

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160M-4	Poles	4	Power	11,0	kW	IE:3	
Voltage	400	V	Current	20,9	A	Frequency	50	Hz
Speed	1471	r/min	Duty	S1	Connection	△		
Ins.class	F	Weight	150	kg		IP55		
MAJOR CONTENTS				TEST VALUE				
95,0 °C PHASE RESISTANCE OF WINDING	Ω			0,7763				
NO LOAD CURRENT	A			10,601				
NO LOAD INPUT	W			440,07				
CORE LOSS(Pfe)	W			309,48				
WINDAGE FRICTION LOSS(Pfw)	W			54,66				
STATOR WINDING LOSS(Pcu1)	W			317,35				
ROTOR WINDING LOSS(Pcu2)	W			223,62				
STRAY LOAD LOSS(Ps)	W			112,98				
LOCKED ROTOR CURRENT	A			166,556				
LOCKED ROTOR INPUT @ FULL LOAD	W			52876				
LOCKED ROTOR TORQUE	N.m			172,1				
PULL OUT TORQUE	N.m			224,9				
LOCKED ROTOR CURRENT/RATED CURRENT	P.U			7,96				
LOCKED ROTOR TORQUE/RATED TORQUE	P.U			2,40				
PULL OUT TORQUE/RATED TORQUE	P.U			3,13				
FULL LOAD TORQUE	N.m			71,5				
FULL LOAD CURRENT	A			20,9				
FULL LOAD SLIP	%			1,963				
INPUT @ FULL LOAD	kW			12,019				
FULL LOAD SPEED	r/min			1470,6				
EFFICIENCY @ FULL LOAD	%			91,52				
EFFICIENCY @ 75% LOAD	%			91,55				
POWER FACTOR @ FULL LOAD				0,830				
STATOR WINDING TEMPERATURE RISE	K			47				
D.E. BEARINGS TEMPERATURE BY PT100	°C			39,2				
STATOR WINDING TEMPERATURE	°C			58,7				
High voltage test	V	1800				Imin		
Insulation resistance	MΩ			500				
NOISE (LW)	dB(A)			70				
VIBRATION	mm/s			0,7				

VALIADIS S.A.**ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR**

Type	K160M-4		Poles	4		Power	11,0 kW		IE:3		
Voltage	400	V	Current	20,9	A	Frequency	50 Hz				
Speed	1471	r/min	Duty	S1		Connection	△				
Ins.class	F		Weight	150	kg			IP55			

NO LOAD TEST

VOL	mul.	HZ	I01	I02	I03	mul.	W1	W2	mul.	°C	Ω
493,6	1	50	4,142	4,171	4,158	5	-857,1	1097,8	5	52,0	0,4501
440,5	1	50	2,753	2,772	2,756	5	-518,0	644,8	5	52,1	0,4503
400,3	1	50	2,121	2,128	2,122	5	-361,6	449,8	5	52,2	0,4504
352,3	1	50	1,664	1,665	1,667	5	-246,7	310,8	5	52,2	0,4504
305,7	1	50	3,418	3,382	3,413	2	-433,3	552,7	2	51,9	0,4499
242,4	1	50	2,570	2,537	2,562	2	-250,8	335,3	2	51,7	0,4496
199,4	1	50	2,057	2,027	2,053	2	-156,1	227,3	2	51,5	0,4493
161,2	1	50	1,630	1,603	1,621	2	-93,5	151,0	2	51,0	0,4485
82,9	1	50	0,847	0,823	0,839	2	-13,3	47,8	2	49,9	0,4468

data calculation of no load

V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'
123,4%	1,23	20,785	1203,5	1,523	291,67	911,83
110,1%	1,10	13,802	634,0	1,213	128,65	505,35
100,1%	1,00	10,618	441,0	1,002	76,17	364,83
88,1%	0,88	8,327	320,5	0,776	46,84	273,66
76,4%	0,76	6,809	238,8	0,584	31,29	207,51
60,6%	0,61	5,113	169,0	0,367	17,63	151,37
49,8%	0,50	4,091	142,4	0,248	11,28	131,12
40,3%	0,40	3,236	115,0	0,162	7,05	107,95
20,7%	0,21	1,673	69,0	0,043	1,88	67,12

RESULTS AT: 400 V

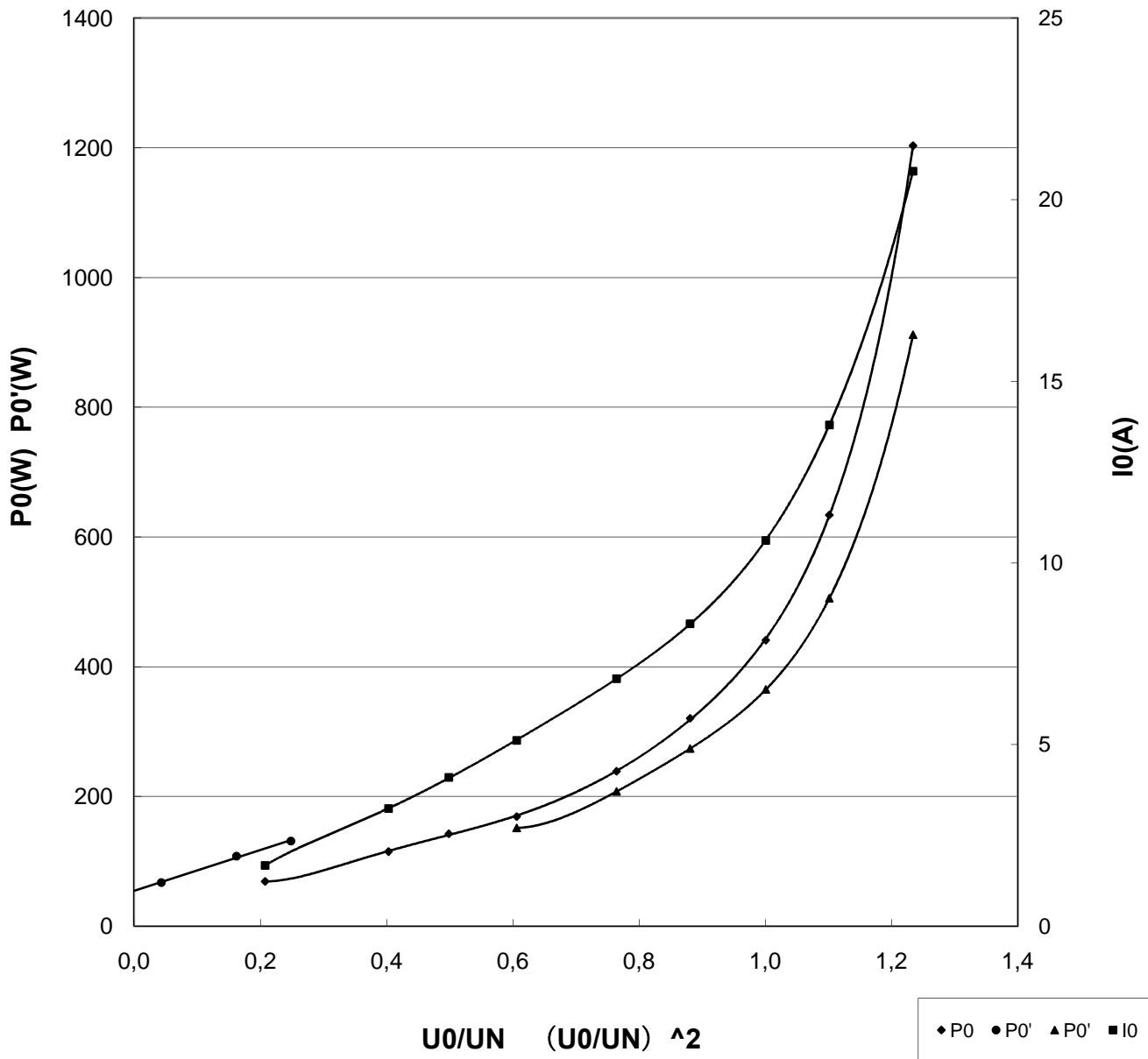
N.L.AMP	10,60	N.L.LOSS(W)	440,07	Pw(W)	54,7	Pe(W)	309,5	P.F	0,06
---------	-------	-------------	--------	-------	------	-------	-------	-----	------

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160M-4		Poles	4	Power	11,0	IE:3
Voltage	400	V	Current	20,9	A	Frequency	50,0
Speed	1471	r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F		Weight	150	kg	IP55	

No Load Curve



VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

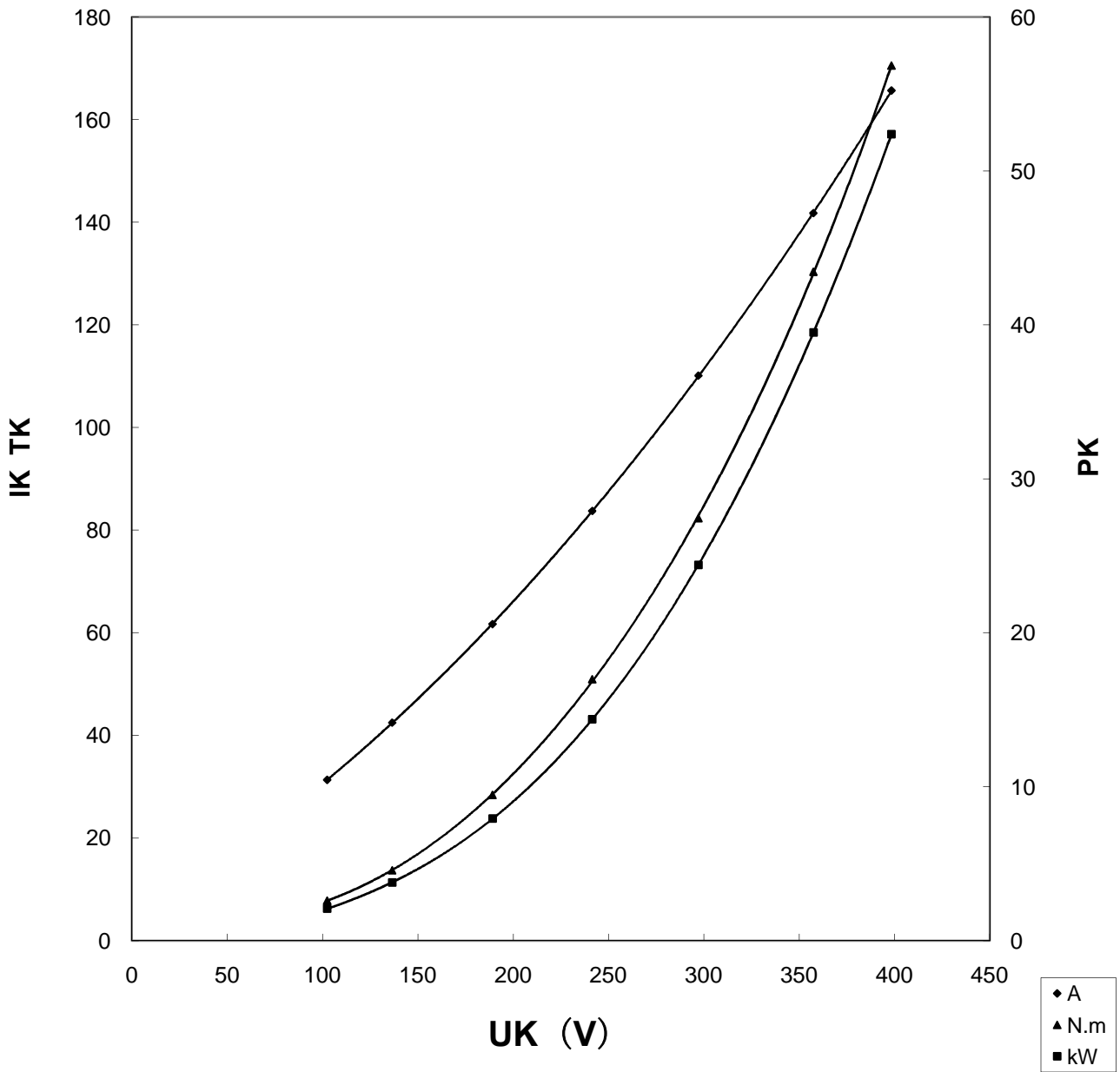
Type	K160M-4		Poles	4		Power	11,0		IE:3	kW
Voltage	400	V	Current	20,9	A	Frequency	50,0		Hz	
Speed	1471	r/min	Duty	S1		Connection	Δ			
Ins.class	F		Weight	150	kg		IP55			
LOCKED ROTOR TEST										
VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torqur (kg.m)	
398,4	1,0	1,656	1,658	1,655	100,0	-65,5	589,3	100,0	17,40	
357,5	1,0	1,418	1,419	1,415	100,0	-55,3	450,4	100,0	13,30	
297,2	1,0	2,203	2,204	2,198	50,0	-85,4	573,5	50,0	8,40	
241,5	1,0	1,675	1,677	1,671	50,0	-60,6	348,2	50,0	5,20	
189,2	1,0	1,235	1,235	1,231	50,0	-39,7	198,2	50,0	2,90	
136,5	1,0	2,118	2,138	2,115	20,0	-55,2	244,2	20,0	1,40	
102,4	1,0	1,561	1,582	1,557	20,0	-30,9	134,7	20,0	0,80	
data calculation of locked rotor										
Uk	IK	PK	TK			LOGUk	LOGIk	LOGPk	LOGTk	
V	A	kW	N.m							
398,42	165,63	52,380	170,52			2,6003	2,2192	1,7192	2,2318	
357,47	141,75	39,510	130,34			2,5532	2,1515	1,5967	2,1151	
297,16	110,09	24,405	82,32			2,4730	2,0417	1,3875	1,9155	
241,47	83,72	14,380	50,96			2,3829	1,9229	1,1578	1,7072	
189,16	61,68	7,925	28,42			2,2768	1,7902	0,8990	1,4536	
136,53	42,47	3,780	13,72			2,1352	1,6281	0,5775	1,1374	
102,42	31,33	2,076	7,84			2,0104	1,4960	0,3172	0,8943	
performance collection of locked rotor										
	at rated volts		at rated current		at 2.5 times rated current		at 100V			
VOLTS (V)	400		68,966		159,3		100,0			
AMPS (A)	166,6		20,4		51,0		30,16			
INPUT (kW)	52,88				5,7		1,673			
TORQUE (N.m)	172,07									

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160M-4	Poles	4	Power	11,0	IE:3
Voltage	400 V	Current	20,9 A	Frequency	50,0	Hz
Speed	1471 r/min	Duty	S1	Connection	Δ	
Ins.class	F	Weight	150 kg			IP55

Locked Rotor Curve



VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160M-4		Poles	4		Power	11 kW		IE:3		
Voltage	400	V	Current	20,9	A	Frequency	50 Hz				
Speed	1471	r/min	Duty	S1		Connection	Δ				
Ins.class	F		Weight	150	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	
18,00	399,9	2,103	2,107	2,102	10	361,2	852,0	10	36,0	—	53,5	51,7	—	—	—	—	—	—	—	—	—	11,3
18,30	400,0	2,106	2,110	2,105	10	362,2	852,9	10	38,0	—	56,1	54,2	—	—	—	—	—	—	—	—	—	10,9
18,59	400,1	2,100	2,105	2,100	10	361,1	851,5	10	39,5	—	58,1	56,0	—	—	—	—	—	—	—	—	—	10,8
19,31	399,9	2,096	2,100	2,096	10	361,0	848,9	10	40,0	—	58,8	56,8	—	—	—	—	—	—	—	—	—	10,7
19,57	399,9	2,088	2,092	2,088	10	358,1	846,0	10	39,2	—	58,7	56,8	—	—	—	—	—	—	—	—	—	10,6
The average of the last three		20,961			A	12088,7		W	39,2	—	58,5	56,8	—	—	—	—	—	—	—	—	—	10,7

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)	51	67	79	94	111	132	148	168		
RESISTANC	0,4568	0,4554	0,4545	0,4536	0,4527	0,4516	0,4508	0,4500		

WINDING RESISTANCE(COLD)

Δ	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	0,3837	0,3836	0,3835	0,38360	0,38350	9,6 °C
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
						°C

resistance value at 0 sec (Ω)

0,461263

calculation value of temp.rising

48,50 K

30 S (Ω)

0,458507

calculation value of temp.rising

46,74 K

full load curent

20,91 A

modify value of temp. rising

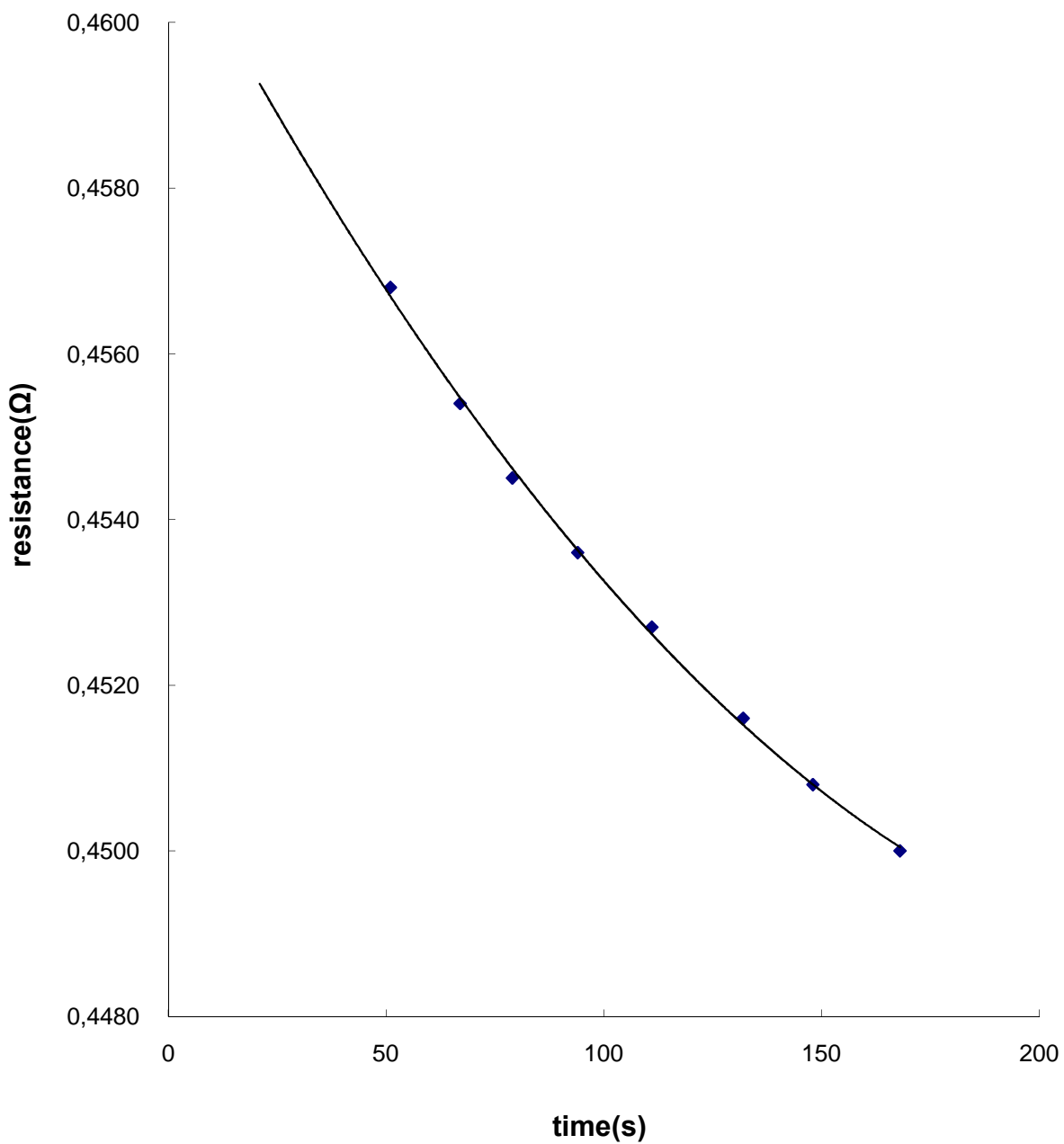
46,53 K

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160M-4	Poles	4	output Power	11,0	IE:3
Voltage	400 V	Current	20,9 A	Frequency	50,0	kW
Speed	1471 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	150 kg		IP55	

RESISTANCE CURVE



VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160M-4		Poles	4		Power	11,0		IE:3			
Voltage	400	V	Current	20,9	A	Frequency	50,0		kW			
Speed	1471	r/min	Duty	S1		Connection	Δ		Hz			
Ins.class	F		Weight	150	kg			IP55				

LOAD TEST

V	HZ	I1	I2	I3	mul.	W1	W2	mul.	r/min	Resistance Ω	Temperature °C	Torque N.m
399,9	50,02	3,043	3,051	3,043	10	608,5	1234,2	10	1457,1	0,4622	59,7	108,45
400,3	50,01	2,555	2,562	2,554	10	486,5	1037,7	10	1464,8	0,4637	60,7	90,05
400,0	50,02	2,103	2,110	2,102	10	360,9	851,3	10	1472,1	0,4642	61,0	71,54
400,1	50,02	1,706	1,713	1,705	10	233,7	683,3	10	1478,8	0,4625	59,9	53,63
400,3	50,01	1,490	1,496	1,488	10	154,5	585,8	10	1482,7	0,4617	59,4	42,84
400,0	50,02	2,727	2,739	2,739	5	205,7	1047,1	5	1485,1	0,4595	58,0	35,93
400,3	50,02	2,213	2,224	2,219	5	-69,7	744,7	5	1491,1	0,4568	56,3	18,01
400,1	50,0	2,129	2,137	2,133	5,0	-310,0	498,0	5	1499,1	0,4557	55,6	2,65
400,1	50,0	2,117	2,127	2,123	5,0	-360,2	448,7	5	1500,0	0,4503	52,1	0,00

slope A= 0,02215

intercept B= 17,86

relative coefficient r= 0,994

LOAD %	P2 W	I A	P1 W	Pcu1s W	Ss %	Pcu2s W	Ps W	Pz W	N.m	EFF %	P.F
150,0	16500	30,28	18313,3	665,4	3,014	522,6	259,8	1811,9	108,3	90,10	0,873
125,0	13750	25,38	15112,5	467,5	2,448	350,9	178,5	1361,1	89,8	90,98	0,859
100,0	11000	20,91	12019,1	317,3	1,963	223,6	113,0	1018,1	71,4	91,52	0,830
75,0	8250	16,89	9011,4	206,9	1,493	126,9	62,6	760,5	53,2	91,55	0,770
50,0	5500	13,52	6085,6	132,6	1,062	59,9	27,6	584,3	35,3	90,38	0,650
25,0	2750	10,96	3225,2	87,1	0,649	18,4	6,9	476,5	17,6	85,27	0,425

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160M-4		Poles	4		output Power	11,0 kW		IE:3
Voltage	400	V	Current	20,9	A	Frequency	50,0 Hz		
Speed	1471	r/min	Duty	S1		Connection	Δ		
Ins.class	F		Weight	150	kg		IP55		

LOAD CURVE

