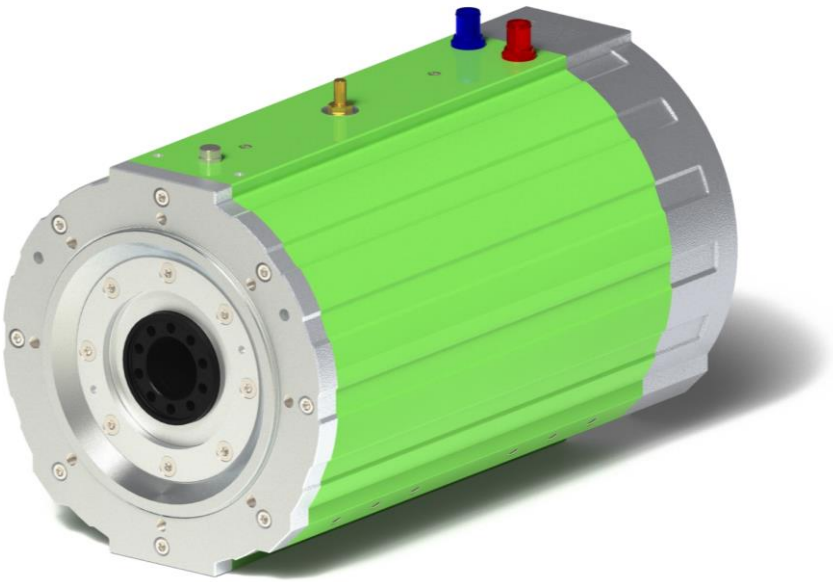
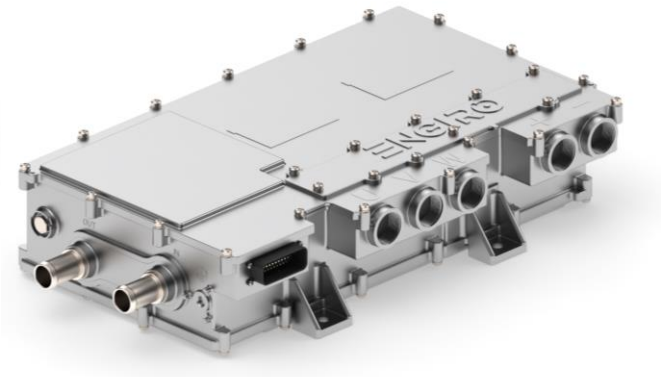
# 260W-15018-ABC

water-cooled motor / generator with 166 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



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# 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** |
| 4807368 | 260W_15018_SFR | S1 | F1 | R | …S11 |
| 4844591 | 260W_15018_DFR | S1 | F1 | R | …D01 |

## 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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# Operating Range

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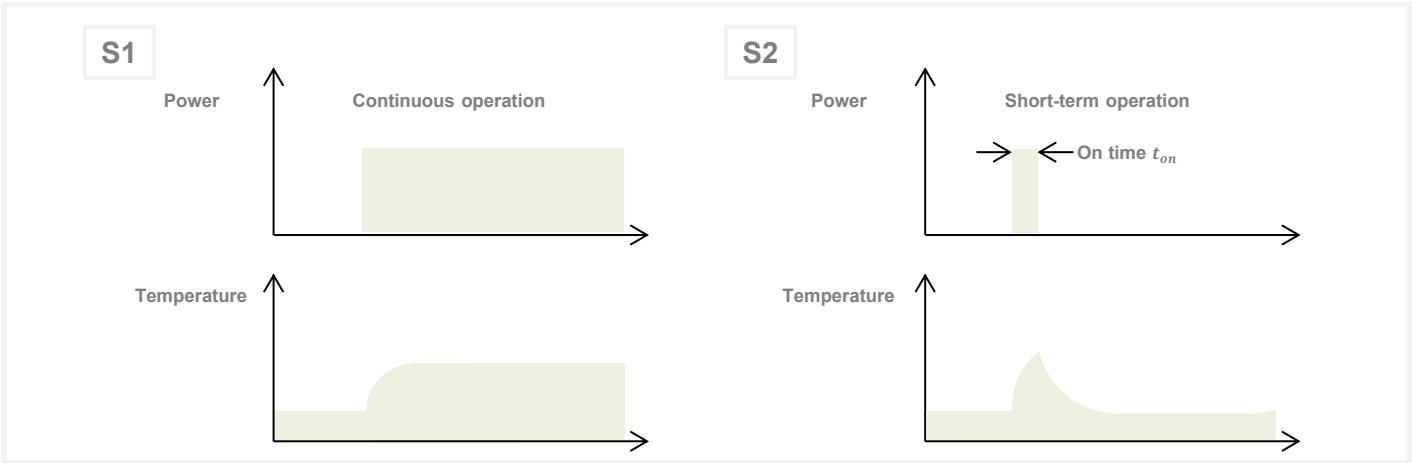
| Characteristic Operating Points [1] | | | | | |
|---|---|---|---|---|---|
| | | S1 | S2 | S2 | |
| Feasible operation time | $t_{on}$ | continuous | 30 min | 30 sec | |
| Torque [2] | $T$ | 381 | 381 | 833 | Nm |
| Power [2] | $P$ | 166 | 166 | 283 | kW |
| Speed | $n$ | 4000 | 4000 | 3250 | rpm |
| Phase rms-current (AC) [3] | $I_{rms}$ | 215 | 215 | 547 | A |
| Phase RMS-current (AC) [3] | $I_{nom}$ | 232 | 232 | 428 | A |
| Battery current (DC) | $U_{nom}$ | 750 | 750 | 750 | V |
| Electric frequency | $f_{el}$ | 333 | 333 | 270 | Hz |
| Efficiency | $\eta_{tot}$ | 95 | 95 | 88 | % |
| Power factor | $cos(\varphi)$ | 0.88 | 0.88 | 0.68 | |
| Cooling | specified in chapter „Additional Data“ | | | | |

| Maximum Operating Range | | | |
|---|---|---|---|
| Torque [2] [4] | $T_{max}$ | 833 @ 3250 rpm | Nm |
| Power [2] [4] | $P_{max}$ | 300 @ 3500 | kW |
| Speed [5] | $n_{max}$ | 6000 (S11: B-side interface)<br>3500 (D01: B-side interface) | rpm |
| Phase RMS-current (AC) [3] [4] | $I_{rms,max}$ | 547 | A |
| Battery current (DC) [3] [4] | $I_{max}$ | 454 | 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
5) Higher speeds available upon request. A detailed discussion of the functional safety concept of the vehicle is required.





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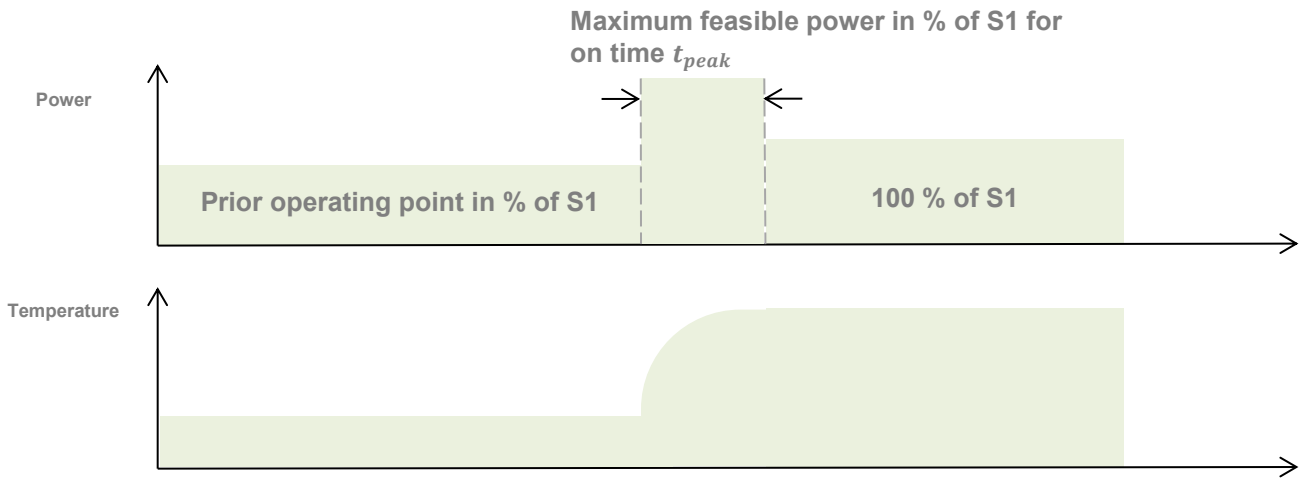
| S9 Operating Points<br>Maximum Feasible Power in % of S1 | | | | | | |
|---|---|---|---|---|---|---|
| $U_{nom}$ = 750 V | | Prior operating point in % of S1 | | | | |
| | | 0 % | 25 % | 50 % | 75 % | 100 % |
| On time $t_{peak}$ | 30 s | 170% | 160% | 150% | 130% | 100% |
| | 180 s | 140% | 130% | 130% | 110% | 100% |
| | 420 s | 120% | 110% | 110% | 100% | 100% |

**S9** Overload capability for subsequent continuous operation depending on preceding operation





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# Additional Data

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| Electrical Data | | | | | |
|---|---|---|---|---|---|
| Number of phases | | | | 3 | |
| Number of pole pairs | | | | 5 | |
| Maximal efficiency | | | | 95 | % |
| T/I constant (I<Inom) | | | | 1.85 | $Nm/A_{rms}$ |
| U/n constant (AC) at temperature 30°C | rms: | 116.6 | peak: | 173,6 | V/(1000rpm) |
| Ke constant (AC) at temperature 30°C | rms: | 0.278 | peak: | 0.414 | $V/(rad*s^{-1})$ |

| Additional Data | | | |
|---|---|---|---|
| Rotor moment of inertia | | 0.1006 | $kg*m^2$ |
| 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<br>▪ TL 774-D/F<br>▪ VIN 878389<br>▪ MAN 324 SNF<br>▪ MTL 5048 | |
| | Flow rate | 20 | l/min |
| | Inlet temperature | 45 | °C |
| | Pressure drop | 0.44 | bar |
| | Maximum inlet pressure | 2 | bar |
| | Cooling channel volume | 1.64 | 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 | ISO 20635 IP6K9K[2)]<br>Only applies to variants with closed B-side (S11) |
| 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.





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# Available Type Variants

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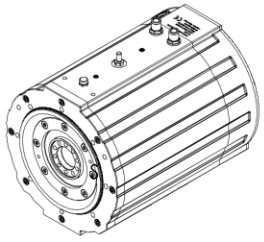
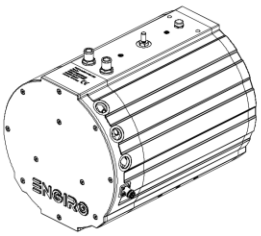
| Available Type Variants | | | | |
|---|---|---|---|---|
| **Flange** | **Shaft** | **Pos. sensor** | **B-side interface** | **Weight (kg)** |
| **S1**<br>Flange with mounting threads (Ø230 mm centering, Ø250 PCD 8 x M10) | **F1**<br>Hollow shaft with screw flange (Ø90 and Ø50 mm centering, Ø66 mm PCD 10 x M10) | **R**<br>Resolver | **S11**<br>Closed B-side | ≈ 97 kg |
| | | | **D01**<br>Shaft interface on b-side (Ø90 and Ø50 mm centering, Ø66 mm PCD 10x M10) | |

Other individual combinations are also possible on request.

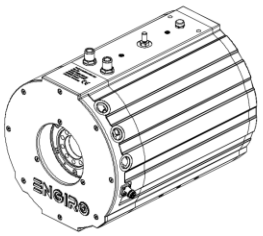
## Technical Drawings



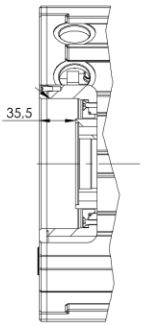
Front view



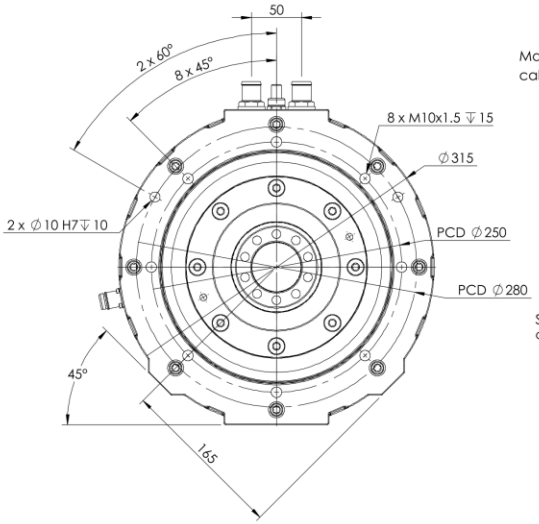
Rear view

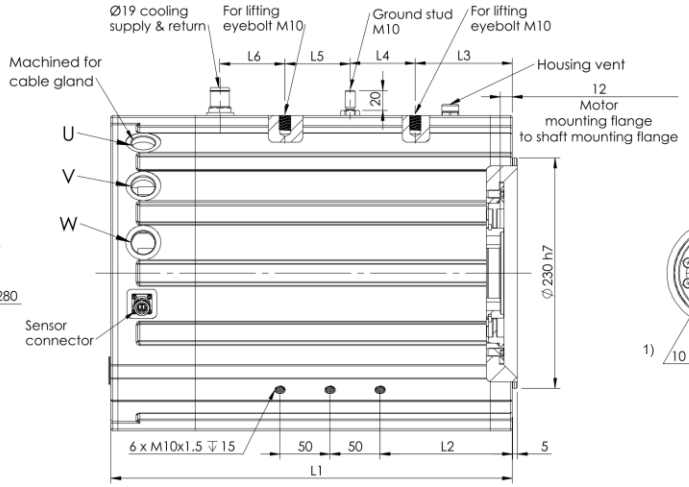


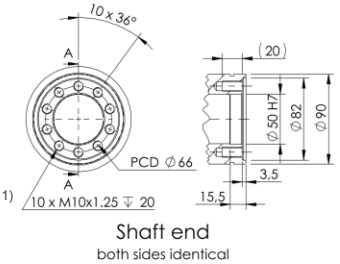
Accessible rear shaft




Rear shaft detail




Shaft end
both sides identical

| Model | L1 | L2 | L3 | L4 | L5 | L6 | Moment of Inertia [kg.m²] | Cooling channel volume [L] |
|---|---|---|---|---|---|---|---|---|
| 260W_080xx | 331 | 97 | 92 | 40 | 30 | 60 | 0,0671 | 1,28 |
| 260W_100xx | 351 | 107 | 97 | 45 | 35 | 65 | 0,0899 | 1,38 |
| 260W_130xx | 381 | 112 | 107 | 55 | 35 | 75 | 0,0944 | 1,53 |
| 260W_150xx | 401 | 132 | 97 | 65 | 65 | 65 | 0,1006 | 1,64 |

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.





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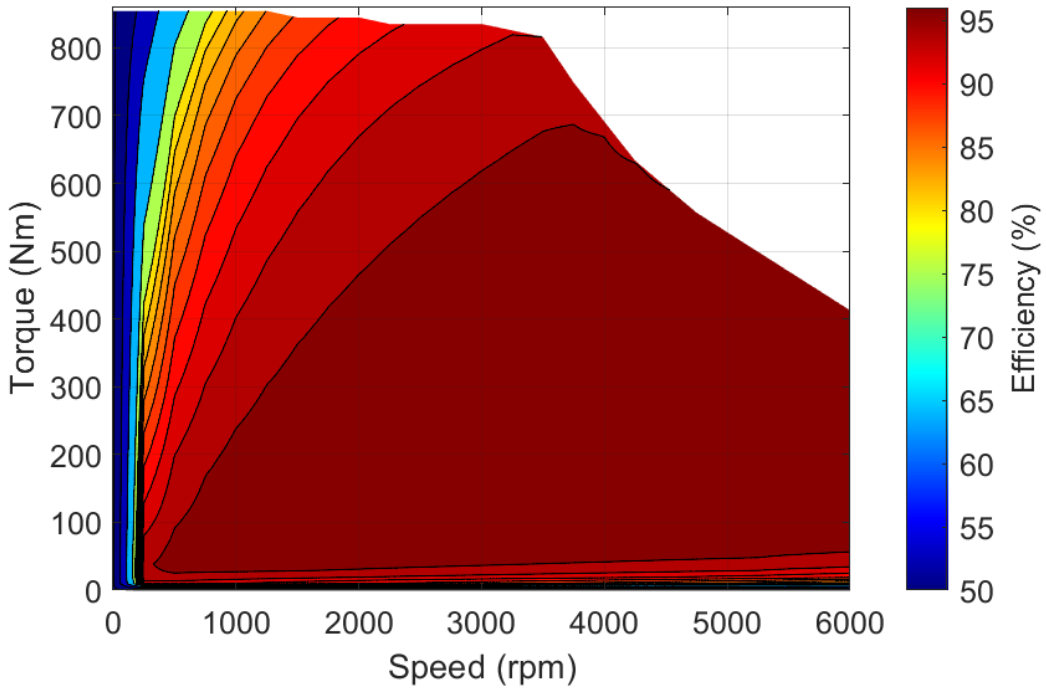
## Simulated Efficiency of Motor Application

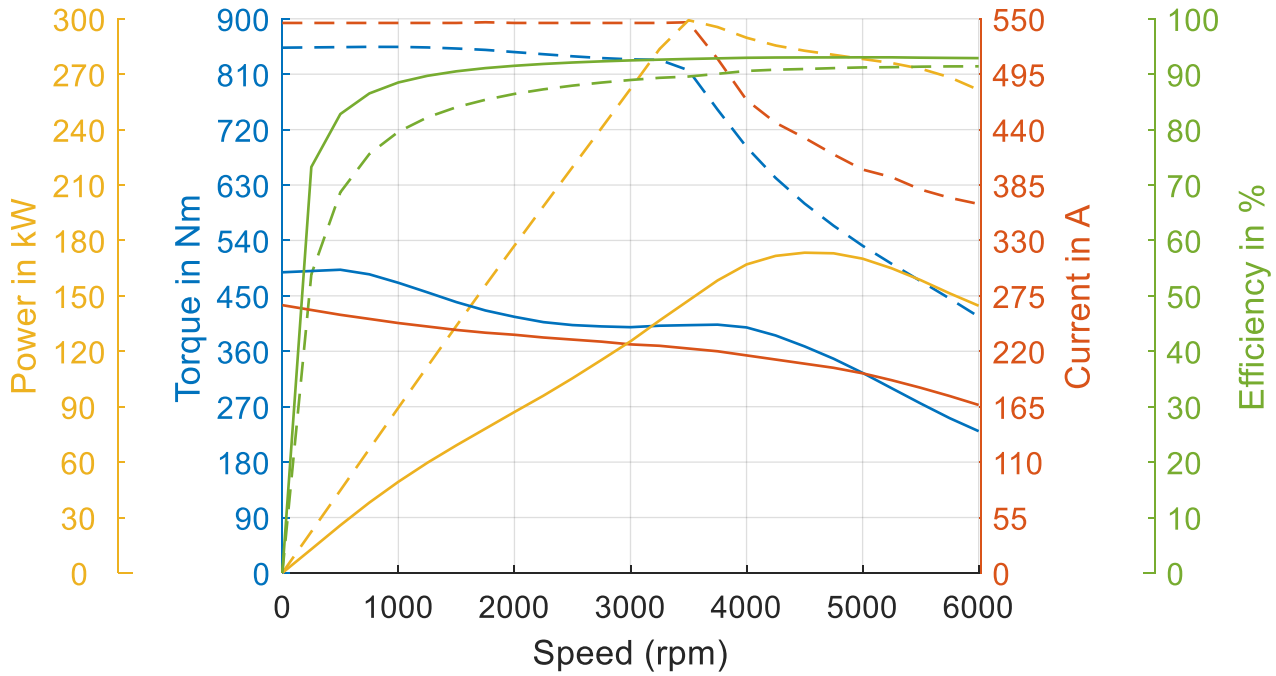
(electric machine only; $U_{nom}$ = 750 V)




## Simulated Characteristic Motor Parameters

$U_{nom}$ = 750 V

solid lines: continuous; dashed lines: maximum;





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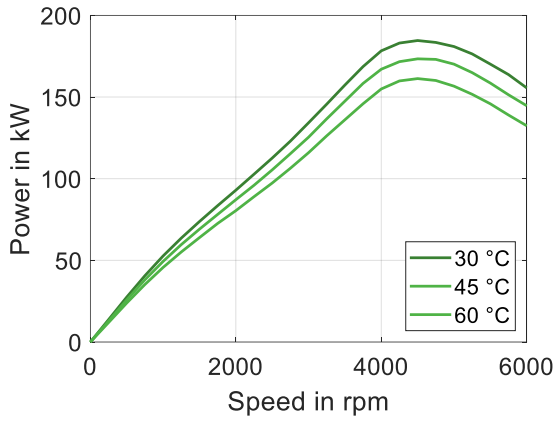
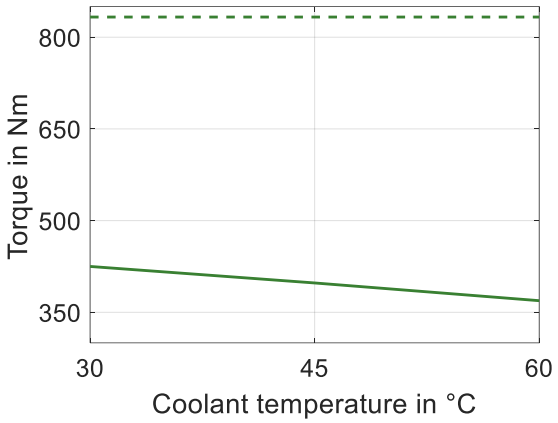
# Additional Characteristics



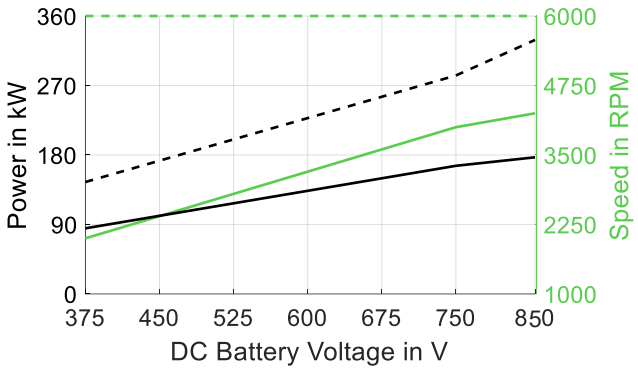
Simulated nominal power at different coolant temperatures - $U_{nom}$ = 750 V



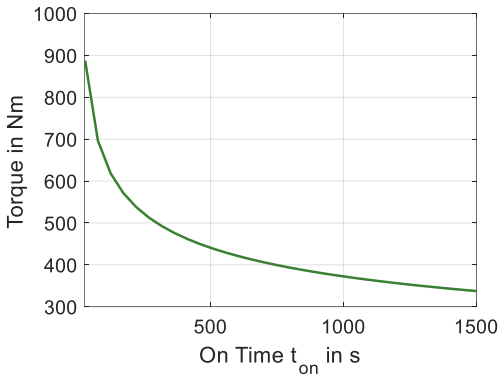

Available torque at different coolant temperatures[1)]




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;





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