

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

							IE:3
Type	K180L-4		Poles	4		Power	22,0 kW
Voltage	400	V	Current	39,5	A	Frequen	50 Hz
Speed	1474	r/min	Duty	S1		Connecti	△
Ins.class	F		Weight	255	kg	IP55	
MAJOR CONTENTS				TEST VALUE			
95,0 °C PHASE RESISTANCE OF WII			Ω	0,3631			
NO LOAD CURRENT			A	13,240			
NO LOAD INPUT			W	545,65			
CORE LOSS(Pfe)			W	340,91			
WINDAGE FRICTION LOSS(Pfw)			W	148,25			
STATOR WINDING LOSS(Pcu1)			W	544,72			
ROTOR WINDING LOSS(Pcu2)			W	392,33			
STRAY LOAD LOSS(Ps)			W	263,00			
LOCKED ROTOR CURRENT			A	285,057			
LOCKED ROTOR INPUT @ FULL LOAD			W	76907			
LOCKED ROTOR TORQUE			N.m	292,0			
PULL OUT TORQUE			N.m	392,9			
LOCKED ROTOR CURRENT/RATED CURF			P.U	7,22			
LOCKED ROTOR TORQUE/RATED TORQL			P.U	2,05			
PULL OUT TORQUE/RATED TORQUE			P.U	2,76			
FULL LOAD TORQUE			N.m	142,6			
FULL LOAD CURRENT			A	39,5			
FULL LOAD SLIP			%	1,720			
INPUT @ FULL LOAD			kW	23,689			
FULL LOAD SPEED			r/min	1474,2			
EFFICIENCY @ FULL LOAD			%	92,87			
EFFICIENCY @ 75% LOAD			%	93,43			
POWER FACTOR @ FULL LOAD				0,866			
STATOR WINDING TEMPERATURE RISE			K	50			
D.E. BEARINGS TEMPERATURE BY PT10			°C	47,1			
STATOR WINDING TEMPERATURE			°C	68,1			
High voltage test			V	1800	Imin		
Insulation resistance			MΩ	500			
NOISE (LW)			dB(A)	73			
VIBRATION			mm/s	0,7			

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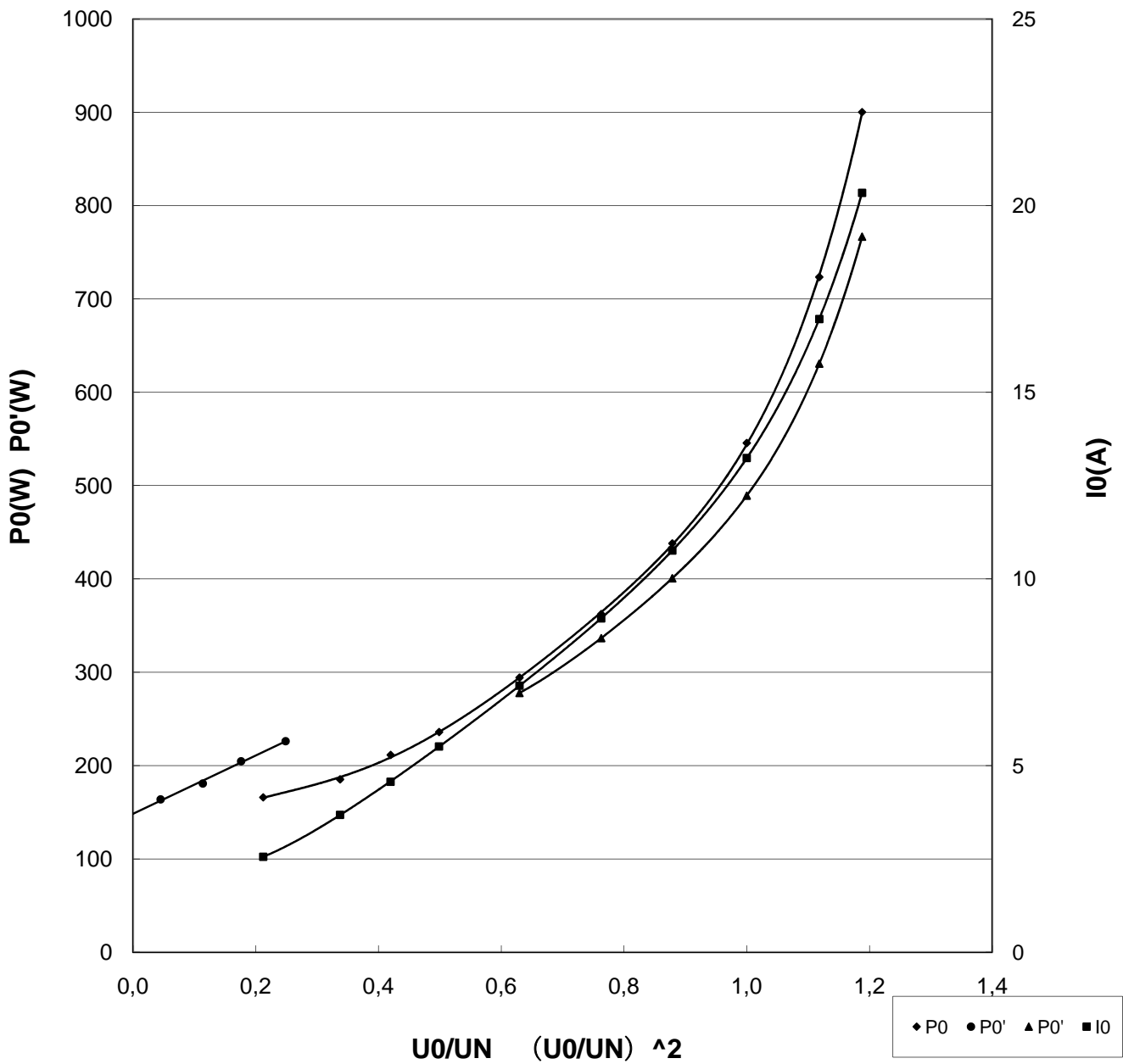
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Speed	1474	r/min	Duty	S1		Connection	Δ				
Ins.class	F		Weight	255	kg	IP55					
NO LOAD TEST											
VOL	mul.	HZ	I01	I02	I03	mul.	W1	W2	mul.	°C	Ω
475,2	1	50	3,973	4,066	4,167	5	-780,3	960,3	5	58,2	0,21510
447,3	1	50	3,307	3,392	3,478	5	-609,0	753,7	5	58,1	0,21503
400,0	1	50	2,574	2,652	2,718	5	-420,1	529,2	5	57,8	0,21481
351,5	1	50	2,090	2,158	2,208	5	-295,0	382,6	5	57,7	0,21473
305,2	1	50	1,735	1,793	1,838	5	-207,2	279,7	5	57,6	0,21466
251,9	1	50	1,384	1,430	1,471	5	-129,7	188,5	5	57,5	0,21459
199,5	1	50	2,678	2,772	2,818	2	-187,4	305,4	2	57,3	0,21444
167,9	1	50	2,217	2,299	2,335	2	-117,6	223,3	2	57,2	0,21437
134,9	1	50	1,786	1,853	1,882	2	-62	154,6	2	57,1	0,21429
84,8	1	50	1,240	1,289	1,303	2	0,0	83,0	2	56,8	0,21407
data calculation of no load											
V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'					
118,8%	1,19	20,343	900,2	1,411	133,53	766,71					
111,8%	1,12	16,962	723,5	1,250	92,79	630,68					
100,0%	1,00	13,240	545,6	1,000	56,48	489,17					
87,9%	0,88	10,760	438,0	0,772	37,29	400,73					
76,3%	0,76	8,943	362,4	0,582	25,75	336,60					
63,0%	0,63	7,142	294,2	0,397	16,42	277,82					
49,9%	0,50	5,512	235,9	0,249	9,77	226,14					
42,0%	0,42	4,567	211,4	0,176	6,71	204,66					
33,7%	0,34	3,681	185,2	0,114	4,35	180,84					
21,2%	0,21	2,555	165,9	0,045	2,10	163,82					
RESULTS AT: 400 V											
N.L.AMP	13,24	N.L.LOSS(W)	545,65	Pw(W)	148,3	Pe(W)	340,9				

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Speed	1474	r/min	Duty	S1		Connection	Δ		
Ins.class	F		Weight	255	kg		IP55		

No Load Curve



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LOCKED ROTOR TEST

VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torqu (kg.m)
398,8	1,0	1,412	1,420	1,428	200,0	-70,3	452,3	200,0	29,6
357,6	1,0	2,443	2,458	2,475	100,0	-113,8	697,3	100,0	22,6
317,9	1,0	2,079	2,090	2,105	100,0	-91,3	524,2	100,0	16,9
281,7	1,0	1,771	1,778	1,792	100,0	-73,5	393,0	100,0	12,6
223,3	1,0	2,608	2,621	2,636	50,0	-97,9	450,9	50,0	7,1
178,9	1,0	1,964	1,972	1,986	50,0	-65,2	267,0	50,0	4,2
136,4	1,0	3,516	3,550	3,562	20,0	-99,9	361,5	20,0	2,2

data calculation of locked rotor

Uk V	IK A	PK kW	TK N.m	LOGUk	LOGIk	LOGPk	LOGTk
398,84	283,99	76,400	290,08	2,6008	2,4533	1,8831	2,4625
357,58	245,86	58,350	221,48	2,5534	2,3907	1,7660	2,3453
317,89	209,13	43,290	165,62	2,5023	2,3204	1,6364	2,2191
281,68	178,03	31,950	123,48	2,4498	2,2505	1,5045	2,0916
223,26	131,08	17,650	69,58	2,3488	2,1176	1,2467	1,8425
178,95	98,69	10,090	41,16	2,2527	1,9943	1,0039	1,6145
136,42	70,85	5,232	21,56	2,1349	1,8503	0,7187	1,3336

performance collection of locked rotor

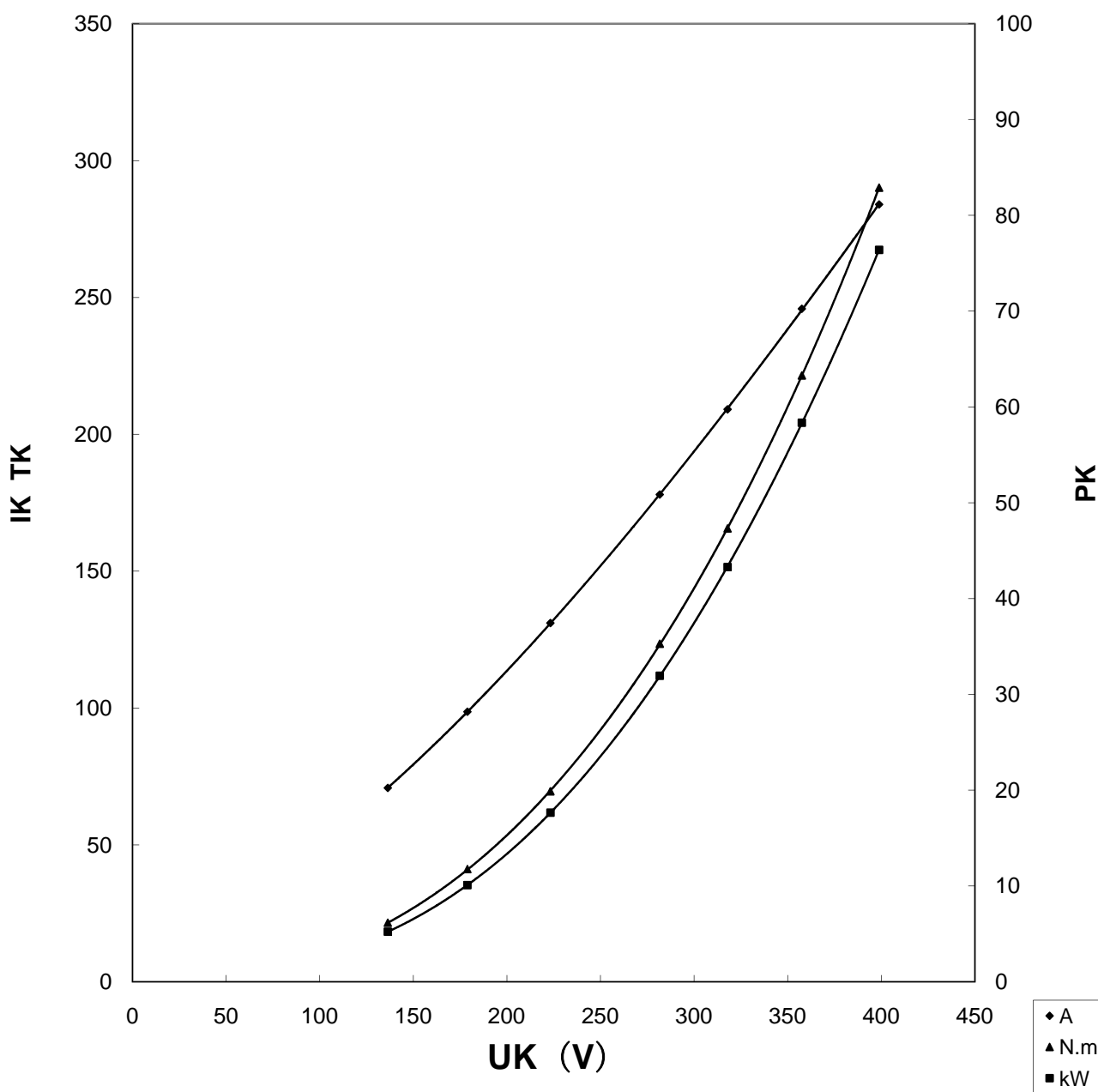
	at rated volts	at rated current	at 2.5 times rated current	at 100V
VOLTS (V)	400	85,171	178,2	100,0
AMPS (A)	285,1	39,7	99,3	47,84
INPUT (kW)	76,91		10,8	1,379
TORQUE (N.m)	292,01			

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Voltage	400 V	Current	39,5 A	Frequency	50,0	kW
Speed	1474 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	255 kg			IP55

Locked Rotor Curve



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Speed	1474	r/min		Duty	S1		Connection	Δ				
Ins.class	F			Weight	255	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	
9,32	400,4	2,075	2,082	2,106	20	406,3	793,1	20	40,9	—	59,2	58,1	—	—	—	—	—	—	—	—	—	10,6
10,00	400,3	2,088	2,095	2,118	20	412,2	798,5	20	44,3	—	62,4	61,3	—	—	—	—	—	—	—	—	—	9,7
10,29	400,3	2,080	2,091	2,112	20	409,4	797,5	20	45,5	—	64,9	63,7	—	—	—	—	—	—	—	—	—	9,5
11,00	400,3	2,072	2,078	2,100	20	409,0	792,0	20	47,2	—	66,5	65,2	—	—	—	—	—	—	—	—	—	10,0
11,29	400,2	2,063	2,083	2,095	20	404,5	792,5	20	46,8	—	67,6	66,3	—	—	—	—	—	—	—	—	—	10,1
12,00	400,5	2,021	2,026	2,052	20	398,1	772,7	20	46,5	—	67,3	66,0	—	—	—	—	—	—	—	—	—	10,3
12,30	400,3	2,095	2,101	2,126	20	413,1	800,1	20	46,8	—	67,8	66,6	—	—	—	—	—	—	—	—	—	11,3
12,59	400,2	2,052	2,057	2,080	20	403,9	784,5	20	47,1	—	68,1	66,9	—	—	—	—	—	—	—	—	—	11,5
The average of the last three		41,356			A	23816		W	47,1	—	67,7	66,9	—	—	—	—	—	—	—	—	—	11,0

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)	53	75	102	124	145	172	195	223		
RESISTANC	0,2202	0,2193	0,2184	0,2177	0,2172	0,2165	0,2160	0,2155		

WINDING RESISTANCE(COLD)

Δ	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	0,1786	0,1786	0,1785	0,17857	0,17850	8,4 °C
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
						°C

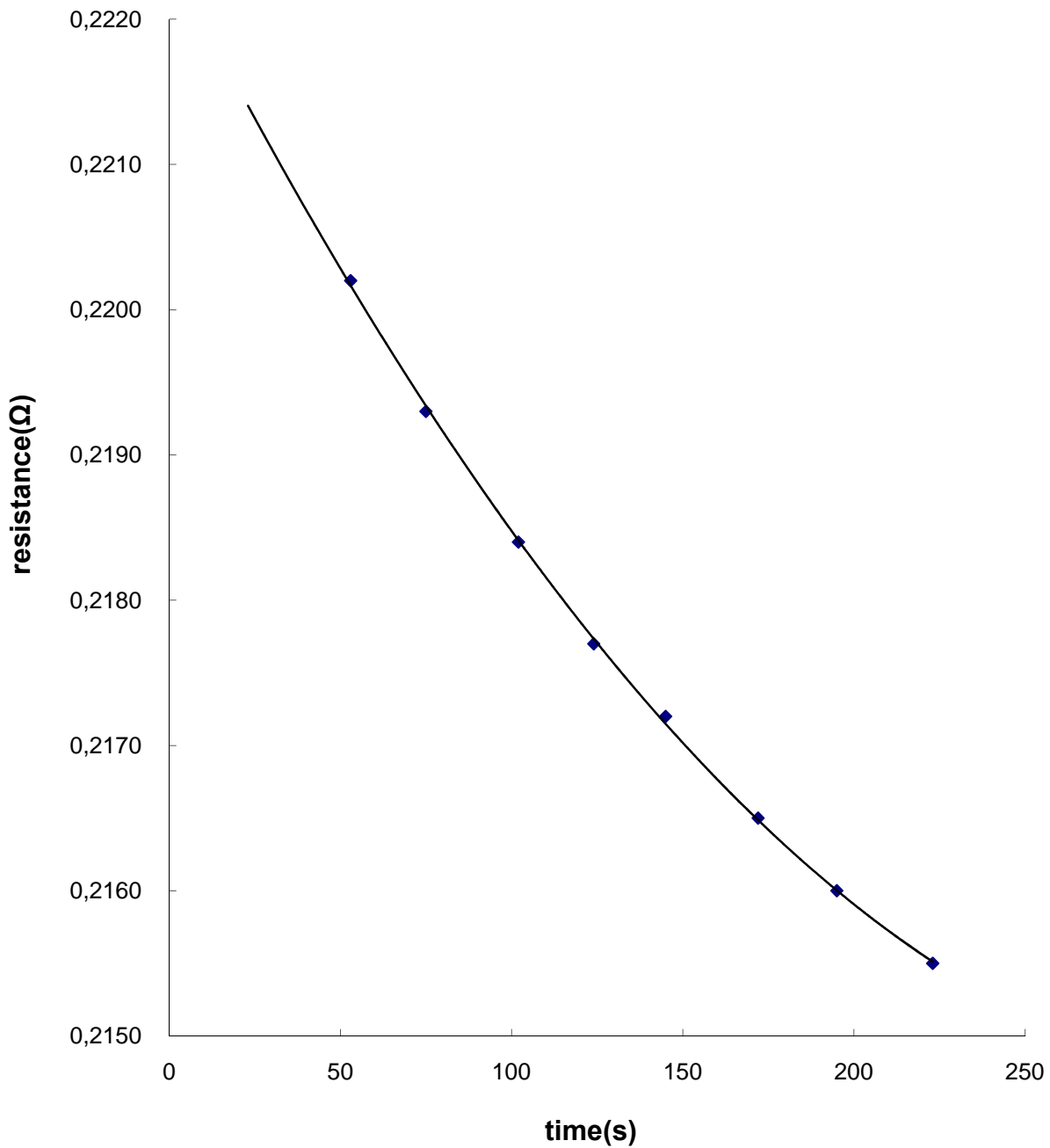
resistance value at 0 sec (Ω)	0,222437	calculation value of temp.rising	57,28	K
30 S (Ω)	0,221008	calculation value of temp.rising	55,33	K
full load curent	39,51 A	modify value of temp. rising	50,49	K

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Ins.class	F	Weight	255 kg		IP55	

RESISTANCE CURVE



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Ins.class	F		Weight	255	kg	IP55					

LOAD TEST

V	HZ	I1	I2	I3	mul.	W1	W2	mul.	r/min	Resistance Ω	Temperature °C	Torqure N.m
399,9	49,99	3,065	3,068	3,102	20	628,9	1216,6	20	1458,3	0,2203	65,3	218,865
399,8	50,00	2,471	2,475	2,504	20	516,6	981,5	20	1468,5	0,2208	66,0	178,765
400,1	49,99	2,137	2,143	2,168	20	443,6	850,3	20	1473,5	0,2211	66,4	154,864
400,3	50,00	1,972	1,978	2,002	20	404,7	785,1	20	1475,4	0,2213	66,7	142,798
400,0	50,00	1,506	1,514	1,537	20	283,9	600,2	20	1482,9	0,2216	67,0	105,707
400,1	49,99	1,100	1,114	1,130	20	159,2	435,6	20	1489,1	0,2205	65,6	70,2404
400,0	49,99	0,777	0,798	0,810	20	34,0	285,8	20	1494,9	0,2194	64,1	35,9376
400,2	50,0	2,592	2,654	2,745	5,0	-357,4	590,2	5	1498,8	0,2186	63,0	2,98
400,2	50,0	2,582	2,654	2,720	5,0	-421,3	530,9	5	1500,0	0,2155	58,8	0,00

slope A= 0,01284

intercept B= -10,10

relative coefficient r= 0,992

LOAD %	P2 W	I A	P1 W	Pcu1s W	Ss %	Pcu2s W	Ps W	Pz W	N.m	EFF %	P.F
150,0	33000	60,66	36381,1	1284,3	2,866	996,2	603,3	3373,0	216,7	90,71	0,866
125,0	27500	49,54	29891,2	856,6	2,209	633,8	412,8	2392,3	179,3	92,00	0,871
100,0	22000	39,51	23688,8	544,7	1,720	392,3	263,0	1689,2	143,1	92,87	0,866
75,0	16500	30,35	17659,4	321,4	1,197	203,4	145,7	1159,7	106,5	93,43	0,840
50,0	11000	22,19	11809,6	171,9	0,740	83,6	64,1	808,8	70,6	93,14	0,768
25,0	5500	15,57	6104,7	84,6	0,318	18,1	15,8	607,6	35,1	90,09	0,566

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Ins.class	F		Weight	255	kg		IP55		

LOAD CURVE

