

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

NAMEPLATE DATA			
AK80-2 FRAME REDUCED	IEC TYPE	2,2 kW	2850 r/min
2 POLE	3 PHASE	400 VOLTS	50 Hz
VALIADIS MANUFACTURER	4,6 AMPS	IP55 IP	
	S1 DUTY	F INS.CLASS	Y CONNECTION
MAJOR CONTENTS		UNIT	TEST VALUE
EFFICIENCY		%	81,15
POWER FACTOR			0,8452
TEM. RISE OF STATOR WINDING		K	93,0
VIBRATION SPEED		mm/s	-
VIBRATION DISPLACEMENT		µm	-
VIBRATION ACCELERATION		m\ls ²	-
NOISE		dB(A) (Lw)	-
BREAKDOWN TORQUE / RATED TORQUE			3,668
PULLUP TORQUE / RATED TORQUE			3,368
LOCKED ROTOR TORQUE / RATED TORQUE			4,090
LOCKED ROTOR CURRENT / RATED CURRENT			7,500
HIGH VOLTAGE TEST		V	1800
HOT INSULATION RES,OF STATOR WINDING		MΩ	-
TEMPERATURE OF BEARING		°C	-
UNBALANCE OF CURRENT		%	2,698
FULL LOAD LINE CURRENT		A	4,629
FULL LOAD INPUT POWER		W	2711
FULL LOAD TORQUE		Nm	7,633
MAX.TEMP.OF ENCLOSURE SURFACE			-
NO LOAD CURRENT		A	2,582
SLIP		%	7,695
STATOR WINDING PHASE RESISTANCE 95 °C		Ω	2,838
STRAY LOAD LOSS		W	44,980
NO LOAD POWER		W	142,600
CORE LOSS		W	59,050
FRICTION & WINDAGE LOSS		W	22,750
LOCKED ROTOR POWER		W	20742,000
STATOR LOSS COPPER		W	195,0
ROTOR LOSS COPPER		W	189,1
The data above is calculated as per IEC 34-2,all data at nominal Volts.			
VALIADIS S.A. AK80-2 2,2 kW 400 VOLTS 50 Hz		SERIAL NO.	
		DATE	REV
		DRAWN	DOCUMENT NO.
		APPRVD	
		CHECKED	

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

VALIADIS S.A.

Type	AK80-2		Poles	2	Frame Reduced	Power	2,2	kW
Voltage	400	V	Current	4,6		Frequency	50	Hz
Speed	2850	r/min	Duty	S1		Connection	Y	
Ins.class	F		Weight	kg				

1) Winding Resistance Measurement

R_{luv}=4,4815 Ω **R_{luw}**=4,4803 Ω **R_{lvw}**=4,4796 Ω **Ambient Temperature** : 25,5 °C

2) High-Voltage Test

The high voltage test (frequency 50 Hz ,virtual value 1800 V) had been applied on stator winding and been maintained for 1 min. with out breakdown.

3) Vibration Test

Position No.	1	2	3	4	5	6	Result
Speed (mm/s)	0	0	0	0	0	0	0
Displacement (μ/s)							
Acceleration (m/s²)							

4) Noise Test Ambient Noise: 0,0 dB(, L= 0,4 m

Position No.	1	2	3	4	5
Test Value	0	0	0	0	0

Test Way : semi-sphere method

L_w=L_p+10lg(S/S₀)= 0,00+0,00=0. dB(A)

Noise Result : L_w=0,0 dB(A)

5) Over Speed Test :

Over Speed r/min , 2 min, Ok

6) Over Torque Test :

Over Torque N.m, 15 s , Ok

7) Over Current Test :

Over Current A, 2min, Ok.

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						Frame Reduced			
Type	AK80-2	Poles	2			Power	2,2	kW	
Voltage	400	V	Current	4,6	A	Frequency	50	Hz	
Speed	2850	r/min	Duty	S1			Connection	Y	
Ins.class	F	Weight						kg	

NO LOAD TEST

No.	Voltage	Freq	Current				Power		Stator Winding Temp.
	(V)	(Hz)	(A)				(W)		(°C)
1	436,090	49,994	3,8982	3,7376	3,8657	1	-676,88	919,56	39,6
2	416,790	49,997	3,1307	2,9979	3,103	1	-519,99	701,63	38,8
3	396,850	49,998	2,5178	2,4064	2,4952	1	-395,97	531,60	38,3
4	300,280	49,998	1,219	1,1828	1,2225	1	-132,27	205,58	38,1
5	199,650	49,999	0,72645	0,69809	0,73	1	-42,345	82,70	37,6
6	101,540	49,996	0,40535	0,36663	0,39086	1	-0,30657	29,008	37,0
7	70,434	49,997	0,35607	0,32158	0,32817	1	5,87120	19,004	36,8
8	47,343	49,995	0,36714	0,35637	0,37266	1	8,96130	14,969	35,8

No.	Uo	Uo/Un	(Uo/Un) ²	Io	IoJ	Po	PoJ	Pocul	Pfe+Pfw
	(V)			(A)	(A)	(W)	(W)	(W)	(W)
1	436,1	1,0900	1,1890	3,834	3,815	242,700	243,20	104,1	138,6
2	416,8	1,0420	1,0860	3,077	0,087	181,600	180,00	66,89	114,8
3	396,9	0,9921	0,9843	2,473	2,499	135,600	137,10	43,13	92,5
4	300,3	0,7507	0,5635	1,208	1,171	73,310	72,70	10,28	63,0
5	199,6	0,4991	0,2491	0,718	0,7526	40,350	41,11	3,627	36,7
6	101,5	0,2539	0,0644	0,388	0,3682	28,700	26,89	1,054	27,7
7	70,43	0,1761	0,3100	0,335	0,3287	24,880	27,11	0,7882	24,1
8	47,34	0,1184	0,0140	0,365	0,377	23,930	23,08	0,9328	23,0

$\delta i = 2,70\%$ $I_o = 2,582 \text{ A}$ $P_{ocul} = 47,09 \text{ W}$ $P_o = 142,6 \text{ W}$ $P_{fe} = 72,77 \text{ W}$
 $P_{fw} = 22,75 \text{ W}$

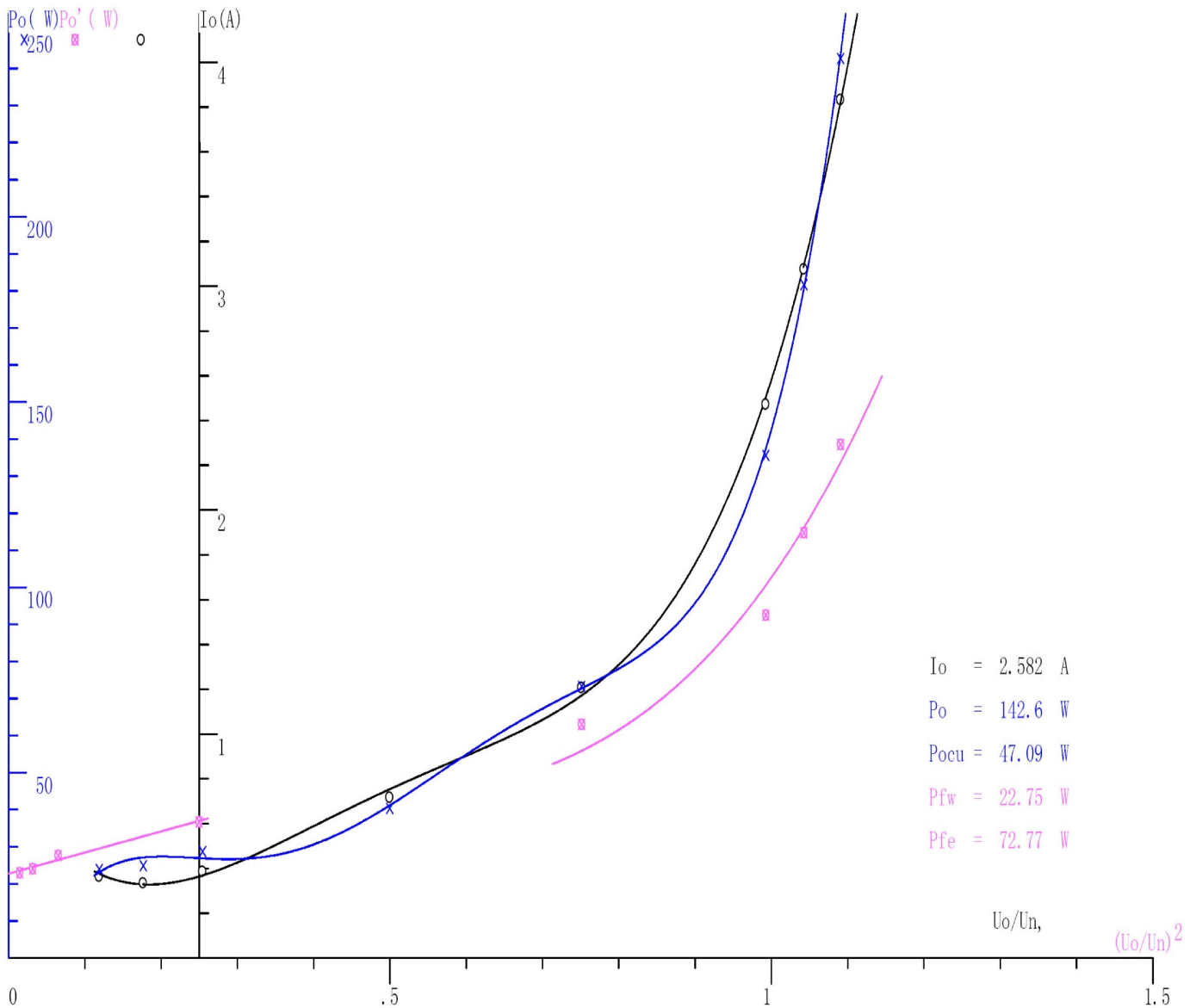
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ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

VALIADIS S.A.

Type	AK80-2	Poles	2	Power	2,2 kW
Voltage	400 V	Current	4,6 A	Frequency	50 Hz
Speed	2850 r/min	Duty	S1	Connection	Y
Ins.class	F	Weight	kg		

No Load Test Curve



$I_o = 2.582 \text{ A}$
 $P_o = 142.6 \text{ W}$
 $P_{ocu} = 47.09 \text{ W}$
 $P_{fw} = 22.75 \text{ W}$
 $P_{fe} = 72.77 \text{ W}$

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ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

VALIADIS S.A.

Type	AK80-2	Poles	2		Frame Reduced
Voltage	400 V	Current	4,6	A	Power 2,2 kW
Speed	2850 r/min	Duty	S1		Frequency 50 Hz
Ins.class F		Weight		kg	Connection Y

LOCKED ROTOR TEST REPORT

No.	Voltage	Current				Power		Torque	
	(V)	(A)				(W)		(Nm)	
1	296,070	2,4918	2,4904	2,4977	10	300,99	741,24	15,70	1
2	248,110	1,9816	1,9777	1,9855	10	198,11	492,57	9,90	1
3	202,070	1,5582	1,5546	1,5618	10	120,80	315,28	6,60	1
4	147,760	1,0974	1,0931	1,0983	10	56,685	161,23	3,50	1
5	99,278	0,70915	0,7063	0,71155	10	21,874	69,219	1,700	1

No.	Uk	Ig	Ik	Ikj	Ig	Pk	Pkj	Tk	Tkj
	(V)	(Uk)	(A)	(A)	(Ik)	(W)	(W)	(Nm)	(Nm)
1	296,07	2,4714	24,9330	24,461	1,3968	10422,0	10422,00	15,7000	15,700
2	248,11	2,3946	19,8160	19,985	1,297	6906,8	6906,80	9,9000	9,9000
3	202,07	2,3055	15,5820	15,804	1,1926	4360,8	4360,80	6,6000	6,6000
4	147,76	2,1695	10,9630	11,048	1,0399	2179,1	2179,10	3,5000	3,5000
5	99,278	1,9969	7,0900	7,0108	0,85065	910,93	910,93	1,7000	1,7000

$I_n = 4,60 \text{ A}$ $I_{kn} = 34,508 \text{ A}$ $I_k / I_n = 7,502$ $n = 2850 \text{ r/min}$ $T_n = 7,633 \text{ Nm}$ $T_k / T_n = 4,093$
 $U_k = 100 \text{ V}$ $I_k = 7,0692 \text{ A}$ $P_k = 925,01 \text{ W}$ $T_k = 1,7114 \text{ Nm}$ $P_{kn} = 20742 \text{ W}$ $T_{kn} = 31,245 \text{ Nm}$

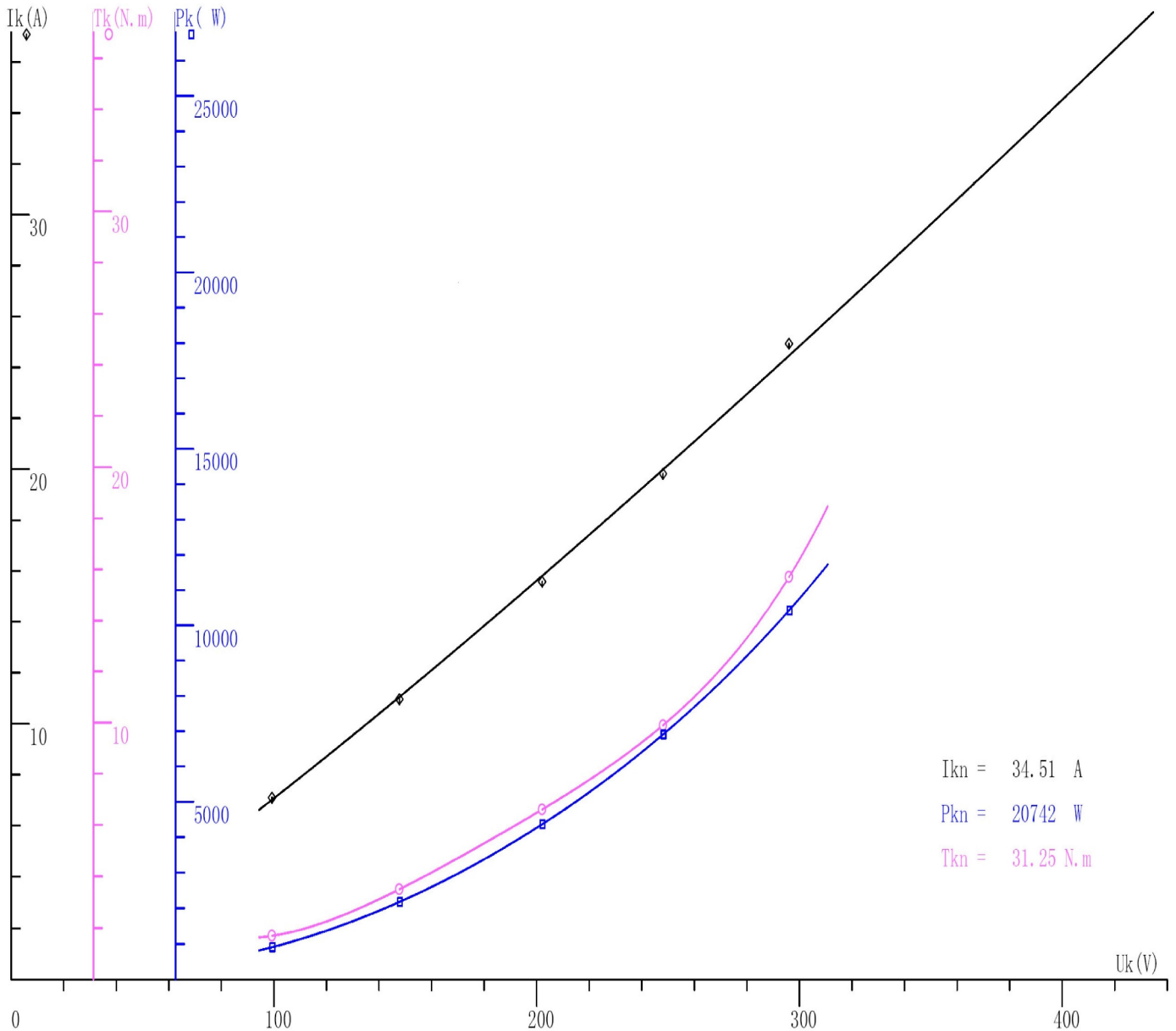
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VALIADIS S.A.

Type	AK80-2	Poles	2	Frame	Reduced
Voltage	400 V	Current	4,6 A	Power	2,2 kW
Speed	2850 r/min	Duty	S1	Frequency	50 Hz
Ins.class	F	Weight	kg	Connection	Y

LOCKED TEST CURVE



VALIADIS S.A.

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VALIADIS S.A.

Type	AK80-2	Poles	2		Frame Reduced
Voltage	400 V	Current	13,9	A	Power 2,2 kW
Speed	2850 r/min	Duty	S1		Frequency 50 Hz
Ins.class F		Weight		kg	Connection Y

Temperature Rise Test Report

Time	Voltage (V)	Current (A)			Input Power (W)	Speed r/min	Torque (N.m)	Winding Temp. (°C)	Core Temp. (°C)	Bearing Temp. (°C)	Ambient Temp. (°C)
		Ia	Ib	Ic							
14:41	401,9	4,6331	4,5702	4,5486	2683,6	2822,2	7,4915	37,1	23,2	24,8	24,5
14:52	402,9	4,6052	4,5311	4,5292	2657,5	2822,7	7,4764	39,8	23,3	24,5	24,4
15:01	403,2	4,6413	4,5705	4,5612	2686,5	2721,3	7,4779	41,3	23,2	24,3	24,4
15:12	402,8	4,6459	4,5956	4,5737	2700,6	2821,00	7,423	41,3	23,1	24,7	24,2
15:21	402,7	4,7353	4,6537	4,6388	2762,6	2805,9	7,5349	44,5	23,1	24,5	24,1
15:33	402,7	4,6751	4,6146	4,6105	2727	2809,00	7,4645	45,9	23,9	24,9	24,7
15:45	402,7	4,6597	4,5877	4,5854	2710,6	2809,0	7,5508	46,3	24	24,8	24,7
15:53	403,1	4,6576	4,5917	4,5891	2711,6	2809,4	7,5404	46,3	24	24,9	24,7
16:03	402,6	4,6252	4,5536	4,5505	2687,6	2808,3	7,4018	48,6	24,4	25,2	25,00
16:16	403,2	4,6868	4,6249	4,6178	2742	2796,8	7,6816	52,2	24,8	25,6	25,4
16:23	402,8	4,6662	4,6064	4,5961	2729,1	2796,2	7,5861	52,7	24,8	25,6	25,4

At the end of test, winding resistance measurement

$$R_2 = 6,0658 \Omega$$

$$\Delta\theta = \frac{6,0658 - 4,4815}{4,4815} * (235 + 25,5) + 25,5 - 24,9 = 99,73 \text{ K}$$

$$\Delta \theta_n = \Delta\theta \left(\frac{4,629}{4,625} \right)^2 = 92,91 \text{ K}$$

Max.temp. of enclosure Surface : °C

Hot Insulation Resistance: 0,00 MΩ

Temperature of Bearing : 0,0 °C

Test Current : 4,625 A

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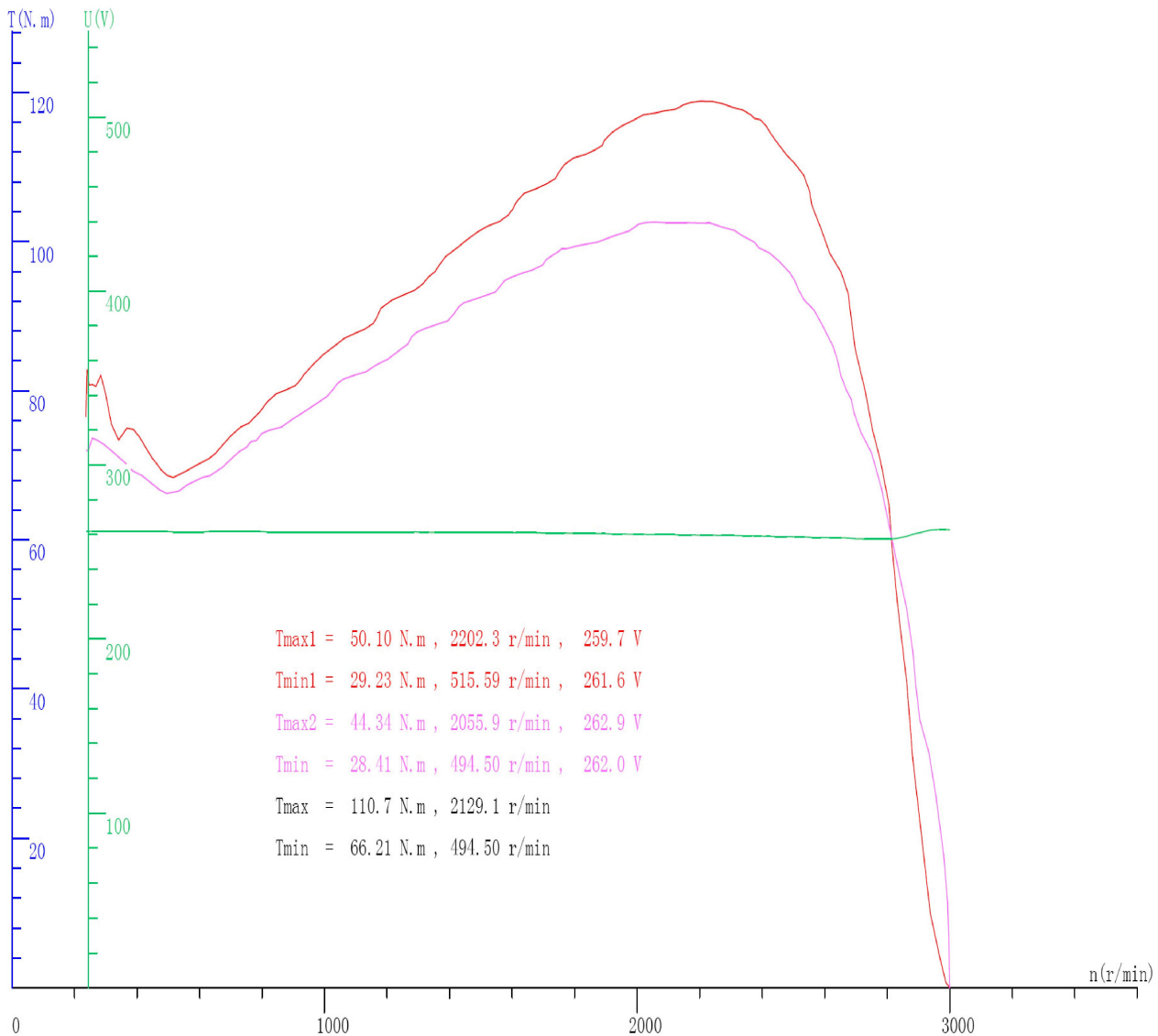
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Voltage	400	V	Current	4,6	A	Frequency
Speed	2850	r/min	Duty	S1	Connection	Y
Ins.class	F	Weight		kg		

Torque-Speed Curve



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