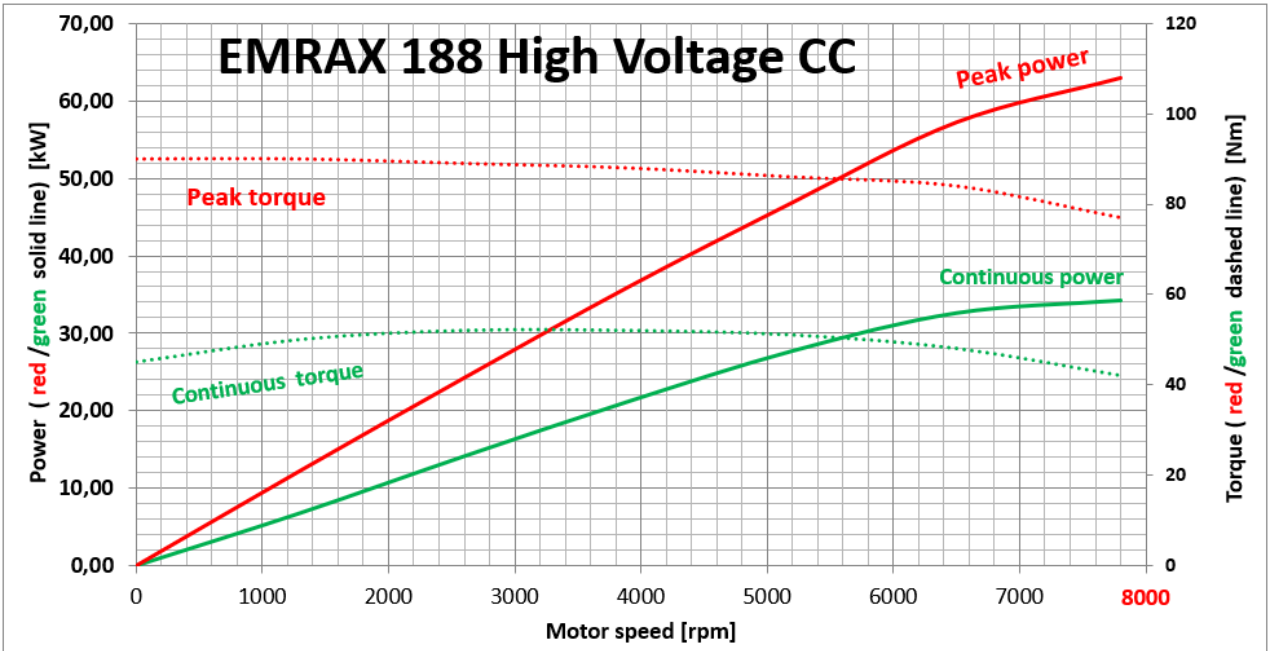
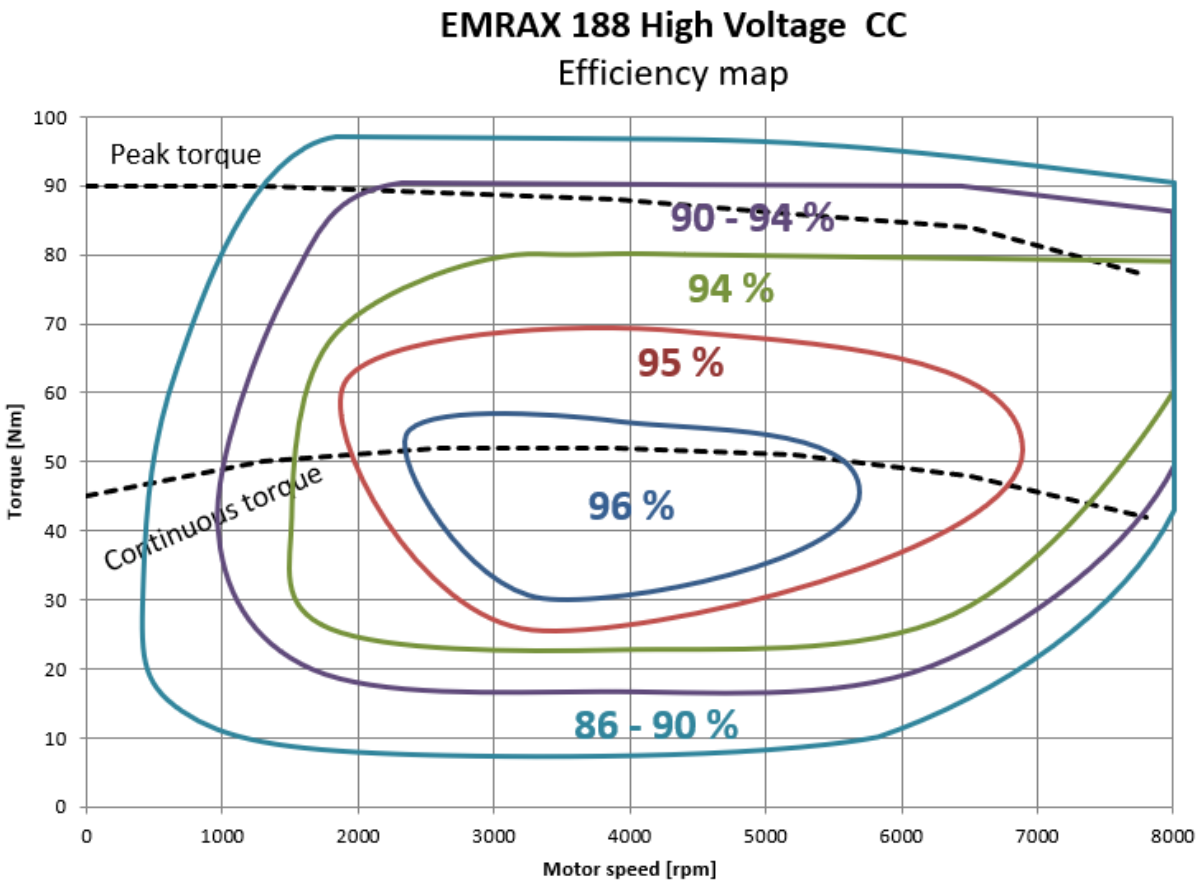
EMRAX 188 Technical Data Table

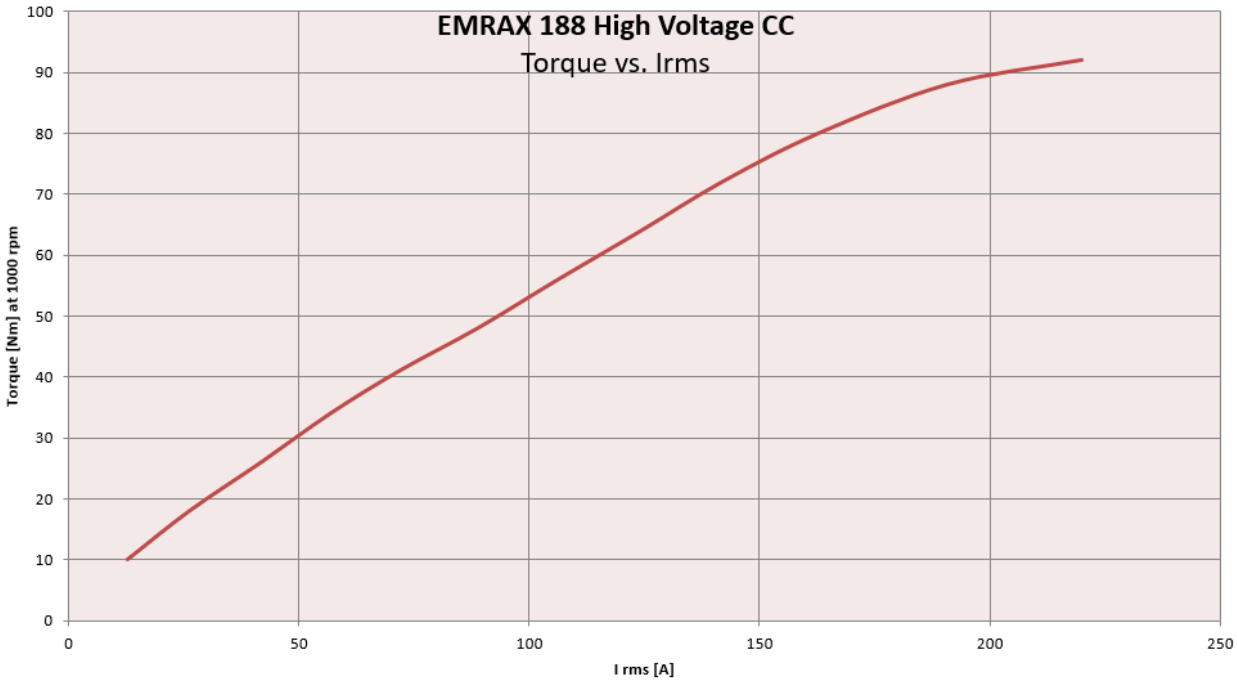
Type / Technical data	EMRAX 188 High Voltage			EMRAX 188 Medium Voltage			EMRAX 188 Low Voltage		
Air cooled = AC Liquid cooled = LC Combined cooled = Air + Liquid cooled = CC	**AC**	**LC**	**CC**	**AC**	**LC**	**CC**	**AC**	**LC**	**CC**
Ingress protection	IP21	IP65	IP21	IP21	IP65	IP21	IP21	IP65	IP21
Cooling medium specification (Air Flow = AF; Inlet Water/glycol Flow = WF; Ambient Air = AA) If inlet WF temperature and/or AA temperature are lower, then continuous power is higher.	AF=20m/s; AA=25°C	WF=8l/min at 50°C; AA=25°C	WF=8l/min at 50°C; AA=25°C	AF=20m/s; AA=25°C	WF=8l/min at 50°C; AA=25°C	WF=8l/min at 50°C; AA=25°C	AF=20m/s; AA=25°C	WF=8l/min at 50°C; AA=25°C	WF=8l/min at 50°C; AA=25°C
Weight [kg]	6,8	7,0	7,0	6,8	7,0	7,0	6,8	7,0	7,0
Diameter ø / width [mm]	188 / 77								
Maximal battery voltage [Vdc] and full load/no load RPM	400 Vdc (6400/7600 RPM)			270 Vdc (6750/7830 RPM)			100 Vdc (7000/7800 RPM)		
Peak motor power at max RPM (few min at cold start / few seconds at hot start) [kW]	**70**								
Continuous motor power (at 3000-6000 RPM) depends on the motor RPM [kW]	**15 - 28**	**15 - 30**	**17 - 35**	**15 - 28**	**15 - 30**	**17 - 35**	**15 - 28**	**15 - 30**	**17 - 35**
Maximal rotation speed [RPM]	**7000 (8500 peak for few seconds)**								
Maximal motor current (for 2 min if cooled as described in Manual) [Arms]	200			300			800		
Continuous motor current [Arms]	100			150			400		
Maximal peak motor torque [Nm]	**100**								
Continuous motor torque [Nm]	**50**								
Torque / motor current [Nm/1Aph rms]	0,60			0,39			0,15		
Maximal temperature of the copper windings in the stator and max. temperature of the magnets [°C]	120								
Motor efficiency [%]	92-98%								
Internal phase resistance at 25 °C [mΩ]	/			/			/		
Input phase wire cross-section [mm²]	10,2			15,2			38		
Wire connection	star								
Induction Ld/Lq [µH]	/			/			/		
Controller / motor signal	sine wave								
AC voltage between two phases [Vrms/1RPM]	0,0384			0,0252			0,00923		
Specific idle speed (no load RPM) [RPM/1Vdc]	19			29			78		
Specific load speed (depends on the controller settings) [RPM/1Vdc]	16 – 19			25 – 29			70 – 78		
Magnetic field weakening (for higher RPM at the same power and lower torque) [%]	up to 100								
Magnetic flux – axial [Vs]	/			/			/		
Temperature sensor in the motor	kty 81/210								
Number of pole pairs	10								
Rotor Inertia (mass dia=160mm, m=3,0kg) [kg*cm²]	/								
Bearings (front:back) - SKF/FAG	6204:6204 (for radial forces) or 6204:7204 (for axial-radial forces; for pull mode; focusing on very high axial load, e.g. for air propeller) or 6204:3204 (for axial-radial forces; for pull-push mode; »O« orientation, α=25°); other bearings are possible (exceptionally)								

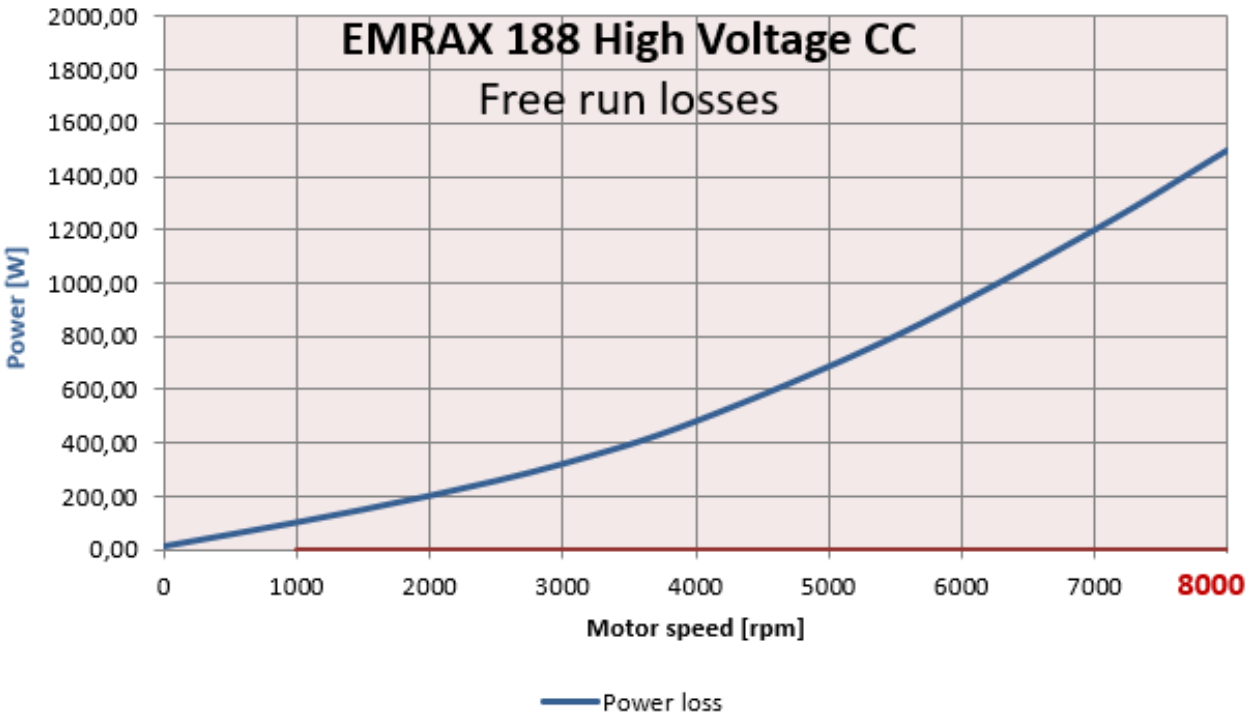
Graphs valid for EMRAX High Voltage Combined Cooled (CC) motor type:



Note 1: for determening peak or continuous power (kW) you should choose motor speed and than read power from chosen power curve (in the left graph side)
Note 2: for determening peak or continuous torque (Nm) you should choose motor speed and than read torque from chosen torque curve (in the right graph side)







Graphs of the EMRAX 188 Medium and Low voltage motor type:

Graphs of EMRAX 188 Low Voltage and EMRAX 188 Medium Voltage are similar to graphs of EMRAX 188 High Voltage. The only differences are the DC voltage and motor current. These two parameters can be read from the Technical data table for the EMRAX 188 Low and Medium Voltage motor.

Low Voltage motor needs 4 x higher motor current and 4 x lower DC voltage for the same power/torque and RPM, compared to EMRAX 188 High Voltage motor.

Medium Voltage motor needs 1.52 x higher motor current and 1/3 lower DC voltage for the same power/torque and RPM, compared to EMRAX 188 High Voltage motor.