

# VALIADIS S.A.

## ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

						IE:3
Type	K315M-4		Poles	4	Power	132,0 kW
Voltage	400	V	Current	223,8 A	Frequency	50 Hz
Speed	1485	r/min	Duty	S1	Connection	Δ
Ins.class	F		Weight	1160 kg	IP55	
MAJOR CONTENTS				TEST VALUE		
95,0 °C PHASE RESISTANCE OF WINDING	Ω			0,0336		
NO LOAD CURRENT	A			51,251		
NO LOAD INPUT	W			1980,23		
CORE LOSS(Pfe)	W			1196,25		
WINDAGE FRICTION LOSS(Pfw)	W			701,37		
STATOR WINDING LOSS(Pcu1)	W			1643,47		
ROTOR WINDING LOSS(Pcu2)	W			1367,18		
STRAY LOAD LOSS(Ps)	W			1090,16		
LOCKED ROTOR CURRENT	A			1499,329		
LOCKED ROTOR INPUT @ FULL LOAD	W			340763		
LOCKED ROTOR TORQUE	N.m			1821,0		
PULL OUT TORQUE	N.m			2411,3		
LOCKED ROTOR CURRENT/RATED CURRENT	P.U			6,70		
LOCKED ROTOR TORQUE/RATED TORQUE	P.U			2,14		
PULL OUT TORQUE/RATED TORQUE	P.U			2,83		
FULL LOAD TORQUE	N.m			849,4		
FULL LOAD CURRENT	A			223,8		
FULL LOAD SLIP	%			1,011		
INPUT @ FULL LOAD	kW			138,020		
FULL LOAD SPEED	r/min			1484,8		
EFFICIENCY @ FULL LOAD	%			95,64		
EFFICIENCY @ 75% LOAD	%			95,94		
POWER FACTOR @ FULL LOAD				0,890		
STATOR WINDING TEMPERATURE RISE	K			60		
D.E. BEARINGS TEMPERATURE BY PT100	°C			56,3		
STATOR WINDING TEMPERATURE	°C			86,1		
High voltage test	V	1800	Imin			
Insulation resistance	MΩ			500		
NOISE(LW)	dB(A)			83		
VIBRATION	mm/s			0,9		

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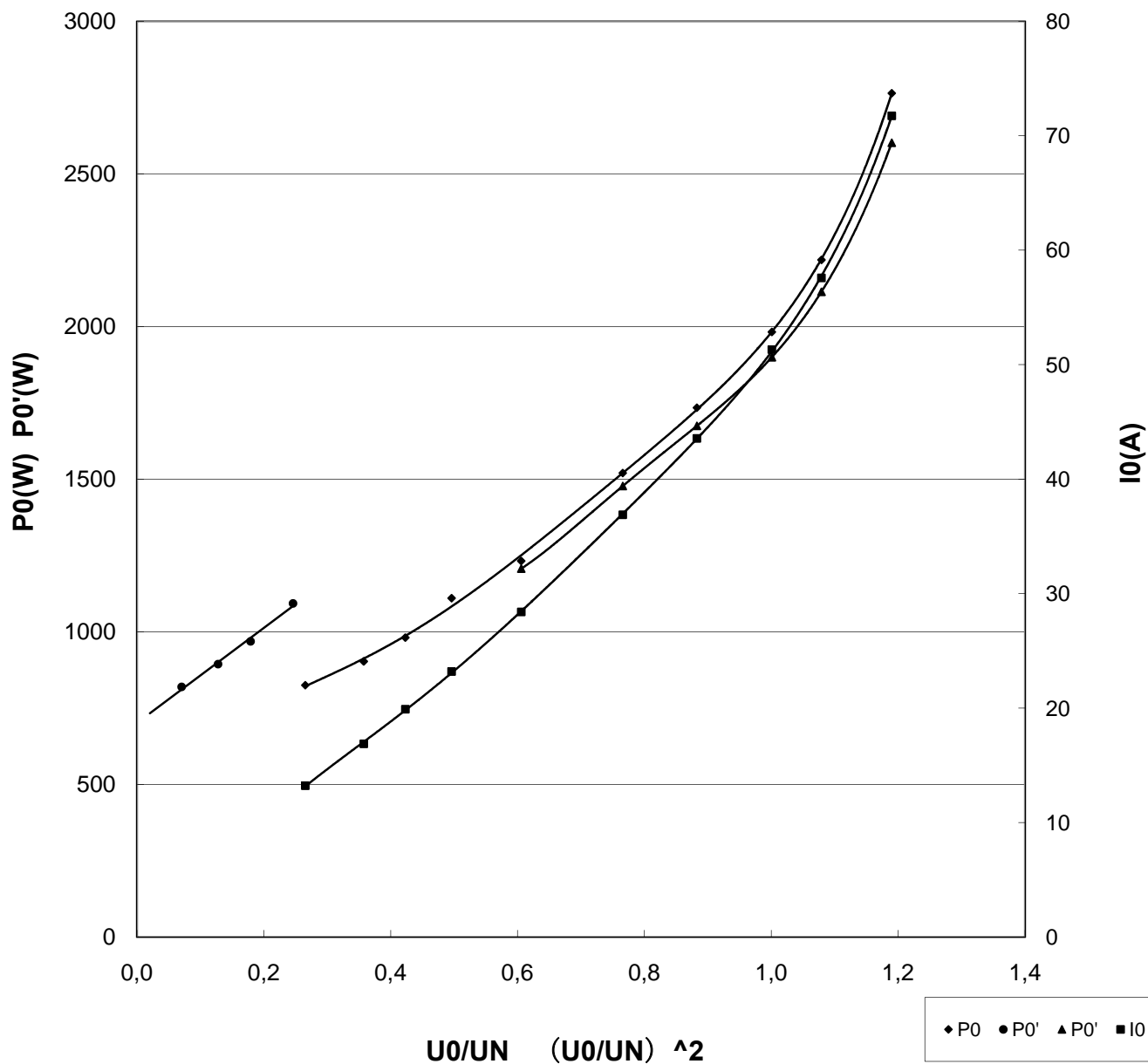
Type	K315M-4		Poles	4		Power	132,0 kW		IE:3		
Voltage	400	V	Current	223,8	A	Frequency	50 Hz				
Speed	1485	r/min	Duty	S1		Connection	△				
Ins.class	F		Weight	1160	kg			IP55			
NO LOAD TEST											
VOL	mul.	HZ	I01	I02	I03	mul.	W1	W2	mul.	°C	Ω
475,9	1	50	3,500	3,682	3,577	20	-750,9	889,1	20	74,4	0,02101
431,6	1	50	2,790	2,979	2,868	20	-543,5	654,4	20	74,1	0,02099
400,3	1	50	2,487	2,657	2,552	20	-447	546,1	20	73,7	0,02096
353,1	1	50	2,101	2,277	2,156	20	-332,1	418,8	20	73,4	0,02094
306,3	1	50	1,766	1,955	1,812	20	-242,3	318,3	20	73,1	0,02092
242,3	1	50	1,354	1,519	1,387	20	-141,9	203,5	20	72,8	0,02090
198,4	1	50	1,088	1,270	1,121	20	-90,3	145,8	20	72,5	0,02088
169,3	1	50	1,989	1,967	2,016	10	-104,6	202,7	10	71,9	0,02084
143,1	1	50	1,689	1,666	1,709	10	-63,6	153,9	10	71,7	0,02083
106,2	1	50	1,324	1,301	1,341	10	-18,8	101,3	10	71,5	0,02081
data calculation of no load											
V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'					
119,0%	1,19	71,727	2764,0	1,415	162,15	2601,85					
107,9%	1,08	57,580	2218,0	1,164	104,39	2113,61					
100,1%	1,00	51,307	1982,0	1,002	82,78	1899,22					
88,3%	0,88	43,560	1734,0	0,779	59,61	1674,39					
76,6%	0,77	36,887	1520,0	0,586	42,70	1477,30					
60,6%	0,61	28,400	1232,0	0,367	25,29	1206,71					
49,6%	0,50	23,193	1110,0	0,246	16,85	1093,15					
42,3%	0,42	19,907	981,0	0,179	12,39	968,61					
35,8%	0,36	16,880	903,0	0,128	8,90	894,10					
26,6%	0,27	13,220	825,0	0,071	5,46	819,54					
RESULTS AT: 400 V											
N.L.AMP	51,25	N.L.LOSS(W)	1980,23	Pw(W)	701,4	Pe(W)	1196,2				

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Type	K315M-4		Poles	4		Power	132,0 kW		IE:3
Voltage	400	V	Current	223,8	A	Frequency	50,0 Hz		
Speed	1485	r/min	Duty	S1		Connection	Δ		
Ins.class	F		Weight	1160	kg		IP55		

### No Load Curve



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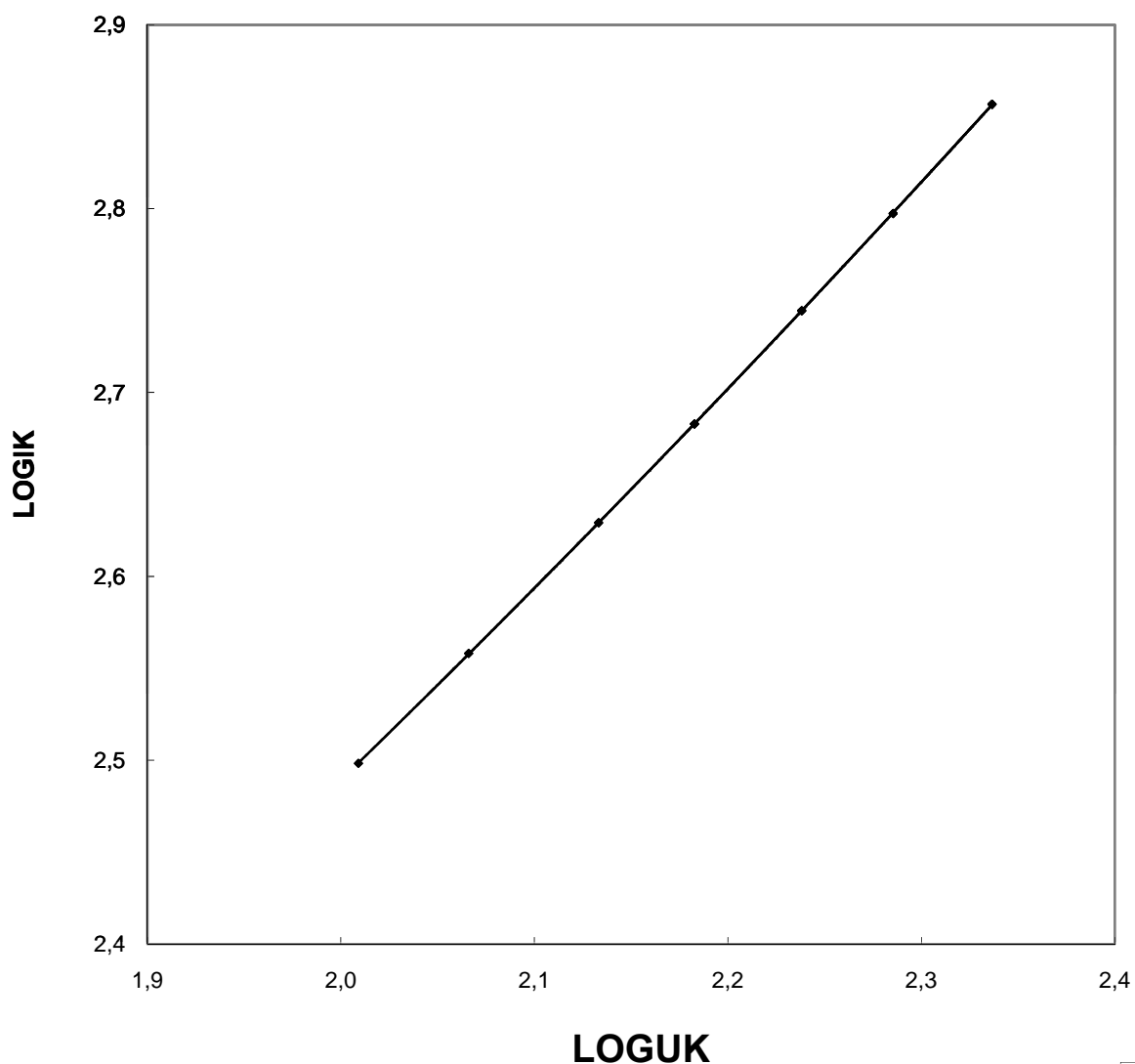
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Voltage	400	V	Current	223,8	A	Frequency	50,0		Hz	
Speed	1485	r/min	Duty	S1		Connection	Δ			
Ins.class	F		Weight	1160	kg		IP55			
LOCKED ROTOR TEST										
VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torqu ( kg.m)	
217,1	1,0	3,575	3,585	3,627	200,0	-158,9	579,1	200,0	42,8	
192,9	1,0	3,119	3,127	3,162	200,0	-127,4	446,5	200,0	32,6	
173,1	1,0	2,763	2,768	2,799	200,0	-103,7	353,7	200,0	25,3	
152,3	1,0	2,397	2,403	2,428	200,0	-80,2	268,4	200,0	19,2	
135,9	1,0	2,120	2,123	2,144	200,0	-64,6	211,4	200,0	14,8	
116,4	1,0	3,601	3,602	3,643	100,0	-95,4	306,5	100,0	10,7	
102,1	1,0	3,136	3,141	3,173	100,0	-73,1	234,0	100,0	8,1	
data calculation of locked rotor										
Uk	IK	PK	TK		LOGUk	LOGIk	LOGPk	LOGTk		
V	A	kW	N.m							
217,05	719,15	84,040	418,95		2,3366	2,8568	1,9245	2,6222		
192,95	627,21	63,820	318,99		2,2854	2,7974	1,8050	2,5038		
173,05	555,30	50,000	247,94		2,2382	2,7445	1,6990	2,3943		
152,32	481,86	37,640	187,67		2,1827	2,6829	1,5756	2,2734		
135,89	425,78	29,360	145,04		2,1332	2,6292	1,4678	2,1615		
116,42	361,49	21,110	104,37		2,0660	2,5581	1,3245	2,0186		
102,11	314,98	16,090	78,89		2,0090	2,4983	1,2066	1,8970		
performance collection of locked rotor										
	at rated volts		at rated current		at 2.5 times rated current		at 100V			
VOLTS ( V )	400		75,164		173,8		100,0			
AMPS ( A )	1499,3		223,9		559,8		305,97			
INPUT ( kW )	340,76				50,8		15,147			
TORQUE ( N.m)	1821,04									

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Voltage	400 V	Current	223,8 A	Frequency	50,0	kW
Speed	1485 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	1160 kg		IP55	

### LOCKED



◆ LOGIK

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Voltage	400	V	Current	223,8	A	Frequency	50	Hz			
Speed	1485	r/min	Duty	S1		Connection	Δ				
Ins.class	F		Weight	1160	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	
10,30	400,4	2,249	2,250	2,280	100	507,7	889,9	100	50,6	—	67,3	65,8	—	—	—	—	—	—	31,7	—	9,2	
11,01	400,3	2,256	2,258	2,287	100	509,9	892,5	100	52,2	—	72,0	71,3	—	—	—	—	—	—	34,3	—	9,2	
11,26	400,3	2,239	2,242	2,271	100	506,9	886,4	100	53,6	—	75,6	74,2	—	—	—	—	—	—	36,0	—	9,6	
12,00	400,3	2,259	2,261	2,290	100	512,1	893,7	100	54,5	—	79,9	78,5	—	—	—	—	—	—	37,7	—	9,7	
12,30	400,3	2,284	2,285	2,315	100	517,8	903,4	100	55,9	—	83,3	81,9	—	—	—	—	—	—	40,5	—	10,3	
12,58	400,3	2,248	2,250	2,278	100	510,3	889,6	100	56,3	—	85,2	83,7	—	—	—	—	—	—	41,9	—	10,6	
13,29	400,3	2,256	2,257	2,287	100	512,3	892,6	100	56,2	—	85,8	84,4	—	—	—	—	—	—	42,4	—	10,8	
13,59	400,4	2,213	2,216	2,244	100	502,9	876,1	100	56,3	—	86,1	84,7	—	—	—	—	—	—	42,4	—	11,0	
The average of the last three		225,000		A		139460		W		56,3	—	85,7	84,7	—	—	—	—	—	—	42,4	—	10,8

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)	50	99	135	186	222	255	320	370		
RESISTANCE ( Ω )	0,02083	0,02074	0,02067	0,02058	0,02053	0,02047	0,02039	0,02035		

### WINDING RESISTANCE(COLD)

Δ	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	0,01653	0,01654	0,01658	0,01655	0,01653	8,7 °C
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
						°C

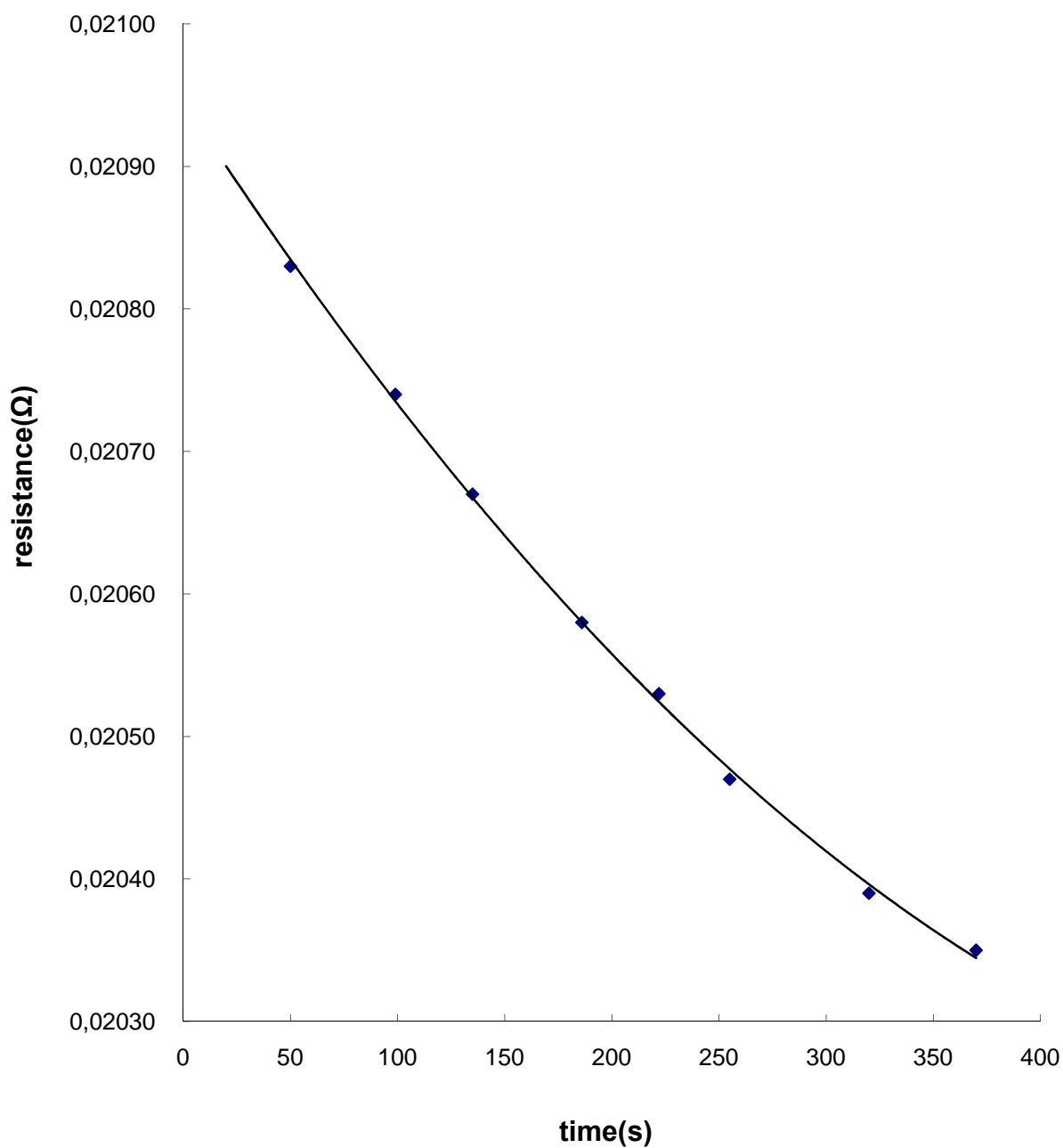
resistance value at 0 sec ( Ω )		0,020946	calculation value of temp.rising	63,00	K
90 S ( Ω )		0,020755	calculation value of temp.rising	60,20	K
full load curent		223,81 A	modify value of temp. rising	59,56	K

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Voltage	400 V	Current	223,8 A	Frequency	50,0	kW
Speed	1485 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	1160 kg		IP55	

### RESISTANCE CURVE



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Speed	1485	r/min	Duty	S1	Connection	Δ			Hz			
Ins.class	F		Weight	1160	kg					IP55		
LOAD TEST												
V	HZ	I1	I2	I3	mul.	W1	W2	mul.	r/min	Resistance Ω	Temperature °C	Torque N.m
400,2	50,01	3,487	3,493	3,540	100	733,6	1377,8	100	1476,2	0,0218	86,2	1286,9
400,2	50,00	2,834	2,837	2,874	100	627,1	1117,3	100	1481,1	0,0219	87,5	1067,7
400,2	50,00	2,183	2,186	2,213	100	493,3	860,7	100	1485,7	0,0219	87,9	829,82
400,4	50,00	1,709	1,711	1,732	100	377,8	673,9	100	1489,3	0,0219	87,1	642,71
400,2	49,99	1,181	1,182	1,196	100	228,1	465,0	100	1493	0,0218	86,4	419,4
400,2	50,00	0,860	0,860	0,869	100	123,6	334,1	100	1495,5	0,0218	85,5	274,79
400,3	49,99	0,730	0,730	0,737	100	74,5	276,8	100	1496,4	0,0217	85	209,19
400,3	50,0	2,515	2,622	2,581	20,0	-415,5	562,4	20	1499,5	0,0216	83,0	5,31
400,2	50,0	2,490	2,668	2,554	20,0	-447,9	549,0	20	1500,0	0,0210	74,9	0,00
slope A=	0,00152		intercept B=	394,5	relative coefficient r=			0,972				
LOAD %	P2 W	I A	P1 W	Pcu1s W	Ss %	Pcu2s W	Ps W	Pz W	N.m	EFF %	P.F	
150,0	198000	348,23	209783,1	3978,7	1,663	3403,6	2490,9	11770,9	1279,3	94,38	0,870	
125,0	165000	283,18	173463,5	2631,1	1,302	2208,6	1717,7	8455,0	1062,3	95,12	0,884	
100,0	132000	223,81	138020,1	1643,5	1,011	1367,2	1090,2	5998,4	846,3	95,64	0,890	
75,0	99000	168,77	103186,8	934,6	0,727	735,0	605,8	4173,0	630,9	95,94	0,882	
50,0	66000	118,13	68934,5	457,9	0,464	312,0	265,4	2932,9	417,6	95,74	0,842	
25,0	33000	73,34	35219,8	176,5	0,231	78,3	67,3	2219,7	210,2	93,70	0,693	



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Speed	1485	r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F		Weight	1160	kg		IP55

### LOAD CURVE

