ETEL

TMB Standard

CONVENTIONAL TORQUE MOTOR TMB+0450-070

MOTOR PERFORMANCE		Winding codes	VA	WB	WD	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
Tp	Peak torque	Nm	1590	1690	1690	1690
Ti	Intermittent torque	Nm	1270	1250	1250	1250
Tc	Continuous torque	Nm	964	939	939	939
Ts	Standstill torque	Nm	788	765	765	765
Ip	Peak current	Arms	30.4	95.8	192	383
Ii	Intermittent current	Arms	20.6	52.9	106	212
Ic	Continuous current	Arms	13.0	33.5	67.0	134
Is	Standstill current	Arms	9.86	25.4	50.7	101
ns	Rated low speed	rpm	0.11	0.12	0.12	0.12
nm	Maximum speed without flux weakening	rpm	71.4	191	383	767
nm,FW	Maximum speed with flux weakening	rpm	239	438	619	767
τon,p	Maximum ON time for peak cycle	s	12	6.0	6.0	6.0
τon,i	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
Pp	Power dissipation @ Ip	W	21900	33800	33800	33800
Pi	Power dissipation @ Ii	W	13000	12800	12800	12800
Pc	Power dissipation @ Ic	W	5180	5110	5110	5110
Td	Max. detent torque (average to peak)	Nm	4.6	4.6	4.6	4.6

MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	96.5	36.1	18.0	9.02
Ku	Back EMF constant (*)	Vrms/(rad/s)	55.6	20.8	10.4	5.19
Km	Motor constant	Nm/√W	20.8	20.1	20.1	20.1
R20	Electrical resistance at 20°C (*)	Ohm	14.4	2.14	0.536	0.134
Ld/Lq	Electrical inductance (*)	mH	163 / 131	22.7 / 18.7	5.69 / 4.67	1.42 / 1.17
Isc	Maximum short-circuit current	Arms	8.96	24.0	47.9	95.9
nb	Base speed	rpm	28.4	152	346	N/A
nb,i	Base speed at intermittent duty cycle	rpm	9.79	116	287	663
nb,p	Base speed at peak duty cycle	rpm	0.00	71.6	179	387
nn	Rated speed	rpm	22.7	134	317	319
Tn	Rated torque	Nm	935	566	365	362
In	Rated current	Arms	12.9	18.4	23.7	47.0
τth	Thermal time constant	s	120	118	118	118
Rth	Thermal resistance	K/W	0.0202	0.0204	0.0204	0.0204
2p	Number of poles	-	88	88	88	88
J	Rotor inertia	kg·m²	0.377	0.377	0.377	0.377
mr	Rotor mass	kg	11.4	11.4	11.4	11.4
ms	Stator mass	kg	50.1	49.8	49.8	49.8

MOTOR ENVIRONMENT		UNIT				
Udc	Nominal DC bus voltage	VDC	600	600	600	600
Di	Intermittent duty cycle	%	40	40	40	40
Dp	Peak duty cycle	%	5.0	5.0	5.0	5.0
Sr	Rotor exchange surface	m²	0.200	0.200	0.200	0.200
θamb	Ambient temperature	°C	20	20	20	20
θmax	Maximum coil temperature	°C	130	130	130	130
θw	Inlet water temperature	°C	20	20	20	20
Δθw	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
qw	Minimum water flow for Δθw	l/min	16	16	16	16
Δpw	Max. pressure drop at qw	bar	0.7	0.7	0.7	0.7

Notes: (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.
Please refer to ETEL Integration Manual for the mass of the optional cooling jacket and the possible additional pressure drop.

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.

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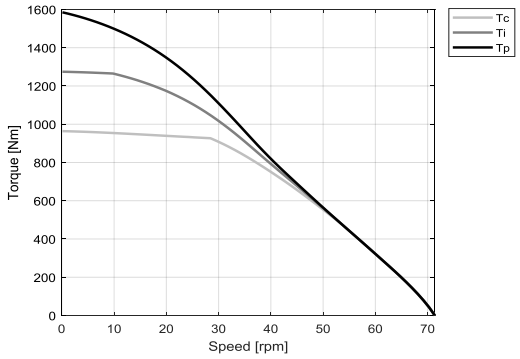
VA - WATER COOLING



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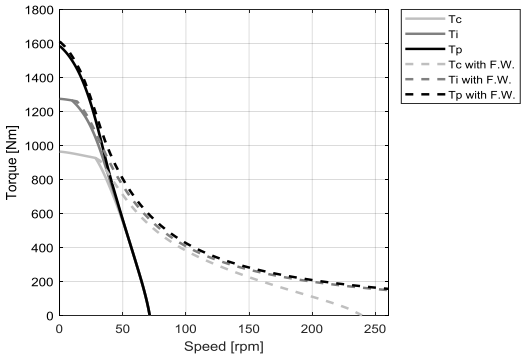
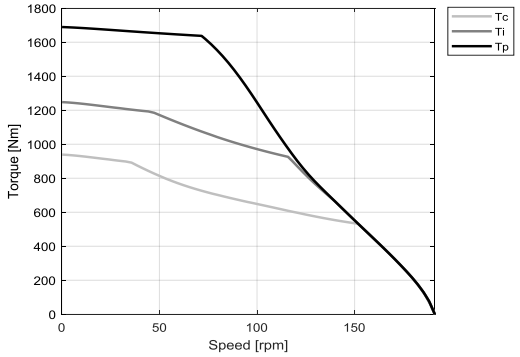


WB - WATER COOLING



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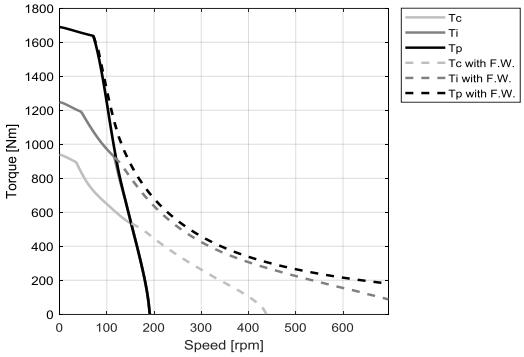

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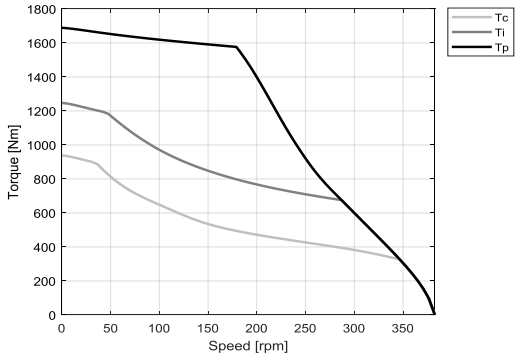

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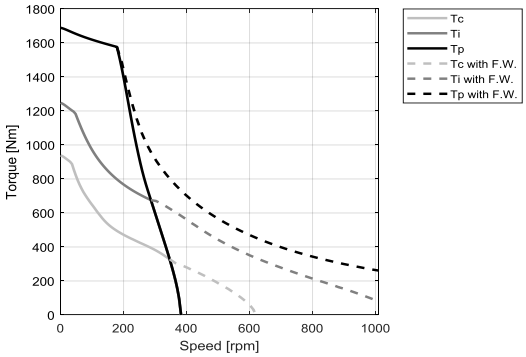

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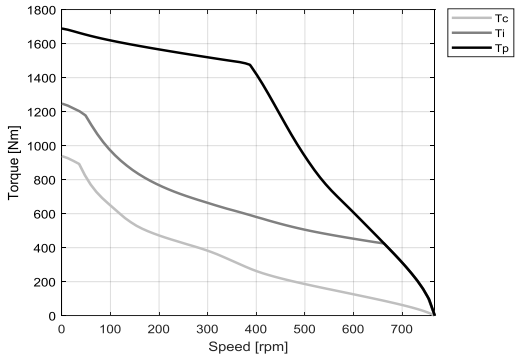

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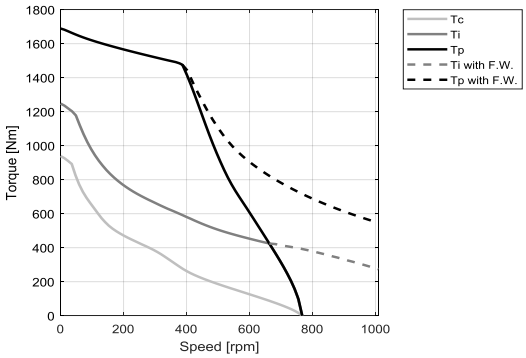

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