ETEL

TMB+ Standard

CONVENTIONAL TORQUE MOTOR TMB+0450-100

		Winding codes	WA	WB	WD	WH
MOTOR PERFORMANCE		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
Tp	Peak torque	Nm	2230	2420	2420	2420
Ti	Intermittent torque	Nm	1820	1820	1820	1820
Tc	Continuous torque	Nm	1370	1370	1370	1370
Ts	Standstill torque	Nm	1120	1120	1120	1120
Ip	Peak current	Arms	38.3	93.3	187	373
Ii	Intermittent current	Arms	27.0	54.1	108	216
Ic	Continuous current	Arms	17.1	34.2	68.4	137
Is	Standstill current	Arms	13.0	25.9	51.8	104
ns	Rated low speed	rpm	0.12	0.12	0.12	0.12
nm	Maximum speed without flux weakening	rpm	66.8	134	268	536
nm,FW	Maximum speed with flux weakening	rpm	199	315	491	774
τon,p	Maximum ON time for peak cycle	s	12	6.3	6.3	6.3
τon,i	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
Pp	Power dissipation @ Ip	W	27600	42400	42400	42400
Pi	Power dissipation @ Ii	W	17800	17800	17800	17800
Pc	Power dissipation @ Ic	W	7120	7120	7120	7120
Td	Max. detent torque (average to peak)	Nm	6.6	6.6	6.6	6.6

MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	103	51.6	25.8	12.9
Ku	Back EMF constant (*)	Vrms/(rad/s)	59.4	29.7	14.8	7.42
Km	Motor constant	Nm/√W	24.9	24.9	24.9	24.9
R20	Electrical resistance at 20°C (*)	Ohm	11.5	2.88	0.719	0.180
Ld/Lq	Electrical inductance (*)	mH	124 / 101	31.0 / 25.3	7.75 / 6.33	1.94 / 1.58
Isc	Maximum short-circuit current	Arms	12.6	25.1	50.2	100
nb	Base speed	rpm	25.9	101	233	514
nb,i	Base speed at intermittent duty cycle	rpm	6.52	73.1	196	450
nb,p	Base speed at peak duty cycle	rpm	0.00	41.7	123	275
nn	Rated speed	rpm	20.2	86.7	213	314
Tn	Rated torque	Nm	1330	926	625	495
In	Rated current	Arms	17.0	21.3	27.8	44.6
τth	Thermal time constant	s	111	111	111	111
Rth	Thermal resistance	K/W	0.0144	0.0144	0.0144	0.0144
2p	Number of poles	-	88	88	88	88
J	Rotor inertia	kg·m²	0.533	0.533	0.533	0.533
mr	Rotor mass	kg	16.1	16.1	16.1	16.1
ms	Stator mass	kg	62.9	62.9	62.9	62.9

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	0.260	0.260	0.260	0.260
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	22	22	22	22
Δpw	Max. pressure drop at qw	bar	1.4	1.4	1.4	1.4

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.

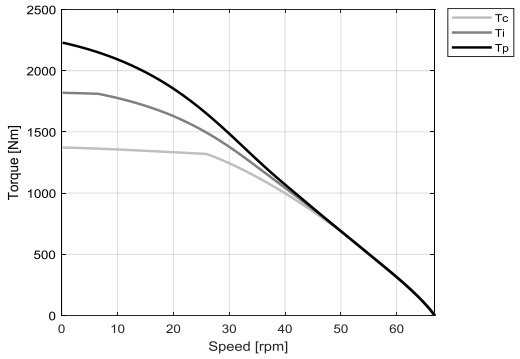
Caution: Any use of the motor beyond speed/torque limit could lead to hazardous voltage and serious injuries. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the motor is used in an improper way.

ETEL S.A. Zone Industrielle, CH-2112 Môtiers, Switzerland
T +41 (0)32 862 01 00 • F +41 (0)32 862 01 01 • etel@etel.ch • www.etel.ch

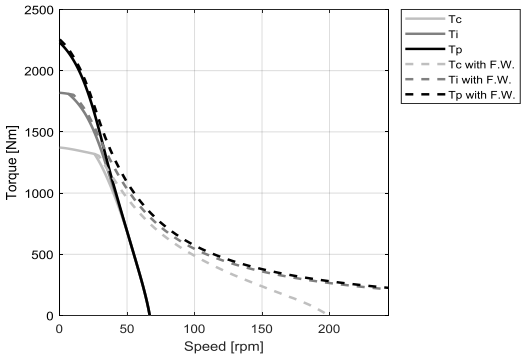
ETEL

CONVENTIONAL TORQUE MOTOR TMB+0450-100

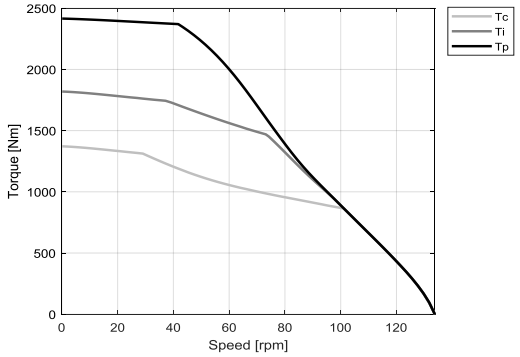
WA - WATER COOLING



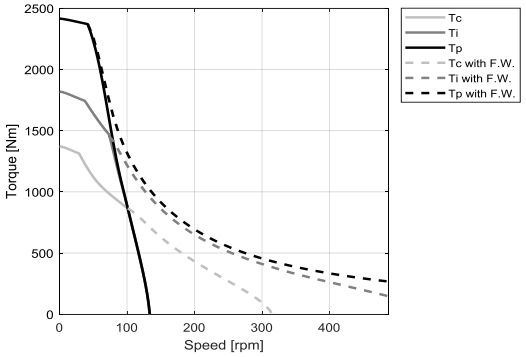
WA - WATER COOLING



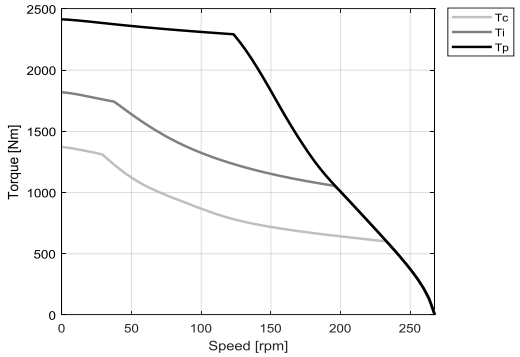
WB - WATER COOLING



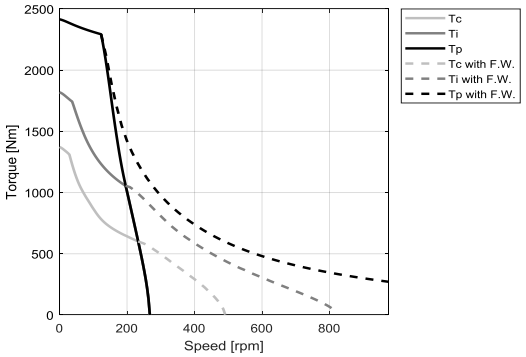
WB - WATER COOLING



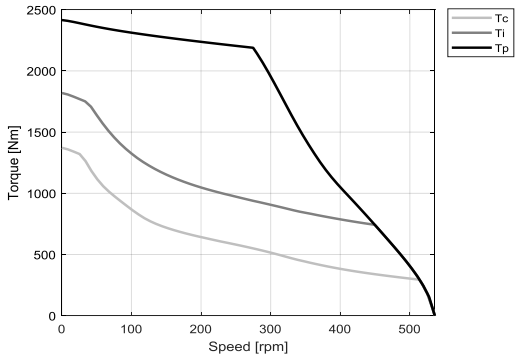
WD - WATER COOLING



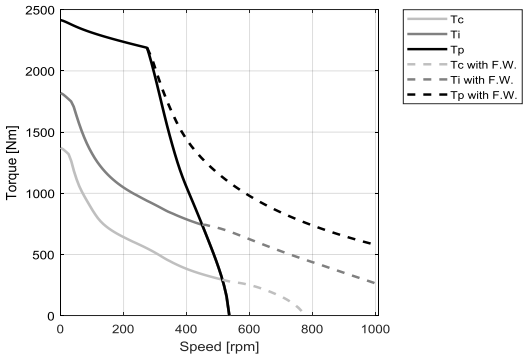
WD - WATER COOLING



WH - WATER COOLING



WH - WATER COOLING



ETEL S.A. Zone Industrielle, CH-2112 Môtiers, Switzerland
T +41 (0)32 862 01 00 • F +41 (0)32 862 01 01 • etel@etel.ch • www.etel.ch