-ABC

water-cooled motor / generator with up to 31 kW continuous power



## KEY FEATURES

- permanent magnet synchronous machine
- water-cooled
- high peak power for motor applications
- convincing cost-benefit ratio
- recommended voltage range from 48V to 200V
- delivery with controller possible
- various mechanical interfaces available

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Technical Data Inverter Set – 48 V	7
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Nominal Operation (S1, cooling as specified below)					
Torque	$T_{nom}$	134	134	Nm	
Power	$P_{nom}$	15	31	kW	
Speed	$n_{nom}$	1080	2180	rpm	
Phase rms-current	$I_{nom}$	382	382	A	
Battery voltage (DC)	$U_{nom}$	48	96	V	
Electric frequency	$f_{el, nom}$	72	145	Hz	
Power factor	$\cos(\varphi)$	0.72	0.69		
Maximal Values (S2, 10s, cooling as specified below)					
Torque	$T_{max}$	284	284	Nm	
Power	$P_{max}$	26	55	kW	
Phase rms-current	$I_{max}$	959	959	A	
Battery voltage (DC)	$U_{max}$		200	V	
Speed	$n_{max}$		5700	rpm	
Electric frequency	$f_{el, max}$		380	Hz	
Electrical Data					
Number of phases			3		
Number of pole pairs			4		
Maximal efficiency			>96	%	
$T/I$ constant ( $I < I_{nom}$ )			0.35	Nm/A <sub>rms</sub>	
$U/n$ constant (AC)		rms: 23.8	peak: 33.7	V/(1000rpm)	
$K_e$ constant (AC)		rms: 0.057	peak: 0.080	V/(rad*s <sup>-1</sup> )	
Additional Data					
Weight (w/o cables)			see page 4		
Rotor moment of inertia			0.0183	kg*m <sup>2</sup>	
Protection category			IP65 / IP69k		
Maximal motor temperature			140	°C	
Allowed ambient temperature			-20 ... 45 <sup>1)</sup>	°C	
Cooling (medium, flow rate, inlet temperature, pressure)			water/glycol 50/50, 6 l/min, ≤ 45°C, ≤ 0.5 bar		
Temperature monitoring			1 x KTY84-130		
Type approval			CE, EN 60034		
Customs tariff number			8501 5230		
Connectors					
Power terminals			3 x M25 cable gland		
Signal connectors			M16, 10 Pin		
Cooling connectors			2 x 3/4" / 19 mm		

<sup>1)</sup> other range on request

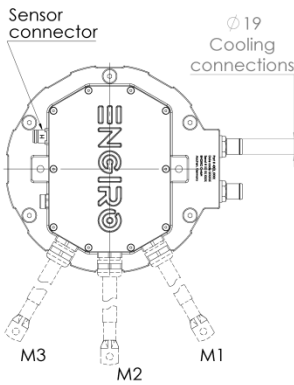
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Available Type Variants

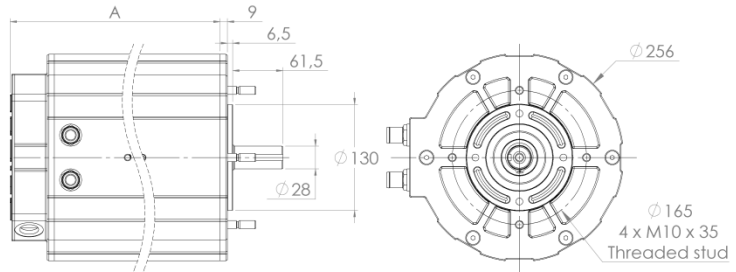
type number	A: flange	B: shaft	C: position sensor
205W-12013-	S: standard	S: cylindrical shaft with keyway Ø28mm	R: resolver
	B: flange for fan motor	H: hollow shaft with internal splines ANSI B 92.1	E: sin/cos encoder
	C: flange for fan without insert	E: external splines, DIN 5480	N: none
		C: cylindrical shaft with keyway Ø35mm	
		D: hollow shaft with internal splines ANSI B 92.1	

Dimension „A“ = 337 mm

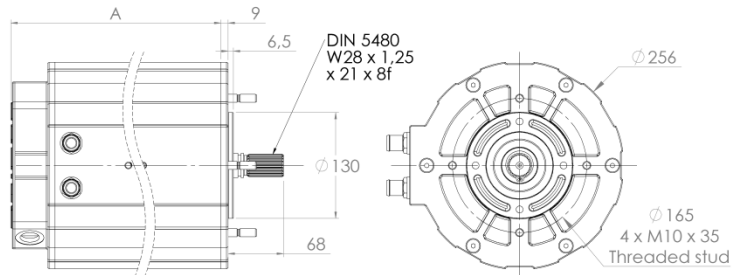
Approximate machine weight		
flange	shaft	kg
S	S	47
S	E	47
S	H	46
C	D	49
B	C	51



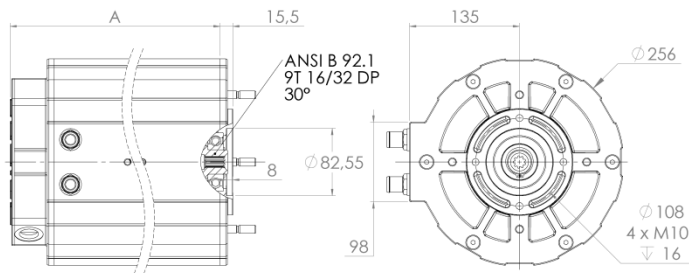
Flange S  
Shaft S



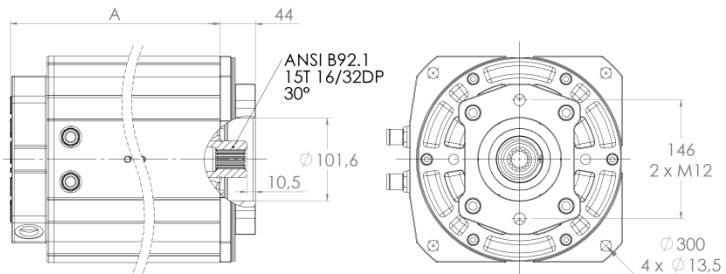
Flange S  
Shaft E



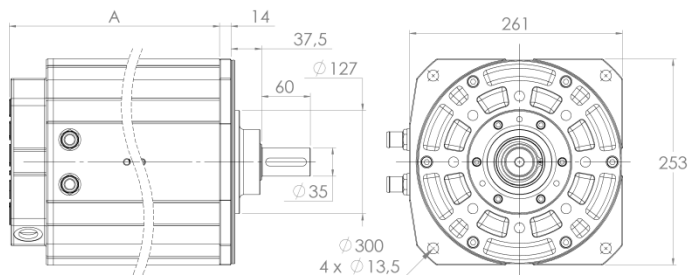
Flange S  
Shaft H



Flange C  
Shaft D



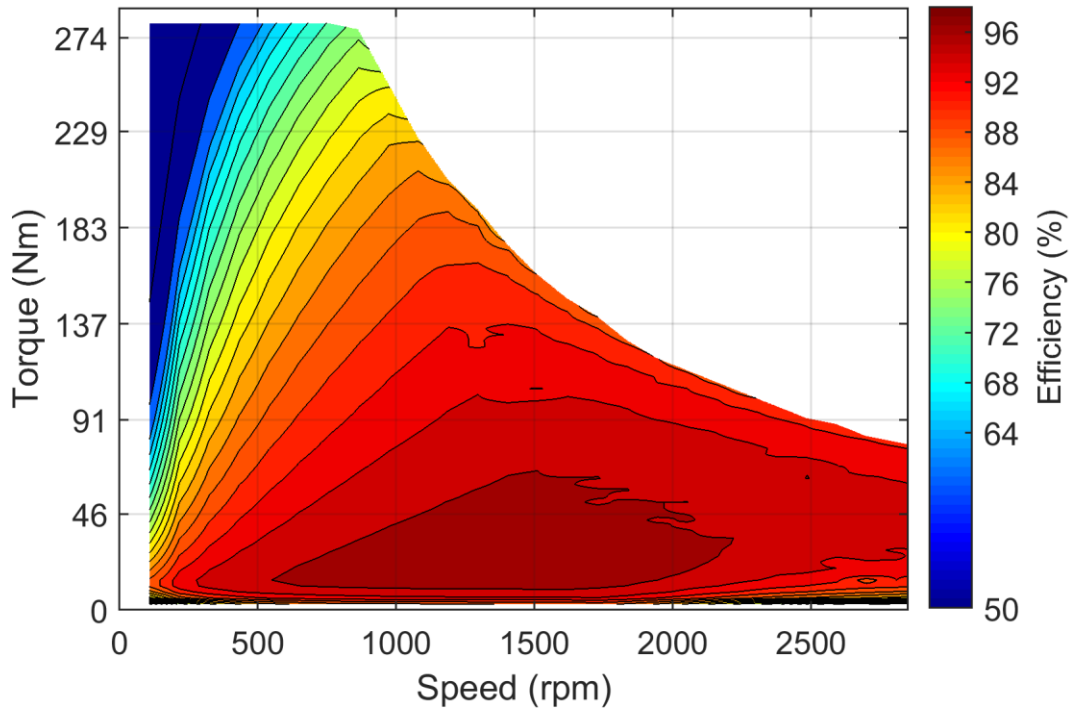
Flange B  
Shaft C



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## Simulated Efficiency of Motor Application

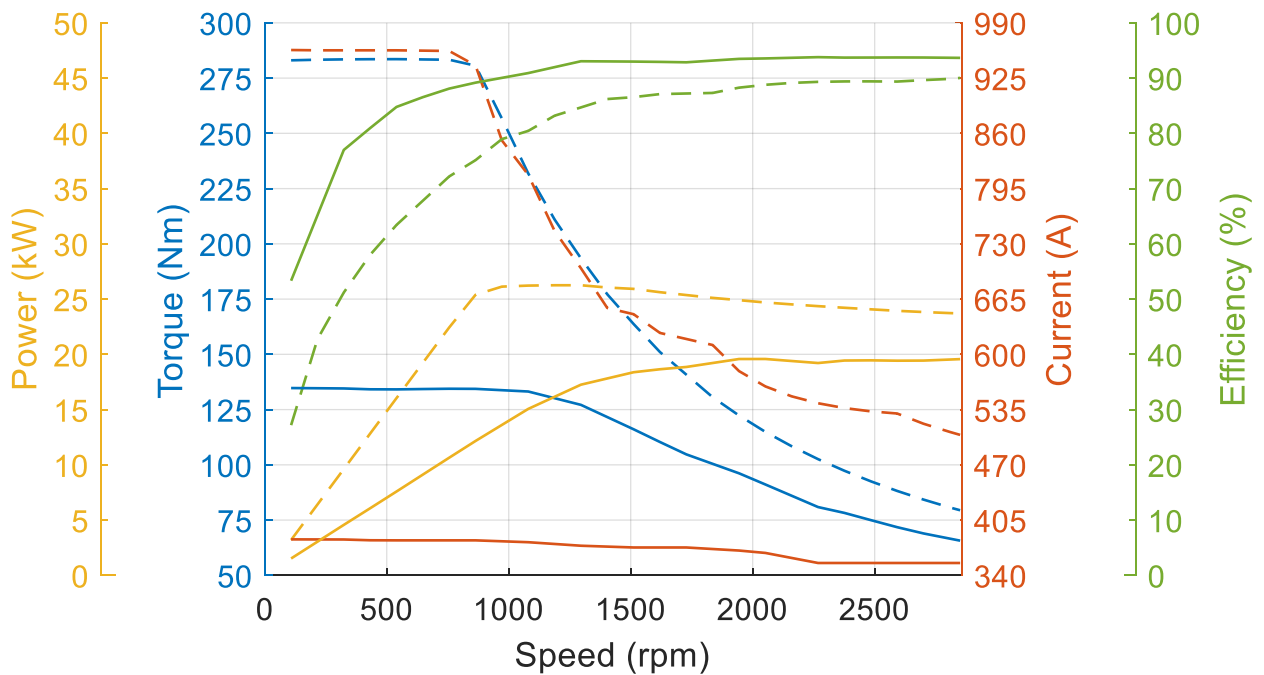
(electric machine only;  $U_{nom} = 48\text{ V}$ ; machine at  $100\text{ }^\circ\text{C}$ ;)



## Simulated Characteristic Motor Parameters

$U_{nom} = 48\text{ V}$

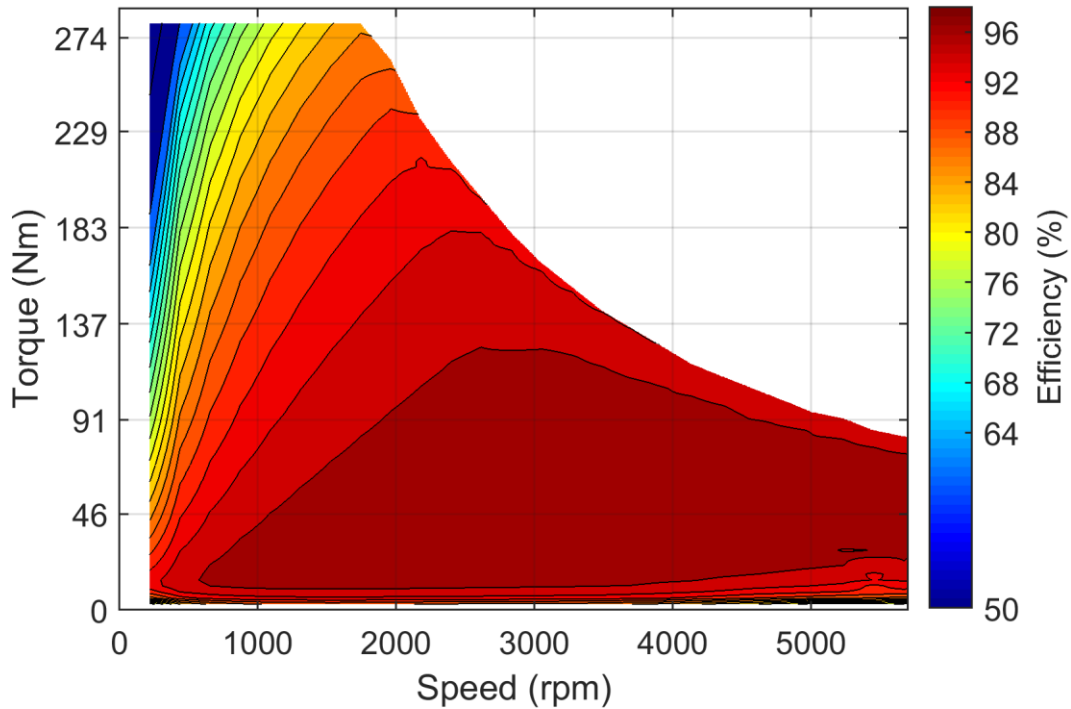
solid lines: continuous; dashed lines: maximum;  
(jitter is caused by numerical inaccuracies in the simulation software)



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## Simulated Efficiency of Motor Application

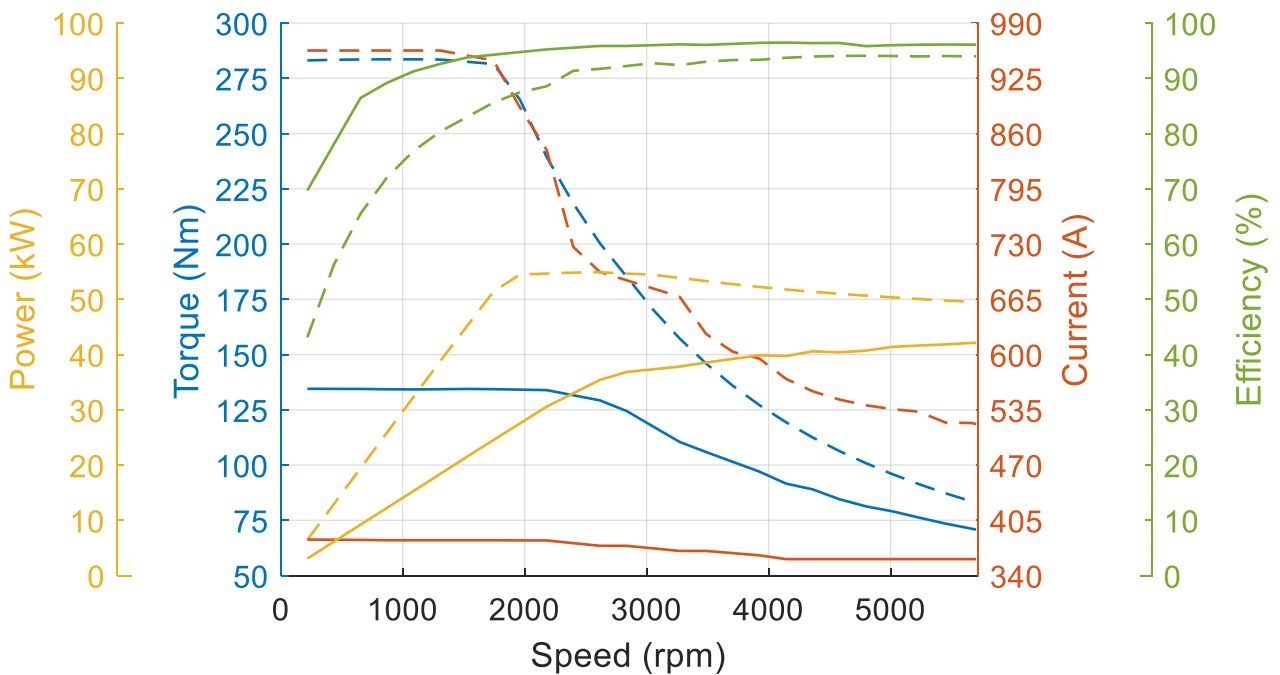
(electric machine only;  $U_{nom} = 96\text{ V}$ ; machine at  $100\text{ }^\circ\text{C}$ ;)



## Simulated Characteristic Motor Parameters

$U_{nom} = 96\text{ V}$

solid lines: continuous; dashed lines: maximum;  
(jitter is caused by numerical inaccuracies in the simulation software)

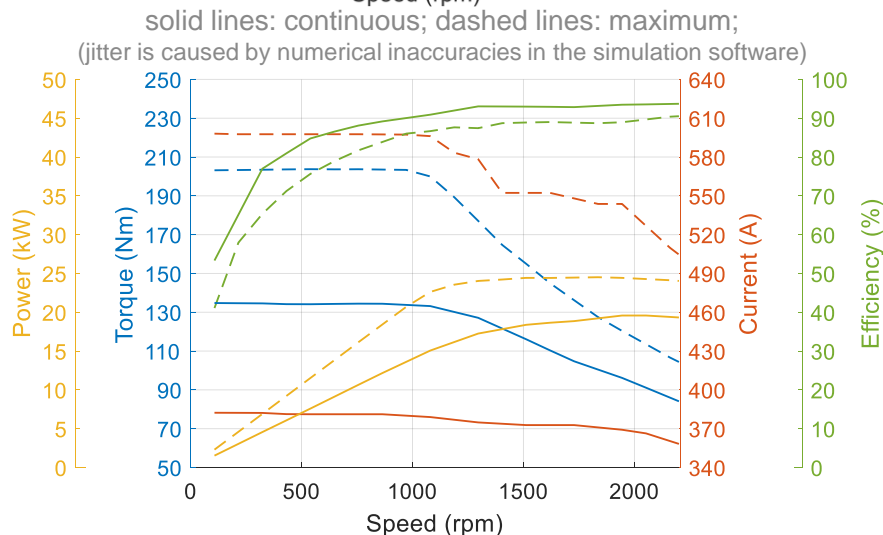
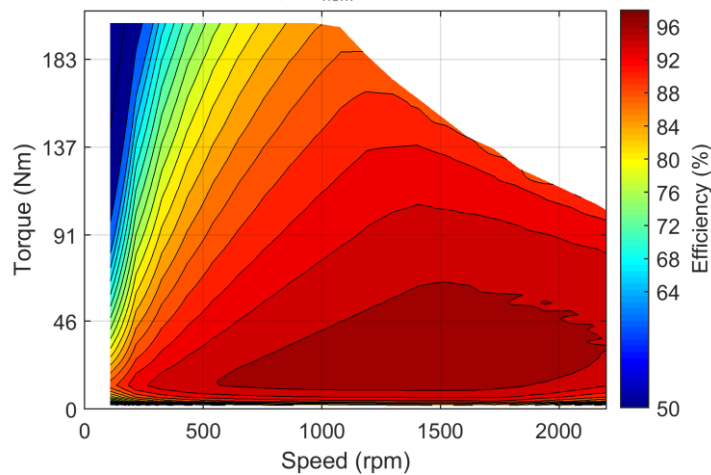


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Nominal Operation Drive Set – 48V (S1)			
Torque	$T_{nom}$		134 Nm
Power	$P_{nom}$		15 kW
Speed	$n_{nom}$		1080 rpm
Phase rms-current	$I_{nom}$		382 A
Battery voltage (DC)	$U_{nom}$		48 V
Electric frequency	$f_{el,nom}$		72 Hz
Power factor	$\cos(\varphi)$		0.72
Maximal Values Drive Set (S2, 1-10s)			
Torque	$T_{max}$		204 Nm
Power	$P_{max}$		25 kW
Phase rms-current	$I_{max}$		600 A
Battery voltage (DC)	$U_{max}$		48 V
Speed	$n_{max}$		2200 rpm
Electric frequency	$f_{el,max}$		147 Hz

### Simulated Efficiency and Motor Characteristic of Motor Application

(electric machine only;  $U_{nom} = 48\text{ V}$ ; machine at  $100\text{ }^\circ\text{C}$ ;)

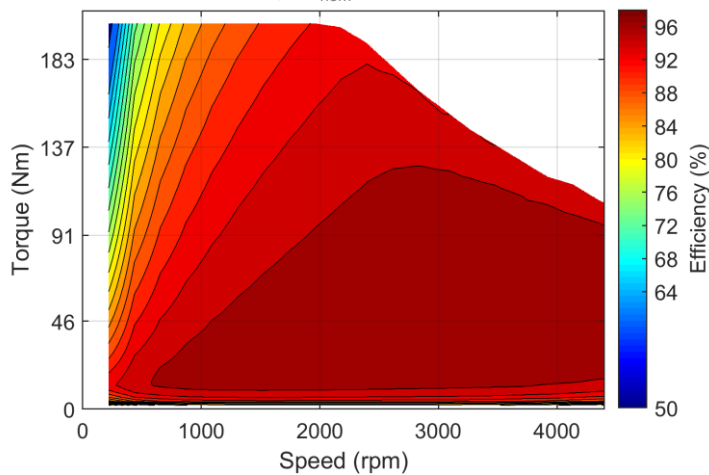


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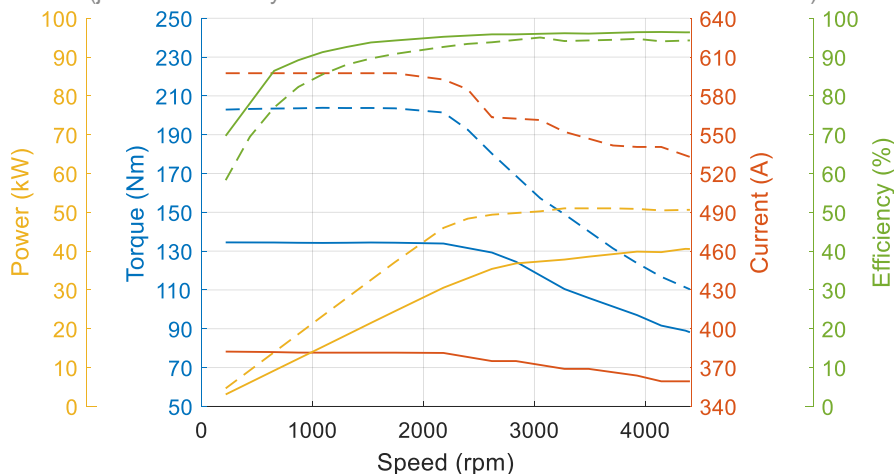
Nominal Operation Drive Set – 96V (S1)			
Torque	$T_{nom}$		134 Nm
Power	$P_{nom}$		31 kW
Speed	$n_{nom}$		2180 rpm
Phase rms-current	$I_{nom}$		382 A
Battery voltage (DC)	$U_{nom}$		96 V
Electric frequency	$f_{el,nom}$		145 Hz
Power factor	$\cos(\varphi)$		0.69
Maximal Values Drive Set (S2, 1-10s)			
Torque	$T_{max}$		204 Nm
Power	$P_{max}$		51 kW
Phase rms-current	$I_{max}$		600 A
Battery voltage (DC)	$U_{max}$		96 V
Speed	$n_{max}$		4400 rpm
Electric frequency	$f_{el,max}$		293 Hz

### Simulated Efficiency and Motor Characteristic of Motor Application

(electric machine only;  $U_{nom} = 96\text{ V}$ ; machine at  $100\text{ }^\circ\text{C}$ ;)



solid lines: continuous; dashed lines: maximum;  
 (jitter is caused by numerical inaccuracies in the simulation software)



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