

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160M-2		Poles	2		Power	11,0	kW	IE:3
Voltage	400	V	Current	19,6	A	Frequency	50	Hz	
Speed	2943	r/min	Duty	S1		Connection	△		
Ins.class		F	Weight	147	kg		IP55		
MAJOR CONTENTS					TEST VALUE				
95,0	°C PHASE RESISTANCE OF WINDING			Ω	0,8364				
NO LOAD CURRENT				A	5,847				
NO LOAD INPUT				W	368,87				
CORE LOSS(Pfe)				W	205,23				
WINDAGE FRICTION LOSS(Pfw)				W	138,66				
STATOR WINDING LOSS(Pcu1)				W	301,61				
ROTOR WINDING LOSS(Pcu2)				W	219,91				
STRAY LOAD LOSS(Ps)				W	147,05				
LOCKED ROTOR CURRENT				A	148,848				
LOCKED ROTOR INPUT @ FULL LOAD				W	48467				
LOCKED ROTOR TORQUE				N.m	93,5				
PULL OUT TORQUE				N.m	114,6				
LOCKED ROTOR CURRENT/RATED CURRENT				P.U	7,59				
LOCKED ROTOR TORQUE/RATED TORQUE				P.U	2,61				
PULL OUT TORQUE/RATED TORQUE				P.U	3,21				
FULL LOAD TORQUE				N.m	35,7				
FULL LOAD CURRENT				A	19,6				
FULL LOAD SLIP				%	1,911				
INPUT @ FULL LOAD				kW	12,017				
FULL LOAD SPEED				r/min	2942,7				
EFFICIENCY @ FULL LOAD				%	91,54				
EFFICIENCY @ 75% LOAD				%	91,93				
POWER FACTOR @ FULL LOAD					0,884				
STATOR WINDING TEMPERATURE RISE				K	47				
D.E. BEARINGS TEMPERATURE BY PT100				°C	45,0				
STATOR WINDING TEMPERATURE				°C	61,4				
High voltage test		V	1800	Imin					
Insulation resistance		MΩ	500						
NOISE (LW)				dB(A)	84				
VIBRATION				mm/s	0,8				

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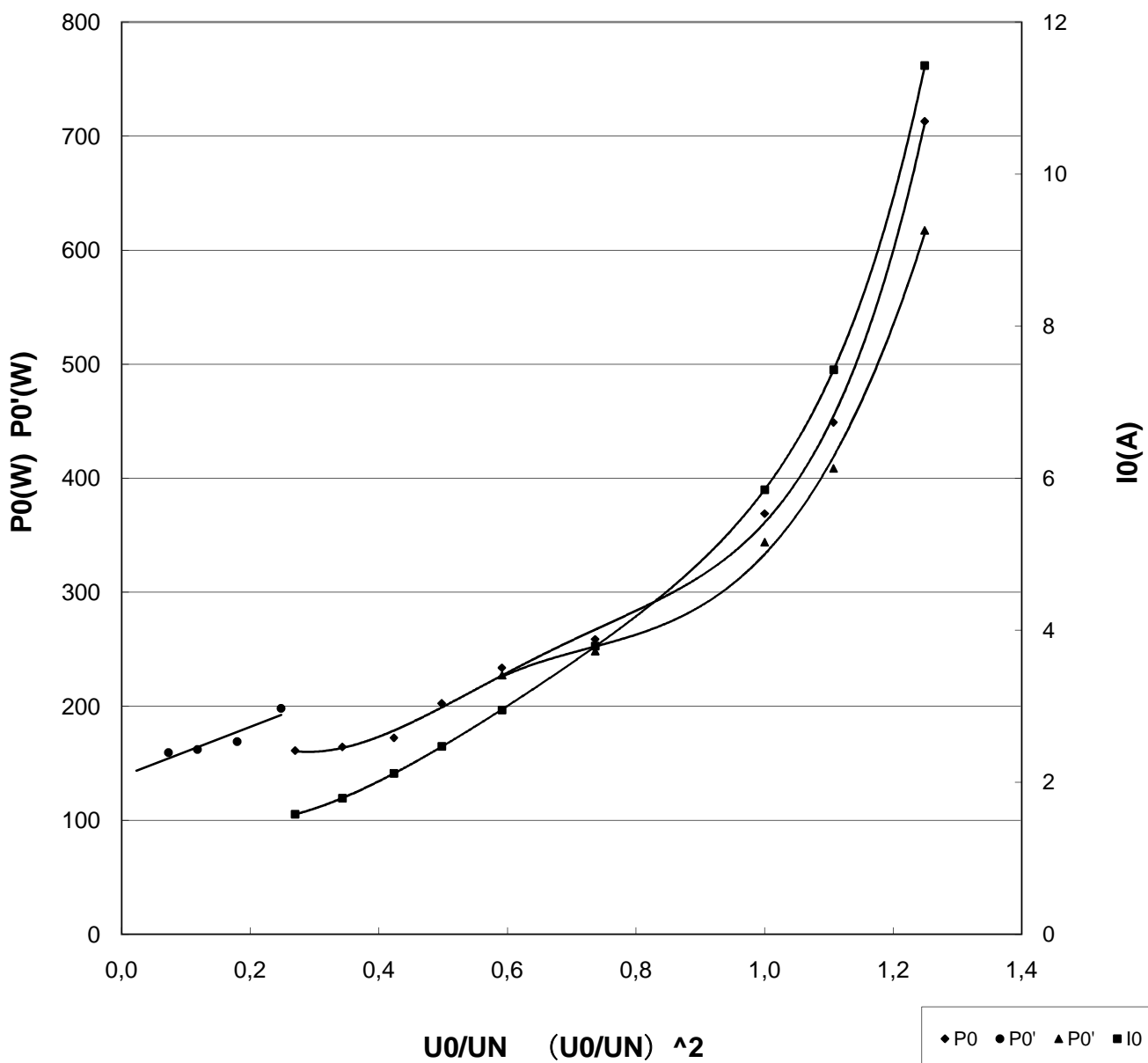
Type	K160M-2		Poles	2		Power	11,0 kW		IE:3		
Voltage	400	V	Current	19,6	A	Frequency	50 Hz				
Speed	2943	r/min	Duty	S1		Connection	Δ				
Ins.class	F		Weight	147	kg			IP55			
NO LOAD TEST											
VOL	mul.	HZ	I01	I02	I03	mul.	W1	W2	mul.	°C	Ω
499,7	1	50	2,297	2,257	2,303	5	-463,0	605,6	5	53,8	0,48799
442,9	1	50	1,493	1,468	1,496	5	-262,9	352,7	5	53,6	0,48765
400,1	1	50	2,933	2,884	2,958	2	-450,6	635,1	2	53,2	0,48697
294,6	1	50	1,897	1,866	1,923	2	-190,7	320,1	2	52,7	0,48613
236,6	1	50	1,478	1,453	1,497	2	-99,4	216,3	2	52,4	0,48562
199,2	1	50	1,239	1,218	1,255	2	-59,2	160,5	2	52,2	0,48528
169,5	1	50	1,059	1,042	1,075	2	-35,6	121,8	2	51,8	0,48461
137,4	1	50	0,898	0,883	0,906	2	-10,4	92,6	2	51,7	0,48444
108,0	1	50	0,794	0,780	0,797	2	8,5	72,1	2	51,2	0,48359
data calculation of no load											
V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'					
124,9%	1,25	11,428	713,0	1,561	95,60	617,40					
110,7%	1,11	7,428	449,0	1,226	40,36	408,64					
100,0%	1,00	5,850	369,0	1,001	25,00	344,00					
73,7%	0,74	3,791	258,8	0,543	10,48	248,32					
59,2%	0,59	2,952	233,8	0,350	6,35	227,45					
49,8%	0,50	2,475	202,6	0,248	4,46	198,14					
42,4%	0,42	2,117	172,4	0,180	3,26	169,14					
34,3%	0,34	1,791	164,4	0,118	2,33	162,07					
27,0%	0,27	1,581	161,2	0,073	1,81	159,39					
RESULTS AT: 400 V											
N.L.AMP	5,85	N.L.LOSS(W)	368,87	Pw(W)	138,7	Pe(W)	205,2				

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Voltage	400	V	Current	19,6	A	Frequency	50,0 Hz		
Speed	2943	r/min	Duty	S1		Connection	Δ		
Ins.class	F		Weight	147	kg		IP55		

No Load Curve



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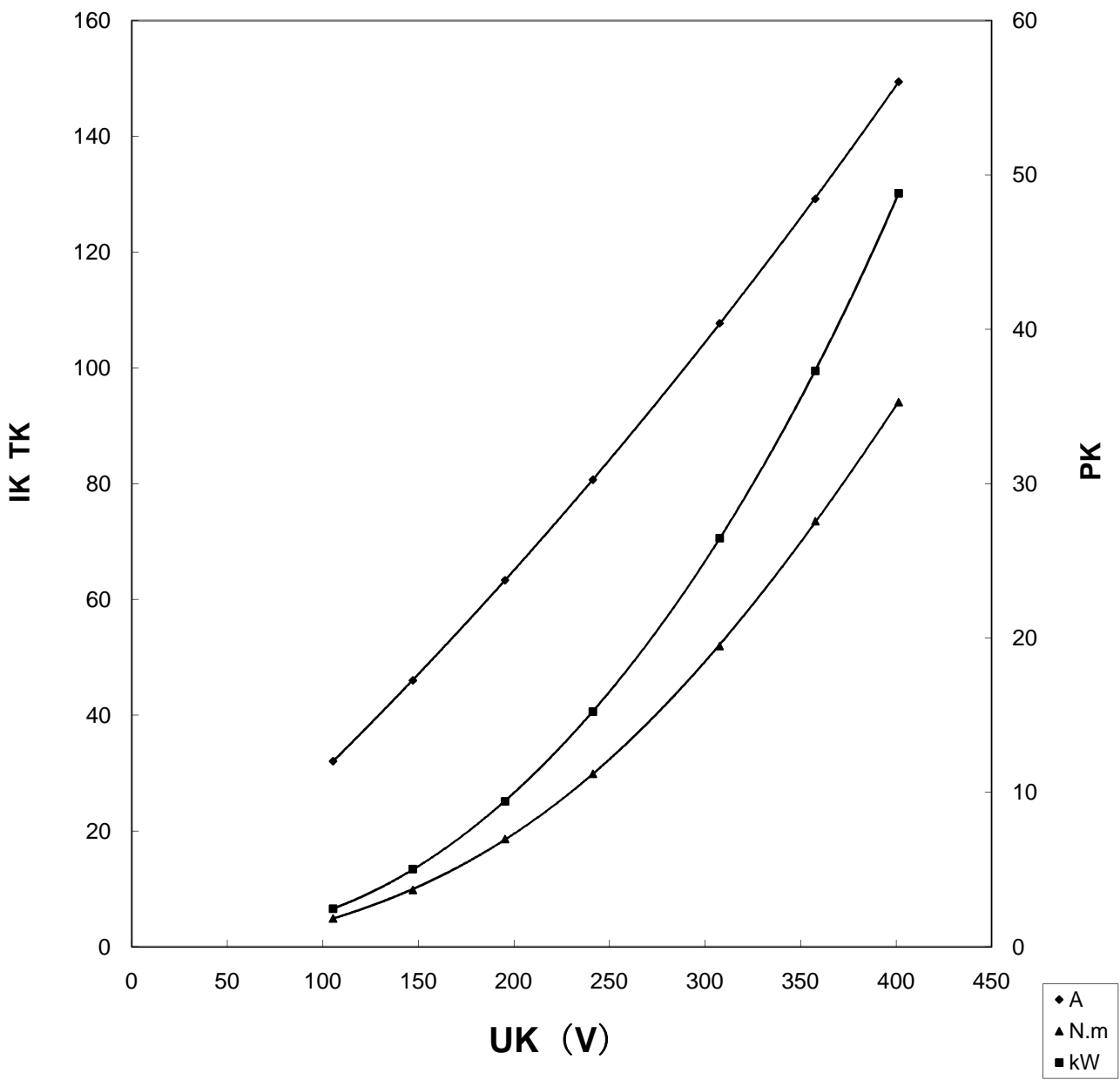
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Voltage	400	V	Current	19,6	A	Frequency	50,0		Hz	
Speed	2943	r/min	Duty	S1		Connection	Δ			
Ins.class	F		Weight	147	kg		IP55			
LOCKED ROTOR TEST										
VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torque (kg.m)	
401,3	1,0	1,492	1,496	1,494	100,0	-23,2	511,2	100,0	9,60	
357,7	1,0	2,582	2,585	2,585	50,0	-40,6	786,8	50,0	7,50	
307,6	1,0	2,152	2,155	2,156	50,0	-32,2	561,5	50,0	5,30	
241,3	1,0	1,611	1,613	1,616	50,0	-22,0	326,7	50,0	3,05	
195,3	1,0	3,157	3,172	3,167	20,0	-45,5	516,1	20,0	1,90	
147,1	1,0	2,291	2,310	2,297	20,0	-29,5	280,7	20,0	1,00	
105,3	1,0	1,594	1,616	1,595	20,0	-16,4	139,4	20,0	0,50	
data calculation of locked rotor										
Uk	IK	PK	TK		LOGUk	LOGIk	LOGPk	LOGTk		
V	A	kW	N.m							
401,26	149,44	48,800	94,08		2,6034	2,1745	1,6884	1,9735		
357,68	129,20	37,310	73,50		2,5535	2,1113	1,5718	1,8663		
307,58	107,70	26,465	51,94		2,4880	2,0322	1,4227	1,7155		
241,26	80,67	15,235	29,89		2,3825	1,9067	1,1828	1,4755		
195,26	63,31	9,412	18,62		2,2906	1,8015	0,9737	1,2700		
147,05	45,99	5,024	9,80		2,1675	1,6627	0,7010	0,9912		
105,26	32,03	2,460	4,90		2,0223	1,5056	0,3909	0,6902		
performance collection of locked rotor										
	at rated volts		at rated current		at 2.5 times rated current		at 100V			
VOLTS (V)	400		68,038		154,6		100,0			
AMPS (A)	148,8		19,6		49,0		30,00			
INPUT (kW)	48,47				6,1		1,815			
TORQUE (N.m)	93,48									

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Speed	2943	r/min	Duty	S1		Connection	Δ		
Ins.class	F		Weight	147	kg		IP55		

Locked Rotor Curve



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Type	K160M-2		Poles	2		Power	11 kW		IE:3		
Voltage	400	V	Current	19,6	A	Frequency	50 Hz				
Speed	2943	r/min	Duty	S1		Connection	Δ				
Ins.class	F		Weight	147	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	
14,58	400,1	2,024	2,011	2,018	10	442,4	808,8	10	43,3	—	55,6	57,9	—	—	—	—	—	—	—	—	—	14,4
15,29	399,6	2,012	1,999	2,006	10	438,9	803,0	10	45,4	—	59,0	61,5	—	—	—	—	—	—	—	—	—	14,1
15,59	400,1	2,000	1,988	1,993	10	436,5	799,5	10	45,2	—	59,5	62,0	—	—	—	—	—	—	—	—	—	14,2
16,31	400,2	2,000	1,988	1,993	10	435,2	799,5	10	45,0	—	59,0	61,4	—	—	—	—	—	—	—	—	—	14,0
The average of the last three		19,976			A	12375,3		W	45,0	—	59,2	61,4	—	—	—	—	—	—	—	—	—	14,1

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)	57	71	88	105	124	147	162	183		
RESISTANC	0,5009	0,5002	0,4994	0,4984	0,4974	0,4962	0,4954	0,4942		

WINDING RESISTANCE(COLD)

Δ	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	0,4156	0,4157	0,4157	0,41567	0,41560	11 °C
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
						°C

resistance value at 0 sec (Ω)

0,503879

calculation value of temp.rising

49,15 K

30 S (Ω)

0,502313

calculation value of temp.rising

48,23 K

full load curent

19,62 A

modify value of temp. rising

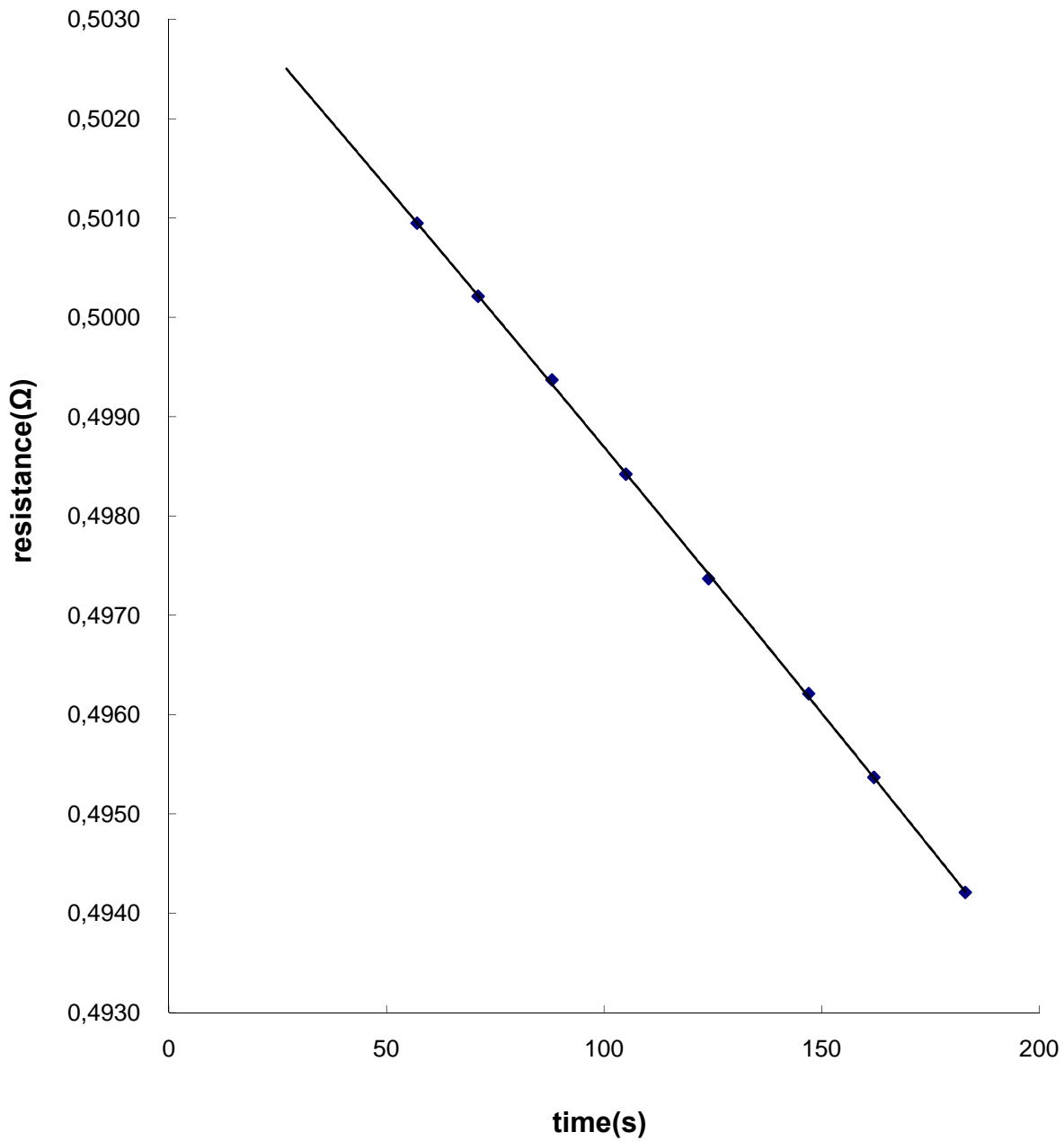
46,52 K

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Voltage	400 V	Current	19,6 A	Frequency	50,0	kW
Speed	2943 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	147 kg			IP55

RESISTANCE CURVE



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Speed	2943	r/min	Duty	S1		Connection	Δ		Hz
Ins.class	F		Weight	147	kg				IP55

LOAD TEST

V	HZ	I1	I2	I3	mul.	W1	W2	mul.	r/min	Resistance Ω	Temperature °C	Torqure N.m
399,8	50,02	3,054	3,044	3,051	10	664,0	1209,3	10	2906,7	0,5017	61,9	53,95
400,0	50,01	2,532	2,521	2,527	10	555,8	1002,0	10	2925,4	0,5027	62,5	44,93
400,1	50,01	2,023	2,011	2,016	10	437,5	800,6	10	2943,1	0,5042	63,4	35,69
400,2	50,00	1,570	1,559	1,563	10	316,7	621,1	10	2958,1	0,5037	63,1	26,82
400,0	50,00	1,302	1,289	1,295	10	239,5	513,5	10	2967,6	0,5027	62,5	21,13
400,0	50,00	2,299	2,278	2,292	5	381,4	903,2	5	2972,4	0,5003	61,1	17,74
400,1	50,01	1,590	1,569	1,586	5	132,7	594,4	5	2986,2	0,4969	59,1	9,03
399,9	50,0	3,253	3,185	3,248	2,0	-119,9	980,6	2	2994,0	0,4947	57,8	3,18
400,2	50,0	2,937	2,896	2,943	2,0	-457,1	640,0	2	3000,0	0,4888	54,3	0,00

slope A= 0,11519

intercept B= 14,00

relative coefficient r= 0,987

LOAD %	P2 W	I A	P1 W	Pcu1s W	Ss %	Pcu2s W	Ps W	Pz W	N.m	EFF %	P.F
150,0	16500	30,04	18456,3	707,0	3,204	562,1	339,3	1952,3	54,3	89,40	0,887
125,0	13750	24,61	15170,0	474,8	2,513	364,1	231,9	1414,7	44,9	90,64	0,890
100,0	11000	19,62	12016,7	301,6	1,911	219,9	147,0	1012,5	35,7	91,54	0,884
75,0	8250	15,05	8973,8	177,6	1,370	117,7	82,1	721,2	26,7	91,93	0,860
50,0	5500	10,95	6028,4	93,9	0,892	51,1	35,8	524,7	17,6	91,23	0,795
25,0	2750	7,29	3150,1	41,7	0,423	12,3	8,6	406,4	8,6	87,30	0,623

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Ins.class	F		Weight	147	kg		IP55		

LOAD CURVE

