

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

							IE:3
Type	K160M-2		Poles	2		Power	15,0 kW
Voltage	400	V	Current	26,7	A	Frequency	50 Hz
Speed	2939	r/min	Duty	S1		Connecti	△
Ins.class	F		Weight	166	kg	IP55	
MAJOR CONTENTS				TEST VALUE			
95,0 °C PHASE RESISTANCE OF WII				Ω	0,5263		
NO LOAD CURRENT				A	8,348		
NO LOAD INPUT				W	430,72		
CORE LOSS(Pfe)				W	282,57		
WINDAGE FRICTION LOSS(Pfw)				W	114,87		
STATOR WINDING LOSS(Pcu1)				W	366,36		
ROTOR WINDING LOSS(Pcu2)				W	321,32		
STRAY LOAD LOSS(Ps)				W	266,06		
LOCKED ROTOR CURRENT				A	213,140		
LOCKED ROTOR INPUT @ FULL LOAD				W	69391		
LOCKED ROTOR TORQUE				N.m	129,8		
PULL OUT TORQUE				N.m	164,4		
LOCKED ROTOR CURRENT/RATED CURF				P.U	7,99		
LOCKED ROTOR TORQUE/RATED TORQL				P.U	2,66		
PULL OUT TORQUE/RATED TORQUE				P.U	3,37		
FULL LOAD TORQUE				N.m	48,8		
FULL LOAD CURRENT				A	26,68		
FULL LOAD SLIP				%	2,046		
INPUT @ FULL LOAD				kW	16,354		
FULL LOAD SPEED				r/min	2938,6		
EFFICIENCY @ FULL LOAD				%	91,72		
EFFICIENCY @ 75% LOAD				%	92,32		
POWER FACTOR @ FULL LOAD					0,885		
STATOR WINDING TEMPERATURE RISE				K	61		
D.E. BEARINGS TEMPERATURE BY PT10				°C	47,1		
STATOR WINDING TEMPERATURE				°C	73,2		
High voltage test				V	1800	Imin	
Insulation resistance				MΩ	500		
NOISE (LW)				dB(A)	83		
VIBRATION				mm/s	1,2		

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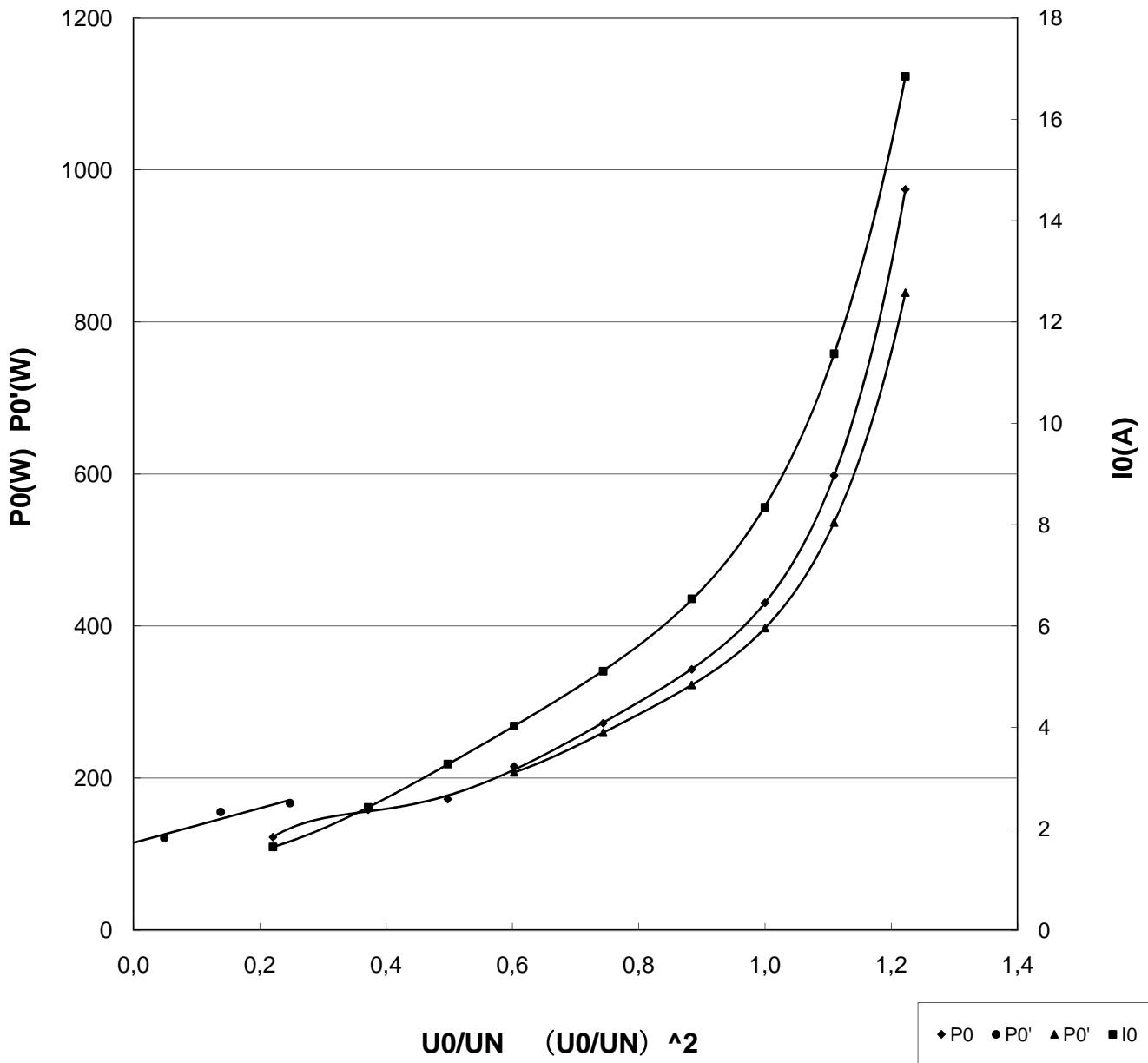
Type	K160M-2		Poles	2		Power	15,0 kW		IE:3		
Voltage	400	V	Current	26,7	A	Frequency	50 Hz				
Speed	2939	r/min	Duty	S1		Connection	△				
Ins.class	F		Weight	166	kg			IP55			
NO LOAD TEST											
VOL	mul.	HZ	I01	I02	I03	mul.	W1	W2	mul.	°C	Ω
488,8	1	50	3,337	3,355	3,417	5	-664,1	859,0	5	65,1	0,3191
443,7	1	50	2,253	2,263	2,308	5	-406,5	526,1	5	64,9	0,3189
399,9	1	50	1,657	1,661	1,688	5	-266,8	352,9	5	64,5	0,3185
353,6	1	50	3,245	3,257	3,307	2	-451,8	623,3	2	64,2	0,3181
297,5	1	50	2,538	2,544	2,583	2	-285,2	421,3	2	64,0	0,3179
241,1	1	50	1,998	2,007	2,033	2	-171,0	278,6	2	63,7	0,3176
199,1	1	50	1,623	1,633	1,658	2	-106,6	192,7	2	63,5	0,3174
148,6	1	50	1,199	1,210	1,222	2	-41,6	120,7	2	63,2	0,3171
88,3	1	50	0,806	0,823	0,833	2	0	61,1	2	62,8	0,3166
data calculation of no load											
V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'					
122,2%	1,22	16,848	974,5	1,494	135,87	838,63					
110,9%	1,11	11,373	598,0	1,230	61,87	536,13					
100,0%	1,00	8,343	430,5	0,999	33,25	397,25					
88,4%	0,88	6,539	343,0	0,781	20,41	322,59					
74,4%	0,74	5,110	272,2	0,553	12,45	259,75					
60,3%	0,60	4,025	215,2	0,363	7,72	207,48					
49,8%	0,50	3,276	172,2	0,248	5,11	167,09					
37,2%	0,37	2,421	158,2	0,138	2,79	155,41					
22,1%	0,22	1,641	122,2	0,049	1,28	120,92					
RESULTS AT: 400 V											
N.L.AMP	8,35	N.L.LOSS(W)	430,72	Pw(W)	114,9	Pe(W)	282,6				

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Voltage	400 V	Current	26,7 A	Frequency	50,0	kW
Speed	2939 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	166 kg			IP55

No Load Curve



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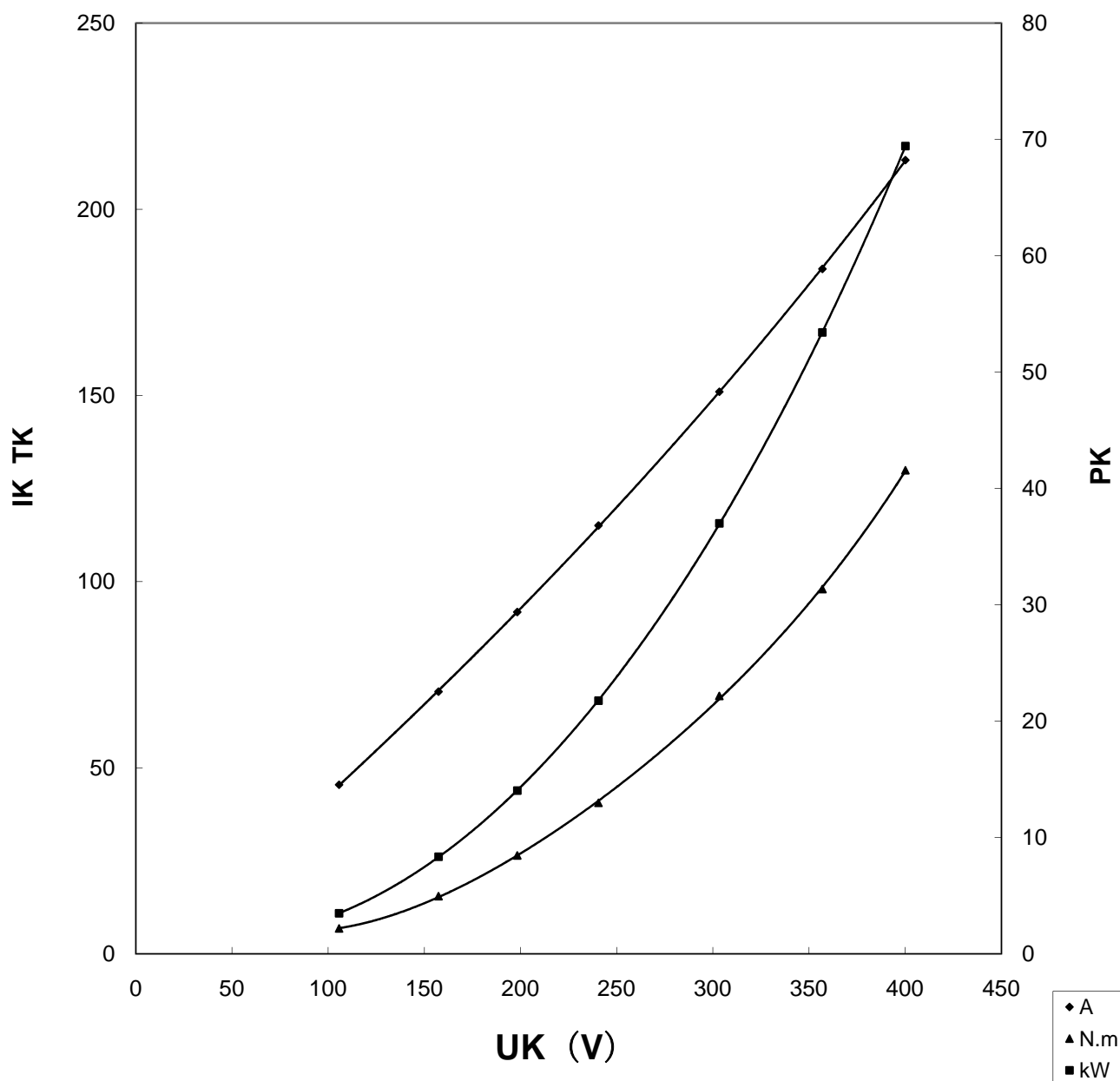
Type	K160M-2		Poles	2		Power	15,0		IE:3
Voltage	400	V	Current	26,7	A	Frequency	50,0		Hz
Speed	2939	r/min	Duty	S1		Connection	Δ		
Ins.class	F		Weight	166	kg	IP55			
LOCKED ROTOR TEST									
VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torqu (kg.m)
400,1	1,0	2,132	2,129	2,136	100	-30,9	725,2	100,0	13,25
356,9	1,0	1,839	1,837	1,843	100	-24,2	558,3	100,0	10,00
303,4	1,0	1,509	1,509	1,512	100	-18,8	388,9	100,0	7,07
240,5	1,0	2,297	2,300	2,306	50	-30,3	465,6	50,0	4,14
198,3	1,0	1,834	1,835	1,839	50	-24,0	304,8	50,0	2,70
157,4	1,0	1,408	1,408	1,410	50	-16,6	183,7	50,0	1,58
105,7	1,0	2,269	2,280	2,264	20	-23,6	198,1	20,0	0,70
data calculation of locked rotor									
Uk	Ik	Pk	Tk		LOGUk	LOGIk	LOGPk	LOGTk	
V	A	kW	N.m						
400,11	213,21	69,430	129,88		2,6022	2,3288	1,8415	2,1136	
356,95	183,98	53,410	97,98		2,5526	2,2648	1,7276	1,9912	
303,37	150,99	37,010	69,27		2,4820	2,1789	1,5683	1,8406	
240,53	115,05	21,765	40,56		2,3812	2,0609	1,3378	1,6081	
198,32	91,82	14,040	26,43		2,2974	1,9629	1,1474	1,4221	
157,37	70,43	8,355	15,49		2,1969	1,8477	0,9219	1,1902	
105,68	45,42	3,490	6,84		2,0240	1,6572	0,5428	0,8348	
performance collection of locked rotor									
	at rated volts		at rated current		at 2.5 times rated current		at 100V		
VOLTS (V)	400		66,593		147,9		100,0		
AMPS (A)	213,1		26,5		66,3		42,32		
INPUT (kW)	69,39				8,0		2,548		
TORQUE (N.m)	129,81								

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Type	K160M-2	Poles	2	Power	15,0	IE:3
Voltage	400 V	Current	26,7 A	Frequency	50,0	kW
Speed	2939 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	166 kg		IP55	

Locked Rotor Curve



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Voltage	400	V		Current	26,7	A	Frequency	50	Hz	
Speed	2939	r/min		Duty	S1		Connection	Δ		
Ins.class	F			Weight	166	kg	IP55			

TEMPERATURE RISE TEST

TIME (h:min)	V	I1	I2	I3	mul.	W1	W2	mul.	T1 °C	T2 °C	T3 °C	T4 °C	T5 °C	T6 °C	T7 °C	T8 °C	T9 °C	T10 °C	T11 °C	T12 °C	T13 °C	
9,28	399,9	2,706	2,693	2,714	10	587,1	1094	10	43,8	—	61,5	62,7	—	—	—	—	—	—	—	—	—	11,3
9,58	400,1	2,676	2,664	2,685	10	579,6	1083	10	46,6	—	67,6	68,6	—	—	—	—	—	—	—	—	—	11,3
10,30	400,0	2,669	2,655	2,678	10	578,1	1080	10	46,5	—	69,7	70,7	—	—	—	—	—	—	—	—	—	11,6
11,01	400,2	2,675	2,662	2,684	10	580,9	1082	10	46,1	—	70,3	71,4	—	—	—	—	—	—	—	—	—	12,0
11,29	400,2	2,667	2,653	2,676	10	577,9	1078	10	46,1	—	70,5	71,5	—	—	—	—	—	—	—	—	—	12,1
12,01	400,1	2,668	2,656	2,678	10	578,5	1079	10	46,6	—	71,2	72,2	—	—	—	—	—	—	—	—	—	12,5
12,30	400,0	2,682	2,668	2,691	10	581,3	1084	10	46,9	—	71,7	72,8	—	—	—	—	—	—	—	—	—	13,4
13,02	400,1	2,678	2,658	2,680	10	580,6	1081	10	47,1	—	72,1	73,2	—	—	—	—	—	—	—	—	—	13,4
The average of the last three		26,733		A		16612		W	47,1	—	71,7	73,2	—	—	—	—	—	—	—	—	—	13,1

T1 T2 : DE BEARING TEMPERATURE

T11 : CORE TEMPERATRE

T12: FRAME TEMPERATRE

T3~T10 : DE WINDING TEMPERATURE

T13 : AMBIENT TEMPERATURE

WINDING RESISTANCE (HOT) AT END OF TEMPERATURE RISE TEST

TIME (S)	56	72	91	105	120	137	152	168		
RESISTANCE	0,3272	0,3264	0,3255	0,3248	0,3242	0,3234	0,3228	0,3222		

WINDING RESISTANCE(COLD)

Δ	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	0,2617	0,2612	0,2618	0,26157	0,26120	11 °C
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
						°C

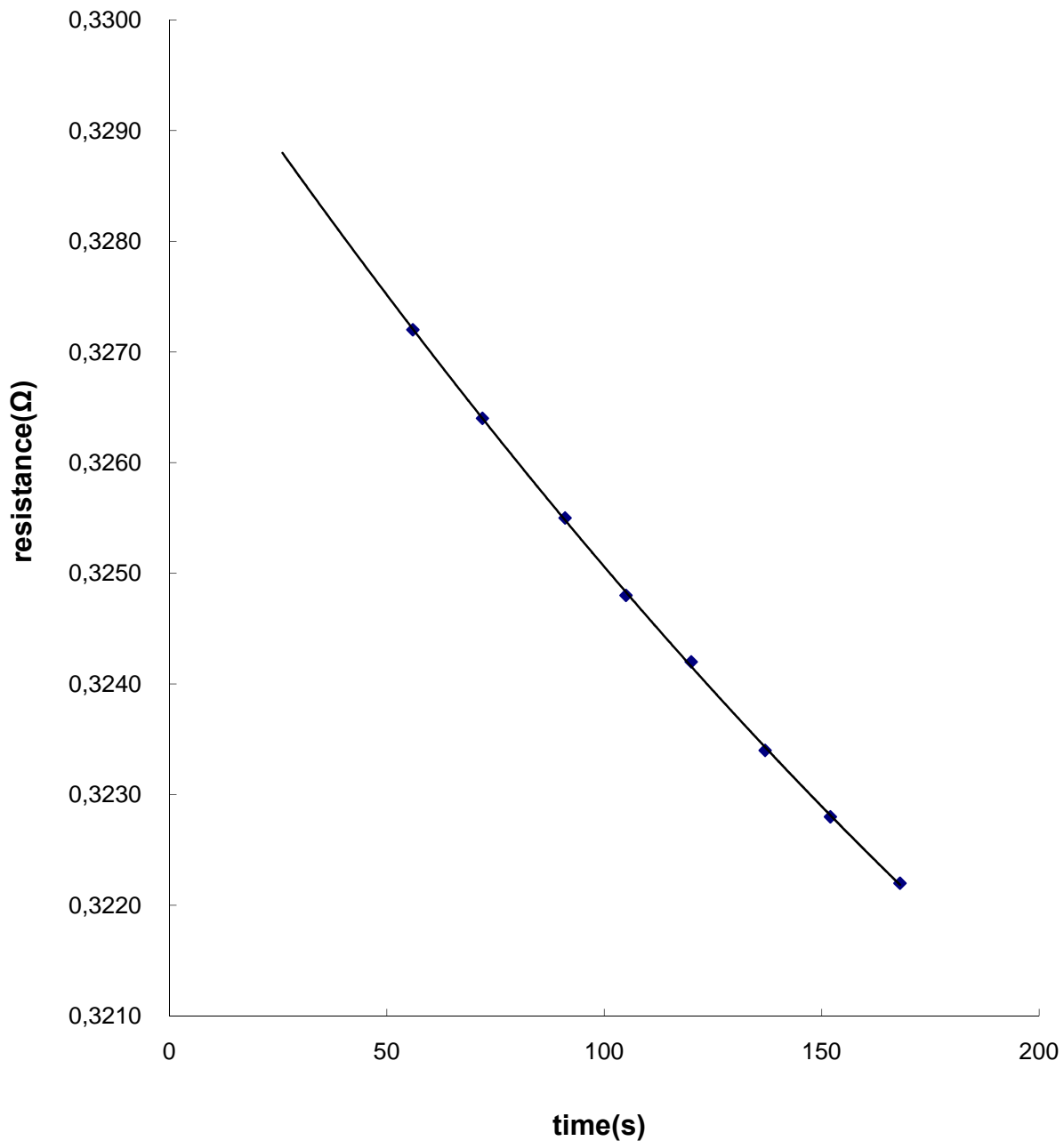
resistance value at 0 sec (Ω)	0,330264	calculation value of temp.rising	62,94	K
30 S (Ω)	0,328454	calculation value of temp.rising	61,24	K
full load current	26,68 A	modify value of temp. rising	61,01	K

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Voltage	400	V	Current	26,7	A	Frequency	50,0	Hz	
Speed	2939	r/min	Duty	S1		Connection	Δ		
Ins.class	F		Weight	166	kg				IP55

RESISTANCE CURVE



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Voltage	400	V	Current	26,7	A	Frequency	50,0					Hz
Speed	2939	r/min	Duty	S1		Connection	Δ					
Ins.class	F		Weight	166	kg							IP55
LOAD TEST												
V	HZ	I1	I2	I3	mul.	W1	W2	mul.	r/min	Resistance Ω	Temperature °C	Torqure N.m
400,1	50,01	4,108	4,100	4,123	10	902,4	1641,7	10	2902,0	0,3287	74,1	74,10
399,8	50,01	3,379	3,365	3,387	10	745,1	1348,0	10	2922,3	0,3309	76,2	61,18
400,0	50,02	2,706	2,692	2,713	10	579,4	1079,6	10	2940,5	0,3313	76,6	48,66
400,0	50,01	2,106	2,094	2,113	10	416,0	839,9	10	2956,7	0,3312	76,5	36,64
400,1	50,01	1,554	1,542	1,562	10	252,3	615,0	10	2971,5	0,3308	76,1	24,75
400,3	50,01	1,325	1,313	1,332	10	170,7	516,1	10	2978,0	0,3304	75,7	19,28
399,9	50,01	1,084	1,074	1,093	10	79,2	404,1	10	2985,4	0,3294	74,8	13,01
399,9	50,0	1,741	1,737	1,775	5,0	-134,5	483,1	5	2996,0	0,3271	72,6	3,31
400,1	50,0	4,150	4,145	4,238	2,0	-664,9	879,1	2	3000,0	0,3205	66,4	0,00
slope A= 0,11164		intercept B= 6,86			relative coefficient r= 0,997							
LOAD %	P2 W	I A	P1 W	Pcu1s W	Ss %	Pcu2s W	Ps W	Pz W	N.m	EFF %	P.F	
150,0	22500	40,67	25176,5	851,2	3,365	808,9	614,7	2672,3	74,2	89,37	0,893	
125,0	18750	33,36	20668,1	572,7	2,650	525,0	419,3	1914,4	61,3	90,72	0,894	
100,0	15000	26,68	16354,3	366,4	2,046	321,3	266,1	1351,2	48,8	91,72	0,885	
75,0	11250	20,51	12186,1	216,5	1,456	170,2	147,6	931,8	36,4	92,32	0,857	
50,0	7500	14,77	8137,8	112,2	0,929	71,9	64,2	645,7	24,0	92,16	0,796	
25,0	3750	10,12	4229,0	52,7	0,449	17,5	16,1	483,8	12,0	88,67	0,603	

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Speed	2939 r/min	Duty	S1	Connection	Δ	
Ins.class	F	Weight	166 kg		IP55	

LOAD CURVE

