

# VALIADIS S.A.

## ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K90S-2		Poles	2		Power	1,5	kW	IE:3
Voltage	400	V	Current	3,0	A	Frequency	50	Hz	
Speed	2906	r/min	Duty	S1		Connecti	Y		
Ins.class	F		Weight	30	kg		IP55		
MAJOR CONTENTS					TEST VALUE				
95,0 °C PHASE RESISTANCE OF WINDING					Ω	3,7306			
NO LOAD CURRENT					A	1,273			
NO LOAD INPUT					W	129,34			
CORE LOSS(Pfe)					W	62,19			
WINDAGE FRICTION LOSS(Pfw)					W	52,37			
STATOR WINDING LOSS(Pcu1)					W	97,04			
ROTOR WINDING LOSS(Pcu2)					W	51,37			
STRAY LOAD LOSS(Ps)					W	26,31			
LOCKED ROTOR CURRENT					A	24,694			
LOCKED ROTOR INPUT @ FULL LOAD					W	12892			
LOCKED ROTOR TORQUE					N.m	13,7			
PULL OUT TORQUE					N.m	17,6			
LOCKED ROTOR CURRENT/RATED CURRENT					P.U	8,13			
LOCKED ROTOR TORQUE/RATED TORQUE					P.U	2,75			
PULL OUT TORQUE/RATED TORQUE					P.U	3,53			
FULL LOAD TORQUE					N.m	4,9			
FULL LOAD CURRENT					A	3,04			
FULL LOAD SLIP					%	3,149			
INPUT @ FULL LOAD					kW	1,790			
FULL LOAD SPEED					r/min	2905,5			
EFFICIENCY @ FULL LOAD					%	83,78			
EFFICIENCY @ 75% LOAD					%	83,58			
POWER FACTOR @ FULL LOAD						0,850			
STATOR WINDING TEMPERATURE RISE					K	46			
D.E. BEARINGS TEMPERATURE BY PT100					°C	35,8			
STATOR WINDING TEMPERATURE					°C	39,7			
High voltage test					V	1800	Imin		
Insulation resistance					MΩ	500			
NOISE ( LW)					dB(A)	67			
VIBRATION					mm/s	0,3			

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Speed	2906	r/min	Duty	S1		Connection	Y				
Ins.class	F		Weight	30	kg			IP55			
NO LOAD TEST											
VOL	mul.	HZ	I01	I02	I03	mul.	W1	W2	mul.	°C	Ω
472,8	1	50	1,819	1,808	1,828	1	-331,4	500,6	1	33,9	3,0399
435,5	1	50	1,489	1,476	1,494	1	-240,3	384,2	1	33,9	3,0399
400,5	1	50	1,279	1,266	1,283	1	-180,7	310,3	1	33,8	3,0388
356,8	1	50	1,082	1,072	1,086	1	-126,1	238,3	1	33,7	3,0376
304,0	1	50	0,896	0,885	0,898	1	-74,5	173,0	1	33,7	3,0376
249,8	1	50	0,728	0,717	0,726	1	-33,9	119,9	1	33,6	3,0365
199,8	1	50	0,602	0,593	0,598	1	-6,3	83,4	1	33,5	3,0354
182,4	1	50	0,568	0,557	0,561	1	0	72,0	1	33,2	3,0320
160,9	1	50	0,534	0,523	0,525	1	8,8	60,0	1	33,1	3,0309
117,9	1	50	0,512	0,501	0,501	1	21,4	40,7	1	33,0	3,0297
data calculation of no load											
V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'					
118,2%	1,18	1,818	169,2	1,397	30,15	139,03					
108,9%	1,09	1,486	143,9	1,185	20,15	123,71					
100,1%	1,00	1,276	129,6	1,003	14,84	114,73					
89,2%	0,89	1,080	112,2	0,796	10,63	101,61					
76,0%	0,76	0,893	98,5	0,578	7,27	91,20					
62,4%	0,62	0,724	86,0	0,390	4,77	81,18					
49,9%	0,50	0,598	77,1	0,249	3,25	73,85					
45,6%	0,46	0,562	72,0	0,208	2,87	69,16					
40,2%	0,40	0,527	68,8	0,162	2,53	66,25					
29,5%	0,29	0,504	62,1	0,087	2,31	59,76					
RESULTS AT: 400 V											
N.L.AMP	1,27	N.L.LOSS(W)	129,34	Pw(W)	52,4	Pe(W)	62,2				

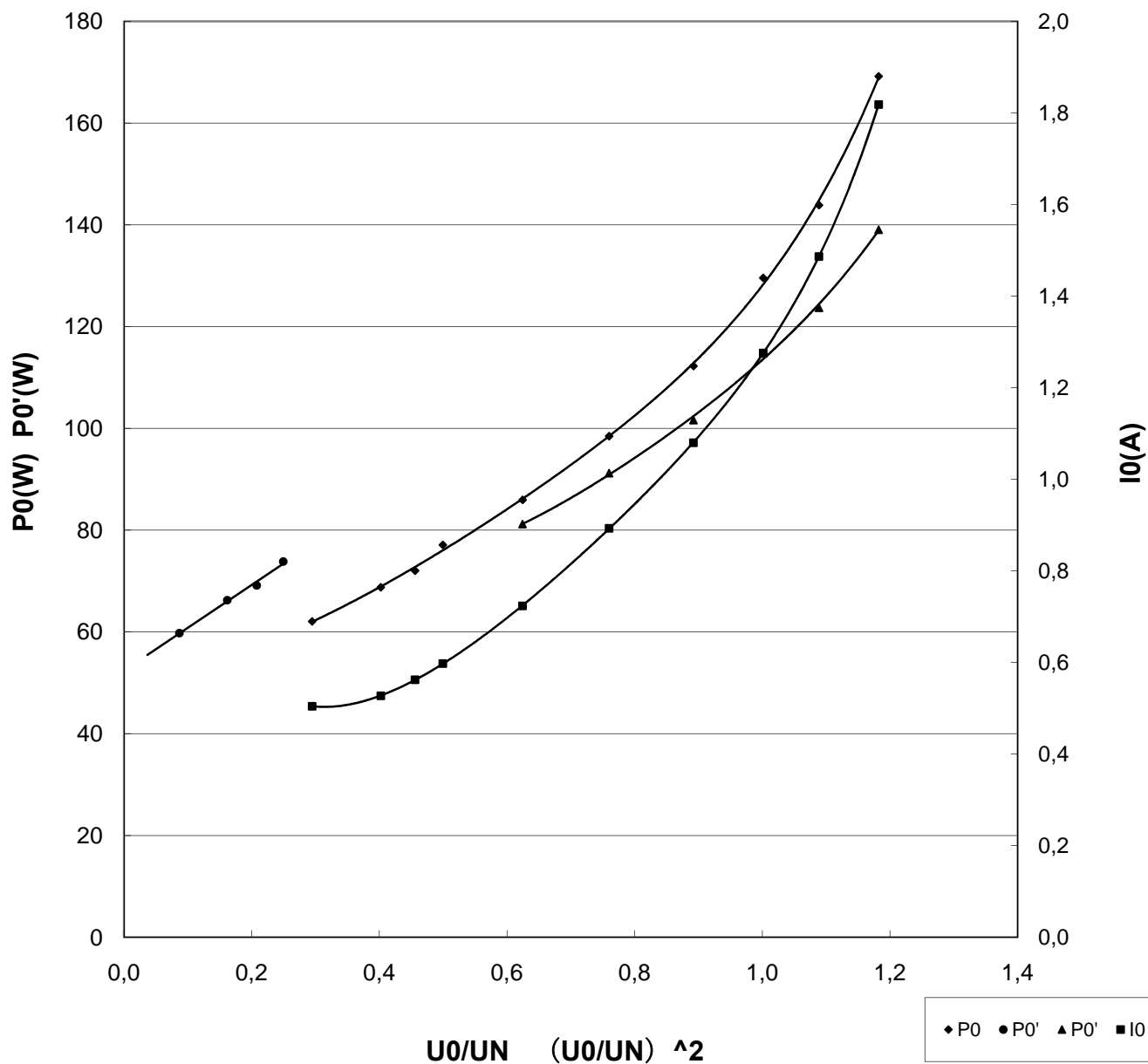
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## ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K90S-2		Poles	2		Power	1,5 kW	
Voltage	400	V	Current	3,0	A	Frequency	50,0 Hz	
Speed	2906	r/min	Duty	S1		Connection	Y	
Ins.class	F		Weight	30	kg	IP55		

IE:3

### No Load Curve



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## ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

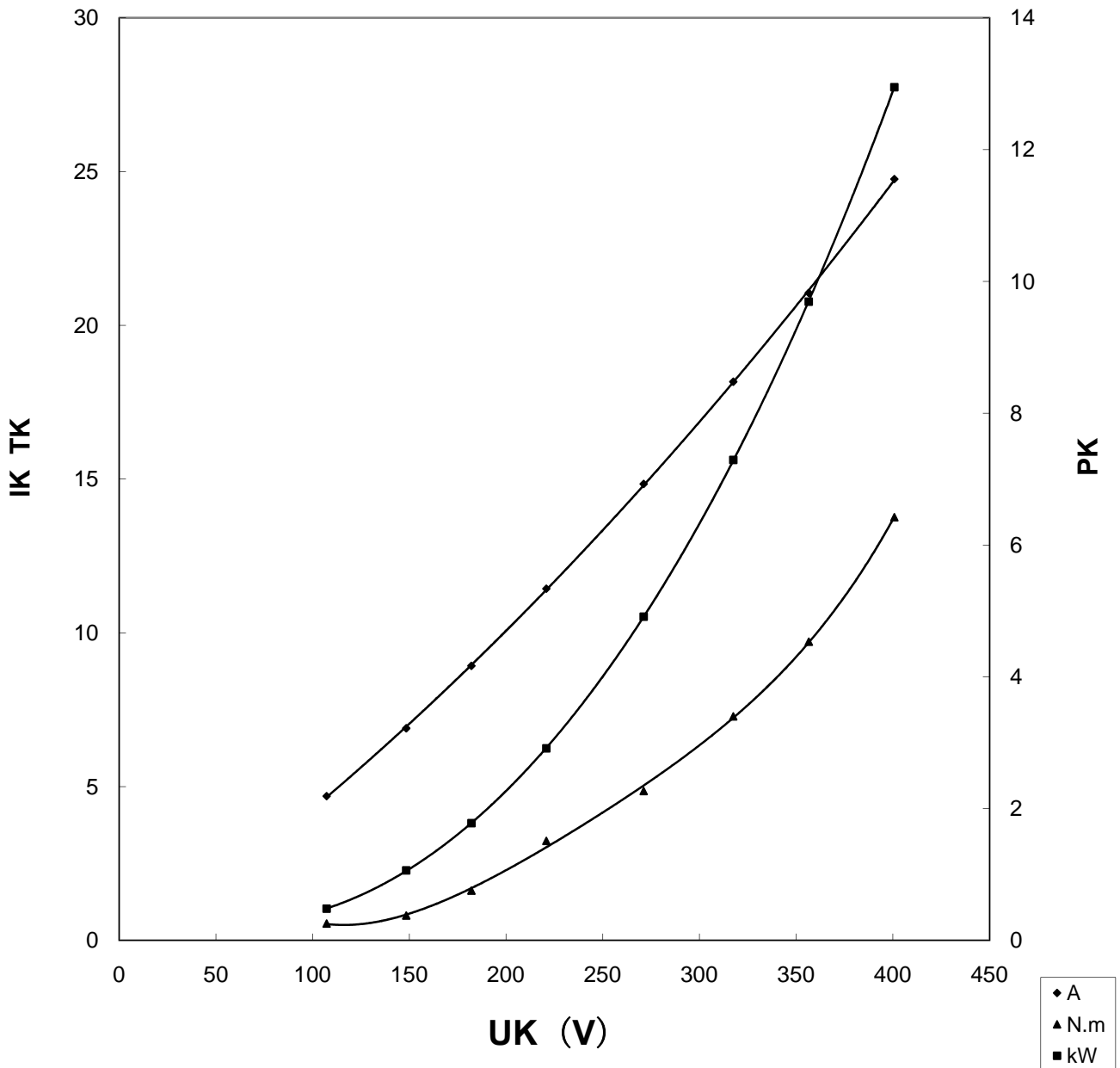
Type	K90S-2		Poles	2		Power	1,5		IE:3	kW
Voltage	400	V	Current	3,0	A	Frequency	50,0		Hz	
Speed	2906	r/min	Duty	S1		Connection	Y			
Ins.class	F		Weight	30	kg		IP55			
LOCKED ROTOR TEST										
VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torqu ( kg.m)	
						W				
400,7	1,0	2,523	2,490	2,414	10,0	260,4	1034,2	10,0	1,40	
356,5	1,0	2,152	2,117	2,047	10,0	188,1	781,1	10,0	0,99	
317,5	1,0	1,863	1,827	1,759	10,0	131,1	597,9	10,0	0,74	
271,2	1,0	1,528	1,492	1,434	10,0	77,7	413,6	10,0	0,50	
220,8	1,0	2,357	2,297	2,207	5,0	71,4	511,6	5,0	0,33	
182,1	1,0	1,839	1,792	1,726	5,0	31,9	323,8	5,0	0,17	
148,4	1,0	1,418	1,383	1,338	5,0	12,3	200,0	5,0	0,08	
107,3	1,0	2,404	2,347	2,286	2,0	0,0	240,2	2,0	0,06	
data calculation of locked rotor										
Uk	IK	PK	TK	LOGUk	LOGIk	LOGPk	LOGTk			
V	A	kW	N.m							
400,74	24,76	12,946	13,76	2,6029	1,3937	1,1121	1,1386			
356,53	21,05	9,692	9,71	2,5521	1,3233	0,9864	0,9873			
317,47	18,17	7,290	7,28	2,5017	1,2593	0,8627	0,8624			
271,16	14,84	4,913	4,86	2,4332	1,1715	0,6913	0,6863			
220,84	11,44	2,915	3,24	2,3441	1,0582	0,4646	0,5102			
182,11	8,93	1,779	1,62	2,2603	0,9508	0,2501	0,2091			
148,42	6,90	1,062	0,81	2,1715	0,8387	0,0259	-0,0919			
107,26	4,69	0,480	0,55	2,0305	0,6713	-0,3184	-0,2606			
performance collection of locked rotor										
at rated volts		at rated current		at 2.5 times rated current		at 100V				
VOLTS ( V )		400		78,756		160,1		100,0		
AMPS ( A )		24,7		3,0		7,6		4,15		
INPUT ( kW )		12,89				1,3		0,177		
TORQUE ( N.m)		13,69								

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Type	K90S-2	Poles	2	Power	1,5	IE:3
Voltage	400 V	Current	3,0 A	Frequency	50,0	kW
Speed	2906 r/min	Duty	S1	Connection	Y	Hz
Ins.class	F	Weight	30 kg			IP55

### Locked Rotor Curve



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## ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K90S-2		Poles	2		Power	1,5	kW	IE:3	
Voltage	400	V	Current	3,0	A	Frequency	50	Hz		
Speed	2906	r/min	Duty	S1		Connection	Y			
Ins.class	F		Weight	30	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	
9,00	400,3	1,535	1,527	1,529	2	308,5	621,1	2	35,0	—	40,8	36,4	—	—	—	—	—	—	—	—	—	6,0
9,30	400,1	1,531	1,525	1,530	2	308,0	619,0	2	35,4	—	40,5	36,0	—	—	—	—	—	—	—	—	—	6,0
10,00	400,1	1,526	1,520	1,525	2	305,1	615,6	2	35,8	—	40,1	35,6	—	—	—	—	—	—	—	—	—	5,9
10,30	400,0	1,534	1,528	1,531	2	307,4	618,8	2	35,8	—	39,7	35,2	—	—	—	—	—	—	—	—	—	5,7
The average of the last three		3,056		A		1849,27		W	35,8	—	40,1	35,2	—	—	—	—	—	—	—	—	—	5,9

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)	44	63	74	88	100	113	129	144		
RESISTANC	3,2368	3,2211	3,2147	3,2068	3,2000	3,1937	3,1868	3,1805		

### WINDING RESISTANCE(COLD)

Δ	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
	2,7494	2,7458	2,7495	2,748	2,7458	8,1 °C

resistance value at 0 sec ( Ω )

3,274215

calculation value of temp.rising

49,02 K

30 S ( Ω )

3,246876

calculation value of temp.rising

46,60 K

full load curent

3,04 A

modify value of temp. rising

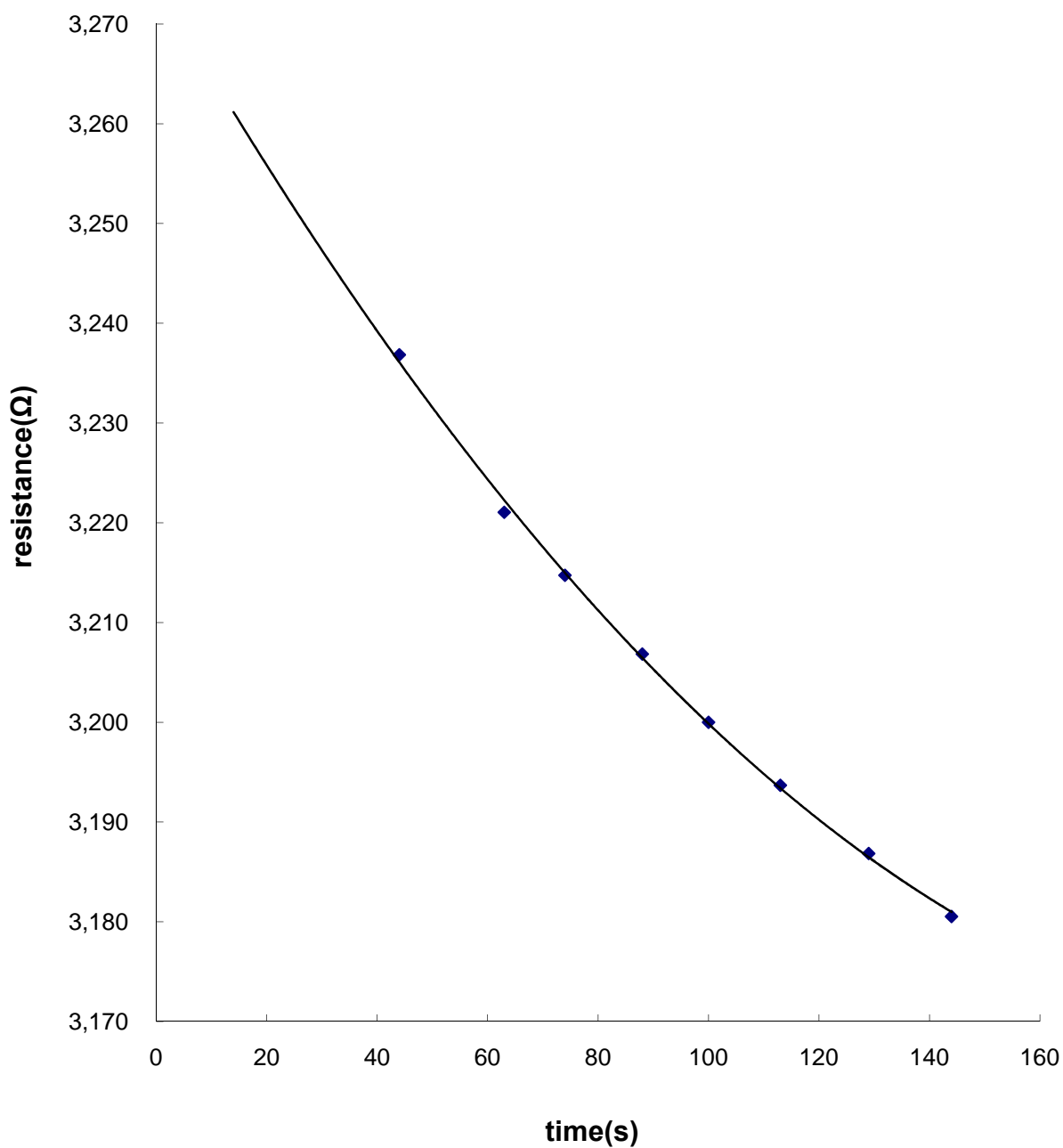
46,09 K

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## ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K90S-2		Poles	2		output Power	1,5	IE:3 kW
Voltage	400	V	Current	3,0	A	Frequency	50,0	Hz
Speed	2906	r/min	Duty	S1		Connection	Y	
Ins.class		F	Weight	30	kg		IP55	

### RESISTANCE CURVE



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Voltage	400	V	Current	3,0	A	Frequency	50,0		kW			
Speed	2906	r/min	Duty	S1		Connection	Y					
Ins.class	F		Weight	30	kg	IP55						
LOAD TEST												
V	HZ	I1	I2	I3	mul.	W1	W2	mul.	r/min	Resistance Ω	Temperature °C	Torque N.m
400,3	50,00	2,324	2,319	2,323	2	507,0	916,2	2	2854,2	3,0851	37,9	7,57
400,1	50,00	1,915	1,909	1,913	2	404,3	755,5	2	2883,2	3,0896	38,3	6,17
400,2	49,99	1,569	1,562	1,566	2	309,3	619,5	2	2908,3	3,0942	38,7	4,88
400,1	50,00	1,260	1,251	1,257	2	210,5	493,3	2	2931,2	2,9438	39,1	3,62
399,9	50,00	1,000	0,990	0,997	2	125,3	383,7	2	2950,2	2,9427	39,0	2,47
400,0	50,00	0,935	0,925	0,934	2	95,0	353,4	2	2955,6	2,9405	38,8	2,11
400,2	50,00	0,816	0,806	0,816	2	43,7	294,9	2	2966,1	2,9320	38,0	1,44
400,2	50,0	0,639	0,631	0,645	2,0	38,7	285,1	2	2973,9	3,0817	37,6	1,38
400,0	50,0	1,279	1,269	1,273	1,0	-179,1	309,7	1	3000,0	3,0422	34,1	0,00
slope A= 1,07170                                  intercept B= 0,70                                  relative coefficient r= 0,996												
LOAD %	P2 W	I A	P1 W	Pcu1s W	Ss %	Pcu2s W	Ps W	Pz W	N.m	EFF %	P.F	
150,0	2250	4,53	2771,0	215,3	5,097	127,1	62,4	519,3	7,6	81,20	0,884	
125,0	1875	3,74	2263,9	147,1	4,085	83,9	42,2	387,8	6,3	82,82	0,873	
100,0	1500	3,04	1790,4	97,0	3,149	51,4	26,3	289,3	5,0	83,78	0,850	
75,0	1125	2,43	1346,0	62,0	2,357	28,8	14,7	220,1	3,7	83,58	0,800	
50,0	750	1,89	922,0	37,5	1,632	13,4	6,4	171,9	2,4	81,34	0,704	
25,0	375	1,45	514,9	22,1	0,944	4,1	1,6	142,3	1,2	72,83	0,513	



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Voltage	400	V	Current	3,0	A	Frequency	50,0 Hz		
Speed	2906	r/min	Duty	S1		Connection	Y		
Ins.class	F		Weight	27	kg	IP55			

### Load Curve

