ETEL

TMB+ Standard

CONVENTIONAL TORQUE MOTOR TMB+1221-100

MOTOR PERFORMANCE		Winding codes	UE	UJ	WJ	WT
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
Tp	Peak torque	Nm	19700	21400	21400	21400
Ti	Intermittent torque	Nm	14800	14800	15100	15100
Tc	Continuous torque	Nm	10900	10900	11200	11200
Ts	Standstill torque	Nm	8760	8760	8980	8980
Ip	Peak current	Arms	121	298	432	865
Ii	Intermittent current	Arms	72.5	145	217	433
Ic	Continuous current	Arms	45.8	91.7	137	274
Is	Standstill current	Arms	34.7	69.4	104	208
ns	Rated low speed	rpm	0.030	0.030	0.029	0.029
nm	Maximum speed without flux weakening	rpm	24.2	48.4	70.3	141
nm,FW	Maximum speed with flux weakening	rpm	84.0	126	160	229
τon,p	Maximum ON time for peak cycle	s	10	5.0	5.7	5.7
τon,i	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
Pp	Power dissipation @ Ip	W	87100	140000	131000	131000
Pi	Power dissipation @ Ii	W	39200	39200	39300	39300
Pc	Power dissipation @ Ic	W	15700	15700	15700	15700
Td	Max. detent torque (average to peak)	Nm	54	54	54	54

MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	286	143	98.5	49.2
Ku	Back EMF constant (*)	Vrms/(rad/s)	164	82.0	56.6	28.3
Km	Motor constant	Nm/√W	125	125	128	128
R20	Electrical resistance at 20°C (*)	Ohm	3.51	0.877	0.394	0.0985
Ld/Lq	Electrical inductance (*)	mH	51.5 / 44.8	12.9 / 11.2	6.12 / 5.26	1.53 / 1.32
Isc	Maximum short-circuit current	Arms	33.5	66.9	97.1	194
nb	Base speed	rpm	10.6	34.3	56.4	128
nb,i	Base speed at intermittent duty cycle	rpm	5.68	25.0	42.7	104
nb,p	Base speed at peak duty cycle	rpm	0.00	13.5	26.8	63.0
nn	Rated speed	rpm	8.77	29.7	49.6	117
Tn	Rated torque	Nm	10500	7810	6380	3960
In	Rated current	Arms	45.4	63.5	73.6	93.8
τth	Thermal time constant	s	184	184	188	188
Rth	Thermal resistance	K/W	0.00648	0.00648	0.00646	0.00646
2p	Number of poles	-	220	220	220	220
J	Rotor inertia	kg·m²	32.9	32.9	32.9	32.9
mr	Rotor mass	kg	107	107	107	107
ms	Stator mass	kg	298	298	300	300

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	0.940	0.940	0.940	0.940
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	10	10	10	10
qw	Minimum water flow for Δθw	l/min	24	24	25	25
Δpw	Max. pressure drop at qw	bar	1.1	1.1	1.1	1.1

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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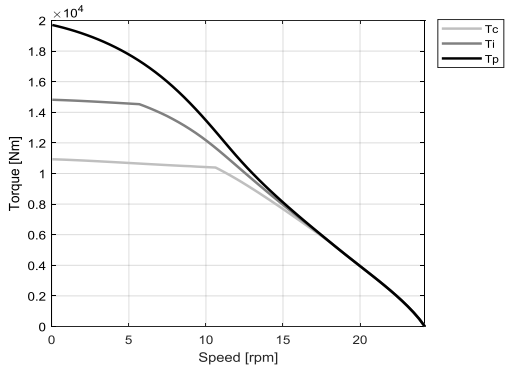
UE - WATER COOLING



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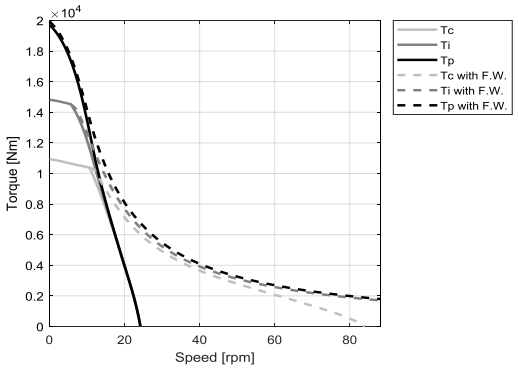
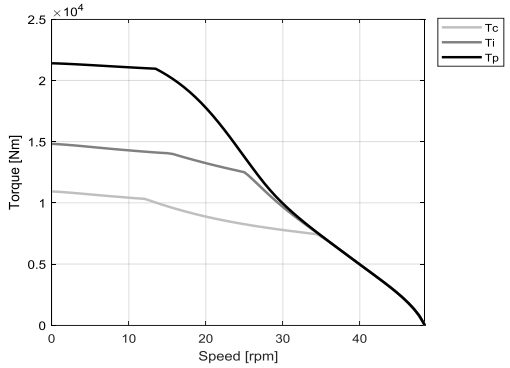


UJ - WATER COOLING



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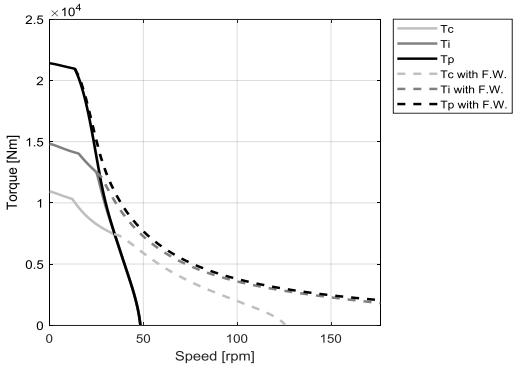
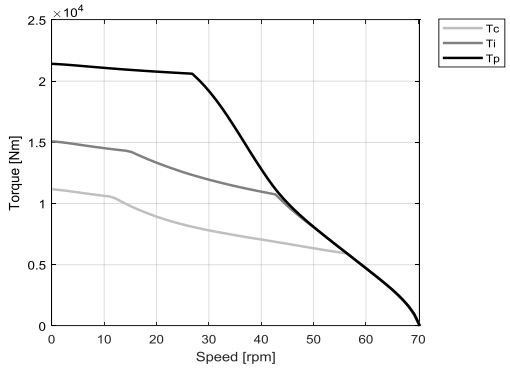


WJ - WATER COOLING



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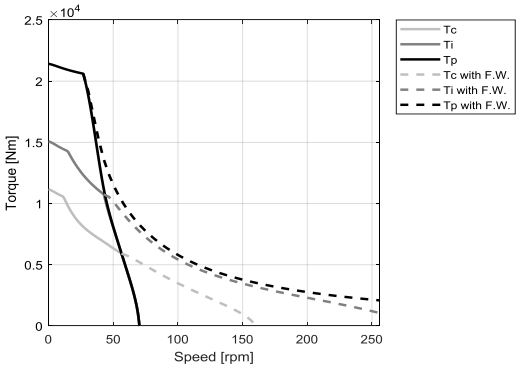

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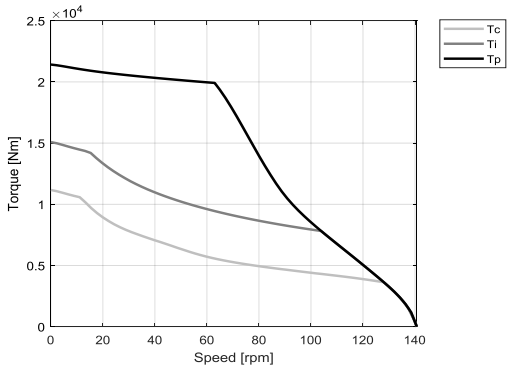

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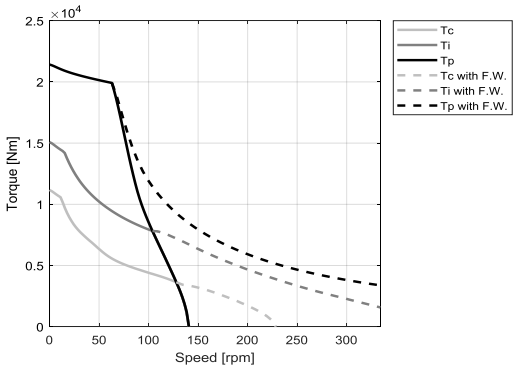

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