VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

IE:3

Type	K180M-4		**Poles**	4		**Power**	18,5	**kW**
Voltage	400	**V**	**Current**	32,7	**A**	**Frequen**	50	**Hz**
Speed	1476	**r/min**	**Duty**	S1		**Connecti**	△	
Ins.class		F	**Weight**	221	**kg**		IP55	

MAJOR CONTENTS		TEST VALUE	
95,0 ℃ PHASE RESISTANCE OF WINDING	Ω	0,3926	
NO LOAD CURRENT	A	15,031	
NO LOAD INPUT	W	673,17	
CORE LOSS(Pfe)	W	452,22	
WINDAGE FRICTION LOSS(Pfw)	W	139,53	
STATOR WINDING LOSS(Pcu1)	W	406,17	
ROTOR WINDING LOSS(Pcu2)	W	310,32	
STRAY LOAD LOSS(Ps)	W	183,73	
LOCKED ROTOR CURRENT	A	257,140	
LOCKED ROTOR INPUT @ FULL LOAD	W	80058	
LOCKED ROTOR TORQUE	N.m	295,7	
PULL OUT TORQUE	N.m	348,2	
LOCKED ROTOR CURRENT/RATED CURRENT	P.U	7,85	
LOCKED ROTOR TORQUE/RATED TORQUE	P.U	2,47	
PULL OUT TORQUE/RATED TORQUE	P.U	2,91	
FULL LOAD TORQUE	N.m	119,8	
FULL LOAD CURRENT	A	32,7	
FULL LOAD SLIP	%	1,622	
INPUT @ FULL LOAD	kW	19,996	
FULL LOAD SPEED	r/min	1475,7	
EFFICIENCY @ FULL LOAD	%	92,52	
EFFICIENCY @ 75% LOAD	%	92,52	
POWER FACTOR @ FULL LOAD		0,882	
STATOR WINDING TEMPERATURE RISE	K	56	
D.E. BEARINGS TEMPERATURE BY PT100	℃	57,6	
STATOR WINDING TEMPERATURE	℃	78,3	
High voltage test	V	1800	Imin
Insulation resistance	MΩ	500	
NOISE (LW)	dB(A)	76	
VIBRATION	mm/s	0,9	

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Ins.class	F		**Weight**	221	**kg**		IP55	

NO LOAD TEST

VOL	mul.	HZ	I01	I02	I03	mul.	W1	W2	mul.	℃	Ω
475,7	1	50	2,718	2,728	2,763	10	-562,3	705,8	10	66,9	0,23944
430,5	1	50	1,861	1,881	1,898	10	-351,9	437,96	10	67,1	0,23960
397,0	1	50	1,450	1,464	1,497	10	-247,4	313,11	10	67,2	0,23968
351,5	1	50	1,103	1,113	1,130	10	-163,6	215,01	10	67,2	0,23968
312,1	1	50	1,830	1,806	1,895	5	-229,3	309,58	5	67,0	0,23952
259,9	1	50	1,423	1,444	1,481	5	-146,8	210,1	5	66,8	0,23937
187,3	1	50	2,474	2,479	2,489	2	-170,5	283,0	2	66,3	0,23897
150,6	1	50	1,934	1,982	1,995	2	-92,2	190,6	2	66,1	0,23881
66,5	1	50	1,052	1,079	1,125	2	10,9	64,3	2	65,7	0,23849

data calculation of no load

V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'	COSφ
118,9%	1,19	27,363	1435,0	1,414	268,93	1166,03	0,064
107,6%	1,08	18,800	860,6	1,158	127,03	733,59	0,061
99,3%	0,99	14,703	657,1	0,985	77,72	579,38	0,065
87,9%	0,88	11,153	514,1	0,772	44,72	469,40	0,076
78,0%	0,78	9,218	401,4	0,609	30,53	370,88	0,081
65,0%	0,65	7,247	316,6	0,422	18,86	297,70	0,097
46,8%	0,47	4,961	225,0	0,219	8,82	216,22	0,140
37,7%	0,38	3,941	196,8	0,142	5,56	191,26	0,191
16,6%	0,17	2,171	150,4	0,028	1,69	148,69	0,601

RESULTS AT: **400** **V**

N.L.AMP	15,03	N.L.LOSS(W)	673,17	**Pw(W)**	139,5	**Pe(W)**	452,2		

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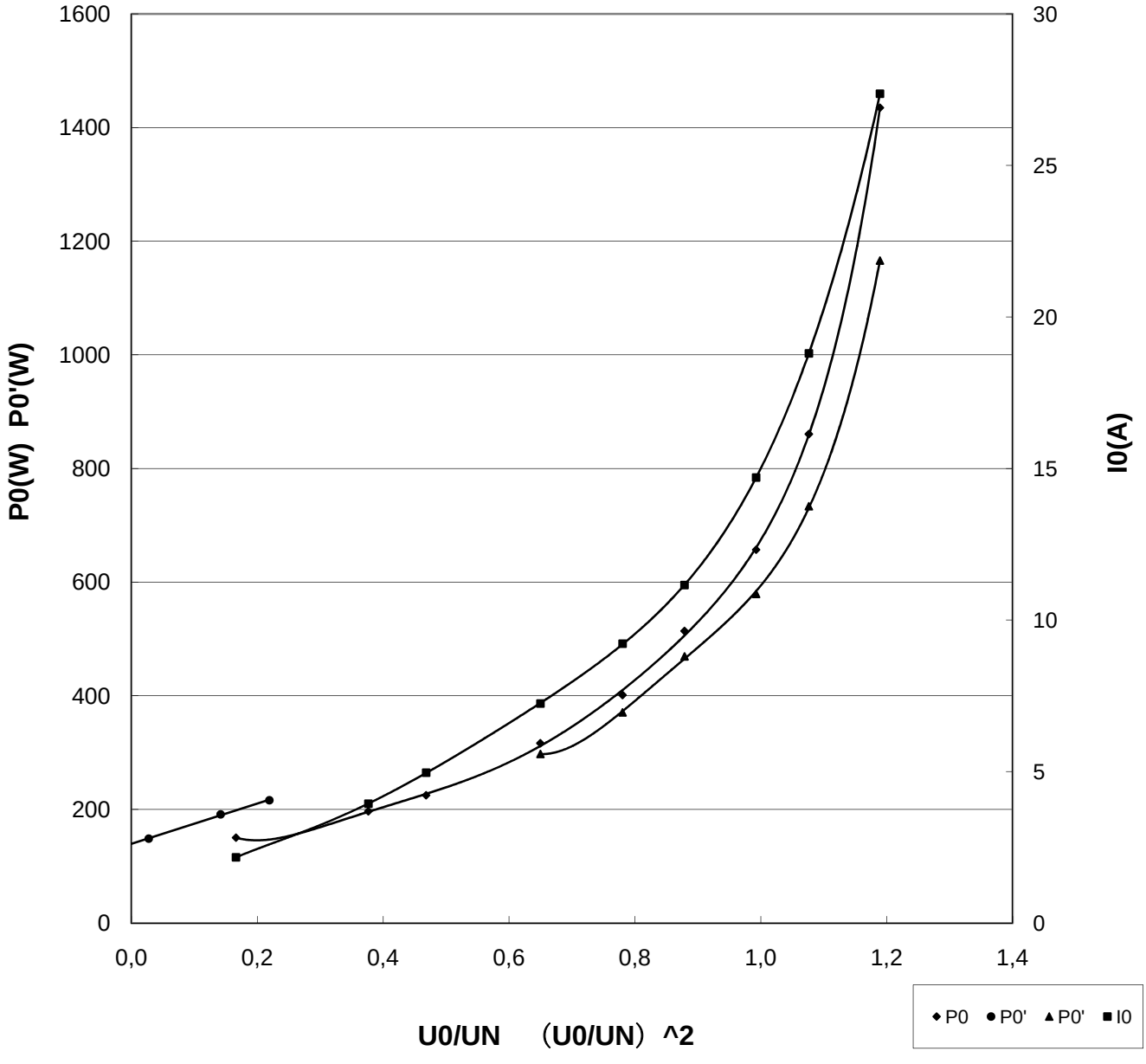
Voltage	400	**V**	**Current**	32,7	**A**	**Frequency**	50,0	**Hz**
Speed	1476	**r/min**	**Duty**	S1		**Connection**	Δ	
Ins.class		F	**Weight**	221	**kg**		IP55	

No Load Curve



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Ins.class		F	**Weight**	221	**kg**		IP55	

LOCKED ROTOR TEST

VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torqur (kg.m)
399,9	1,0	2,567	2,570	2,574	100,0	-138,6	938,5	100,0	30,2
359,3	1,0	2,222	2,229	2,234	100,0	-111,3	727,7	100,0	23,3
320,2	1,0	1,921	1,921	1,927	100,0	-88,6	557,5	100,0	17,9
276,6	1,0	3,178	3,185	3,184	50,0	-141,6	791,2	50,0	12,5
237,4	1,0	2,600	2,597	2,605	50,0	-106,3	546,5	50,0	8,6
199,4	1,0	2,073	2,073	2,073	50,0	-79,3	362,4	50,0	5,6
157,9	1,0	1,538	1,537	1,540	50,0	-51,6	209,3	50,0	3,2
116,6	1,0	2,657	2,654	2,670	20,0	-73,7	262,0	20,0	1,5
82,8	1,0	1,815	1,805	1,821	20,0	-37,0	125,6	20,0	0,7

data calculation of locked rotor

Uk V	IK A	PK kW	TK N.m	LOGUk	LOGIk	LOGPk	LOGTk
399,85	257,01	79,990	295,47	2,6019	2,4100	1,9030	2,4705
359,33	222,85	61,640	228,34	2,5555	2,3480	1,7899	2,3586
320,19	192,26	46,890	174,93	2,5054	2,2839	1,6711	2,2429
276,63	159,12	32,480	122,50	2,4419	2,2017	1,5116	2,0881
237,36	130,02	22,010	84,28	2,3754	2,1140	1,3426	1,9257
199,38	103,63	14,155	54,88	2,2997	2,0155	1,1509	1,7394
157,87	76,91	7,885	30,87	2,1983	1,8860	0,8968	1,4895
116,64	53,21	3,766	14,70	2,0668	1,7260	0,5759	1,1673
82,83	36,27	1,772	6,86	1,9182	1,5596	0,2485	0,8363

performance collection of locked rotor

	at rated volts	at rated current	at 2.5 times rated current	at 100V
VOLTS (V)	400	76,300	167,6	100,0
AMPS (A)	257,1	33,0	82,5	44,87
INPUT (kW)	80,06		8,9	2,785
TORQUE (N.m)	295,72			

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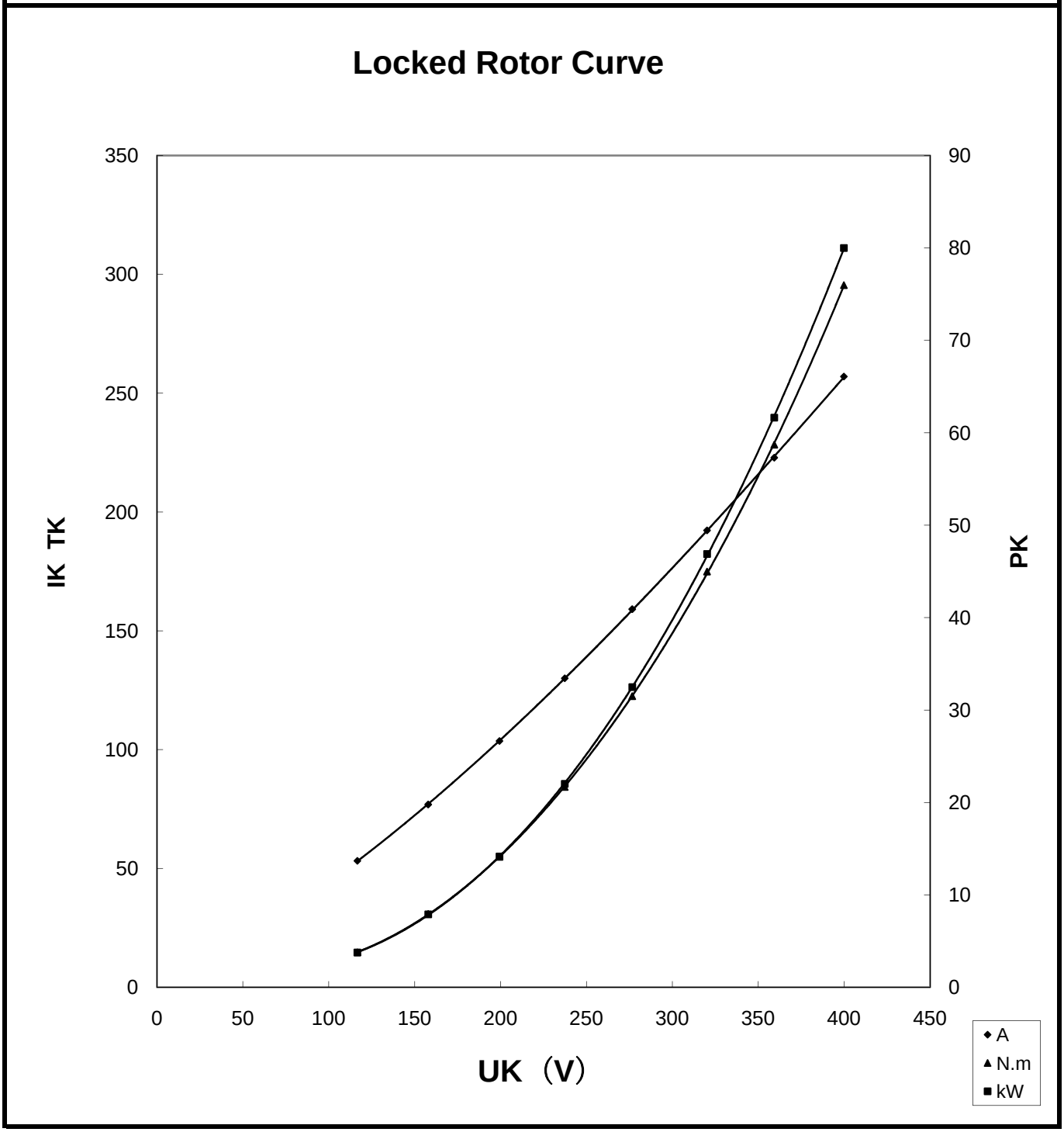
Voltage	400	**V**	**Current**	32,7	**A**	**Frequency**	50,0	**Hz**
Speed	1476	**r/min**	**Duty**	S1		**Connection**	Δ	
Ins.class		F	**Weight**	221	**kg**		IP55	



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ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K180M-4		**Poles**	4		**Power**	18,5	**kW**		IE:3		
Voltage	400	**V**	**Current**	32,7	**A**	**Frequency**	50	**Hz**				
Speed	1476	**r/min**	**Duty**	S1		**Connection**	△					
Ins.class	F		**Weight**	221	**kg**		IP55					

TEMPERATURE RISE TEST

TIME (h:min)	V	I1	I2	I3	mul.	W1	W2	mul.	T1 ℃	T2 ℃	T3 ℃	T4 ℃	T5 ℃	T6 ℃	T7 ℃	T8 ℃	T9 ℃	T10 ℃	T11 ℃	T12 ℃	T13 ℃
11,59	400,5	3,290	3,317	3,338	10	630,3	1405	10	50,5	—	69,5	68,5	—	—	—	—	—	—	47,1	42,3	22,8
12,29	400,6	3,288	3,288	3,318	10	632,3	1393	10	54,0	—	73,3	72,3	—	—	—	—	—	—	49,3	43,6	22,8
12,58	400,6	3,275	3,296	3,322	10	629,4	1396	10	56,1	—	75,9	74,9	—	—	—	—	—	—	50,9	44,9	23,3
13,30	400,6	3,278	3,283	3,317	10	632,1	1391	10	57,4	—	77,5	76,5	—	—	—	—	—	—	51,8	45,8	23,2
13,59	400,8	3,270	3,289	3,329	10	632,0	1394	10	57,8	—	78,1	77,1	—	—	—	—	—	—	52,2	46,2	23,3
14,31	400,7	3,270	3,296	3,321	10	630,0	1397	10	58,2	—	78,5	77,5	—	—	—	—	—	—	52,0	46,1	23,1
15,01	400,7	3,280	3,287	3,313	10	632,0	1393	10	57,6	—	78,3	77,2	—	—	—	—	—	—	51,8	45,9	22,8
The average of the last three			32,950		A	20259,7		W	57,6	—	78,3	77,2	—	—	—	—	—	—	51,8	45,9	23,1

T1 T2 : DE BEARING TEMPERATURE
T3~T10 : DE WINDING TEMPERATURE
T11 : CORE TEMPERATRE
T12: FRAME TEMPERATRE
T13 : AMBIENT TEMPERATURE

WINDING RESISTANCE (HOT) AT END OF TEMPERATURE RISE TEST

TIME (S)	49	82	107	127	143	173	200	222		
RESISTANCE (Ω)	0,2490	0,2479	0,2470	0,2464	0,2457	0,2450	0,2445	0,2438		

WINDING RESISTANCE(COLD)

△	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	0,2015	0,2015	0,2016	0,20153	0,20150	19,1 ℃
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
						℃

resistance value at 0 sec (Ω)	0,251043	calculation value of temp.rising	58,51	K
30 S (Ω)	0,249665	calculation value of temp.rising	56,77	K
full load curent	32,65 A	modify value of temp. rising	55,76	K

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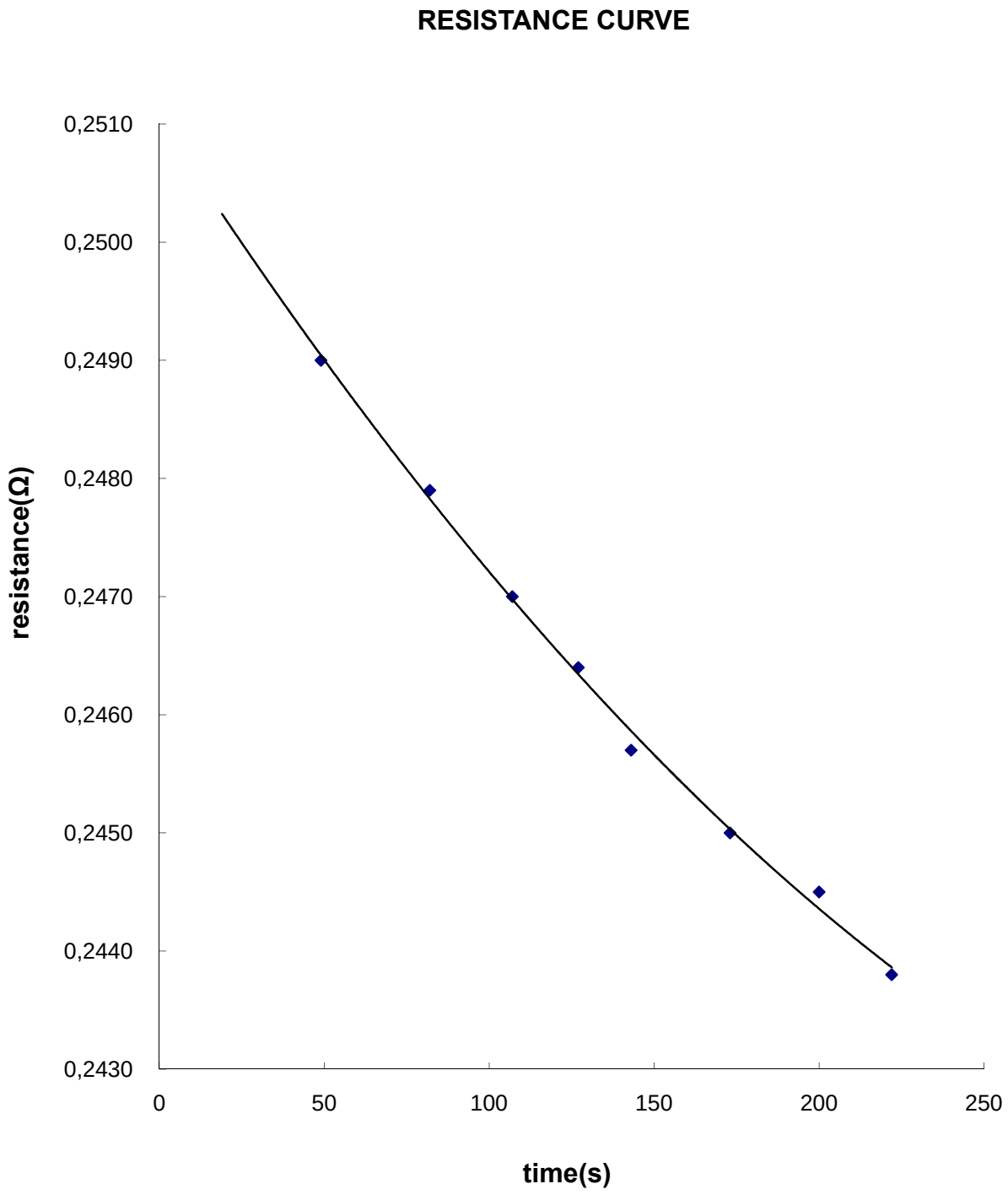

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Ins.class		F	**Weight**	221	**kg**		IP55	

LOAD TEST

V	HZ	I1	I2	I3	mul.	W1	W2	mul.	r/min	Resistance Ω	Temperature ℃	Torqur N.m
400,1	50,01	4,226	4,230	4,286	10	886,6	1791,1	10	1466,8	0,2471	76,5	160,05
400,3	50,01	3,881	3,906	3,943	10	795,3	1654,0	10	1470	0,2476	77,2	146,32
400,3	50,01	3,303	3,325	3,363	10	635,7	1406,1	10	1475,6	0,2479	77,6	122,1
400,4	50,00	2,639	2,640	2,685	10	428,5	1107,5	10	1482,3	0,2476	77,2	91,5
400,2	50,00	2,045	2,066	2,091	10	225,5	788,3	10	1488,7	0,2470	76,4	59,2
400,4	50,00	1,667	1,664	1,689	10	33,5	596,6	10	1493,5	0,2448	73,7	35,3
400,3	50,0	1,478	1,491	1,524	10,0	-243,7	331,3	10	1499,5	0,2450	73,9	1,56
400,2	50,0	1,485	1,497	1,518	10,0	-258,3	325,8	10	1500,0	0,2396	67,1	0,00

slope A= 0,01292 intercept B= 83,19 relative coefficient r= 0,995

LOAD %	P2 W	I A	P1 W	Pcu1s W	Ss %	Pcu2s W	Ps W	Pz W	N.m	EFF %	P.F
150,0	27750	47,73	30339,4	863,3	2,605	756,0	424,0	2635,1	181,2	91,47	0,917
125,0	23125	40,03	25121,5	607,1	2,101	505,4	289,9	1994,2	149,8	92,05	0,906
100,0	18500	32,74	19996,0	406,2	1,622	310,3	183,7	1492,0	119,3	92,52	0,882
75,0	13875	26,14	14997,0	258,9	1,162	166,0	102,2	1118,9	89,0	92,52	0,828
50,0	9250	20,65	10120,3	161,6	0,762	72,4	44,7	870,4	58,8	91,40	0,707
25,0	4625	15,17	5243,6	87,2	0,361	17,0	10,6	706,5	28,6	88,20	0,499

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LOAD CURVE