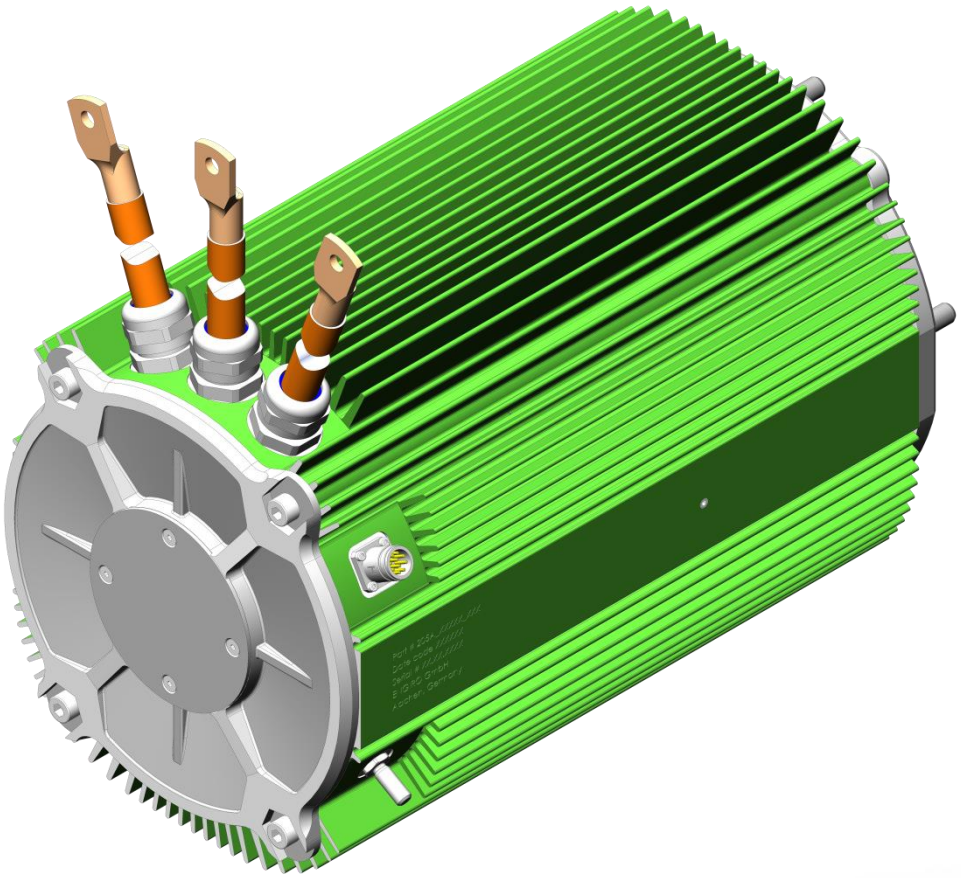
# 205A-16011-ABC

air-cooled motor / generator with up to 28 kW continuous power



## KEY FEATURES

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



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# Technical Data Machine

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| | | | | | |
|---|---|---|---|---|---|
| **Nominal Operation (S1, cooling as specified below)** | | | | | |
| Torque | $T_{nom}$ | 89 | 89 | 89 | Nm |
| Power | $P_{nom}$ | 9.7 | 19 | 28 | kW |
| Speed | $n_{nom}$ | 1040 | 2080 | 3030 | rpm |
| Phase rms-current | $I_{nom}$ | 227 | 227 | 227 | A |
| Battery voltage (DC) | $U_{nom}$ | 48 | 96 | 140 | V |
| Electric frequency | $f_{el,nom}$ | 69 | 138 | 202 | Hz |
| Power factor | cos(φ) | 0.77 | 0.76 | 0.75 | |
| **Maximal Values (S2, 10s, cooling as specified below)** | | | | | |
| Torque | $T_{max}$ | 380 | 380 | 380 | Nm |
| Power | $P_{max}$ | 32 | 68 | 100 | kW |
| Phase rms-current | $I_{max}$ | 1136 | 1136 | 1136 | A |
| Battery voltage (DC) | $U_{max}$ | | | 280 | V |
| Speed | $n_{max}$ | | | 7900 | rpm |
| Electric frequency | $f_{el,\ max}$ | | | 527 | Hz |
| **Electrical Data** | | | | | |
| Number of phases | | | | 3 | |
| Number of pole pairs | | | | 4 | |
| Maximal efficiency | | | | >96 | % |
| *T*/*I* constant (I<$I_{nom}$) | | | | 0.39 | $Nm/A_{rms}$ |
| *U*/*n* constant (AC) | rms: | 25.0 | peak: | 35.4 | V/(1000rpm) |
| $K_e$ constant (AC) | rms: | 0.060 | peak: | 0.085 | $V/(rad*s^{-1})$ |
| **Additional Data** | | | | | |
| Weight (w/o cables) | | | | 45 | kg |
| Rotor moment of inertia | | | | 0.023 | $kg*m^2$ |
| Protection category | | | | IP65 | |
| Maximal motor temperature | | | | 120 | °C |
| Allowed ambient temperature | | | | -20 … 45[1)] | °C |
| Cooling (medium, flow rate, inlet temperature, pressure) | | | | air, 6-16 m/s, ≤ 45°C | |
| Temperature monitoring | | | | 1 x KTY84-130 | |
| Type approval | | | | CE, EN 60034 | |
| Customs tariff number | | | | 8501 5230 | |
| **Connectors** | | | | | |
| Power terminals | | | | 3 x 50mm² cables with M8 cable lugs | |
| Weight power cables | | | | 3.3 | kg |
| Length power cables | | | | 2 | m |
| Signal connectors | | | | M16, 10 Pin | |

[1)] other range on request

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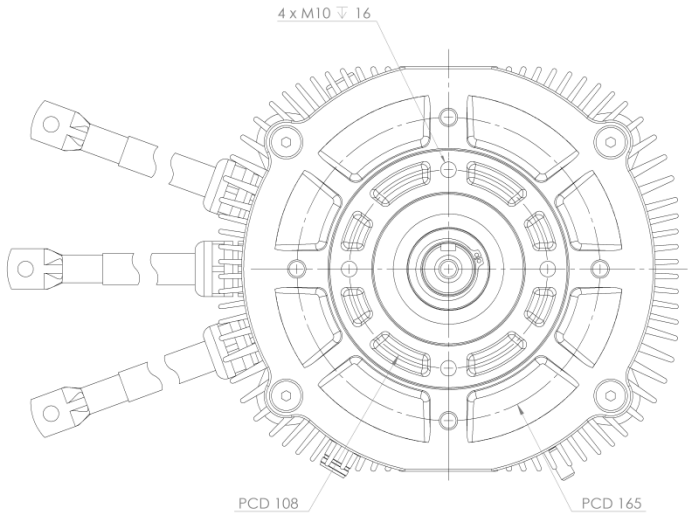
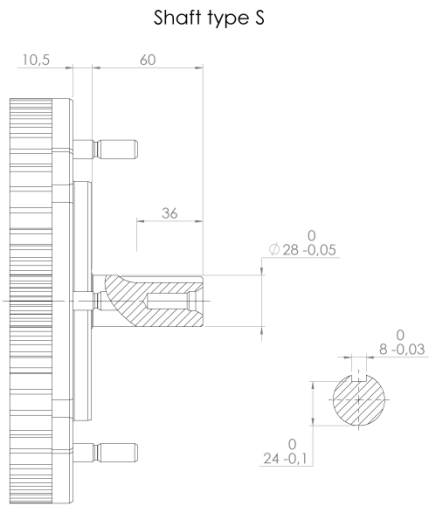
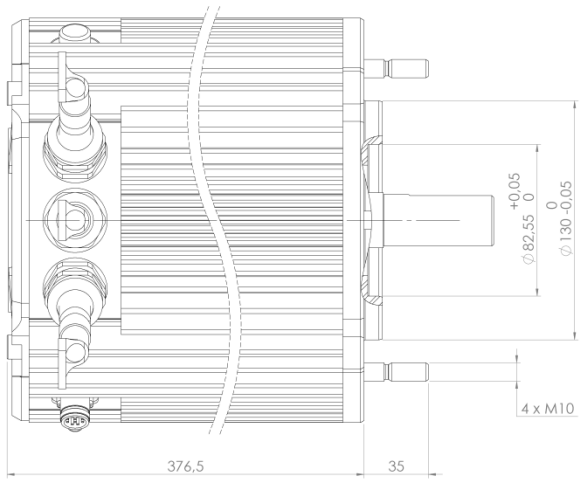
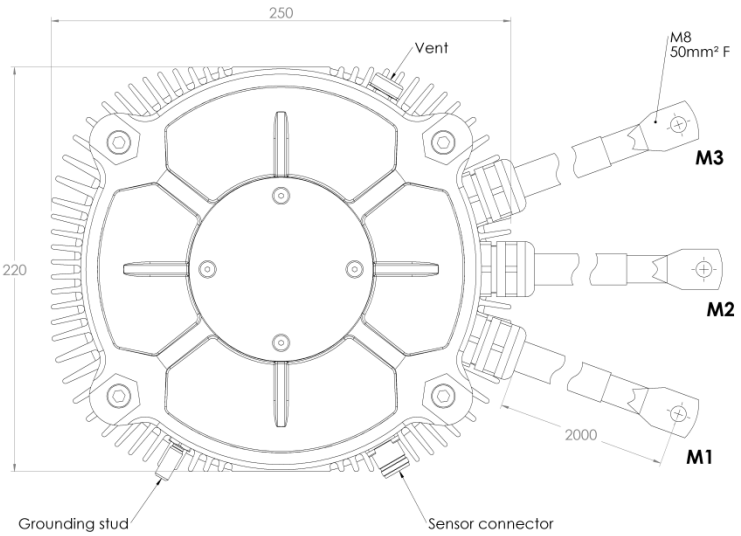
# Technical Drawings

| Available Type Variants | | | |
|---|---|---|---|
| type number | A: flange | B: shaft | C: position sensor |
| 205A-16011- | S: standard | S: cylindrical shaft with keyway | E: sin/cos encoder |
| | | | N: none |

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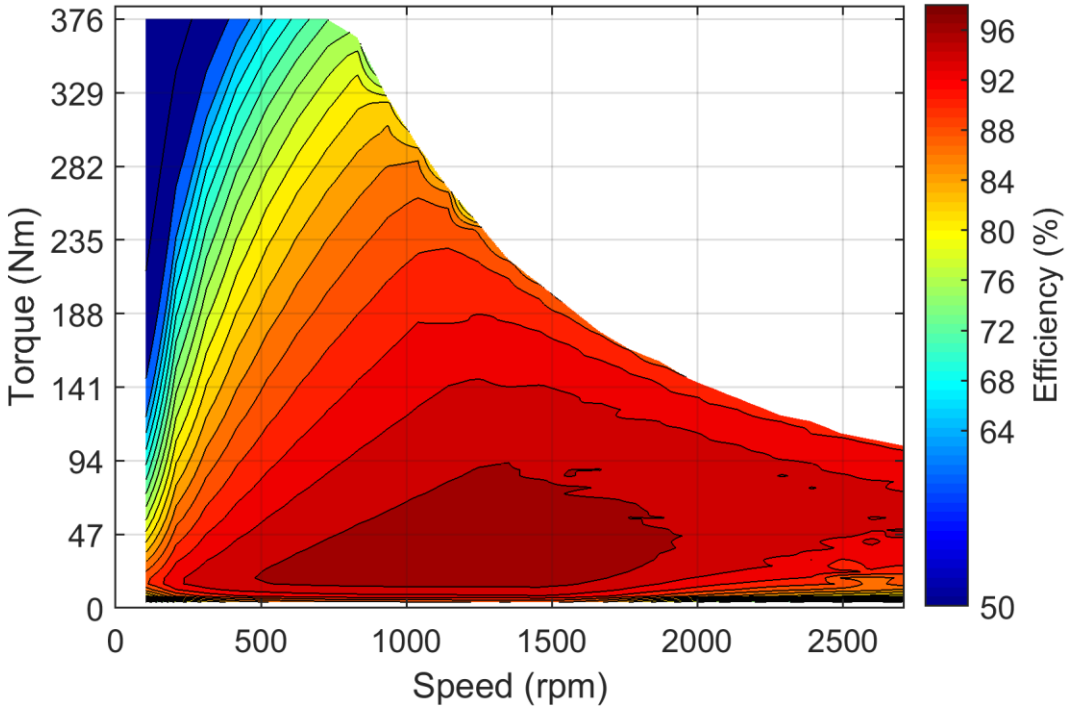
# Characteristics Machine

## Simulated Efficiency of Motor Application

(electric machine only; $U_{nom}$ = 48 V; machine at 100 °C;)

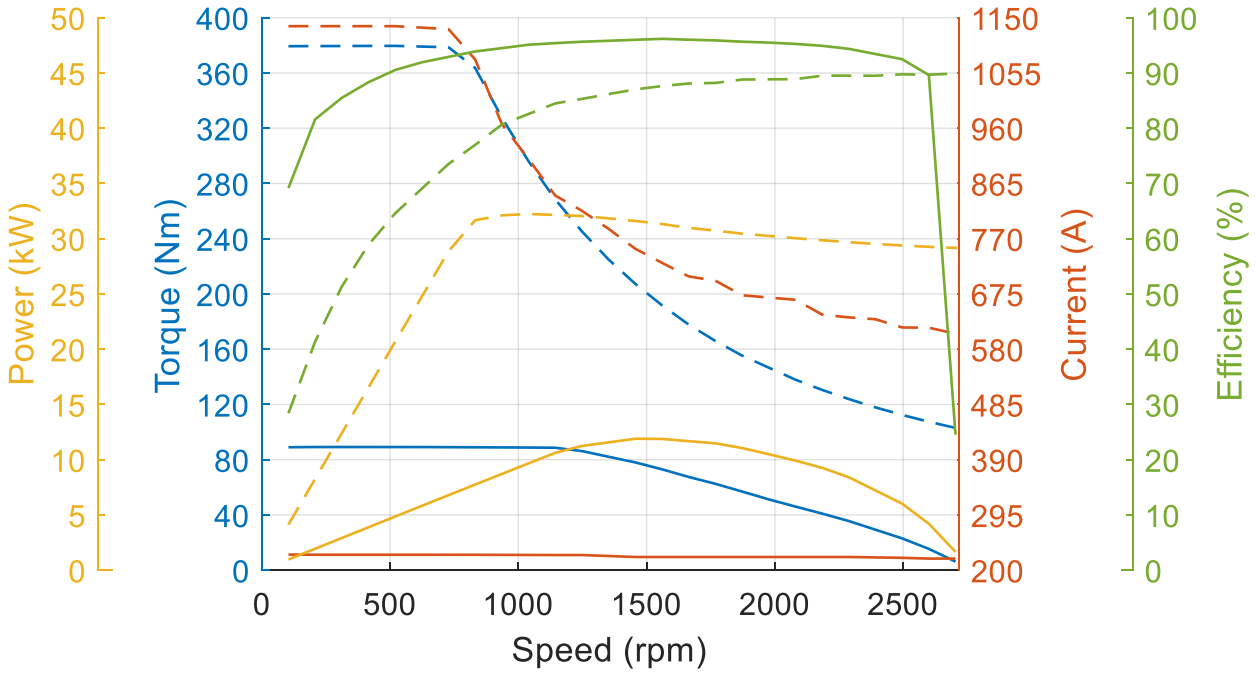



## Simulated Characteristic Motor Parameters

$U_{nom}$ = 48 V

solid lines: continuous; dashed lines: maximum;

(jitter is caused by numerical inaccuracies in the simulation software)

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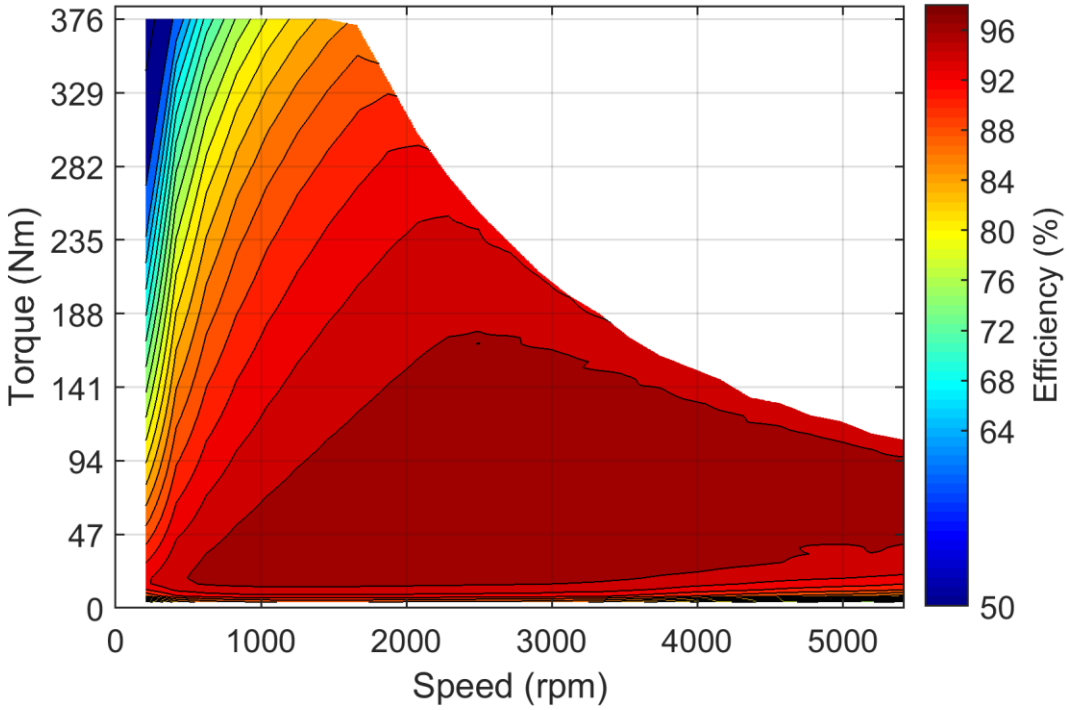
## Simulated Efficiency of Motor Application

(electric machine only; $U_{nom}$ = 96 V; machine at 100 °C;)

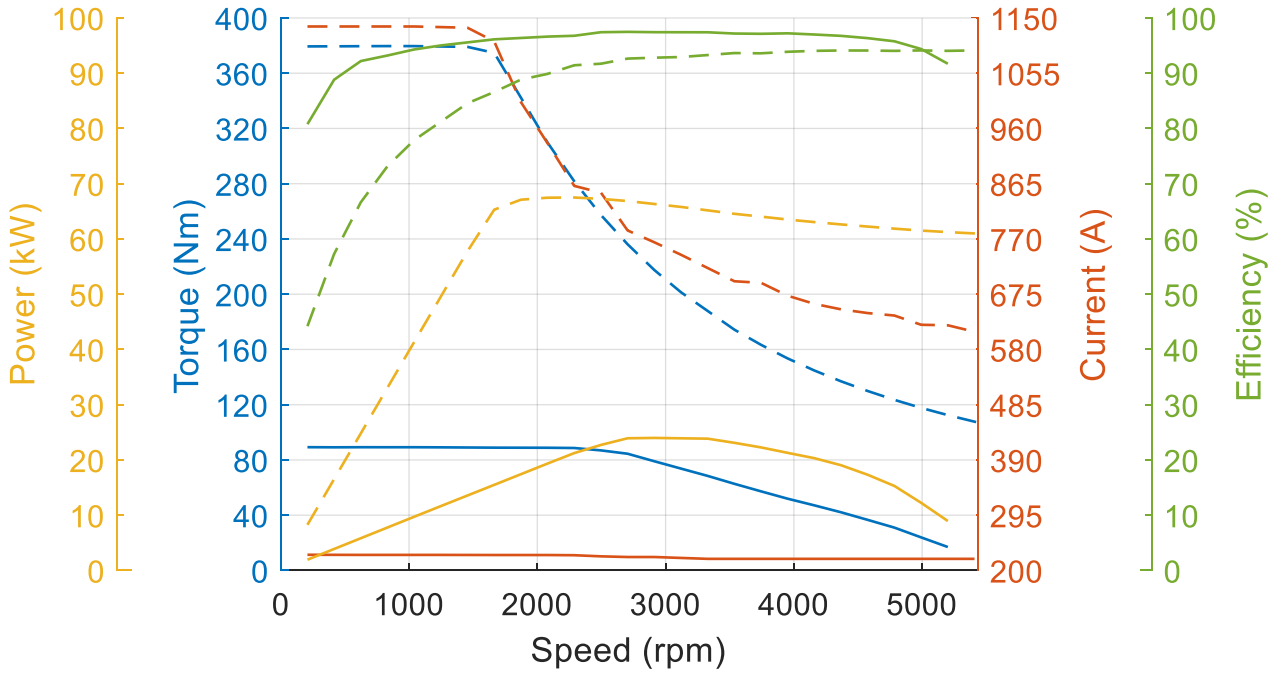



## Simulated Characteristic Motor Parameters

$U_{nom}$ = 96 V

solid lines: continuous; dashed lines: maximum;

(jitter is caused by numerical inaccuracies in the simulation software)

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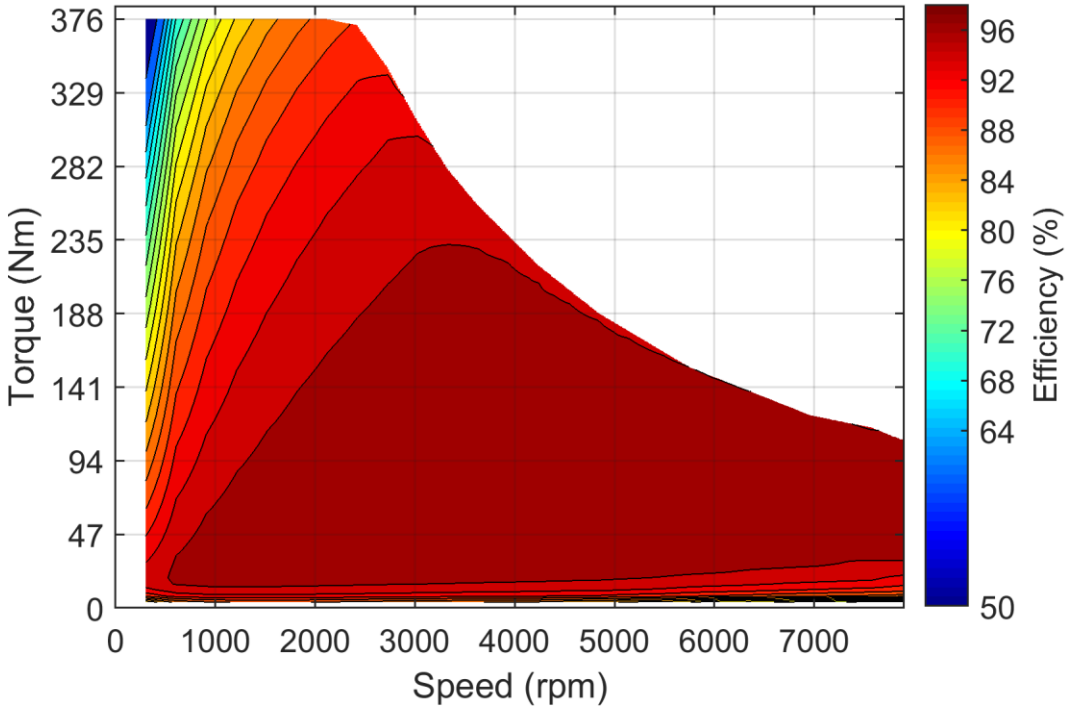
# Characteristics Machine

## Simulated Efficiency of Motor Application

(electric machine only; $U_{nom}$ = 140 V; machine at 100 °C;)

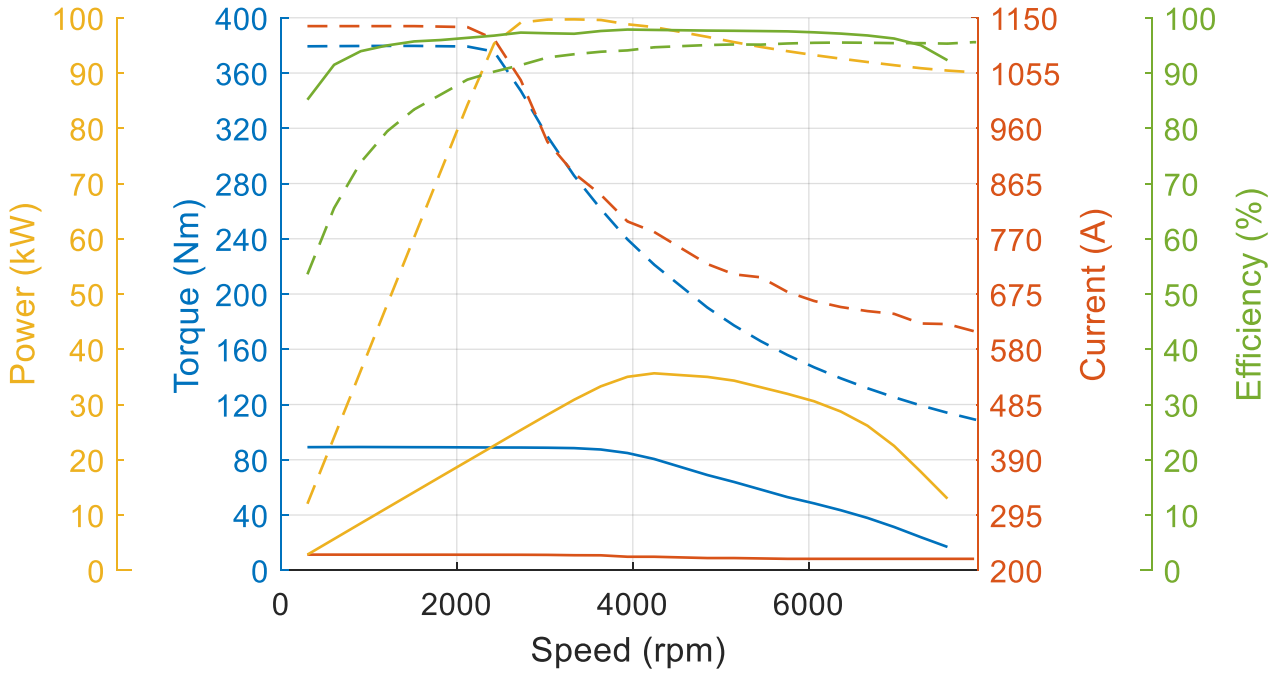



## Simulated Characteristic Motor Parameters

$U_{nom}$ = 140 V

solid lines: continuous; dashed lines: maximum;

(jitter is caused by numerical inaccuracies in the simulation software)

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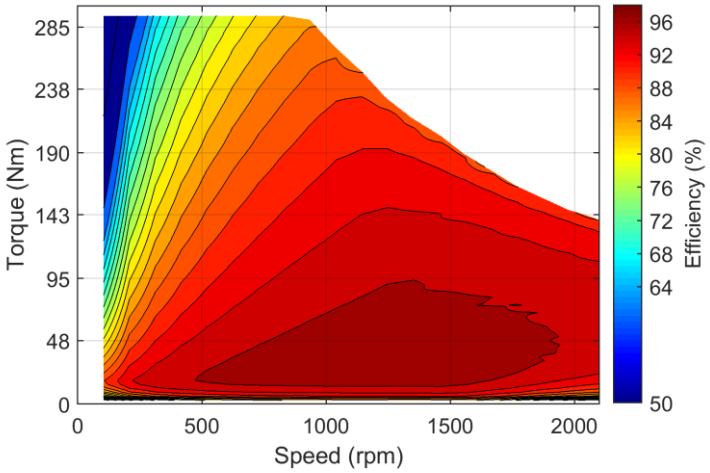
# Technical Data Inverter Set

| Nominal Operation Drive Set (S1) | | | |
|---|---|---|---|
| Torque | $T_{nom}$ | 89 | Nm |
| Power | $P_{nom}$ | 9.7 | kW |
| Speed | $n_{nom}$ | 1040 | rpm |
| Phase rms-current | $I_{nom}$ | 227 | A |
| Battery voltage (DC) | $U_{nom}$ | 48 | V |
| Electric frequency | $f_{el,nom}$ | 69 | Hz |
| Power factor | cos(φ) | 0.77 | |
| **Maximal Values Drive Set (S2, 1-10s)** | | | |
| Torque | $T_{max}$ | 296 | Nm |
| Power | $P_{max}$ | 31 | kW |
| Phase rms-current | $I_{max}$ | 781 | A |
| Battery voltage (DC) | $U_{max}$ | 48 | V |
| Speed | $n_{max}$ | 2100 | rpm |
| Electric frequency | $f_{el,\ max}$ | 140 | Hz |

## Simulated Efficiency and Motor Characteristic of Motor Application

(electric machine only; $U_{nom}$ = 48 V; machine at 100 °C;)

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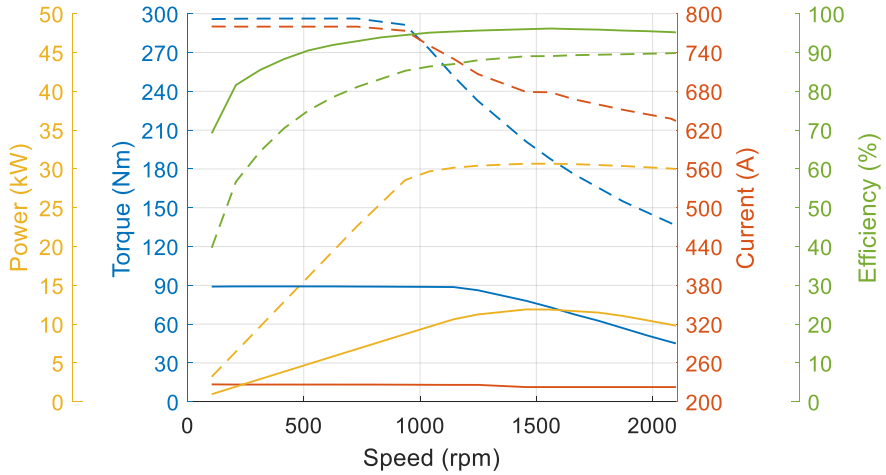


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# Technical Data Inverter Set

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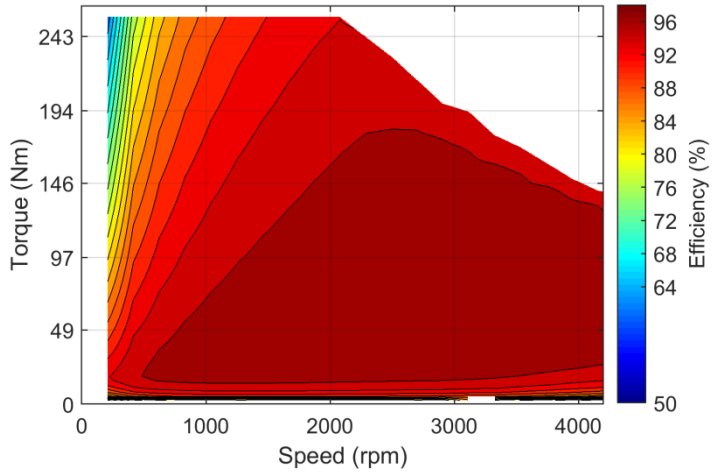
| Nominal Operation Drive Set (S1) | | | |
|---|---|---|---|
| Torque | $T_{nom}$ | 86 | Nm |
| Power | $P_{nom}$ | 19 | kW |
| Speed | $n_{nom}$ | 2080 | rpm |
| Phase rms-current | $I_{nom}$ | 220 | A |
| Battery voltage (DC) | $U_{nom}$ | 96 | V |
| Electric frequency | $f_{el,nom}$ | 138 | Hz |
| Power factor | cos(φ) | 0.76 | |
| **Maximal Values Drive Set (S2, 1-10s)** | | | |
| Torque | $T_{max}$ | 258 | Nm |
| Power | $P_{max}$ | 62 | kW |
| Phase rms-current | $I_{max}$ | 660 | A |
| Battery voltage (DC) | $U_{max}$ | 96 | V |
| Speed | $n_{max}$ | 4200 | rpm |
| Electric frequency | $f_{el,\ max}$ | 280 | Hz |

## Simulated Efficiency and Motor Characteristic of Motor Application

(electric machine only; $U_{nom}$ = 96 V; machine at 100 °C;)

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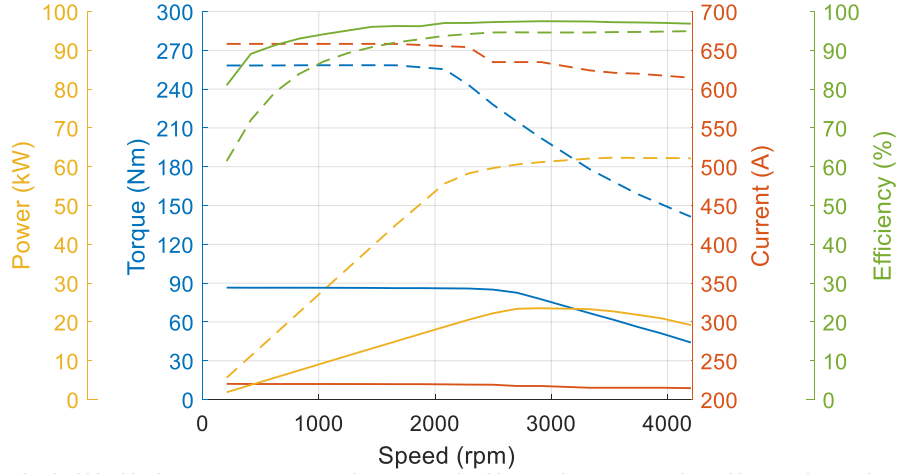


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