

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K112M-4	Poles	4	Power	4,0	kW	IE:3
Voltage	400 V	Current	8,0 A	Frequency	50	Hz	
Speed	1445 r/min	Duty	S1	Connection	△		
Ins.class	F	Weight	73 kg		IP55		
MAJOR CONTENTS				TEST VALUE			
95,0 °C PHASE RESISTANCE OF WINDING	Ω			2,6366			
NO LOAD CURRENT	A			4,117			
NO LOAD INPUT	W			206,14			
CORE LOSS(Pfe)	W			135,50			
WINDAGE FRICTION LOSS(Pfw)	W			32,06			
STATOR WINDING LOSS(Pcu1)	W			159,05			
ROTOR WINDING LOSS(Pcu2)	W			155,62			
STRAY LOAD LOSS(Ps)	W			45,50			
LOCKED ROTOR CURRENT	A			57,519			
LOCKED ROTOR INPUT @ FULL LOAD	W			22565			
LOCKED ROTOR TORQUE	N.m			70,7			
PULL OUT TORQUE	N.m			91,3			
LOCKED ROTOR CURRENT/RATED CURRENT	P.U			7,19			
LOCKED ROTOR TORQUE/RATED TORQUE	P.U			2,67			
PULL OUT TORQUE/RATED TORQUE	P.U			3,45			
FULL LOAD TORQUE	N.m			26,5			
FULL LOAD CURRENT	A			8,00			
FULL LOAD SLIP	%			3,676			
INPUT @ FULL LOAD	kW			4,528			
FULL LOAD SPEED	r/min			1444,9			
EFFICIENCY @ FULL LOAD	%			88,34			
EFFICIENCY @ 75% LOAD	%			88,74			
POWER FACTOR @ FULL LOAD				0,817			
STATOR WINDING TEMPERATURE RISE	K			49			
D.E. BEARINGS TEMPERATURE BY PT100	°C			37,9			
STATOR WINDING TEMPERATURE	°C			56,6			
High voltage test	V	1800		Imin			
Insulation resistance	MΩ			500			
NOISE (LW)	dB(A)			63			
VIBRATION	mm/s			0,5			

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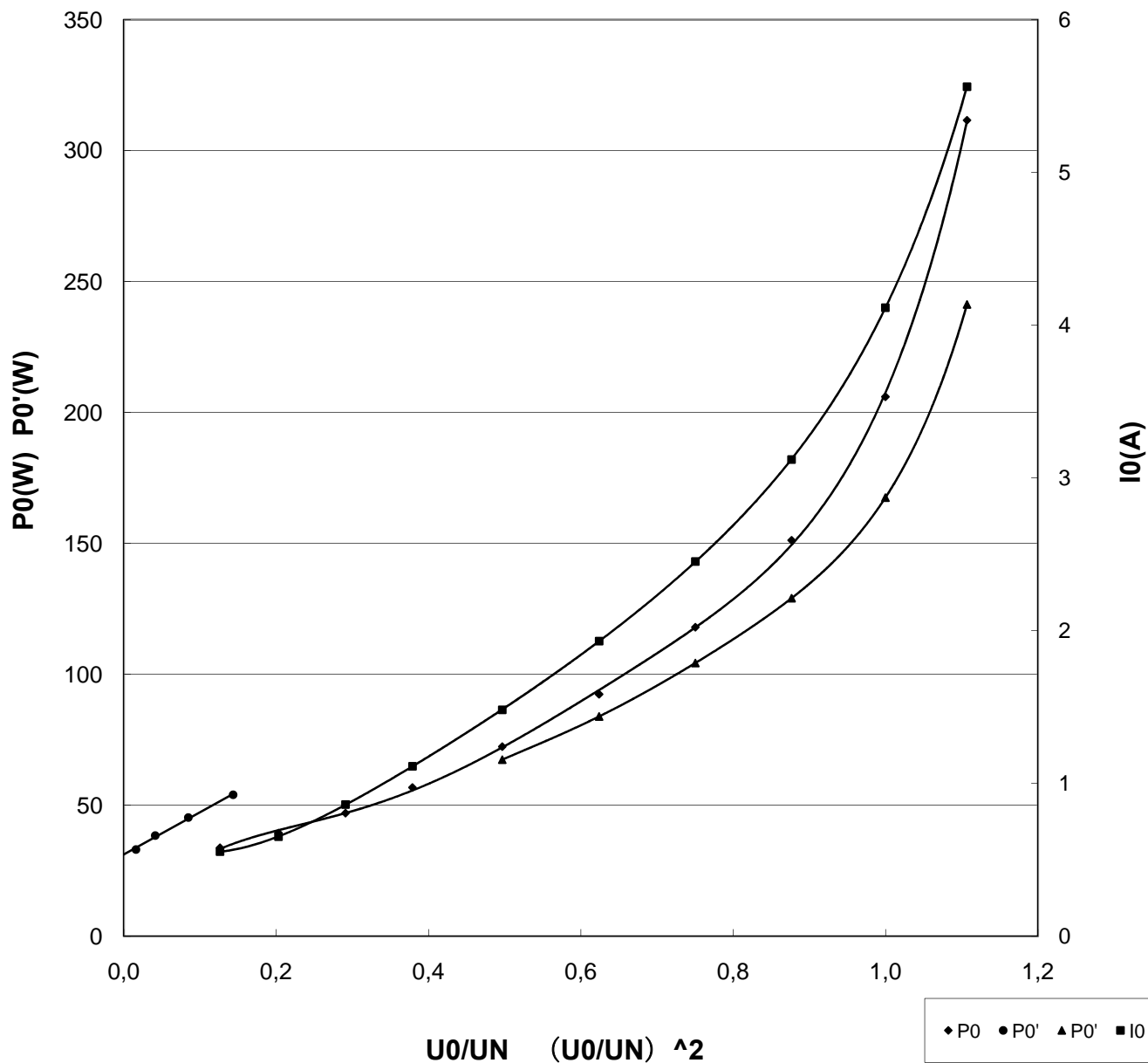
Type	K112M-4	Poles	4	Power	4,0 kW	IE:3					
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Speed	1445 r/min	Duty	S1	Connection	△						
Ins.class	F	Weight	73 kg		IP55						
NO LOAD TEST											
VOL	mul.	HZ	I01	I02	I03	mul.	W1	W2	mul.	°C	Ω
442,7	1	50	2,853	2,836	2,653	2	-587,3	743,1	2	49,8	1,5170
399,9	1	50	2,095	2,096	1,982	2	-387,1	490,1	2	49,8	1,5170
350,6	1	50	1,594	1,570	1,516	2	-248,7	324,3	2	49,6	1,5159
300,1	1	50	1,253	1,240	1,187	2	-164,4	223,4	2	49,6	1,5159
249,6	1	50	0,980	0,986	0,931	2	-104,7	150,9	2	49,6	1,5159
198,7	1	50	0,747	0,762	0,714	2	-59,9	96,1	2	49,4	1,5149
151,6	1	50	0,556	0,579	0,535	2	-30,4	58,8	2	49,4	1,5149
116,4	1	50	0,427	0,450	0,416	2	-14,4	37,9	2	49,2	1,5138
81,3	1	50	0,310	0,349	0,319	2	-3,4	23,1	2	49,0	1,5127
50,5	1	50	0,259	0,299	0,272	2	2,4	14,5	2	48,3	1,5090
data calculation of no load											
V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'					
110,7%	1,11	5,561	311,6	1,225	70,38	241,22					
100,0%	1,00	4,115	206,0	0,999	38,53	167,47					
87,7%	0,88	3,120	151,2	0,768	22,14	129,06					
75,0%	0,75	2,453	118,0	0,563	13,68	104,32					
62,4%	0,62	1,932	92,4	0,389	8,48	83,92					
49,7%	0,50	1,482	72,4	0,247	4,99	67,41					
37,9%	0,38	1,113	56,8	0,144	2,81	53,99					
29,1%	0,29	0,862	47,0	0,085	1,69	45,31					
20,3%	0,20	0,652	39,4	0,041	0,96	38,44					
12,6%	0,13	0,554	33,8	0,016	0,69	33,11					
RESULTS AT: 400 V											
N.L.AMP	4,12	N.L.LOSS(W)	206,14	Pw(W)	32,1	Pe(W)	135,5				

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Voltage	400	V	Current	8,0	A	Frequency	50,0 Hz		
Speed	1445	r/min	Duty	S1		Connection	Δ		
Ins.class	F		Weight	73	kg	IP55			

No Load Curve



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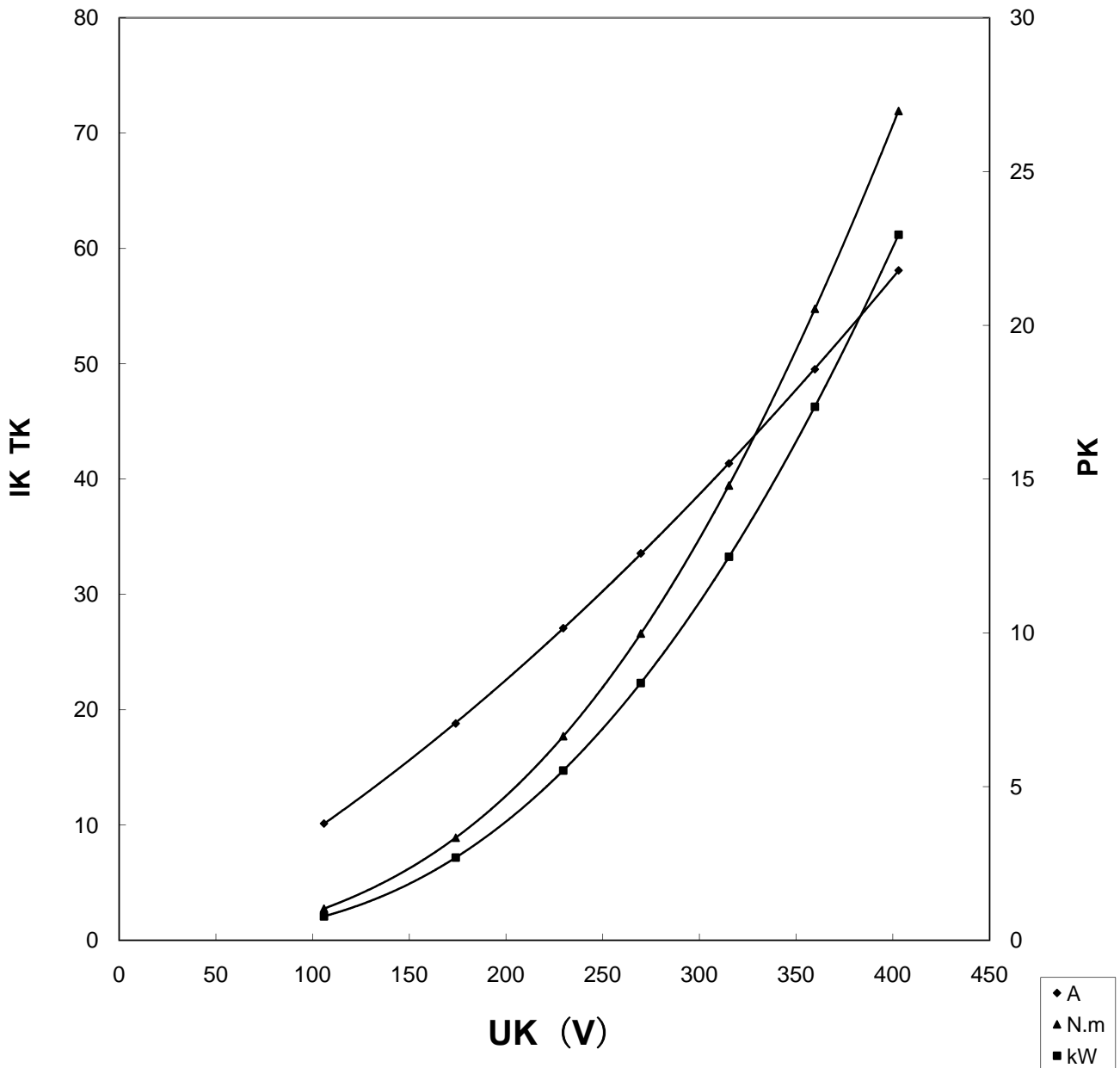
Type	K112M-4		Poles	4		Power	4,0		IE:3	kW
Voltage	400	V	Current	8,0	A	Frequency	50,0		Hz	
Speed	1445	r/min	Duty	S1		Connection	Δ			
Ins.class	F		Weight	73	kg	IP55				
LOCKED ROTOR TEST										
VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torque (kg.m)	
402,9	1,0	2,913	2,887	2,916	20,0	24,5	1122,8	20,0	7,34	
359,7	1,0	2,483	2,457	2,488	20,0	14,8	852,8	20,0	5,59	
315,3	1,0	2,081	2,048	2,075	20,0	4,4	619,4	20,0	4,02	
269,7	1,0	1,692	1,661	1,681	20,0	-6,9	425,3	20,0	2,71	
229,6	1,0	1,368	1,338	1,354	20,0	-12,2	288,3	20,0	1,81	
174,0	1,0	0,952	0,930	0,940	20,0	-13,7	148,4	20,0	0,91	
105,9	1,0	0,511	0,503	0,506	20,0	-7,8	46,9	20,0	0,28	
data calculation of locked rotor										
Uk	IK	PK	TK	LOGUk		LOGIk	LOGPk	LOGTk		
V	A	kW	N.m							
402,95	58,10	22,946	71,91	2,6052		1,7642	1,3607	1,8568		
359,68	49,53	17,352	54,76	2,5559		1,6948	1,2393	1,7385		
315,26	41,36	12,476	39,44	2,4987		1,6166	1,0961	1,5960		
269,68	33,56	8,368	26,60	2,4309		1,5258	0,9226	1,4249		
229,58	27,07	5,522	17,70	2,3609		1,4325	0,7421	1,2480		
174,00	18,81	2,694	8,90	2,2405		1,2744	0,4304	0,9493		
105,89	10,13	0,782	2,75	2,0249		1,0055	-0,1068	0,4396		
performance collection of locked rotor										
at rated volts		at rated current		at 2.5 times rated current		at 100V				
VOLTS (V)		400		89,197		179,5		100,0		
AMPS (A)		57,5		8,0		20,0		9,13		
INPUT (kW)		22,56				3,4		0,350		
TORQUE (N.m)		70,74								

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Voltage	400 V	Current	8,0 A	Frequency	50,0	kW
Speed	1445 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	73 kg			IP55

Locked Rotor Curve



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Type	K112M-4		Poles	4		Power	4 kW		IE:3			
Voltage	400	V	Current	8,0	A	Frequency	50 Hz					
Speed	1445	r/min	Duty	S1			Connection	Δ				
Ins.class	F		Weight	73	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	
10,00	399,8	3,980	4,052	3,964	2	617,9	1638	2	38,9	—	56,4	54,3	—	—	—	—	—	—	—	—	—	8,6
10,30	399,9	3,988	4,056	3,984	2	620,3	1640	2	38,1	—	56,3	54,2	—	—	—	—	—	—	—	—	—	9,2
11,00	399,7	3,986	4,048	3,969	2	616,9	1636	2	37,7	—	56,3	54,2	—	—	—	—	—	—	—	—	—	9,7
11,30	400,1	3,972	4,044	3,968	2	617,3	1636	2	37,9	—	56,6	54,5	—	—	—	—	—	—	—	—	—	9,5
The average of the last three		8,003		A		4511,27		W		37,9	—	56,4	54,5	—	—	—	—	—	—	—	—	9,5

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)	30	40	50	60	70	80				
RESISTANC	1,5655	1,5632	1,5609	1,5590	1,5571	1,5553				

WINDING RESISTANCE(COLD)

Δ	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	1,2822	1,2831	1,2826	1,28263	1,28220	5,8 °C
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
						°C

resistance value at 0 sec (Ω) 1,573356 calculation value of temp.rising 51,01 K

30 S (Ω) 1,565500 calculation value of temp.rising 49,54 K

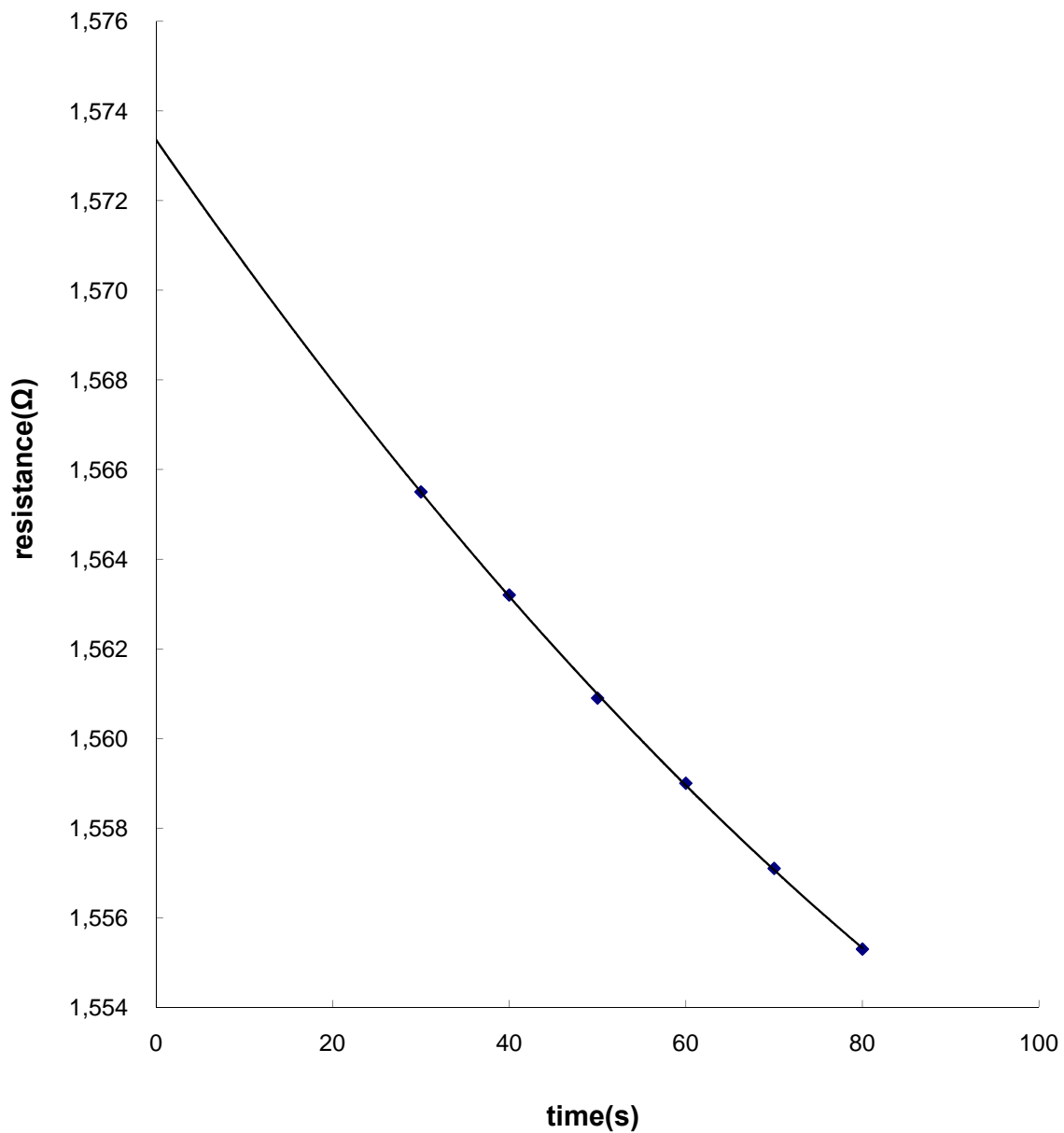
full load curen 8,00 A modify value of temp. rising 49,49 K

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Voltage	400 V	Current	8,0 A	Frequency	50,0	kW
Speed	1445 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	73 kg			IP55

RESISTANCE CURVE



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											IE:3	
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Voltage	400	V	Current	8,0	A	Frequency	50		Hz			
Speed	1445	r/min	Duty	S1		Connection	Δ					
Ins.class	F		Weight	73	kg	IP55						
LOAD TEST												
V	HZ	I1	I2	I3	mul.	W1	W2	mul.	r/min	Resista nce Ω	Temper ature $^{\circ}\text{C}$	Torqu r N.m
400,4	50,00	1,861	1,889	1,864	5	325,4	771,3	5	1435,7	1,5330	52,8	32,18
399,9	50,01	4,299	4,359	4,288	2	714,8	1773,7	2	1442,5	1,5394	54,0	29,29
400,3	50,00	3,940	4,003	3,944	2	612,0	1625,7	2	1448,9	1,5404	54,2	26,32
400,2	49,99	3,197	3,263	3,201	2	373,6	1302,4	2	1462,7	1,5415	54,4	19,65
400,0	50,00	2,598	2,659	2,578	2	131,4	1011,1	2	1475,2	1,5383	53,8	13,11
400,0	50,00	2,175	2,220	2,119	2	-126,7	735,5	2	1488,1	1,5351	53,2	6,48
400,0	50,0	2,059	2,051	2,067	2,0	-368,9	503,3	2	1498,2	1,5340	53,0	0,49
400,0	50,0	2,055	2,049	2,072	2,0	-389,1	492,3	2	1500,0	1,5213	50,6	0,00
slope A= 0,06461		intercept B= -3,01			relative coefficient r= 0,983							
LOAD %	P2 W	I A	P1 W	Pcu1s W	Ss %	Pcu2s W	Ps W	Pz W	N.m	EFF %	P.F	
150,0	6000	11,44	6940,2	325,5	5,972	386,9	105,5	985,5	40,4	86,45	0,875	
125,0	5000	9,71	5729,8	234,3	4,820	258,3	72,5	732,7	33,5	87,26	0,852	
100,0	4000	8,00	4528,1	159,0	3,676	155,6	45,5	527,7	26,5	88,34	0,817	
75,0	3000	6,48	3380,8	104,4	2,649	83,2	25,1	380,3	19,7	88,74	0,753	
50,0	2000	5,22	2282,9	67,8	1,760	36,6	10,9	282,9	13,0	87,61	0,631	
25,0	1000	4,35	1226,3	47,0	0,855	8,9	2,7	226,2	6,4	81,54	0,407	

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Ins.class	F		Weight	73	kg		IP55		

Load Curve

