HIGH SPEED TORQUE MOTOR

TMK0991-050

MOTOR PERFORMANCE		Winding codes	3SPN	3UPN	3UZN	
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	
Tp	Peak torque	Nm	6940	6940	6930	
Ti	Intermittent torque	Nm	4850	4840	4800	
Tc	Continuous torque	Nm	3620	3610	3570	
Ts	Standstill torque	Nm	2890	2880	2840	
Ip	Peak current	Arms	357	575	1170	
Ii	Intermittent current	Arms	161	258	517	
Ic	Continuous current	Arms	102	163	327	
Is	Standstill current	Arms	77.1	124	248	
ns	Rated low speed	rpm	0.027	0.027	0.027	
nm	Maximum speed without flux weakening	rpm	170	273	555	
nm,FW	Maximum speed with flux weakening	rpm	618	682	682	
τon,p	Maximum ON time for peak cycle	s	8.7	8.6	8.0	
τon,i	Maximum ON time for intermittent cycle	s	3.1	3.1	3.1	
Pp	Power dissipation @ Ip	W	86000	86800	89800	
Pi	Power dissipation @ Ii	W	20200	20200	20200	
Pc	Power dissipation @ Ic	W	8090	8090	8090	
Td	Max. detent torque (average to peak)	Nm	14	14	14	

MOTOR SETTING		UNIT				
Kt	Torque constant	Nm/Arms	40.5	25.1	12.4	
Ku	Back EMF constant (*)	Vrms/(rad/s)	23.4	14.5	7.15	
Km	Motor constant	Nm/√W	54.8	54.6	53.8	
R20	Electrical resistance at 20°C (*)	Ohm	0.364	0.141	0.0353	
Ld/Lq	Electrical inductance (*)	mH	4.23 / 3.59	1.63 / 1.38	0.395 / 0.336	
Isc	Maximum short-circuit current	Arms	72.7	117	238	
nb	Base speed	rpm	106	180	439	
nb,i	Base speed at intermittent duty cycle	rpm	80.8	137	301	
nb,p	Base speed at peak duty cycle	rpm	54.6	95.0	202	
nn	Rated speed	rpm	93.9	160	379	
Tn	Rated torque	Nm	3540	3400	2650	
In	Rated current	Arms	99.0	153	238	
τth	Thermal time constant	s	249	250	249	
Rth	Thermal resistance	K/W	0.0133	0.0133	0.0133	
2p	Number of poles	-	176	176	176	
J	Rotor inertia	kg·m²	15.9	15.9	15.9	
mr	Rotor mass	kg	87.1	87.1	87.1	
ms	Stator mass	kg	147	147	147	

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	0.315	0.315	0.315	
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	23	23	23	
Δpw	Max. pressure drop at qw	bar	0.9	0.9	0.9	

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.

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ETEL

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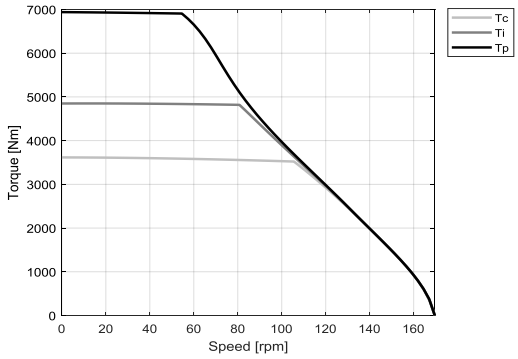
3SPN - WATER COOLING



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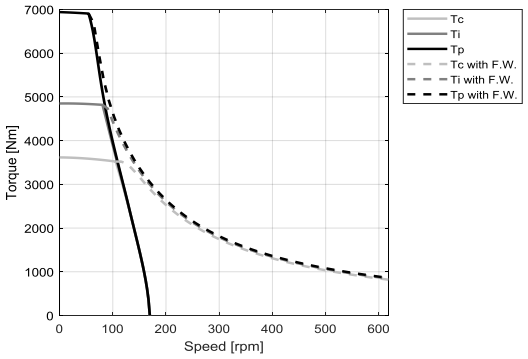
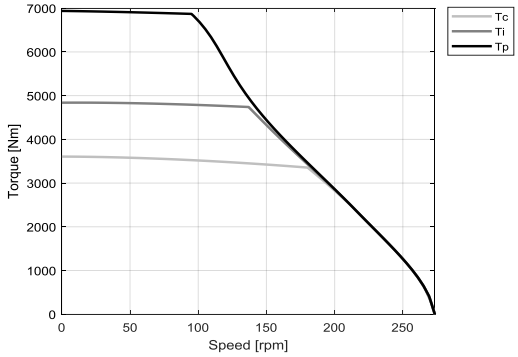


3UPN - WATER COOLING



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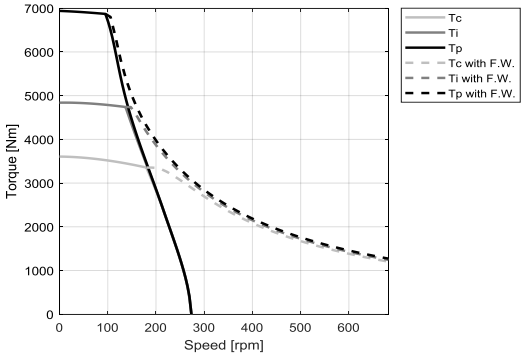

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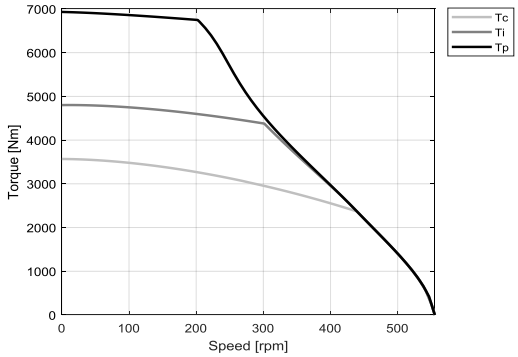

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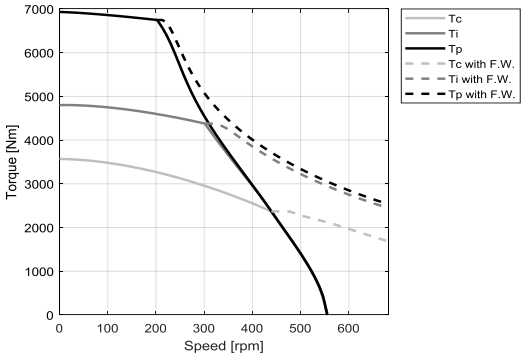

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