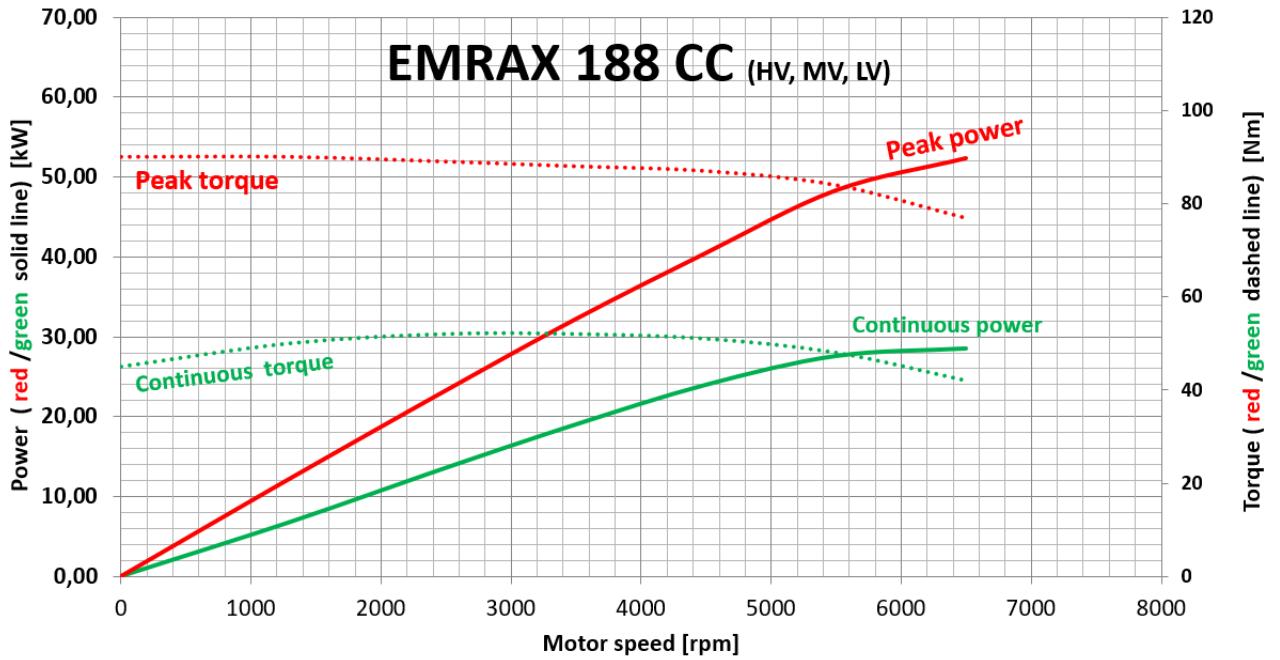


EMRAX 188 Technical Data Table

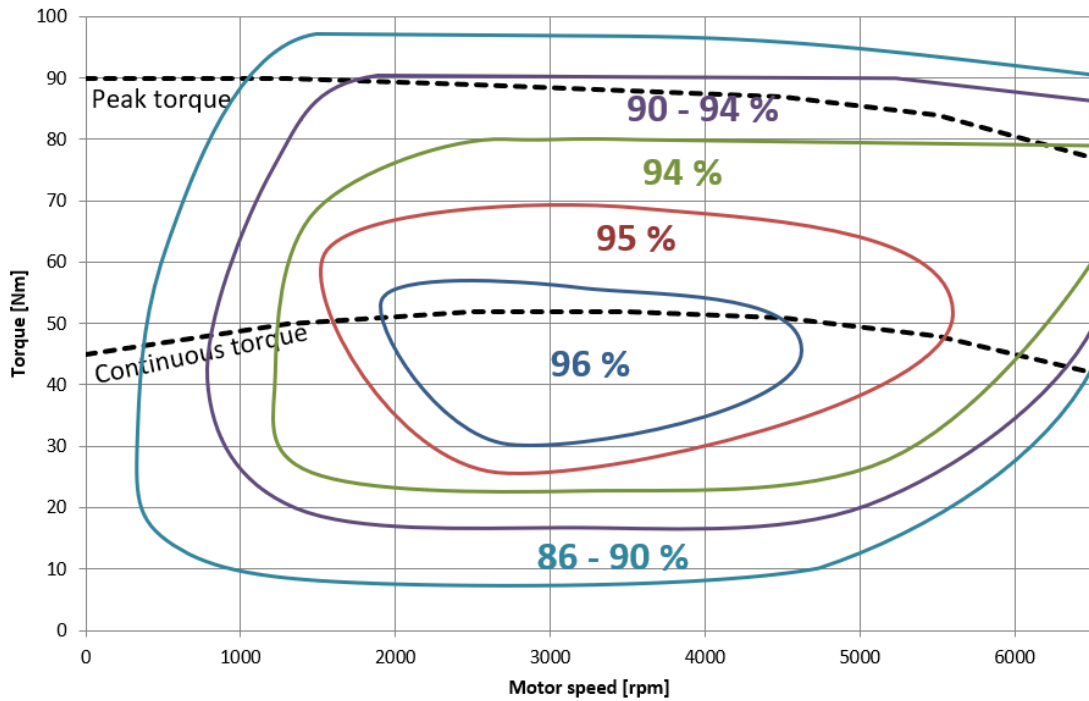
Type	EMRAX 188 High Voltage			EMRAX 188 Medium Voltage			EMRAX 188 Low Voltage		
Technical data									
Air cooled = AC Liquid cooled = LC Combined cooled = Air + Liquid cooled = CC	AC	LC	CC	AC	LC	CC	AC	LC	CC
Ingress protection	IP21	IP65	IP21	IP21	IP65	IP21	IP21	IP65	IP21
Cooling medium specification (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]	7,0	7,3	7,2	7,0	7,3	7,2	7,0	7,3	7,2
Diameter \varnothing / width [mm]	188 / 77								
Maximal battery voltage [Vdc] and max load RPM	430 Vdc (6500 RPM)			300 Vdc (6500 RPM)			110 Vdc (6500 RPM)		
Peak motor power at max load RPM (few min at cold start / few seconds at hot start) [kW]	52								
Continuous motor power (at 6500 RPM)	23	25	29	23	25	29	23	25	29
Maximal rotation speed [RPM]	6500 (8000 for a few seconds with magnetic field weakening)								
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]	90								
Continuous motor torque [Nm]	40	43	50	40	43	50	40	43	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 [m Ω]	12,0			5,0			0,8		
Input phase wire cross-section [mm ²]	10,2			15,2			38,0		
Wire connection	star								
Induction Ld/Lq [μ H] of 1 phase	92/102			40/44			5,4/6,0		
Controller / motor signal	sine wave								
AC voltage between two phases [Vrms/1RPM]	0,0384			0,0252			0,00923		
Specific idle speed (no load) [RPM/1Vdc]	19			28			75		
Specific load speed (max load) [RPM/1Vdc]	15			22			60		
Magnetic field weakening (for higher RPM at the same power and lower torque) [%]	up to 100								
Magnetic flux – axial [Vs]	0,033			0,022			0,008		
Temperature sensor on the stator windings	kty 81/210								
Number of pole pairs	10								
Rotor Inertia_ LC motor [kg*m ²]	0,0134								
Bearings (front:back) - FAG	6204:3204 (for axial-radial forces; for pull-push mode, $\alpha=25^\circ$)								

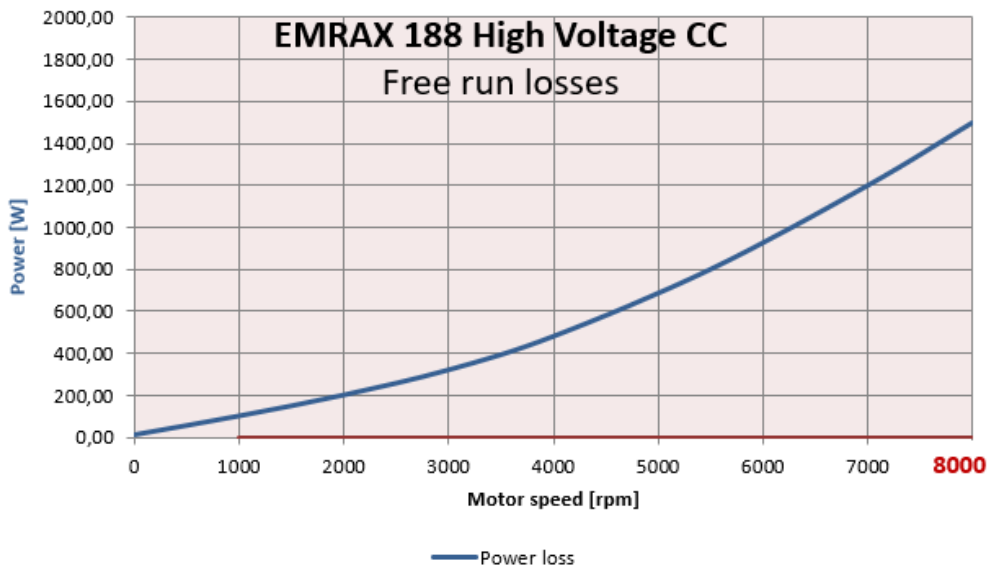
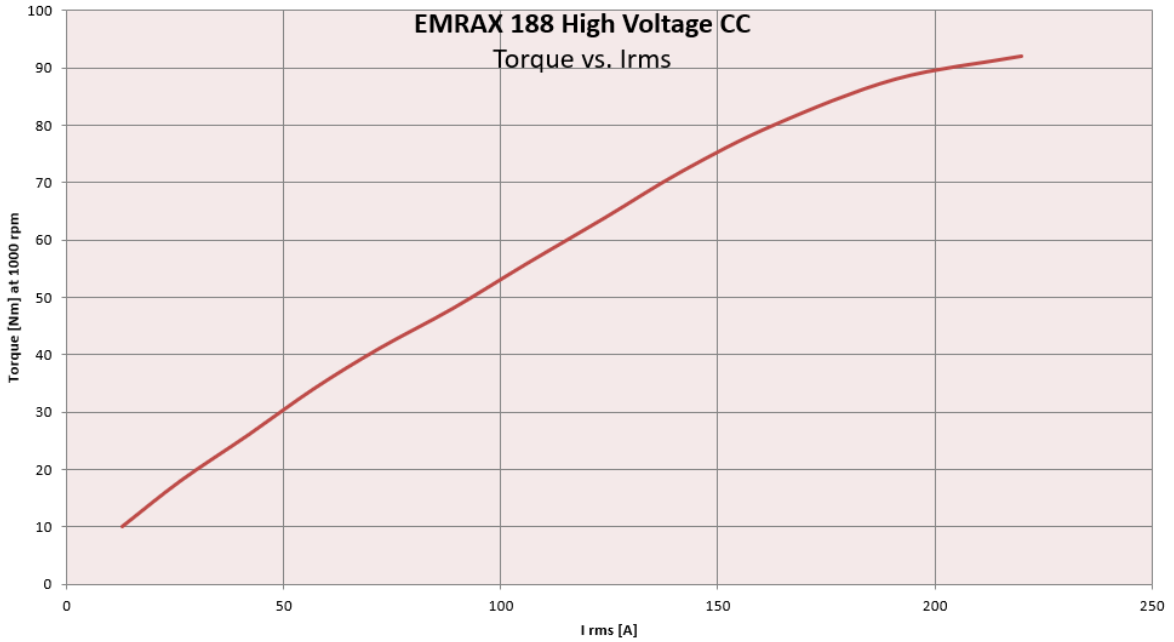
Graphs valid for EMRAX 188:



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

EMRAX 188 CC
Efficiency map





Graphs of EMRAX air cooled and liquid cooled type:

The continuous power and continuous torque for air cooled motor is 20% lower and for liquid cooled motor is 15% lower.

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.