

Torque Motors

TMKi DATA SHEETS

ETEL

MOTOR PERFORMANCE		Winding codes	UA	UB		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	129	129		
Ti	Intermittent torque	Nm	101	101		
Tc	Continuous torque	Nm	76.3	76.3		
Ts	Standstill torque	Nm	61.5	61.5		
Ip	Peak current	Arms	27.3	54.5		
Ii	Intermittent current	Arms	17.3	34.5		
Ic	Continuous current	Arms	10.9	21.8		
Is	Standstill current	Arms	8.27	16.5		
ns	Rated low speed	rpm	0.47	0.47		
nm	Maximum speed without flux weakening	rpm	833	1670		
nm,FW	Maximum speed with flux weakening	rpm	3070	5200		
ton,p	Maximum ON time for peak cycle	s	13	13		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	6540	6540		
Pi	Power dissipation @ Ii	W	3340	3340		
Pc	Power dissipation @ Ic	W	1340	1340		
Td	Max. detent torque (average to peak)	Nm	1.0	1.0		

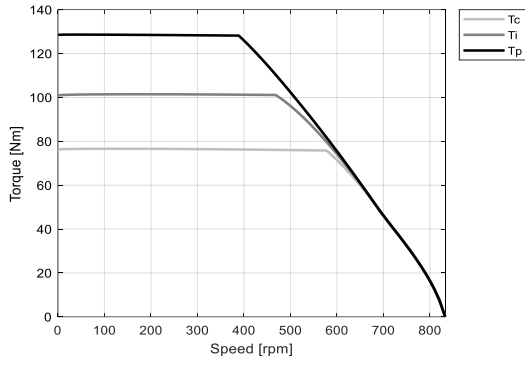
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	8.07	4.04		
Ku	Back EMF constant (*)	Vrms/(rad/s)	4.77	2.38		
Km	Motor constant	Nm/√W	2.86	2.86		
R20	Electrical resistance at 20°C (*)	Ohm	5.30	1.32		
Ld/Lq	Electrical inductance (*)	mH	45.3 / 39.7	11.3 / 9.94		
Isc	Maximum short-circuit current	Arms	11.0	22.1		
nb	Base speed	rpm	577	1260		
nb,i	Base speed at intermittent duty cycle	rpm	468	1050		
nb,p	Base speed at peak duty cycle	rpm	389	886		
nn	Rated speed	rpm	510	1120		
Tn	Rated torque	Nm	76.0	73.6		
In	Rated current	Arms	10.8	21.2		
rth	Thermal time constant	s	116	116		
Rth	Thermal resistance	K/W	0.0766	0.0766		
2p	Number of poles	-	22	22		
J	Rotor inertia	kg·m²	0.00796	0.00796		
mr	Rotor mass	kg	4.25	4.25		
ms	Stator mass	kg	10.5	10.5		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.026	0.026		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	4.2	4.2		
Δpw	Max. pressure drop at qw	bar	0.1	0.1		

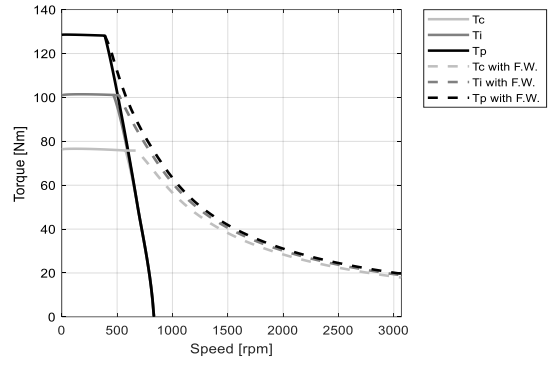
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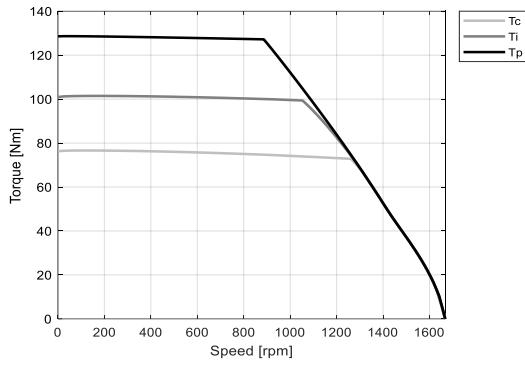
UA - WATER COOLING



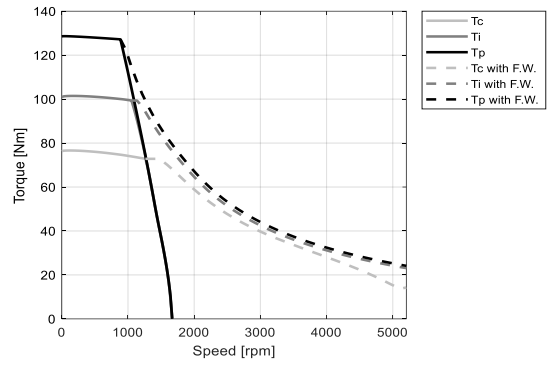
UA - WATER COOLING



UB - WATER COOLING



UB - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UA	UB		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	187	187		
Ti	Intermittent torque	Nm	145	145		
Tc	Continuous torque	Nm	109	109		
Ts	Standstill torque	Nm	88.0	88.0		
Ip	Peak current	Arms	28.0	56.0		
Ii	Intermittent current	Arms	17.8	35.5		
Ic	Continuous current	Arms	11.2	22.5		
Is	Standstill current	Arms	8.51	17.0		
ns	Rated low speed	rpm	0.50	0.50		
nm	Maximum speed without flux weakening	rpm	595	1190		
nm,FW	Maximum speed with flux weakening	rpm	2190	4380		
ton,p	Maximum ON time for peak cycle	s	12	12		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	8560	8560		
Pi	Power dissipation @ Ii	W	4360	4360		
Pc	Power dissipation @ Ic	W	1750	1750		
Td	Max. detent torque (average to peak)	Nm	1.4	1.4		

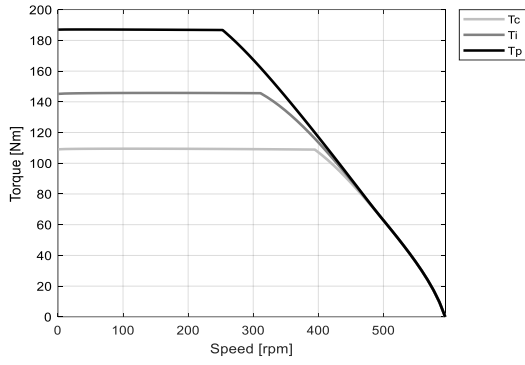
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	11.4	5.68		
Ku	Back EMF constant (*)	Vrms/(rad/s)	6.68	3.34		
Km	Motor constant	Nm/√W	3.61	3.61		
R20	Electrical resistance at 20°C (*)	Ohm	6.59	1.65		
Ld/Lq	Electrical inductance (*)	mH	62.2 / 53.9	15.6 / 13.5		
Isc	Maximum short-circuit current	Arms	11.3	22.5		
nb	Base speed	rpm	395	878		
nb,i	Base speed at intermittent duty cycle	rpm	311	730		
nb,p	Base speed at peak duty cycle	rpm	253	614		
nn	Rated speed	rpm	346	781		
Tn	Rated torque	Nm	109	107		
In	Rated current	Arms	11.2	22.1		
rth	Thermal time constant	s	108	108		
Rth	Thermal resistance	K/W	0.0574	0.0574		
2p	Number of poles	-	22	22		
J	Rotor inertia	kg·m²	0.0106	0.0106		
mr	Rotor mass	kg	5.58	5.58		
ms	Stator mass	kg	13.2	13.2		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.030	0.030		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	5.5	5.5		
Δpw	Max. pressure drop at qw	bar	0.2	0.2		

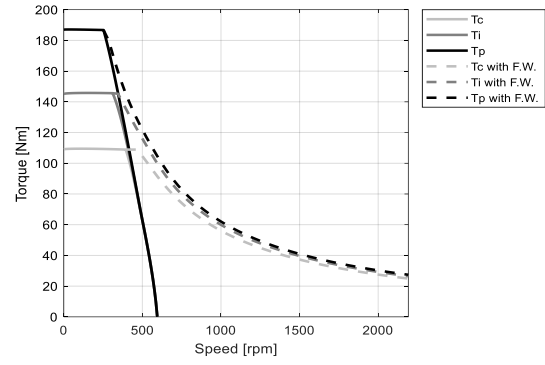
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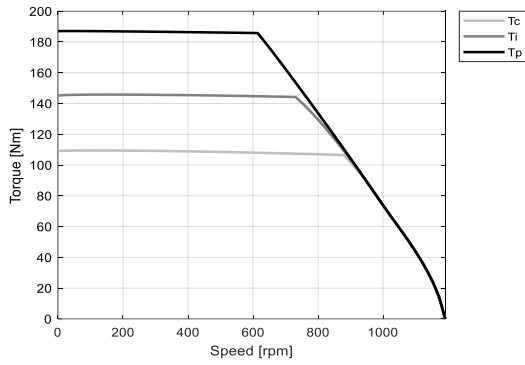
UA - WATER COOLING



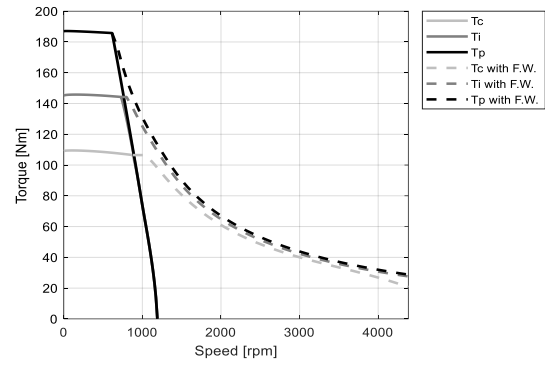
UA - WATER COOLING



UB - WATER COOLING



UB - WATER COOLING



MOTOR PERFORMANCE		Winding codes	XA	XB		
		UNIT	WATER COOLING	WATER COOLING		
TP	Peak torque	Nm	263	263		
TI	Intermittent torque	Nm	214	214		
TC	Continuous torque	Nm	161	161		
TS	Standstill torque	Nm	130	130		
IP	Peak current	Arms	49.7	99.4		
II	Intermittent current	Arms	35.7	71.4		
IC	Continuous current	Arms	22.6	45.2		
IS	Standstill current	Arms	17.1	34.2		
NS	Rated low speed	rpm	0.56	0.56		
NM	Maximum speed without flux weakening	rpm	828	1660		
NM,FW	Maximum speed with flux weakening	rpm	3050	4480		
TON,p	Maximum ON time for peak cycle	s	15	15		
TON,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
PP	Power dissipation @ Ip	W	8890	8890		
PI	Power dissipation @ Ii	W	5890	5890		
PC	Power dissipation @ Ic	W	2360	2360		
TD	Max. detent torque (average to peak)	Nm	2.0	2.0		

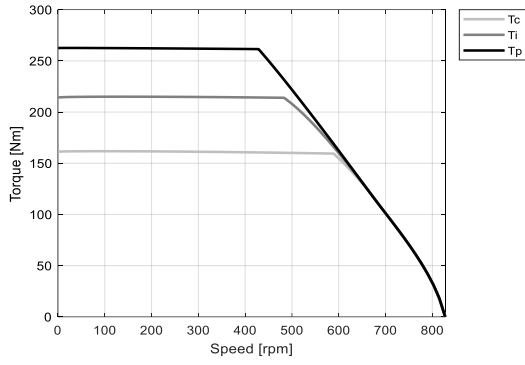
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	8.31	4.16		
Ku	Back EMF constant (*)	Vrms/(rad/s)	4.80	2.40		
Km	Motor constant	Nm/√W	4.56	4.56		
R20	Electrical resistance at 20°C (*)	Ohm	2.22	0.554		
Ld/Lq	Electrical inductance (*)	mH	22.2 / 19.1	5.55 / 4.78		
Isc	Maximum short-circuit current	Arms	22.7	45.4		
nb	Base speed	rpm	589	1280		
nb,i	Base speed at intermittent duty cycle	rpm	483	1070		
nb,p	Base speed at peak duty cycle	rpm	429	938		
nn	Rated speed	rpm	522	1140		
Tn	Rated torque	Nm	160	154		
In	Rated current	Arms	22.4	43.5		
rth	Thermal time constant	s	98.2	98.2		
Rth	Thermal resistance	K/W	0.0410	0.0410		
2p	Number of poles	-	22	22		
J	Rotor inertia	kg·m²	0.0144	0.0144		
mr	Rotor mass	kg	7.56	7.56		
ms	Stator mass	kg	16.7	16.7		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.036	0.036		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	7.4	7.4		
Δpw	Max. pressure drop at qw	bar	0.4	0.4		

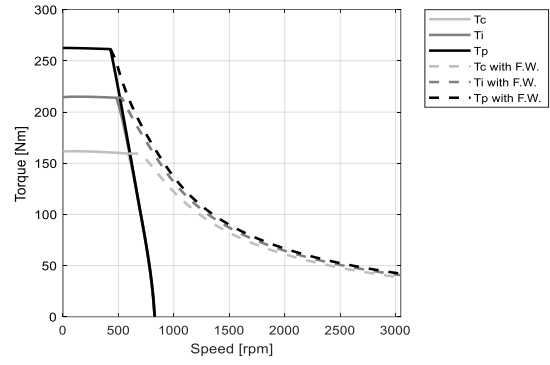
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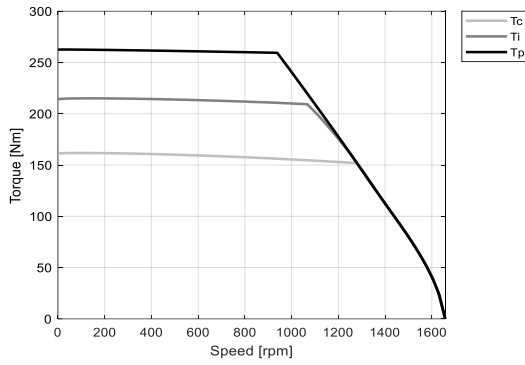
XA - WATER COOLING



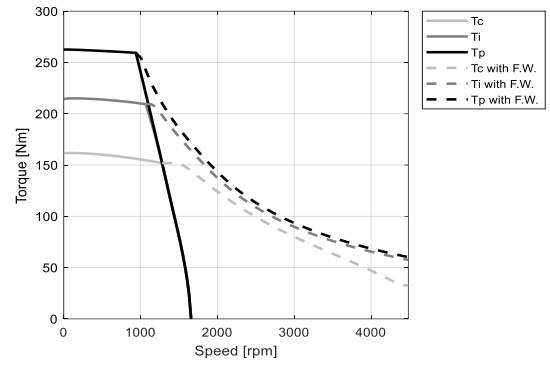
XA - WATER COOLING



XB - WATER COOLING



XB - WATER COOLING



MOTOR PERFORMANCE		Winding codes	XA	XB		
		UNIT	WATER COOLING	WATER COOLING		
TP	Peak torque	Nm	401	401		
TI	Intermittent torque	Nm	325	325		
TC	Continuous torque	Nm	242	242		
TS	Standstill torque	Nm	194	194		
IP	Peak current	Arms	49.5	99.0		
II	Intermittent current	Arms	35.6	71.1		
IC	Continuous current	Arms	22.5	45.0		
IS	Standstill current	Arms	17.0	34.1		
NS	Rated low speed	rpm	0.57	0.57		
NM	Maximum speed without flux weakening	rpm	552	1100		
NM,FW	Maximum speed with flux weakening	rpm	2030	4060		
TON,p	Maximum ON time for peak cycle	s	13	13		
TON,i	Maximum ON time for intermittent cycle	s	3.0	3.0		
PP	Power dissipation @ Ip	W	12200	12200		
PI	Power dissipation @ Ii	W	7990	7990		
PC	Power dissipation @ Ic	W	3200	3200		
TD	Max. detent torque (average to peak)	Nm	3.0	3.0		

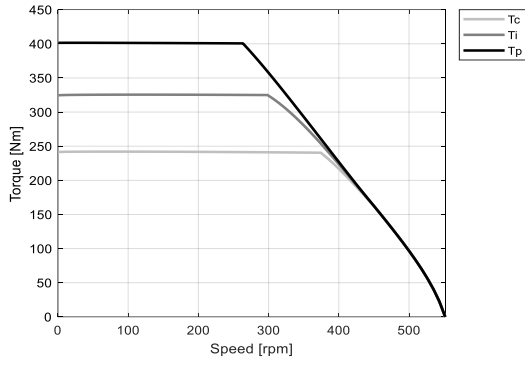
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	12.4	6.20		
Ku	Back EMF constant (*)	Vrms/(rad/s)	7.20	3.60		
Km	Motor constant	Nm/√W	5.76	5.76		
R20	Electrical resistance at 20°C (*)	Ohm	3.09	0.771		
Ld/Lq	Electrical inductance (*)	mH	33.0 / 28.3	8.24 / 7.07		
Isc	Maximum short-circuit current	Arms	22.9	45.9		
nb	Base speed	rpm	374	827		
nb,i	Base speed at intermittent duty cycle	rpm	299	689		
nb,p	Base speed at peak duty cycle	rpm	263	609		
nn	Rated speed	rpm	329	735		
Tn	Rated torque	Nm	241	236		
In	Rated current	Arms	22.4	44.2		
rth	Thermal time constant	s	95.2	95.2		
Rth	Thermal resistance	K/W	0.0284	0.0284		
2p	Number of poles	-	22	22		
J	Rotor inertia	kg·m²	0.0209	0.0209		
mr	Rotor mass	kg	10.9	10.9		
ms	Stator mass	kg	23.6	23.6		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.046	0.046		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	10	10		
Δpw	Max. pressure drop at qw	bar	0.6	0.6		

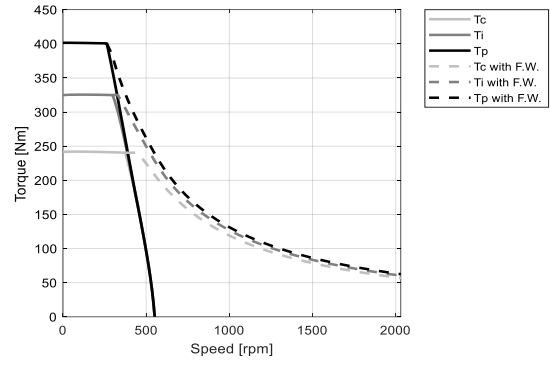
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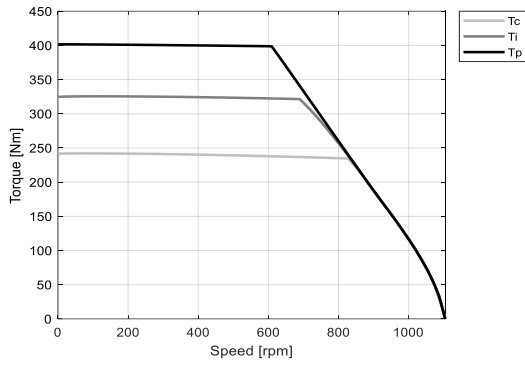
XA - WATER COOLING



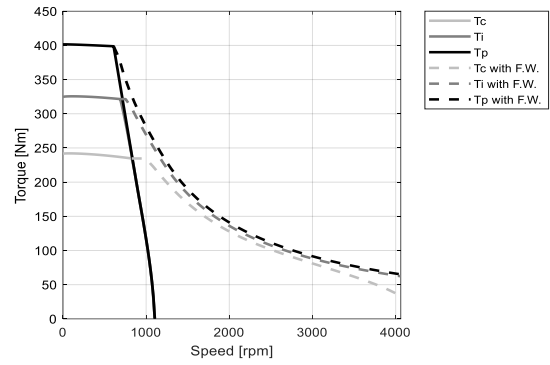
XA - WATER COOLING



XB - WATER COOLING



XB - WATER COOLING



MOTOR PERFORMANCE		Winding codes	VB	VD		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	440	440		
Ti	Intermittent torque	Nm	344	344		
Tc	Continuous torque	Nm	256	256		
Ts	Standstill torque	Nm	203	203		
Ip	Peak current	Arms	69.8	140		
Ii	Intermittent current	Arms	44.1	88.2		
Ic	Continuous current	Arms	27.9	55.8		
Is	Standstill current	Arms	21.1	42.3		
ns	Rated low speed	rpm	0.22	0.22		
nm	Maximum speed without flux weakening	rpm	627	1260		
nm,FW	Maximum speed with flux weakening	rpm	2310	2690		
ton,p	Maximum ON time for peak cycle	s	13	13		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	12200	12200		
Pi	Power dissipation @ Ii	W	6200	6200		
Pc	Power dissipation @ Ic	W	2480	2480		
Td	Max. detent torque (average to peak)	Nm	2.0	2.0		

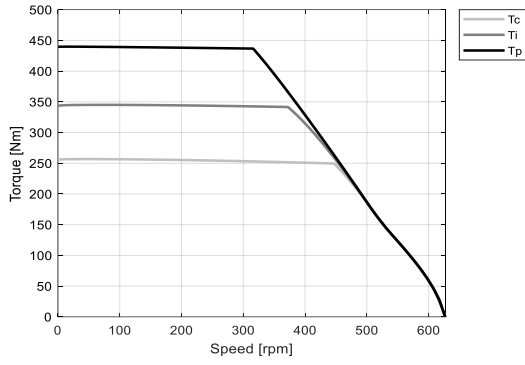
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	10.2	5.11		
Ku	Back EMF constant (*)	Vrms/(rad/s)	6.34	3.17		
Km	Motor constant	Nm/√W	6.79	6.79		
R20	Electrical resistance at 20°C (*)	Ohm	1.51	0.377		
Ld/Lq	Electrical inductance (*)	mH	12.8 / 10.8	3.21 / 2.71		
Isc	Maximum short-circuit current	Arms	25.9	51.8		
nb	Base speed	rpm	447	968		
nb,i	Base speed at intermittent duty cycle	rpm	372	810		
nb,p	Base speed at peak duty cycle	rpm	316	685		
nn	Rated speed	rpm	397	862		
Tn	Rated torque	Nm	251	233		
In	Rated current	Arms	27.3	51.6		
rth	Thermal time constant	s	126	126		
Rth	Thermal resistance	K/W	0.0411	0.0411		
2p	Number of poles	-	44	44		
J	Rotor inertia	kg·m²	0.103	0.103		
mr	Rotor mass	kg	11.9	11.9		
ms	Stator mass	kg	17.6	17.6		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.064	0.064		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	7.8	7.8		
Δpw	Max. pressure drop at qw	bar	0.3	0.3		

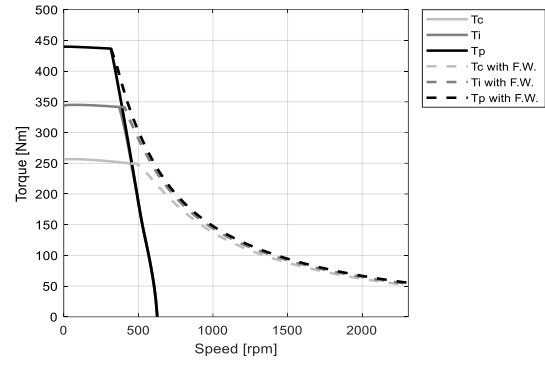
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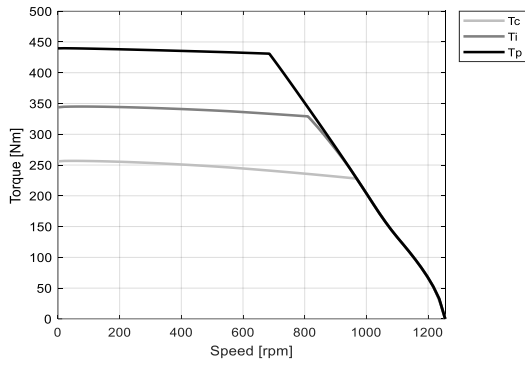
VB - WATER COOLING



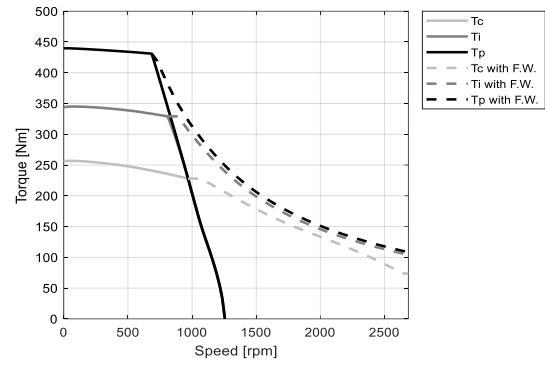
VB - WATER COOLING



VD - WATER COOLING



VD - WATER COOLING



MOTOR PERFORMANCE		Winding codes	VB	VD		
		UNIT	WATER COOLING	WATER COOLING		
TP	Peak torque	Nm	629	629		
TI	Intermittent torque	Nm	492	492		
TC	Continuous torque	Nm	368	368		
TS	Standstill torque	Nm	292	292		
IP	Peak current	Arms	71.8	144		
II	Intermittent current	Arms	45.3	90.7		
IC	Continuous current	Arms	28.7	57.3		
IS	Standstill current	Arms	21.7	43.4		
NS	Rated low speed	rpm	0.23	0.23		
NM	Maximum speed without flux weakening	rpm	448	896		
NM,FW	Maximum speed with flux weakening	rpm	1650	2600		
TON,p	Maximum ON time for peak cycle	s	12	12		
TON,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
PP	Power dissipation @ Ip	W	16100	16100		
PI	Power dissipation @ Ii	W	8120	8120		
PC	Power dissipation @ Ic	W	3250	3250		
TD	Max. detent torque (average to peak)	Nm	2.8	2.8		

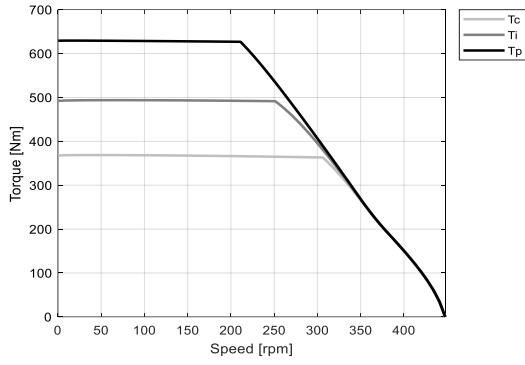
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	14.4	7.19		
Ku	Back EMF constant (*)	Vrms/(rad/s)	8.87	4.43		
Km	Motor constant	Nm/√W	8.55	8.55		
R20	Electrical resistance at 20°C (*)	Ohm	1.88	0.470		
Ld/Lq	Electrical inductance (*)	mH	18.0 / 15.2	4.50 / 3.79		
Isc	Maximum short-circuit current	Arms	25.8	51.7		
nb	Base speed	rpm	306	665		
nb,i	Base speed at intermittent duty cycle	rpm	251	557		
nb,p	Base speed at peak duty cycle	rpm	211	473		
nn	Rated speed	rpm	271	592		
Tn	Rated torque	Nm	364	350		
In	Rated current	Arms	28.3	54.9		
rth	Thermal time constant	s	119	119		
Rth	Thermal resistance	K/W	0.0307	0.0307		
2p	Number of poles	-	44	44		
J	Rotor inertia	kg·m²	0.136	0.136		
mr	Rotor mass	kg	15.5	15.5		
ms	Stator mass	kg	22.3	22.3		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.074	0.074		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	10	10		
Δpw	Max. pressure drop at qw	bar	0.5	0.5		

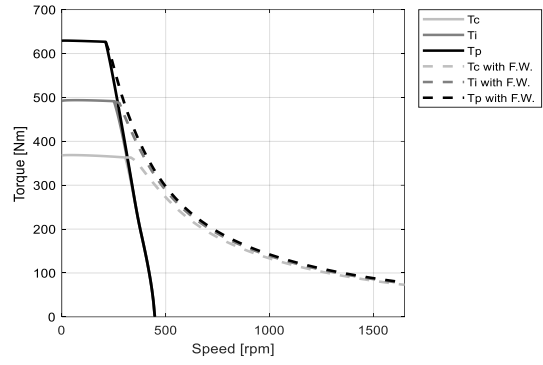
Notes: (*) terminal to terminal.
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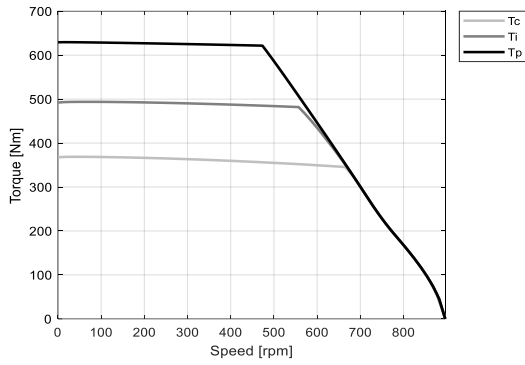
VB - WATER COOLING



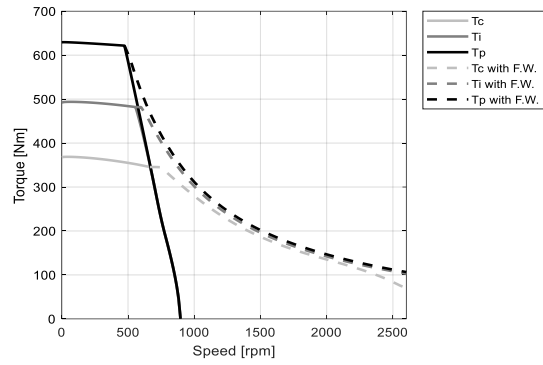
VB - WATER COOLING



VD - WATER COOLING



VD - WATER COOLING



MOTOR PERFORMANCE		Winding codes	VB	VD		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	915	915		
Ti	Intermittent torque	Nm	717	717		
Tc	Continuous torque	Nm	538	538		
Ts	Standstill torque	Nm	428	428		
Ip	Peak current	Arms	73.5	147		
Ii	Intermittent current	Arms	46.5	93.0		
Ic	Continuous current	Arms	29.4	58.8		
Is	Standstill current	Arms	22.3	44.5		
ns	Rated low speed	rpm	0.25	0.25		
nm	Maximum speed without flux weakening	rpm	313	627		
nm,FW	Maximum speed with flux weakening	rpm	1150	2310		
ton,p	Maximum ON time for peak cycle	s	11	11		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	21900	21900		
Pi	Power dissipation @ Ii	W	11000	11000		
Pc	Power dissipation @ Ic	W	4410	4410		
Td	Max. detent torque (average to peak)	Nm	4.0	4.0		

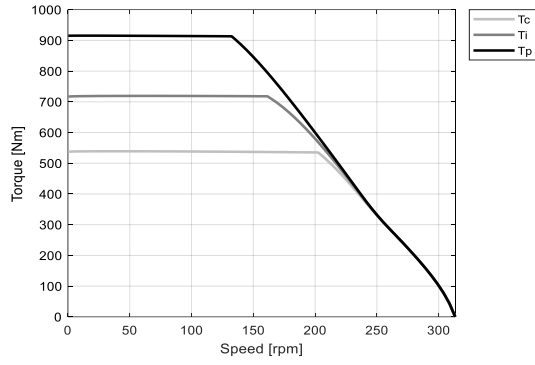
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	20.6	10.3		
Ku	Back EMF constant (*)	Vrms/(rad/s)	12.7	6.34		
Km	Motor constant	Nm/√W	10.7	10.7		
R20	Electrical resistance at 20°C (*)	Ohm	2.45	0.613		
Ld/Lq	Electrical inductance (*)	mH	25.8 / 21.6	6.45 / 5.40		
Isc	Maximum short-circuit current	Arms	25.8	51.5		
nb	Base speed	rpm	202	447		
nb,i	Base speed at intermittent duty cycle	rpm	161	373		
nb,p	Base speed at peak duty cycle	rpm	132	317		
nn	Rated speed	rpm	178	398		
Tn	Rated torque	Nm	536	525		
In	Rated current	Arms	29.2	57.5		
rth	Thermal time constant	s	109	109		
Rth	Thermal resistance	K/W	0.0218	0.0218		
2p	Number of poles	-	44	44		
J	Rotor inertia	kg·m²	0.184	0.184		
mr	Rotor mass	kg	20.9	20.9		
ms	Stator mass	kg	28.7	28.7		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.090	0.090		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	14	14		
Δpw	Max. pressure drop at qw	bar	1.0	1.0		

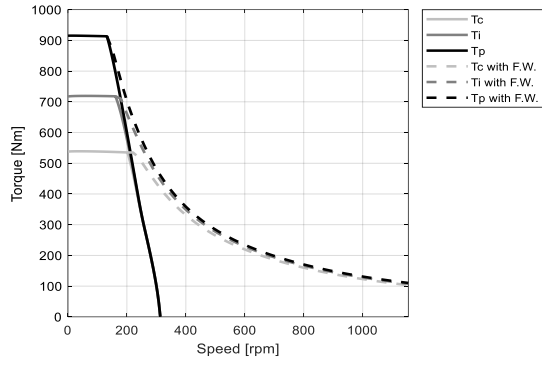
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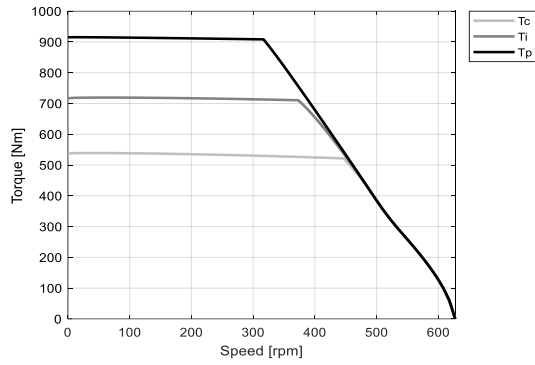
VB - WATER COOLING



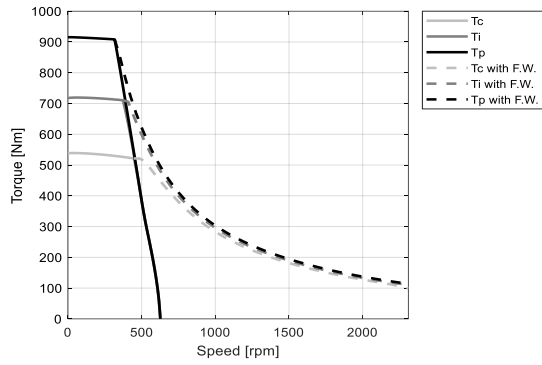
VB - WATER COOLING



VD - WATER COOLING



VD - WATER COOLING



MOTOR PERFORMANCE		Winding codes	VB	VD	XD	
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	
Tp	Peak torque	Nm	1380	1380	1310	
Ti	Intermittent torque	Nm	1080	1080	1070	
Tc	Continuous torque	Nm	811	811	800	
Ts	Standstill torque	Nm	645	645	633	
Ip	Peak current	Arms	73.5	147	204	
Ii	Intermittent current	Arms	46.5	93.1	146	
Ic	Continuous current	Arms	29.4	58.9	92.5	
Is	Standstill current	Arms	22.3	44.6	70.1	
ns	Rated low speed	rpm	0.26	0.26	0.26	
nm	Maximum speed without flux weakening	rpm	209	418	671	
nm,FW	Maximum speed with flux weakening	rpm	770	1540	2360	
ton,p	Maximum ON time for peak cycle	s	9.9	9.9	14	
ton,i	Maximum ON time for intermittent cycle	s	3.0	3.0	3.1	
Pp	Power dissipation @ Ip	W	30100	30100	22700	
Pi	Power dissipation @ Ii	W	15000	15000	14900	
Pc	Power dissipation @ Ic	W	6000	6000	5940	
Td	Max. detent torque (average to peak)	Nm	6.0	6.0	6.0	

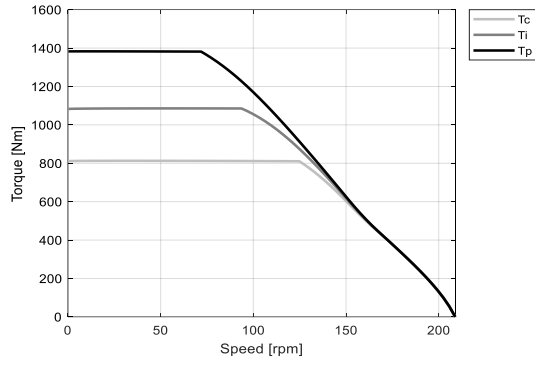
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	31.0	15.5	9.67	
Ku	Back EMF constant (*)	Vrms/(rad/s)	19.0	9.50	5.93	
Km	Motor constant	Nm/√W	13.8	13.8	13.5	
R20	Electrical resistance at 20°C (*)	Ohm	3.39	0.847	0.340	
Ld/Lq	Electrical inductance (*)	mH	38.8 / 32.5	9.70 / 8.12	3.77 / 3.18	
Isc	Maximum short-circuit current	Arms	25.7	51.4	82.5	
nb	Base speed	rpm	125	287	487	
nb,i	Base speed at intermittent duty cycle	rpm	93.6	236	407	
nb,p	Base speed at peak duty cycle	rpm	71.8	199	362	
nn	Rated speed	rpm	108	254	433	
Tn	Rated torque	Nm	811	803	774	
In	Rated current	Arms	29.3	58.2	89.8	
rth	Thermal time constant	s	106	106	106	
Rth	Thermal resistance	K/W	0.0151	0.0151	0.0151	
2p	Number of poles	-	44	44	44	
J	Rotor inertia	kg·m²	0.264	0.264	0.264	
mr	Rotor mass	kg	30.0	30.0	30.0	
ms	Stator mass	kg	40.5	40.5	40.5	

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	
Di	Intermittent duty cycle	%	40	40	40	
Dp	Peak duty cycle	%	5.0	5.0	5.0	
Sr	Rotor exchange surface	m²	0.117	0.117	0.117	
θamb	Ambient temperature	°C	20	20	20	
θmax	Maximum coil temperature	°C	130	130	130	
θw	Inlet water temperature	°C	20	20	20	
Δθw	Water temperature difference for Pc	K	5.0	5.0	5.0	
qw	Minimum water flow for Δθw	l/min	19	19	19	
Δpw	Max. pressure drop at qw	bar	1.8	1.8	1.8	

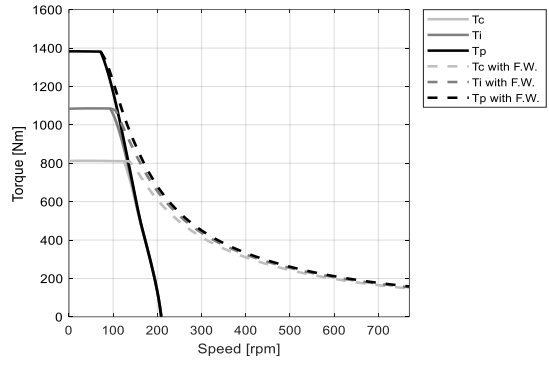
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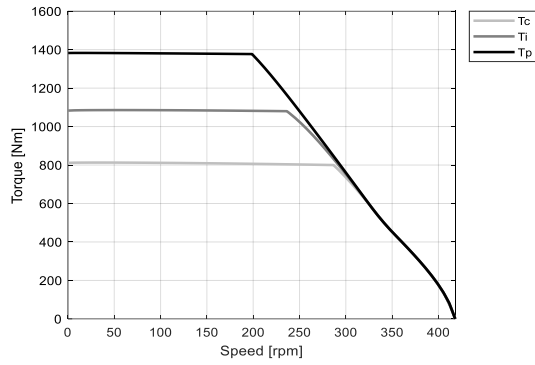
VB - WATER COOLING



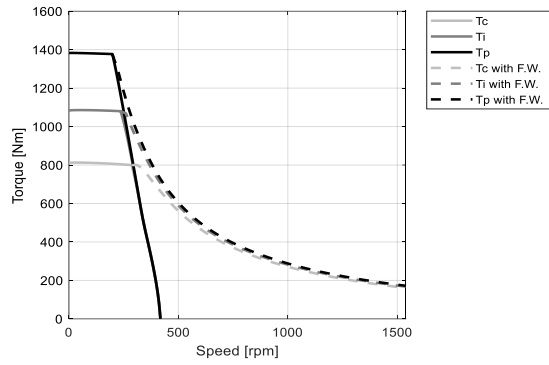
VB - WATER COOLING



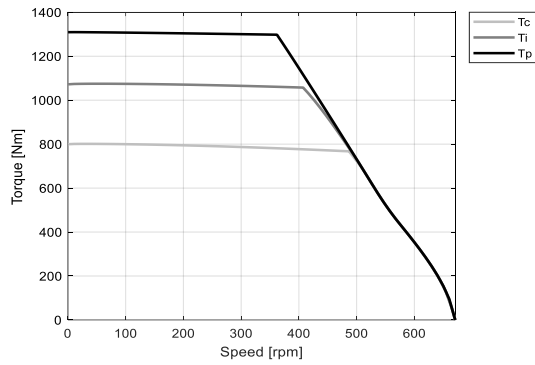
VD - WATER COOLING



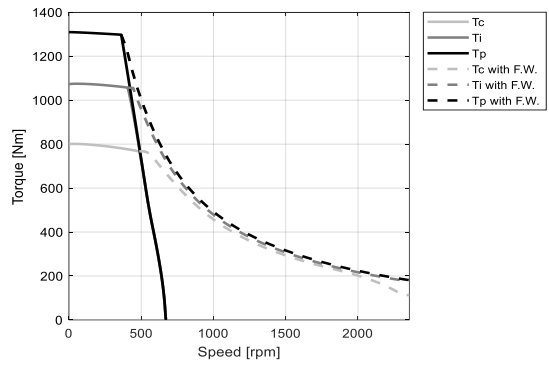
VD - WATER COOLING



XD - WATER COOLING



XD - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UB	XB		
		UNIT	WATER COOLING	WATER COOLING		
TP	Peak torque	Nm	844	773		
TI	Intermittent torque	Nm	657	630		
TC	Continuous torque	Nm	495	468		
TS	Standstill torque	Nm	401	376		
IP	Peak current	Arms	61.0	108		
II	Intermittent current	Arms	38.5	77.4		
IC	Continuous current	Arms	24.4	48.9		
IS	Standstill current	Arms	18.5	37.1		
NS	Rated low speed	rpm	0.18	0.18		
NM	Maximum speed without flux weakening	rpm	272	590		
NM,FW	Maximum speed with flux weakening	rpm	1000	1820		
TON,p	Maximum ON time for peak cycle	s	10	15		
TON,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
PP	Power dissipation @ Ip	W	17100	12600		
PI	Power dissipation @ Ii	W	8660	8480		
PC	Power dissipation @ Ic	W	3470	3390		
TD	Max. detent torque (average to peak)	Nm	3.0	3.0		

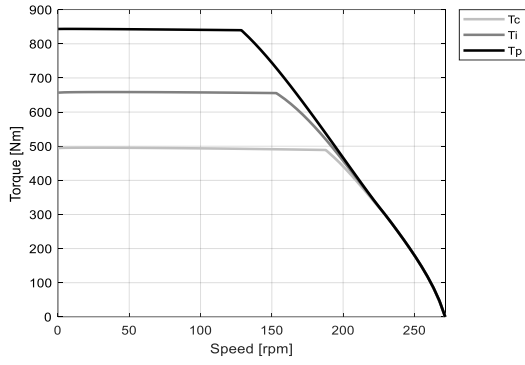
MOTOR SETTING		UNIT				
KT	Torque constant	Nm/Arms	24.0	11.1		
KU	Back EMF constant (*)	Vrms/(rad/s)	14.6	6.73		
KM	Motor constant	Nm/√W	11.8	11.0		
R20	Electrical resistance at 20°C (*)	Ohm	2.76	0.673		
Ld/Lq	Electrical inductance (*)	mH	19.2 / 17.1	4.08 / 3.70		
ISC	Maximum short-circuit current	Arms	26.6	57.8		
NB	Base speed	rpm	188	462		
NB,i	Base speed at intermittent duty cycle	rpm	153	394		
NB,p	Base speed at peak duty cycle	rpm	129	354		
NN	Rated speed	rpm	165	410		
TN	Rated torque	Nm	490	443		
IN	Rated current	Arms	24.1	46.5		
rth	Thermal time constant	s	104	103		
Rth	Thermal resistance	K/W	0.0292	0.0296		
2p	Number of poles	-	66	66		
J	Rotor inertia	kg·m²	0.267	0.267		
mr	Rotor mass	kg	16.3	16.3		
ms	Stator mass	kg	25.9	25.7		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.087	0.087		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	11	11		
Δpw	Max. pressure drop at qw	bar	0.4	0.4		

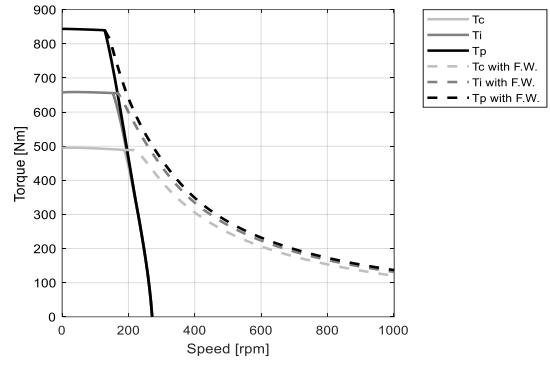
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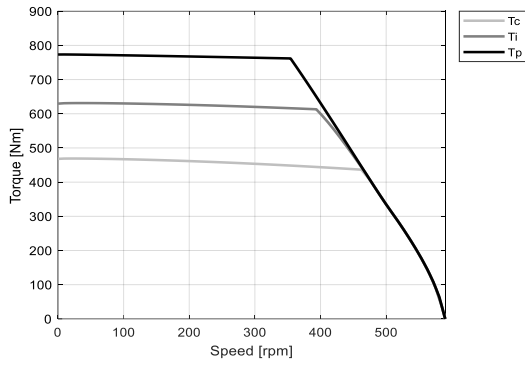
UB - WATER COOLING



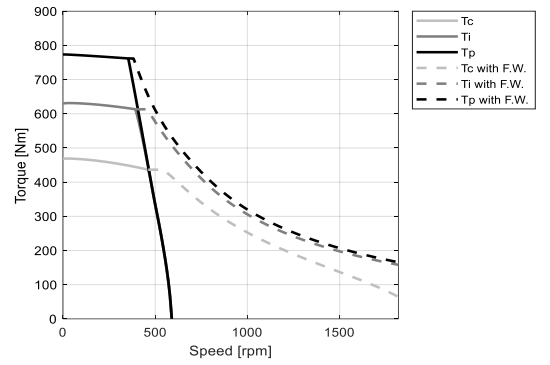
UB - WATER COOLING



XB - WATER COOLING



XB - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UC	UF		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	1230	1230		
Ti	Intermittent torque	Nm	951	951		
Tc	Continuous torque	Nm	711	711		
Ts	Standstill torque	Nm	573	573		
Ip	Peak current	Arms	93.8	188		
Ii	Intermittent current	Arms	59.3	119		
Ic	Continuous current	Arms	37.5	75.0		
Is	Standstill current	Arms	28.4	56.8		
ns	Rated low speed	rpm	0.18	0.18		
nm	Maximum speed without flux weakening	rpm	300	601		
nm,FW	Maximum speed with flux weakening	rpm	1110	1820		
ton,p	Maximum ON time for peak cycle	s	9.3	9.3		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	22400	22400		
Pi	Power dissipation @ Ii	W	11300	11300		
Pc	Power dissipation @ Ic	W	4540	4540		
Td	Max. detent torque (average to peak)	Nm	4.2	4.2		

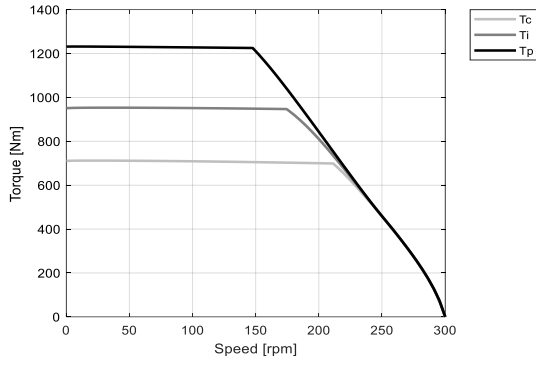
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	22.2	11.1		
Ku	Back EMF constant (*)	Vrms/(rad/s)	13.2	6.61		
Km	Motor constant	Nm/√W	14.6	14.6		
R20	Electrical resistance at 20°C (*)	Ohm	1.54	0.385		
Ld/Lq	Electrical inductance (*)	mH	11.8 / 10.4	2.95 / 2.59		
Isc	Maximum short-circuit current	Arms	39.2	78.4		
nb	Base speed	rpm	211	464		
nb,i	Base speed at intermittent duty cycle	rpm	175	393		
nb,p	Base speed at peak duty cycle	rpm	148	338		
nn	Rated speed	rpm	187	412		
Tn	Rated torque	Nm	702	670		
In	Rated current	Arms	37.0	71.0		
rth	Thermal time constant	s	99.8	99.8		
Rth	Thermal resistance	K/W	0.0218	0.0218		
2p	Number of poles	-	66	66		
J	Rotor inertia	kg·m²	0.350	0.350		
mr	Rotor mass	kg	21.3	21.3		
ms	Stator mass	kg	32.3	32.3		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.102	0.102		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	14	14		
Δpw	Max. pressure drop at qw	bar	0.6	0.6		

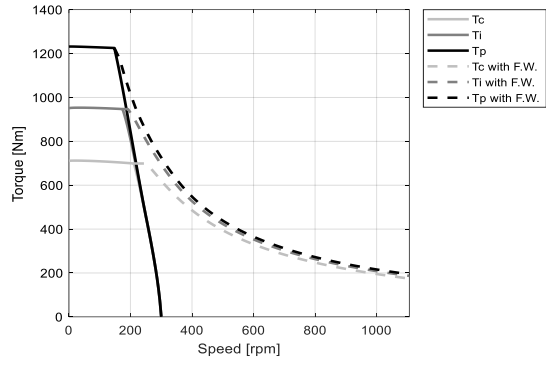
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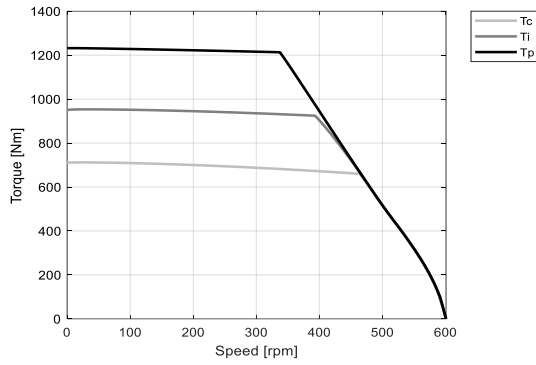
UC - WATER COOLING



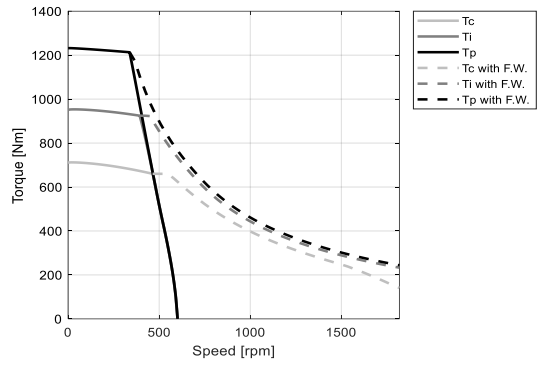
UC - WATER COOLING



UF - WATER COOLING



UF - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UC	UF		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	1760	1760		
Ti	Intermittent torque	Nm	1370	1370		
Tc	Continuous torque	Nm	1030	1030		
Ts	Standstill torque	Nm	839	839		
Ip	Peak current	Arms	96.0	192		
Ii	Intermittent current	Arms	60.6	121		
Ic	Continuous current	Arms	38.4	76.7		
Is	Standstill current	Arms	29.1	58.1		
ns	Rated low speed	rpm	0.20	0.20		
nm	Maximum speed without flux weakening	rpm	204	408		
nm,FW	Maximum speed with flux weakening	rpm	751	1500		
ton,p	Maximum ON time for peak cycle	s	8.3	8.3		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	30700	30700		
Pi	Power dissipation @ Ii	W	15300	15300		
Pc	Power dissipation @ Ic	W	6130	6130		
Td	Max. detent torque (average to peak)	Nm	6.0	6.0		

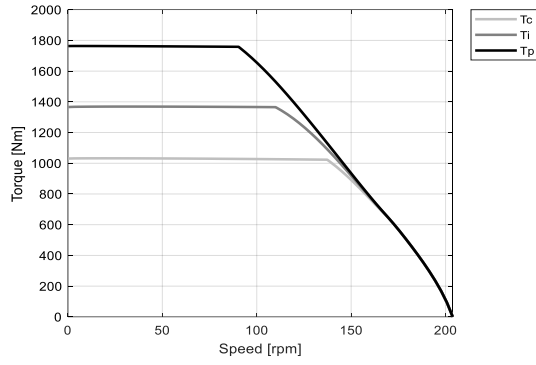
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	32.6	16.3		
Ku	Back EMF constant (*)	Vrms/(rad/s)	19.5	9.74		
Km	Motor constant	Nm/√W	18.8	18.8		
R20	Electrical resistance at 20°C (*)	Ohm	2.01	0.503		
Ld/Lq	Electrical inductance (*)	mH	16.7 / 14.6	4.18 / 3.64		
Isc	Maximum short-circuit current	Arms	40.7	81.5		
nb	Base speed	rpm	137	308		
nb,i	Base speed at intermittent duty cycle	rpm	110	261		
nb,p	Base speed at peak duty cycle	rpm	90.4	224		
nn	Rated speed	rpm	120	273		
Tn	Rated torque	Nm	1030	1000		
In	Rated current	Arms	38.1	74.6		
rth	Thermal time constant	s	92.9	92.9		
Rth	Thermal resistance	K/W	0.0154	0.0154		
2p	Number of poles	-	66	66		
J	Rotor inertia	kg·m²	0.473	0.473		
mr	Rotor mass	kg	28.6	28.6		
ms	Stator mass	kg	40.9	40.9		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.124	0.124		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	19	19		
Δpw	Max. pressure drop at qw	bar	1.2	1.2		

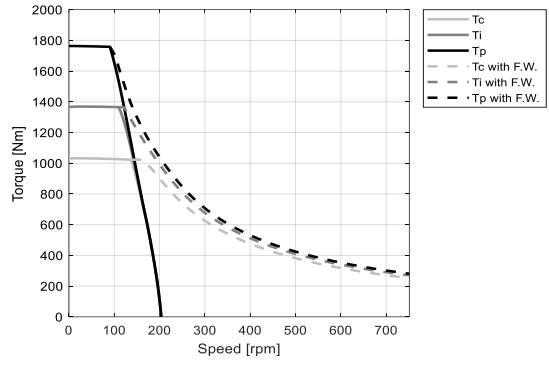
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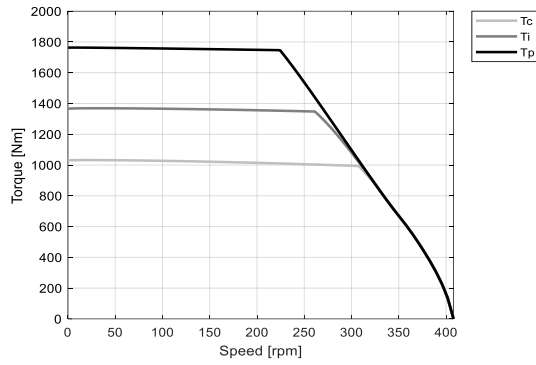
UC - WATER COOLING



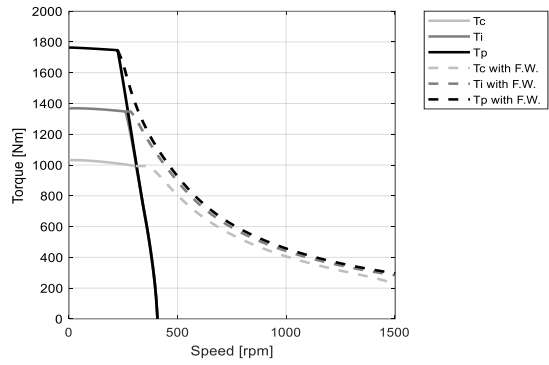
UC - WATER COOLING



UF - WATER COOLING



UF - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UF	XF		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	2650	2440		
Ti	Intermittent torque	Nm	2050	1980		
Tc	Continuous torque	Nm	1540	1470		
Ts	Standstill torque	Nm	1250	1190		
Ip	Peak current	Arms	187	337		
Ii	Intermittent current	Arms	118	242		
Ic	Continuous current	Arms	74.9	153		
Is	Standstill current	Arms	56.8	116		
ns	Rated low speed	rpm	0.19	0.20		
nm	Maximum speed without flux weakening	rpm	272	591		
nm,FW	Maximum speed with flux weakening	rpm	1000	1570		
ton,p	Maximum ON time for peak cycle	s	7.5	11		
ton,i	Maximum ON time for intermittent cycle	s	3.0	3.1		
Pp	Power dissipation @ Ip	W	41300	30800		
Pi	Power dissipation @ Ii	W	20400	19900		
Pc	Power dissipation @ Ic	W	8140	7970		
Td	Max. detent torque (average to peak)	Nm	9.0	9.0		

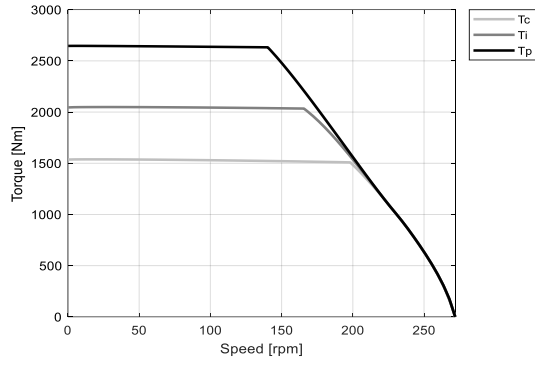
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	24.6	11.3		
Ku	Back EMF constant (*)	Vrms/(rad/s)	14.6	6.73		
Km	Motor constant	Nm/√W	23.7	22.5		
R20	Electrical resistance at 20°C (*)	Ohm	0.716	0.168		
Ld/Lq	Electrical inductance (*)	mH	6.23 / 5.45	1.32 / 1.17		
Isc	Maximum short-circuit current	Arms	82.0	178		
nb	Base speed	rpm	198	475		
nb,i	Base speed at intermittent duty cycle	rpm	166	408		
nb,p	Base speed at peak duty cycle	rpm	140	364		
nn	Rated speed	rpm	175	425		
Tn	Rated torque	Nm	1510	1370		
In	Rated current	Arms	73.9	143		
rth	Thermal time constant	s	93.5	92.4		
Rth	Thermal resistance	K/W	0.0107	0.0108		
2p	Number of poles	-	66	66		
J	Rotor inertia	kg·m²	0.679	0.679		
mr	Rotor mass	kg	41.0	41.0		
ms	Stator mass	kg	57.1	56.6		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.162	0.162		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	25	25		
Δpw	Max. pressure drop at qw	bar	2.2	2.1		

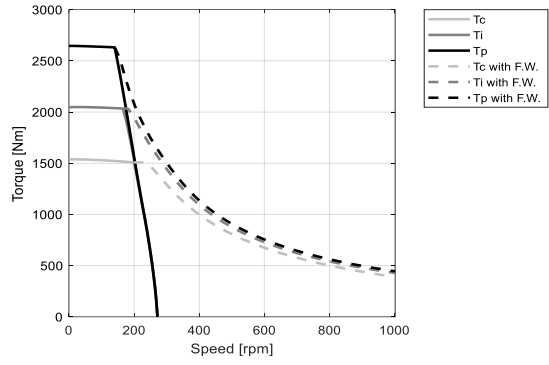
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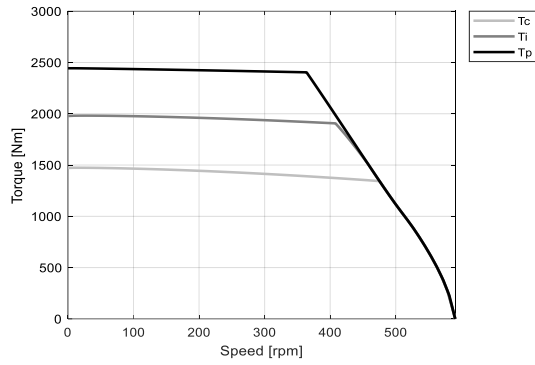
UF - WATER COOLING



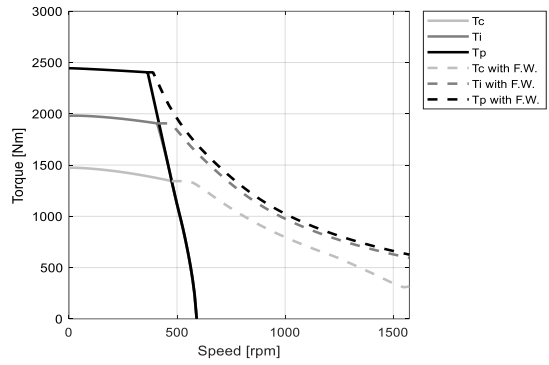
UF - WATER COOLING



XF - WATER COOLING



XF - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UH	XH		
		UNIT	WATER COOLING	WATER COOLING		
TP	Peak torque	Nm	1740	1640		
TI	Intermittent torque	Nm	1360	1350		
TC	Continuous torque	Nm	1030	1020		
TS	Standstill torque	Nm	844	829		
IP	Peak current	Arms	215	359		
II	Intermittent current	Arms	136	257		
IC	Continuous current	Arms	85.8	163		
IS	Standstill current	Arms	65.0	123		
NS	Rated low speed	rpm	0.082	0.082		
NM	Maximum speed without flux weakening	rpm	448	871		
NM,FW	Maximum speed with flux weakening	rpm	1240	1240		
TON,p	Maximum ON time for peak cycle	s	16	23		
TON,i	Maximum ON time for intermittent cycle	s	3.2	3.1		
PP	Power dissipation @ Ip	W	22900	17400		
PI	Power dissipation @ Ii	W	11700	11700		
PC	Power dissipation @ Ic	W	4670	4670		
TD	Max. detent torque (average to peak)	Nm	7.0	7.0		

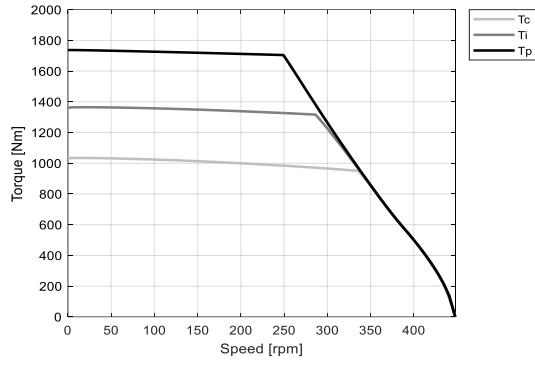
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	14.7	7.59		
Ku	Back EMF constant (*)	Vrms/(rad/s)	8.87	4.57		
Km	Motor constant	Nm/√W	22.0	21.5		
R20	Electrical resistance at 20°C (*)	Ohm	0.299	0.0833		
Ld/Lq	Electrical inductance (*)	mH	2.95 / 2.53	0.784 / 0.678		
Isc	Maximum short-circuit current	Arms	78.8	153		
nb	Base speed	rpm	336	720		
nb,i	Base speed at intermittent duty cycle	rpm	286	600		
nb,p	Base speed at peak duty cycle	rpm	249	523		
nn	Rated speed	rpm	298	644		
Tn	Rated torque	Nm	966	768		
In	Rated current	Arms	80.4	123		
rth	Thermal time constant	s	166	167		
Rth	Thermal resistance	K/W	0.0220	0.0219		
2p	Number of poles	-	88	88		
J	Rotor inertia	kg·m²	1.37	1.37		
mr	Rotor mass	kg	33.2	33.2		
ms	Stator mass	kg	49.2	49.4		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.147	0.147		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	15	15		
Δpw	Max. pressure drop at qw	bar	0.5	0.5		

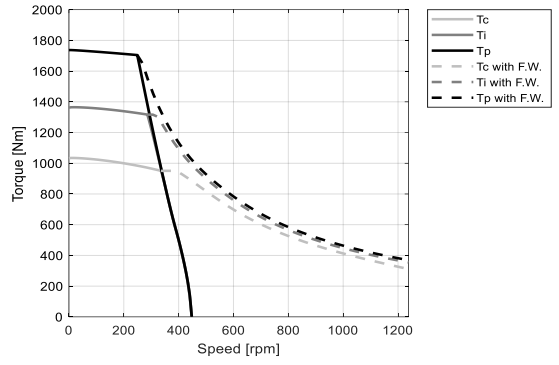
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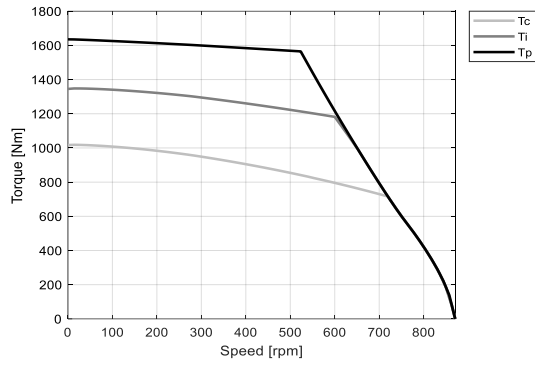
UH - WATER COOLING



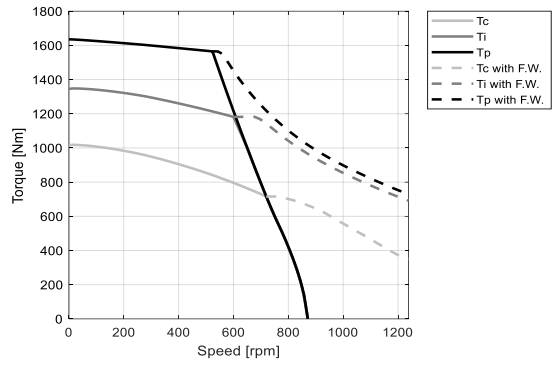
UH - WATER COOLING



XH - WATER COOLING



XH - WATER COOLING



MOTOR PERFORMANCE		Winding codes	XD	XH		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	2380	2380		
Ti	Intermittent torque	Nm	1950	1950		
Tc	Continuous torque	Nm	1480	1480		
Ts	Standstill torque	Nm	1210	1210		
Ip	Peak current	Arms	185	370		
Ii	Intermittent current	Arms	133	265		
Ic	Continuous current	Arms	83.9	168		
Is	Standstill current	Arms	63.5	127		
ns	Rated low speed	rpm	0.086	0.086		
nm	Maximum speed without flux weakening	rpm	310	622		
nm,FW	Maximum speed with flux weakening	rpm	1140	1260		
ton,p	Maximum ON time for peak cycle	s	21	21		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	22900	22900		
Pi	Power dissipation @ Ii	W	15300	15300		
Pc	Power dissipation @ Ic	W	6110	6110		
Td	Max. detent torque (average to peak)	Nm	9.8	9.8		

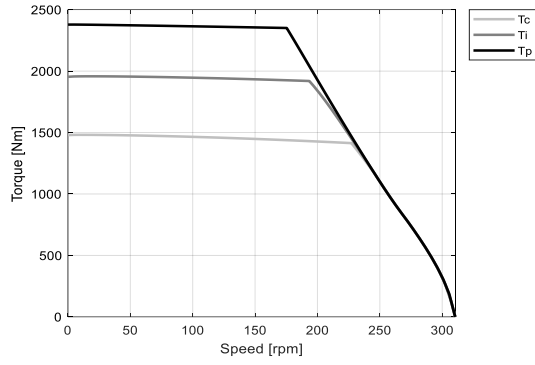
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	21.4	10.7		
Ku	Back EMF constant (*)	Vrms/(rad/s)	12.8	6.40		
Km	Motor constant	Nm/√W	27.2	27.2		
R20	Electrical resistance at 20°C (*)	Ohm	0.413	0.103		
Ld/Lq	Electrical inductance (*)	mH	4.31 / 3.68	1.08 / 0.919		
Isc	Maximum short-circuit current	Arms	78.0	156		
nb	Base speed	rpm	227	492		
nb,i	Base speed at intermittent duty cycle	rpm	193	417		
nb,p	Base speed at peak duty cycle	rpm	175	370		
nn	Rated speed	rpm	202	439		
Tn	Rated torque	Nm	1430	1270		
In	Rated current	Arms	80.8	145		
rth	Thermal time constant	s	159	159		
Rth	Thermal resistance	K/W	0.0164	0.0164		
2p	Number of poles	-	88	88		
J	Rotor inertia	kg·m²	1.77	1.77		
mr	Rotor mass	kg	42.7	42.7		
ms	Stator mass	kg	61.3	61.3		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.172	0.172		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	19	19		
Δpw	Max. pressure drop at qw	bar	0.8	0.8		

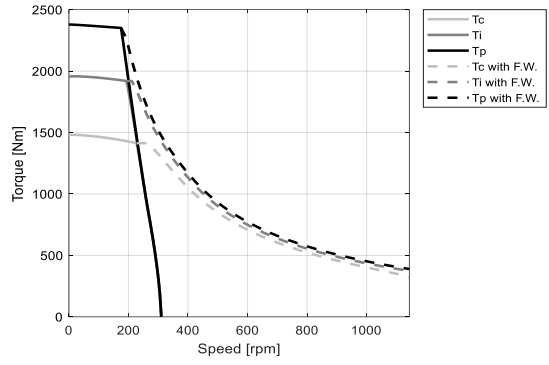
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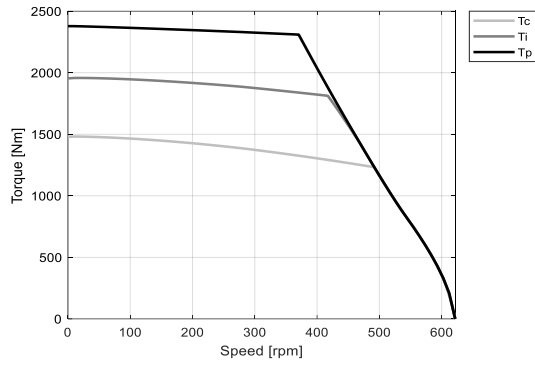
XD - WATER COOLING



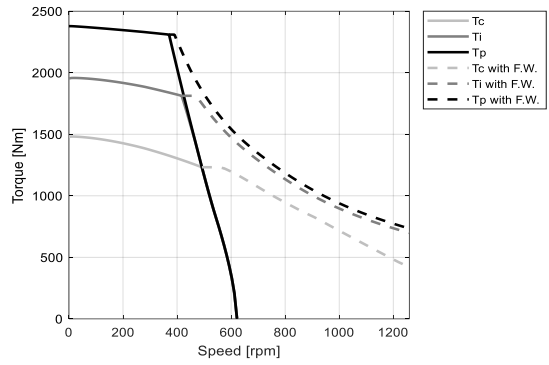
XD - WATER COOLING



XH - WATER COOLING



XH - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UH	XH		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	3700	3520		
Ti	Intermittent torque	Nm	2900	2890		
Tc	Continuous torque	Nm	2210	2200		
Ts	Standstill torque	Nm	1800	1790		
Ip	Peak current	Arms	226	383		
Ii	Intermittent current	Arms	143	275		
Ic	Continuous current	Arms	90.2	174		
Is	Standstill current	Arms	68.4	132		
ns	Rated low speed	rpm	0.094	0.093		
nm	Maximum speed without flux weakening	rpm	224	435		
nm,FW	Maximum speed with flux weakening	rpm	825	1280		
ton,p	Maximum ON time for peak cycle	s	13	18		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	41400	31500		
Pi	Power dissipation @ Ii	W	20900	20900		
Pc	Power dissipation @ Ic	W	8360	8350		
Td	Max. detent torque (average to peak)	Nm	14	14		

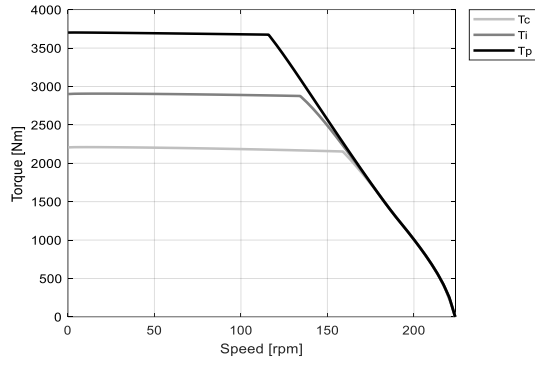
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	29.9	15.4		
Ku	Back EMF constant (*)	Vrms/(rad/s)	17.7	9.14		
Km	Motor constant	Nm/√W	34.8	34.6		
R20	Electrical resistance at 20°C (*)	Ohm	0.492	0.132		
Ld/Lq	Electrical inductance (*)	mH	5.72 / 4.79	1.52 / 1.28		
Isc	Maximum short-circuit current	Arms	81.5	158		
nb	Base speed	rpm	159	332		
nb,i	Base speed at intermittent duty cycle	rpm	134	283		
nb,p	Base speed at peak duty cycle	rpm	116	254		
nn	Rated speed	rpm	141	296		
Tn	Rated torque	Nm	2160	2030		
In	Rated current	Arms	88.4	161		
rth	Thermal time constant	s	145	146		
Rth	Thermal resistance	K/W	0.0117	0.0116		
2p	Number of poles	-	88	88		
J	Rotor inertia	kg·m²	2.37	2.37		
mr	Rotor mass	kg	56.8	56.8		
ms	Stator mass	kg	77.3	77.5		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.209	0.209		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	26	26		
Δpw	Max. pressure drop at qw	bar	1.5	1.5		

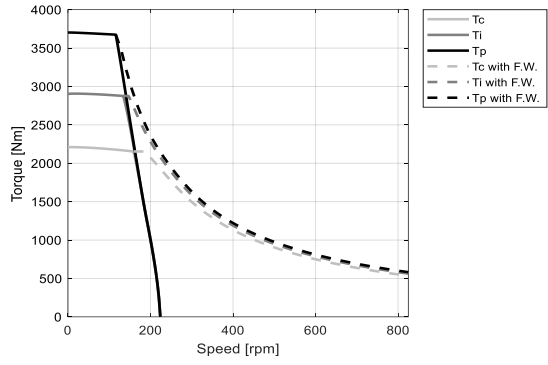
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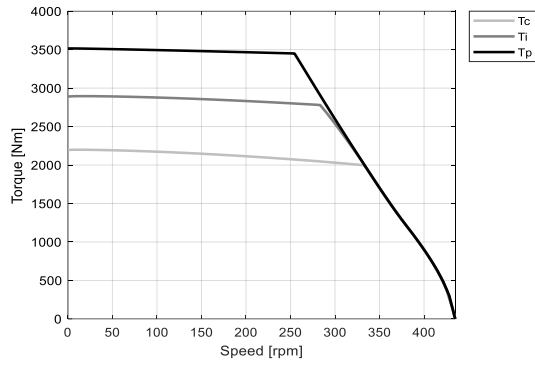
UH - WATER COOLING



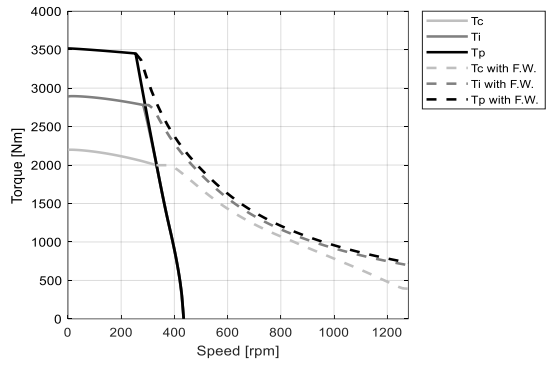
UH - WATER COOLING



XH - WATER COOLING



XH - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UH	XH		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	5710	5450		
Ti	Intermittent torque	Nm	4450	4470		
Tc	Continuous torque	Nm	3350	3380		
Ts	Standstill torque	Nm	2710	2730		
Ip	Peak current	Arms	221	381		
Ii	Intermittent current	Arms	140	274		
Ic	Continuous current	Arms	88.4	173		
Is	Standstill current	Arms	67.0	131		
ns	Rated low speed	rpm	0.094	0.094		
nm	Maximum speed without flux weakening	rpm	149	290		
nm,FW	Maximum speed with flux weakening	rpm	550	1070		
ton,p	Maximum ON time for peak cycle	s	11	17		
ton,i	Maximum ON time for intermittent cycle	s	3.0	3.1		
Pp	Power dissipation @ Ip	W	56600	43100		
Pi	Power dissipation @ Ii	W	28100	28400		
Pc	Power dissipation @ Ic	W	11200	11400		
Td	Max. detent torque (average to peak)	Nm	21	21		

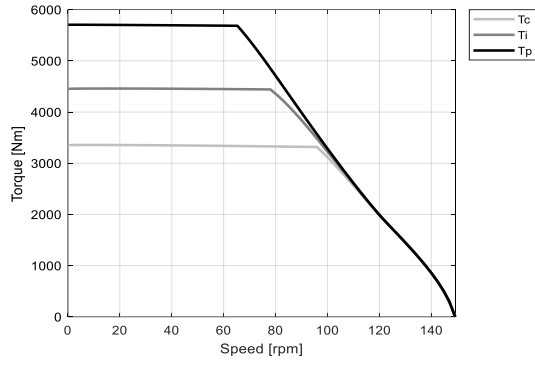
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	44.3	22.8		
Ku	Back EMF constant (*)	Vrms/(rad/s)	26.6	13.7		
Km	Motor constant	Nm/√W	43.2	43.4		
R20	Electrical resistance at 20°C (*)	Ohm	0.702	0.184		
Ld/Lq	Electrical inductance (*)	mH	9.92 / 8.16	2.63 / 2.16		
Isc	Maximum short-circuit current	Arms	70.4	137		
nb	Base speed	rpm	95.9	201		
nb,i	Base speed at intermittent duty cycle	rpm	78.0	168		
nb,p	Base speed at peak duty cycle	rpm	65.3	151		
nn	Rated speed	rpm	84.8	179		
Tn	Rated torque	Nm	3320	3260		
In	Rated current	Arms	87.5	168		
rth	Thermal time constant	s	145	145		
Rth	Thermal resistance	K/W	0.00807	0.00806		
2p	Number of poles	-	88	88		
J	Rotor inertia	kg·m²	3.37	3.37		
mr	Rotor mass	kg	80.7	80.7		
ms	Stator mass	kg	107	107		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.271	0.271		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	35	36		
Δpw	Max. pressure drop at qw	bar	2.7	2.7		

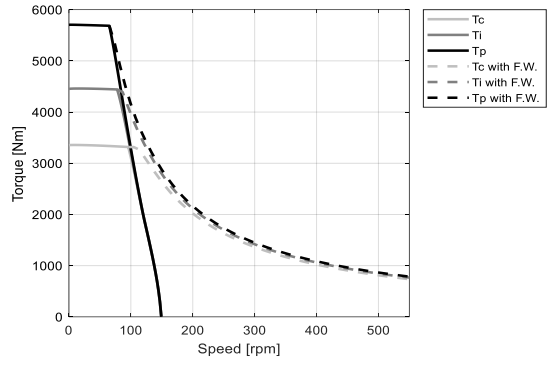
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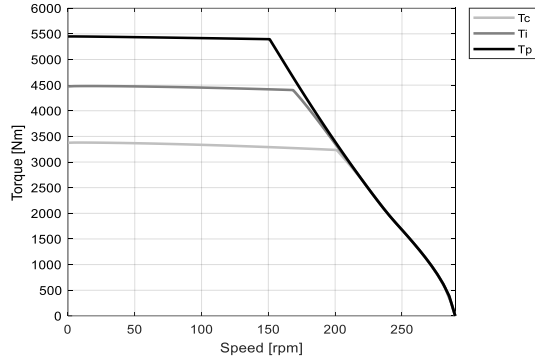
UH - WATER COOLING



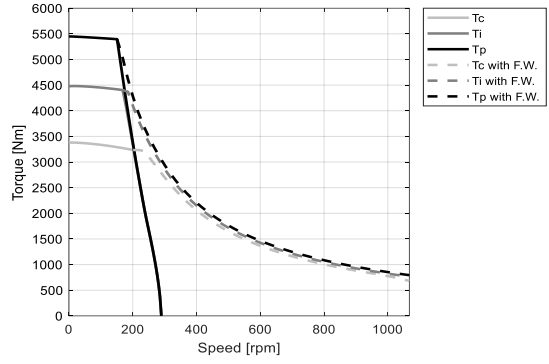
UH - WATER COOLING



XH - WATER COOLING



XH - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UL	XL		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	3760	3760		
Ti	Intermittent torque	Nm	2890	2850		
Tc	Continuous torque	Nm	2150	2120		
Ts	Standstill torque	Nm	1750	1720		
Ip	Peak current	Arms	305	592		
Ii	Intermittent current	Arms	192	365		
Ic	Continuous current	Arms	122	231		
Is	Standstill current	Arms	92.1	175		
ns	Rated low speed	rpm	0.048	0.048		
nm	Maximum speed without flux weakening	rpm	306	595		
nm,FW	Maximum speed with flux weakening	rpm	825	825		
ton,p	Maximum ON time for peak cycle	s	17	15		
ton,i	Maximum ON time for intermittent cycle	s	3.2	3.2		
Pp	Power dissipation @ Ip	W	30900	32500		
Pi	Power dissipation @ Ii	W	15600	15600		
Pc	Power dissipation @ Ic	W	6260	6250		
Td	Max. detent torque (average to peak)	Nm	11	11		

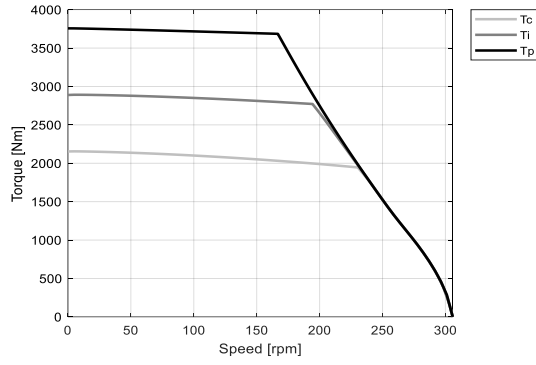
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	21.8	11.2		
Ku	Back EMF constant (*)	Vrms/(rad/s)	13.0	6.69		
Km	Motor constant	Nm/√W	39.8	38.8		
R20	Electrical resistance at 20°C (*)	Ohm	0.200	0.0555		
Ld/Lq	Electrical inductance (*)	mH	2.00 / 1.76	0.531 / 0.470		
Isc	Maximum short-circuit current	Arms	114	221		
nb	Base speed	rpm	230	503		
nb,i	Base speed at intermittent duty cycle	rpm	194	409		
nb,p	Base speed at peak duty cycle	rpm	167	336		
nn	Rated speed	rpm	205	449		
Tn	Rated torque	Nm	1980	1490		
In	Rated current	Arms	112	161		
rth	Thermal time constant	s	189	191		
Rth	Thermal resistance	K/W	0.0165	0.0164		
2p	Number of poles	-	132	132		
J	Rotor inertia	kg·m²	5.81	5.81		
mr	Rotor mass	kg	58.5	58.5		
ms	Stator mass	kg	98.3	98.6		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.328	0.328		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	20	20		
Δpw	Max. pressure drop at qw	bar	0.8	0.8		

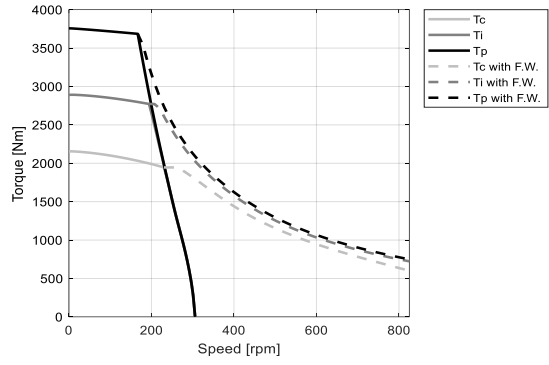
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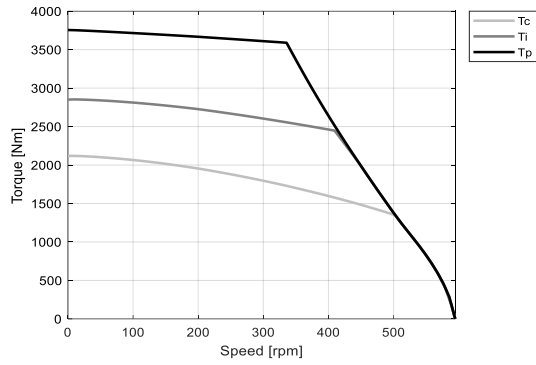
UL - WATER COOLING



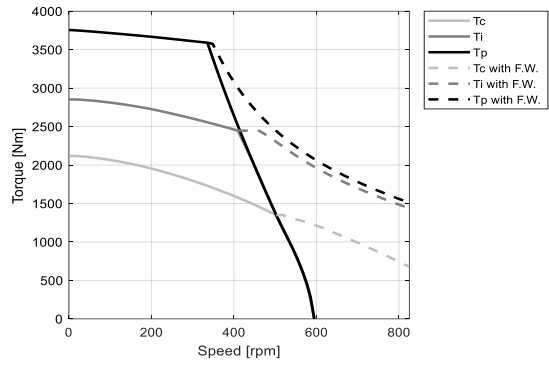
UL - WATER COOLING



XL - WATER COOLING



XL - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UL	XL		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	5460	5460		
Ti	Intermittent torque	Nm	4200	4170		
Tc	Continuous torque	Nm	3130	3100		
Ts	Standstill torque	Nm	2540	2510		
Ip	Peak current	Arms	310	602		
Ii	Intermittent current	Arms	196	375		
Ic	Continuous current	Arms	124	237		
Is	Standstill current	Arms	94.1	180		
ns	Rated low speed	rpm	0.050	0.049		
nm	Maximum speed without flux weakening	rpm	218	424		
nm,FW	Maximum speed with flux weakening	rpm	805	895		
ton,p	Maximum ON time for peak cycle	s	16	15		
ton,i	Maximum ON time for intermittent cycle	s	3.2	3.2		
Pp	Power dissipation @ Ip	W	40100	41500		
Pi	Power dissipation @ Ii	W	20500	20400		
Pc	Power dissipation @ Ic	W	8190	8170		
Td	Max. detent torque (average to peak)	Nm	15	15		

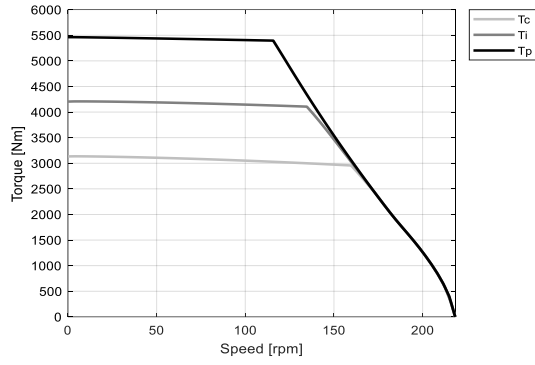
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	30.7	15.8		
Ku	Back EMF constant (*)	Vrms/(rad/s)	18.2	9.37		
Km	Motor constant	Nm/√W	50.0	49.2		
R20	Electrical resistance at 20°C (*)	Ohm	0.252	0.0689		
Ld/Lq	Electrical inductance (*)	mH	2.76 / 2.41	0.733 / 0.643		
Isc	Maximum short-circuit current	Arms	115	223		
nb	Base speed	rpm	160	338		
nb,i	Base speed at intermittent duty cycle	rpm	135	281		
nb,p	Base speed at peak duty cycle	rpm	116	236		
nn	Rated speed	rpm	142	301		
Tn	Rated torque	Nm	2990	2590		
In	Rated current	Arms	118	199		
rth	Thermal time constant	s	183	185		
Rth	Thermal resistance	K/W	0.0124	0.0124		
2p	Number of poles	-	132	132		
J	Rotor inertia	kg·m²	7.47	7.47		
mr	Rotor mass	kg	74.9	74.9		
ms	Stator mass	kg	118	119		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.407	0.407		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	26	26		
Δpw	Max. pressure drop at qw	bar	1.1	1.1		

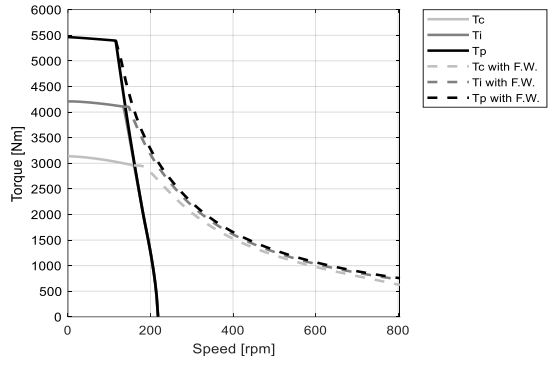
Notes: (*) terminal to terminal.
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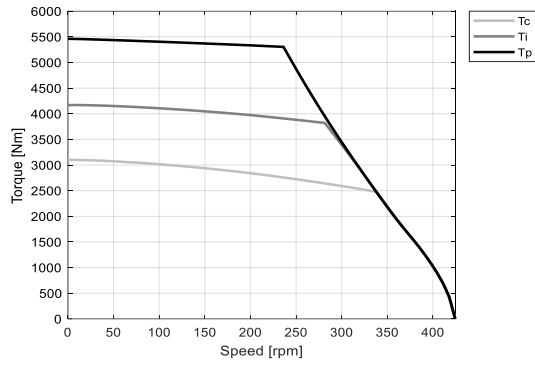
UL - WATER COOLING



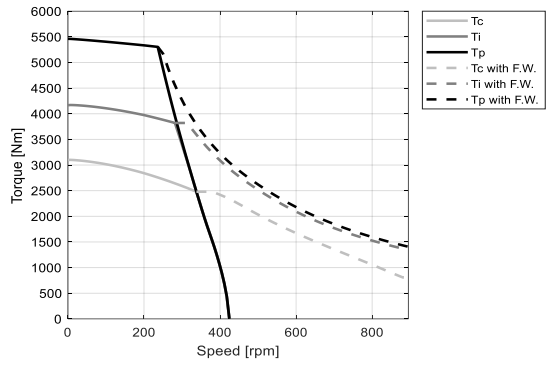
UL - WATER COOLING



XL - WATER COOLING



XL - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UL	XL		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	8080	8080		
Ti	Intermittent torque	Nm	6200	6180		
Tc	Continuous torque	Nm	4620	4600		
Ts	Standstill torque	Nm	3750	3720		
Ip	Peak current	Arms	318	616		
Ii	Intermittent current	Arms	200	386		
Ic	Continuous current	Arms	127	244		
Is	Standstill current	Arms	96.0	185		
ns	Rated low speed	rpm	0.052	0.052		
nm	Maximum speed without flux weakening	rpm	153	297		
nm,FW	Maximum speed with flux weakening	rpm	563	881		
ton,p	Maximum ON time for peak cycle	s	14	14		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	54800	55700		
Pi	Power dissipation @ Ii	W	27600	27600		
Pc	Power dissipation @ Ic	W	11000	11000		
Td	Max. detent torque (average to peak)	Nm	21	21		

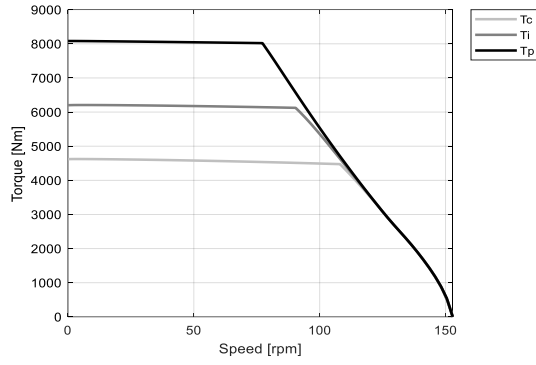
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	44.2	22.8		
Ku	Back EMF constant (*)	Vrms/(rad/s)	26.0	13.4		
Km	Motor constant	Nm/√W	63.1	62.6		
R20	Electrical resistance at 20°C (*)	Ohm	0.328	0.0883		
Ld/Lq	Electrical inductance (*)	mH	3.92 / 3.39	1.04 / 0.902		
Isc	Maximum short-circuit current	Arms	116	225		
nb	Base speed	rpm	108	226		
nb,i	Base speed at intermittent duty cycle	rpm	90.5	190		
nb,p	Base speed at peak duty cycle	rpm	77.3	162		
nn	Rated speed	rpm	96.0	201		
Tn	Rated torque	Nm	4500	4190		
In	Rated current	Arms	123	223		
rth	Thermal time constant	s	176	176		
Rth	Thermal resistance	K/W	0.00894	0.00892		
2p	Number of poles	-	132	132		
J	Rotor inertia	kg·m²	9.89	9.89		
mr	Rotor mass	kg	98.9	98.9		
ms	Stator mass	kg	147	147		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.524	0.524		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	34	34		
Δpw	Max. pressure drop at qw	bar	2.2	2.2		

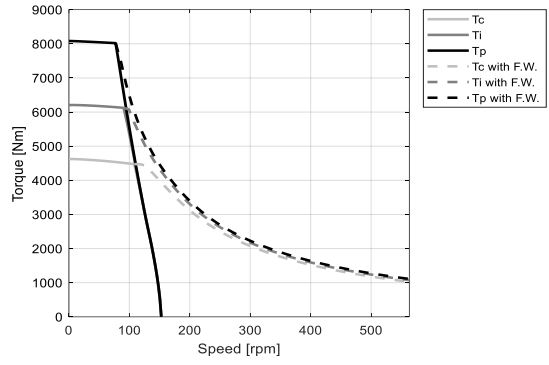
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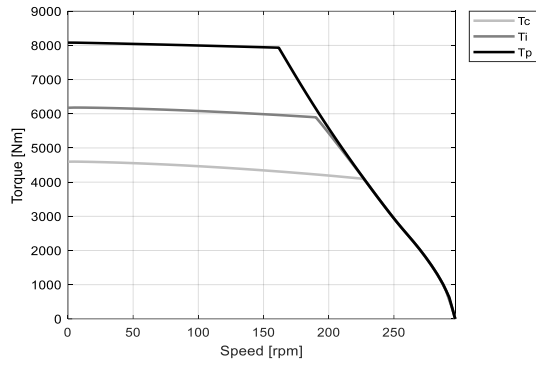
UL - WATER COOLING



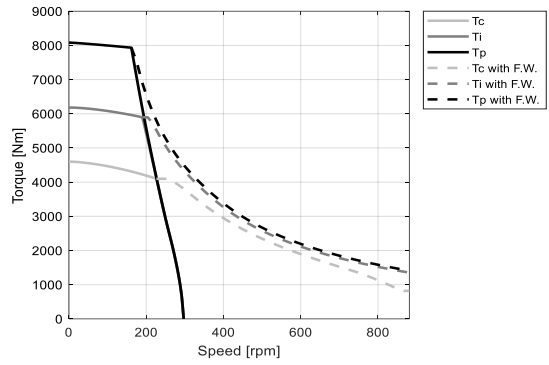
UL - WATER COOLING



XL - WATER COOLING



XL - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UL	XL		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	12200	12200		
Ti	Intermittent torque	Nm	9290	9340		
Tc	Continuous torque	Nm	6880	6920		
Ts	Standstill torque	Nm	5550	5590		
Ip	Peak current	Arms	308	597		
Ii	Intermittent current	Arms	194	381		
Ic	Continuous current	Arms	123	241		
Is	Standstill current	Arms	93.1	183		
ns	Rated low speed	rpm	0.047	0.047		
nm	Maximum speed without flux weakening	rpm	102	198		
nm,FW	Maximum speed with flux weakening	rpm	375	729		
ton,p	Maximum ON time for peak cycle	s	12	13		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	73600	72700		
Pi	Power dissipation @ Ii	W	36500	36800		
Pc	Power dissipation @ Ic	W	14600	14700		
Td	Max. detent torque (average to peak)	Nm	32	32		

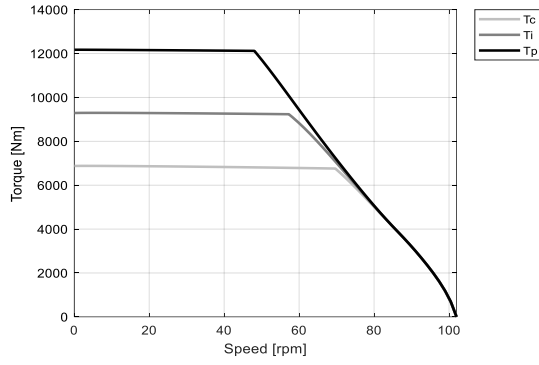
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	66.8	34.4		
Ku	Back EMF constant (*)	Vrms/(rad/s)	39.0	20.1		
Km	Motor constant	Nm/√W	79.7	80.1		
R20	Electrical resistance at 20°C (*)	Ohm	0.468	0.123		
Ld/Lq	Electrical inductance (*)	mH	5.84 / 5.10	1.55 / 1.35		
Isc	Maximum short-circuit current	Arms	117	227		
nb	Base speed	rpm	69.7	146		
nb,i	Base speed at intermittent duty cycle	rpm	57.2	123		
nb,p	Base speed at peak duty cycle	rpm	48.1	106		
nn	Rated speed	rpm	61.6	130		
Tn	Rated torque	Nm	6780	6590		
In	Rated current	Arms	121	230		
rth	Thermal time constant	s	193	193		
Rth	Thermal resistance	K/W	0.00621	0.00620		
2p	Number of poles	-	132	132		
J	Rotor inertia	kg·m²	14.0	14.0		
mr	Rotor mass	kg	140	140		
ms	Stator mass	kg	197	198		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.720	0.720		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	10	10		
qw	Minimum water flow for Δθw	l/min	23	23		
Δpw	Max. pressure drop at qw	bar	1.2	1.2		

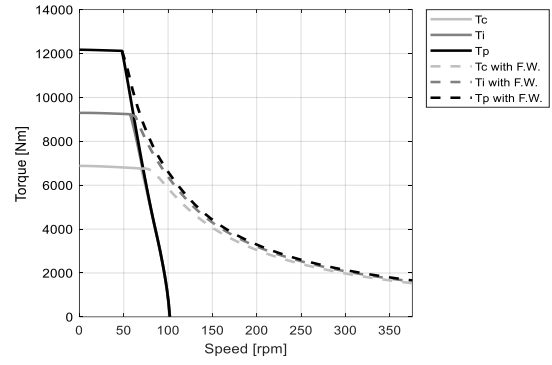
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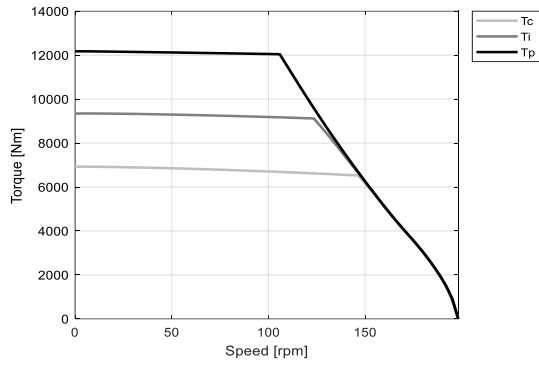
UL - WATER COOLING



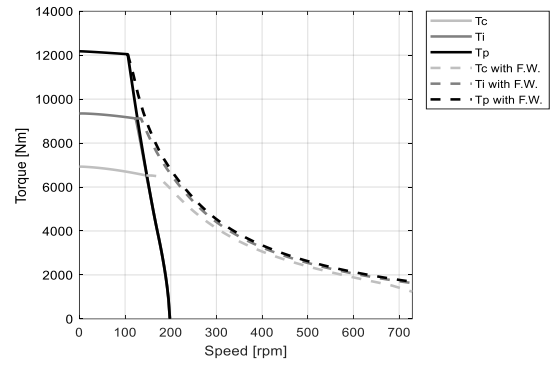
UL - WATER COOLING



XL - WATER COOLING



XL - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UP	XP		
		UNIT	WATER COOLING	WATER COOLING		
TP	Peak torque	Nm	6130	6120		
TI	Intermittent torque	Nm	4670	4610		
TC	Continuous torque	Nm	3470	3410		
TS	Standstill torque	Nm	2810	2760		
IP	Peak current	Arms	393	762		
II	Intermittent current	Arms	247	469		
IC	Continuous current	Arms	157	297		
IS	Standstill current	Arms	119	225		
NS	Rated low speed	rpm	0.032	0.032		
NM	Maximum speed without flux weakening	rpm	240	467		
NM,FW	Maximum speed with flux weakening	rpm	598	598		
TON,p	Maximum ON time for peak cycle	s	19	17		
TON,i	Maximum ON time for intermittent cycle	s	3.2	3.2		
PP	Power dissipation @ Ip	W	38400	40400		
PI	Power dissipation @ Ii	W	19500	19400		
PC	Power dissipation @ Ic	W	7790	7780		
TD	Max. detent torque (average to peak)	Nm	14	14		

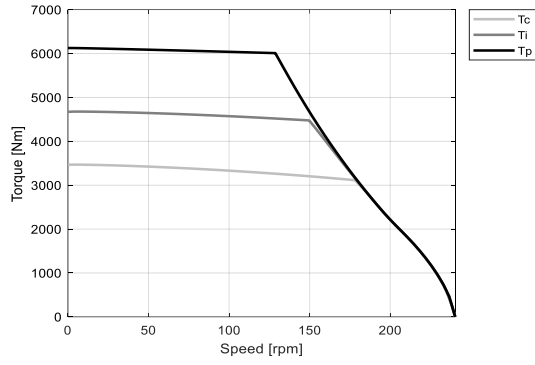
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	27.5	14.1		
Ku	Back EMF constant (*)	Vrms/(rad/s)	16.5	8.51		
Km	Motor constant	Nm/√W	57.9	56.6		
R20	Electrical resistance at 20°C (*)	Ohm	0.150	0.0416		
Ld/Lq	Electrical inductance (*)	mH	1.49 / 1.35	0.395 / 0.361		
Isc	Maximum short-circuit current	Arms	146	283		
nb	Base speed	rpm	178	398		
nb,i	Base speed at intermittent duty cycle	rpm	150	315		
nb,p	Base speed at peak duty cycle	rpm	129	258		
nn	Rated speed	rpm	158	352		
Tn	Rated torque	Nm	3180	2300		
In	Rated current	Arms	144	199		
rth	Thermal time constant	s	211	212		
Rth	Thermal resistance	K/W	0.0133	0.0133		
2p	Number of poles	-	176	176		
J	Rotor inertia	kg·m²	15.9	15.9		
mr	Rotor mass	kg	87.1	87.1		
ms	Stator mass	kg	145	145		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.315	0.315		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	24	24		
Δpw	Max. pressure drop at qw	bar	1.1	1.1		

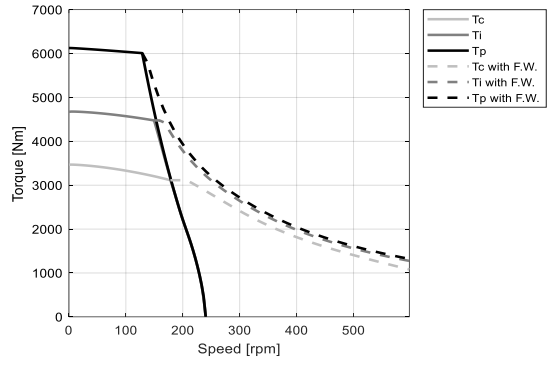
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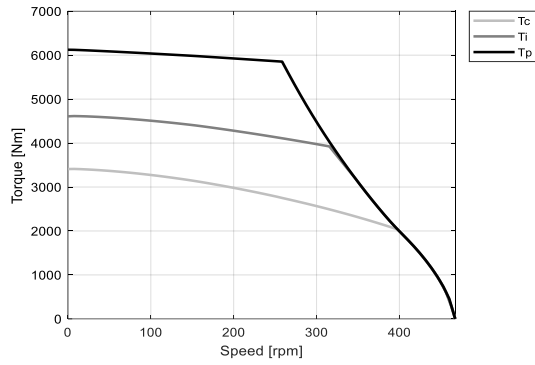
UP - WATER COOLING



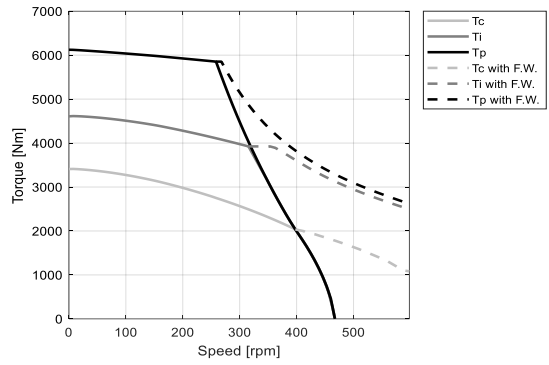
UP - WATER COOLING



XP - WATER COOLING



XP - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UP	XP		
		UNIT	WATER COOLING	WATER COOLING		
TP	Peak torque	Nm	9000	9000		
TI	Intermittent torque	Nm	6860	6790		
TC	Continuous torque	Nm	5070	5020		
TS	Standstill torque	Nm	4110	4050		
IP	Peak current	Arms	400	776		
II	Intermittent current	Arms	254	485		
IC	Continuous current	Arms	160	307		
IS	Standstill current	Arms	122	232		
NS	Rated low speed	rpm	0.034	0.033		
NM	Maximum speed without flux weakening	rpm	172	334		
NM,FW	Maximum speed with flux weakening	rpm	632	671		
TON,p	Maximum ON time for peak cycle	s	17	16		
TON,i	Maximum ON time for intermittent cycle	s	3.2	3.2		
PP	Power dissipation @ Ip	W	50100	51800		
PI	Power dissipation @ Ii	W	25700	25600		
PC	Power dissipation @ Ic	W	10300	10200		
TD	Max. detent torque (average to peak)	Nm	20	20		

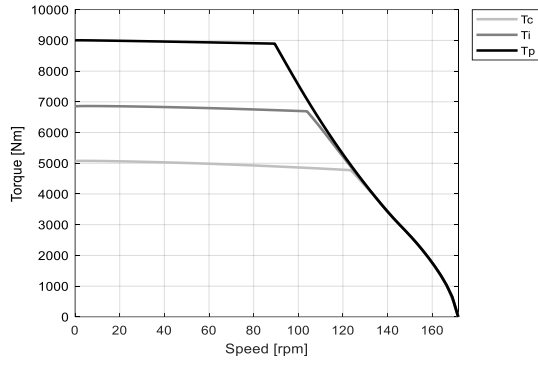
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	38.6	19.9		
Ku	Back EMF constant (*)	Vrms/(rad/s)	23.1	11.9		
Km	Motor constant	Nm/√W	72.5	71.4		
R20	Electrical resistance at 20°C (*)	Ohm	0.189	0.0516		
Ld/Lq	Electrical inductance (*)	mH	2.05 / 1.84	0.544 / 0.491		
Isc	Maximum short-circuit current	Arms	148	287		
nb	Base speed	rpm	124	263		
nb,i	Base speed at intermittent duty cycle	rpm	104	217		
nb,p	Base speed at peak duty cycle	rpm	89.4	182		
nn	Rated speed	rpm	110	233		
Tn	Rated torque	Nm	4830	4140		
In	Rated current	Arms	153	253		
rth	Thermal time constant	s	203	204		
Rth	Thermal resistance	K/W	0.00993	0.00991		
2p	Number of poles	-	176	176		
J	Rotor inertia	kg·m²	20.4	20.4		
mr	Rotor mass	kg	111	111		
ms	Stator mass	kg	173	174		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.369	0.369		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	5.0	5.0		
qw	Minimum water flow for Δθw	l/min	32	32		
Δpw	Max. pressure drop at qw	bar	1.6	1.6		

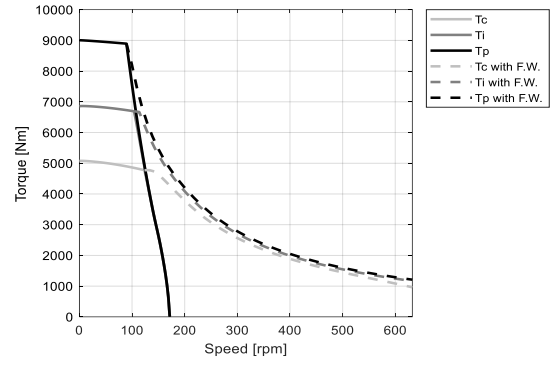
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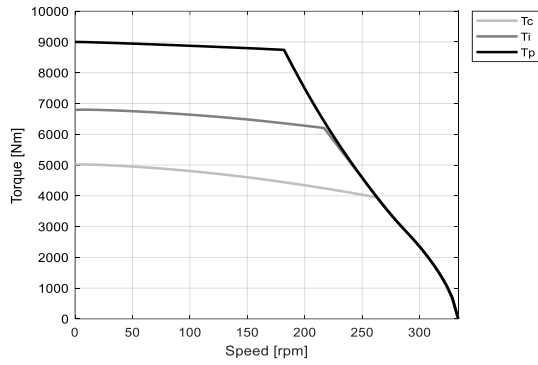
UP - WATER COOLING



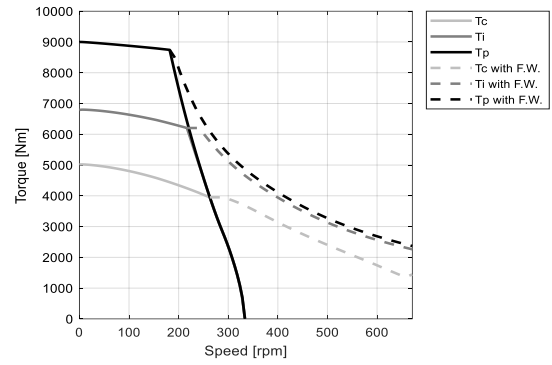
UP - WATER COOLING



XP - WATER COOLING



XP - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UP	XP		
		UNIT	WATER COOLING	WATER COOLING		
TP	Peak torque	Nm	13500	13500		
TI	Intermittent torque	Nm	10200	10200		
TC	Continuous torque	Nm	7580	7540		
TS	Standstill torque	Nm	6130	6090		
IP	Peak current	Arms	413	801		
II	Intermittent current	Arms	260	501		
IC	Continuous current	Arms	165	317		
IS	Standstill current	Arms	125	240		
NS	Rated low speed	rpm	0.034	0.034		
NM	Maximum speed without flux weakening	rpm	120	234		
NM,FW	Maximum speed with flux weakening	rpm	443	661		
TON,p	Maximum ON time for peak cycle	s	15	14		
TON,i	Maximum ON time for intermittent cycle	s	3.2	3.2		
PP	Power dissipation @ Ip	W	69900	71000		
PI	Power dissipation @ Ii	W	34900	34900		
PC	Power dissipation @ Ic	W	14000	14000		
TD	Max. detent torque (average to peak)	Nm	28	28		

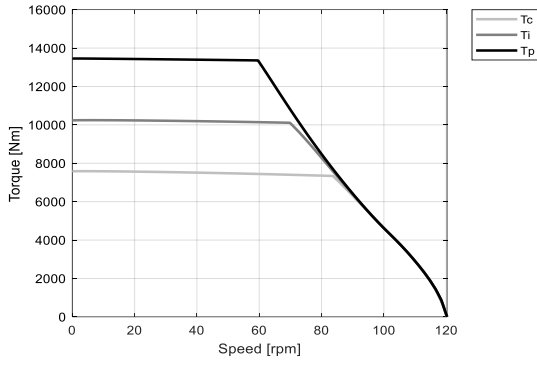
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	55.8	28.7		
Ku	Back EMF constant (*)	Vrms/(rad/s)	33.1	17.0		
Km	Motor constant	Nm/√W	91.8	91.1		
R20	Electrical resistance at 20°C (*)	Ohm	0.246	0.0662		
Ld/Lq	Electrical inductance (*)	mH	2.90 / 2.58	0.769 / 0.686		
Isc	Maximum short-circuit current	Arms	150	290		
nb	Base speed	rpm	83.7	175		
nb,i	Base speed at intermittent duty cycle	rpm	69.8	146		
nb,p	Base speed at peak duty cycle	rpm	59.6	124		
nn	Rated speed	rpm	74.3	156		
Tn	Rated torque	Nm	7380	6850		
In	Rated current	Arms	160	288		
rth	Thermal time constant	s	202	202		
Rth	Thermal resistance	K/W	0.00693	0.00691		
2p	Number of poles	-	176	176		
J	Rotor inertia	kg·m²	27.0	27.0		
mr	Rotor mass	kg	147	147		
ms	Stator mass	kg	215	215		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.449	0.449		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	10	10		
qw	Minimum water flow for Δθw	l/min	22	22		
Δpw	Max. pressure drop at qw	bar	1.0	0.9		

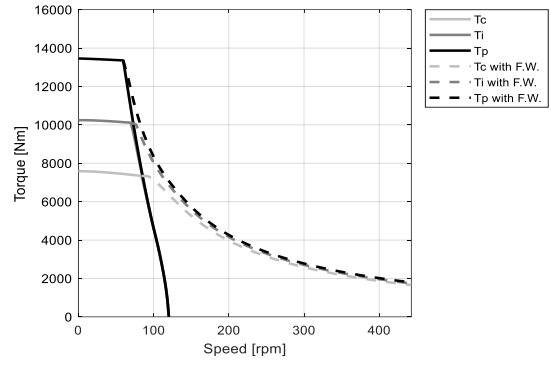
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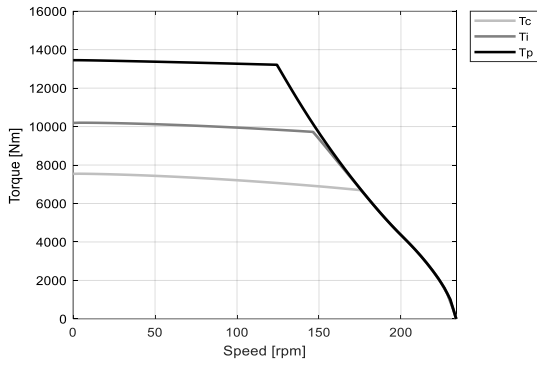
UP - WATER COOLING



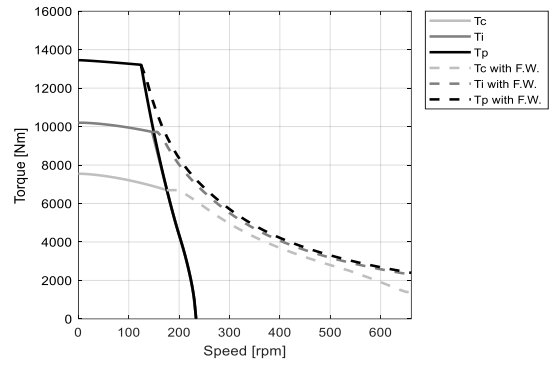
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XP - WATER COOLING



XP - WATER COOLING



MOTOR PERFORMANCE		Winding codes	UP	XP		
		UNIT	WATER COOLING	WATER COOLING		
Tp	Peak torque	Nm	20500	20600		
Ti	Intermittent torque	Nm	15600	15600		
Tc	Continuous torque	Nm	11500	11600		
Ts	Standstill torque	Nm	9240	9310		
Ip	Peak current	Arms	405	786		
Ii	Intermittent current	Arms	256	502		
Ic	Continuous current	Arms	162	318		
Is	Standstill current	Arms	123	241		
ns	Rated low speed	rpm	0.034	0.034		
nm	Maximum speed without flux weakening	rpm	80.2	156		
nm,FW	Maximum speed with flux weakening	rpm	295	573		
ton,p	Maximum ON time for peak cycle	s	13	14		
ton,i	Maximum ON time for intermittent cycle	s	3.1	3.1		
Pp	Power dissipation @ Ip	W	95800	94600		
Pi	Power dissipation @ Ii	W	47500	48000		
Pc	Power dissipation @ Ic	W	19000	19200		
Td	Max. detent torque (average to peak)	Nm	42	42		

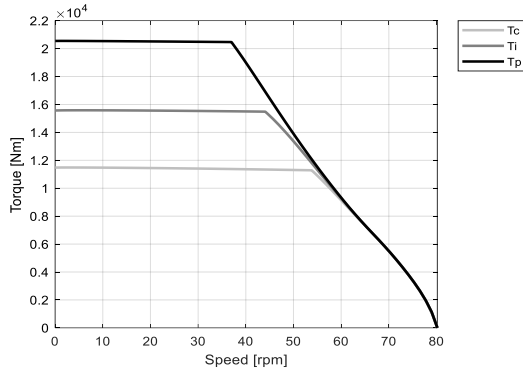
MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	84.5	43.5		
Ku	Back EMF constant (*)	Vrms/(rad/s)	49.6	25.5		
Km	Motor constant	Nm/√W	116	117		
R20	Electrical resistance at 20°C (*)	Ohm	0.351	0.0921		
Ld/Lq	Electrical inductance (*)	mH	4.32 / 3.85	1.15 / 1.02		
Isc	Maximum short-circuit current	Arms	151	293		
nb	Base speed	rpm	53.8	113		
nb,i	Base speed at intermittent duty cycle	rpm	44.1	94.7		
nb,p	Base speed at peak duty cycle	rpm	37.0	81.1		
nn	Rated speed	rpm	47.6	100		
Tn	Rated torque	Nm	11300	11000		
In	Rated current	Arms	160	303		
rth	Thermal time constant	s	202	202		
Rth	Thermal resistance	K/W	0.00478	0.00477		
2p	Number of poles	-	176	176		
J	Rotor inertia	kg·m²	38.1	38.1		
mr	Rotor mass	kg	207	207		
ms	Stator mass	kg	287	287		

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600		
Di	Intermittent duty cycle	%	40	40		
Dp	Peak duty cycle	%	5.0	5.0		
Sr	Rotor exchange surface	m²	0.583	0.583		
θamb	Ambient temperature	°C	20	20		
θmax	Maximum coil temperature	°C	130	130		
θw	Inlet water temperature	°C	20	20		
Δθw	Water temperature difference for Pc	K	10	10		
qw	Minimum water flow for Δθw	l/min	30	30		
Δpw	Max. pressure drop at qw	bar	1.6	1.6		

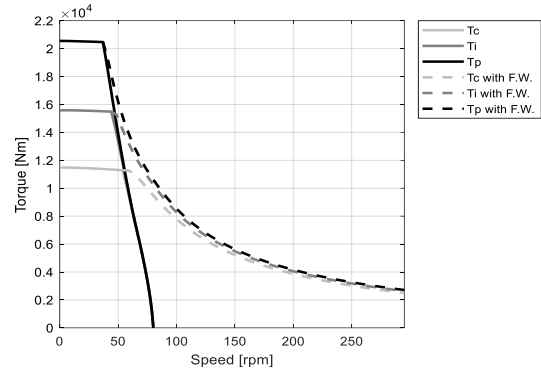
Notes: (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.

Caution: Any use of the motor beyond speed/torque limit could lead to hazardous voltage and serious injuries. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the motor is used in an improper way.

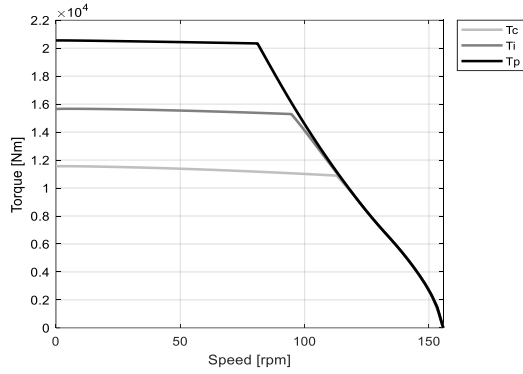
UP - WATER COOLING



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XP - WATER COOLING



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