

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

NAMEPLATE DATA	4	POLE	50	HZ / CYCLES	4,00 KW
K112M-4 FRAME	3	PHASE	F	INS.CLASS	N/A EFF2
400 VOLTS	8,4	AMPS	DELTA	CONNECTION	
1440 RPM	S1	DUTY			
MAJOR CONTENTS		UNIT	TEST VALUE	STANDARD VALUE	
(95°C) PHASE RESISTANCE OF WINDING		OHM	4,3295		
NO LOAD CURRENT		AMP	3,958		
NO LOAD INPUT		W	310,1		
CORE LOSS(Pfe)		W	214,9		
WINDAGE FRICTION LOSS(Pfw)		W	65,3		
STATOR WINDING LOSS(Pcu1)		W	302,2		
ROTOR WINDING LOSS(Pcu2)		W	171,1		
STRAY LOAD LOSS(Ps)		W	23,5		
LOCKED ROTOR CURRENT		A	55,7		
LOCKED ROTOR INPUT @ FULL LOAD		W	24759,9		
LOCKED ROTOR TORQUE		N.m	69,0		
PULL OUT TORQUE		N.m	85,5		
LOCKED ROTOR CURRENT/RATED CURRENT		P.U.	6,64	≤ 8,4	
LOCKED ROTOR TORQUE/RATED TORQUE		P.U.	2,60	≥ 1,955	
PULL OUT TORQUE/RATED TORQUE		P.U.	3,22	≥ 2,07	
FULL LOAD TORQUE		N.m	26,5		
FULL LOAD CURRENT		A	8,355		
FULL LOAD SLIP		%	4,018		
INPUT @ FULL LOAD		KW	4,775		
FULL LOAD SPEED		r/min	1440		
EFFICIENCY @ FULL LOAD		%	83,8	84,2 -2,37	
POWER FACTOR @ FULL LOAD			0,83	≥ 0,79	
STATOR WINDING TEMPERATURE RISE		K	59	≤ 80	
D.E. BEARINGS TEMPERATURE BY PT100		°C	51,4	≤ 95	
SOUND PRESSURE LEVEL		dB(A)	65	≤ 80	
VIBRATION		mm/s	1,2	≤ 1,8	
VALIADIS S.A.		Manufacturing Date		Manufacturing Code	
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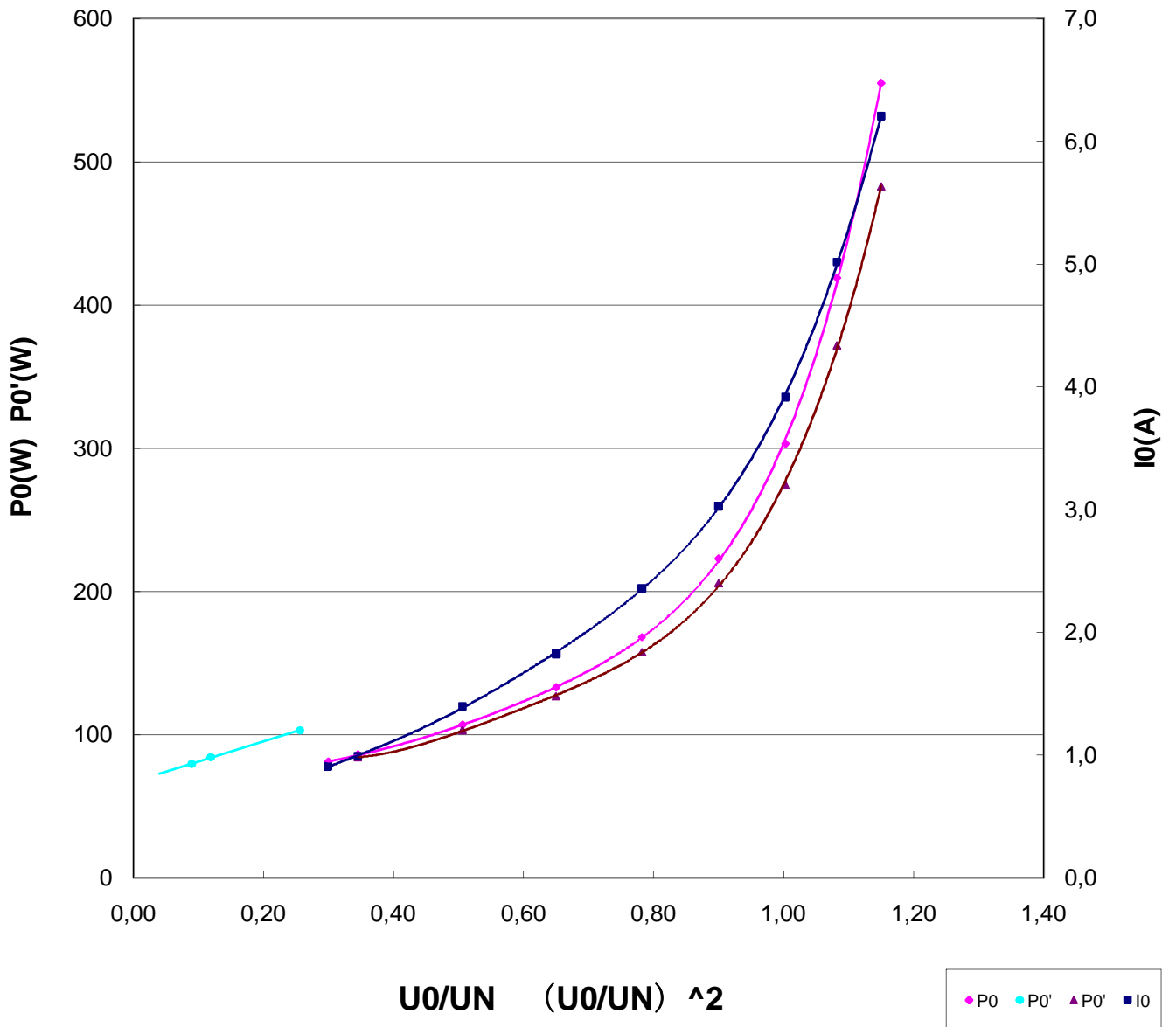
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1440	RPM	S1	DUTY						
NO LOAD TEST									
V (unit)	mul.	HZ	A1 (unit)	A2 (unit)	A3 (unit)	mul.	Pin (unit)	mul.	RESISTANCE
460,0	1	50	6,11	6,44	6,06	1	555,0	1	1,2539
432,8	1	50	5,24	4,92	4,89	1	419,0	1	1,2539
401,2	1	50	4,00	3,87	3,88	1	303,1	1	1,2539
360,0	1	50	3,00	3,04	3,05	1	222,9	1	1,2539
312,8	1	50	2,30	2,41	2,37	1	168,0	1	1,2539
260,0	1	50	1,78	1,85	1,86	1	133,0	1	1,2539
202,4	1	50	1,35	1,44	1,40	1	106,8	1	1,2539
138,0	1	50	1,00	1,02	0,96	1	86,1	1	1,2539
119,7	1	50	0,88	0,90	0,94	1	81,1	1	1,2539
data calculation of no load									
V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'			
115,0%	1,15	6,203	555,0	1,323	72,38	482,62			
108,2%	1,08	5,017	419,0	1,171	47,34	371,66			
100,3%	1,00	3,917	303,1	1,006	28,85	274,25			
90,0%	0,90	3,028	222,9	0,810	17,25	205,65			
78,2%	0,78	2,357	168,0	0,612	10,45	157,55			
65,0%	0,65	1,825	133,0	0,423	6,26	126,74			
50,6%	0,51	1,395	106,8	0,256	3,66	103,14			
34,5%	0,35	0,992	86,1	0,119	1,85	84,25			
29,9%	0,30	0,907	81,1	0,090	1,55	79,55			
RESULTS AT:		400	Volts						
N.L.AMP	N.L.LOSS			WINDAGE/FRICTION Pfw			CORE LOSS Pfe		
3,958	310,062			65,3			214,9		
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NO LOAD TEST

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1440	RPM	S1	DUTY		N/A EFF2

NO LOAD



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NO LOAD

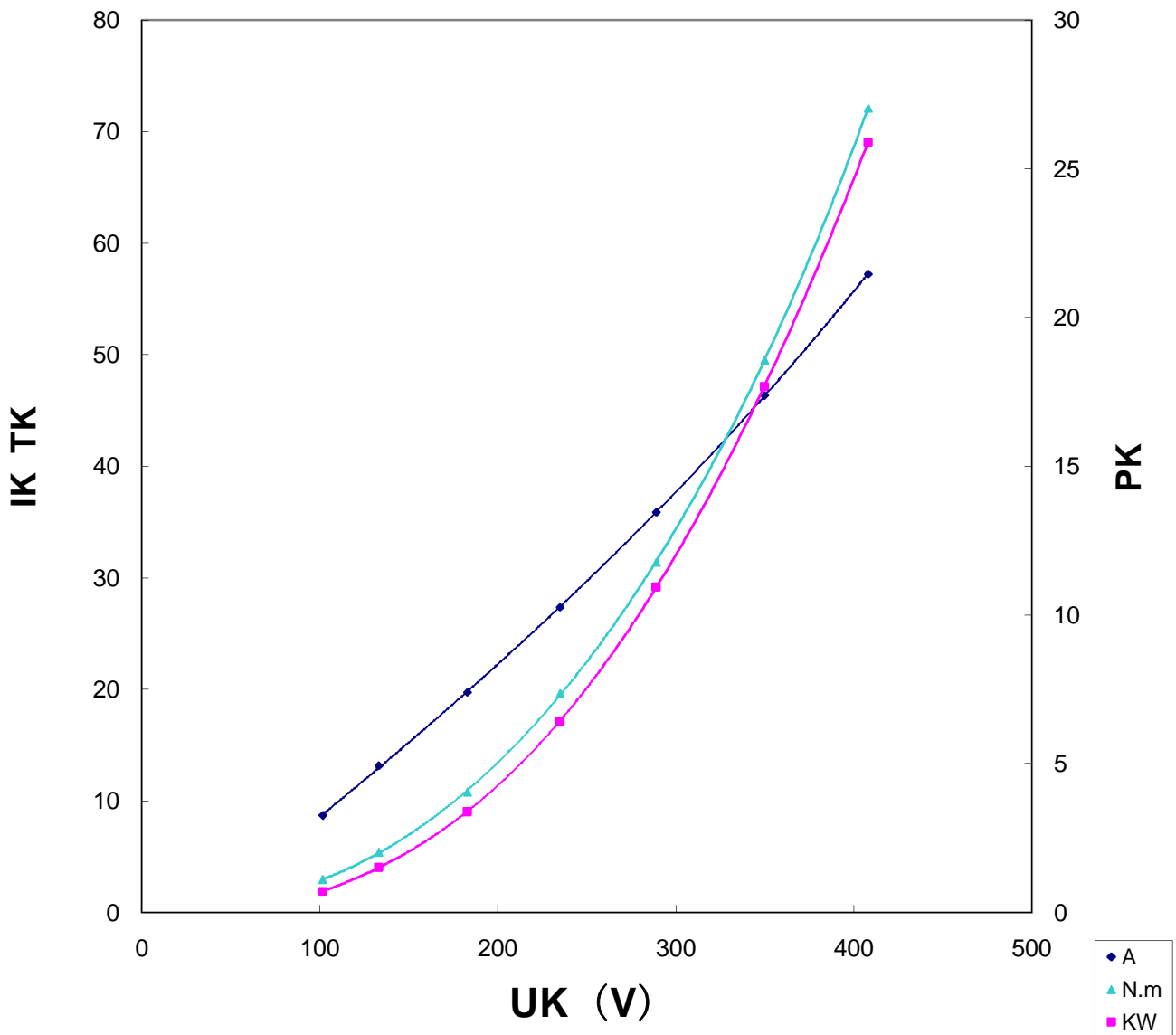
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1440	RPM	S1	DUTY						
LOCKED ROTOR TEST									
V	mul.	A1 (unit)	A2 (unit)	A3 (unit)	mul.	P	mul.	TORQUE (Kg.m)	
408,0	1	57,0	56,6	58,1	1	25880,0	1	7,36	
349,8	1	46,2	45,8	47,1	1	17680,0	1	5,05	
289,0	1	35,7	35,5	36,4	1	10940,0	1	3,20	
234,9	1	27,2	27,0	27,8	1	6420,0	1	2,00	
182,8	1	19,6	19,5	20,0	1	3383,0	1	1,10	
133,0	1	13,1	13,0	13,3	1	1513,0	1	0,55	
101,6	1	8,7	8,6	8,8	1	706,5	1	0,30	
data calculation of locked rotor									
UK		IK	PK	TK		LOG	LOG	LOG	LOG
V		A	KW	N.m	cosφ	UK	IK	LOGPK	TK
408,0		57,23	25,880	72,08	0,640	2,6106	1,7576	1,4130	1,8578
349,8		46,35	17,680	49,53	0,630	2,5438	1,6660	1,2475	1,6949
289,0		35,88	10,940	31,38	0,609	2,4608	1,5548	1,0390	1,4967
234,9		27,34	6,420	19,61	0,577	2,3708	1,4368	0,8075	1,2925
182,8		19,72	3,383	10,79	0,542	2,2620	1,2949	0,5293	1,0330
133,0		13,13	1,513	5,39	0,500	2,1239	1,1184	0,1798	0,7316
101,6		8,69	0,707	2,94	0,462	2,0069	0,9388	-0,1509	0,4683
performance collection of locked rotor									
	at rated		at rated		at 2.5 times rated		at 100V		
	volts		current		current				
VOLTS (V)	400		98,974		191,9		100,0		
AMPS (A)	55,7		8,4		21,00		8,541		
INPUT (KW)	24,760		0,655		3,6		0,561		
TORQUE (N.m)	69,000		2,454						
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1440	RPM	S1	DUTY		N/A EFF2

LOCKED



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400	VOLTS	8,4	AMPS	DELTA	CONNECTION	
1440	RPM	S1	DUTY			

TEMPERATURE RISE TEST

TIME (h:min)	V	A1 (unit)	A1 (unit)	A1 (unit)	mul.	P	mul.	T1 °C	T2 °C	T3 °C	T4 °C
22,00	400,0	8,3	8,3	8,3	1,0	4721,0	1	70,8		51,8	7,3
22,30	400,0	8,4	8,4	8,4	1,0	4689,0	1	71,5		51,7	7,3
23,00	400,0	8,1	8,1	8,1	1,0	4561,0	1	72,5		51,7	7,1
23,30	400,0	8,4	8,4	8,4	1,0	4892,0	1	73,1		51,4	7
24,00	400,0	8,2	8,2	8,2	1,0	4689,0	1	72,9		51,3	7
average value of the last three points				8,228 A		2357	W	73,0		51,4	7,0

T1 : CORE TEMPERATRE

T3 : DE BEARING TEMPERATURE

T2 : DE WINDING TEMPERATURE

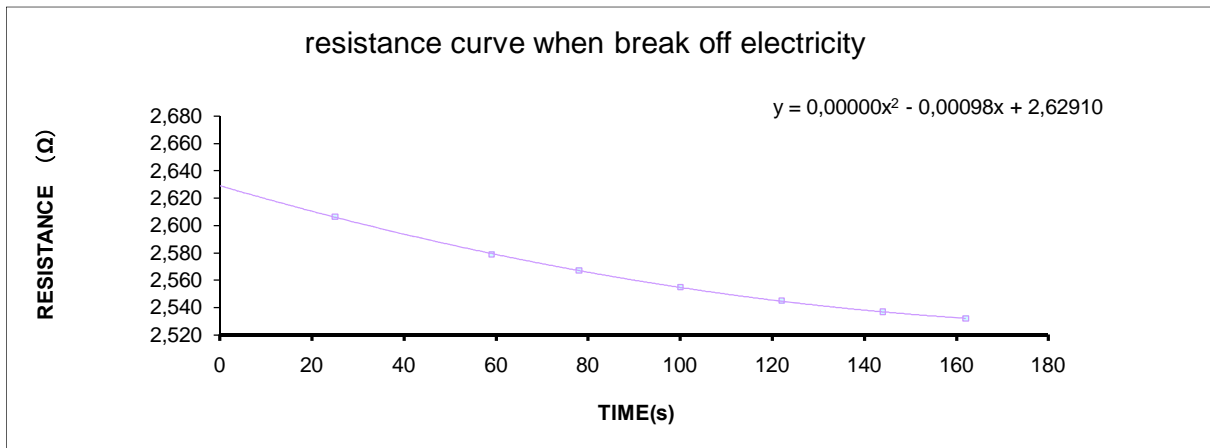
T4 : AMBIENT TEMPERATURE

WINDING RESISTANCE (HOT) AT END OF TEMPERATURE RISE TEST

TIMES (S)	25	59	78	100	122	144	162				
RESISTANCE (Ω)	2,6064	2,579	2,567	2,555	2,545	2,537	2,532				

WINDING RESISTANCE(COLD)

Δ	U1 to V1	U1 to W1	V1 to W1	AVERAGE RESISTANCE	MINIMUM RESISTANCE	AMBIENT TEMPERATURE
	2,112	2,120	2,118	2,1166667	2,112	7
Y	U	V	W	AVERAGE RESISTANCE	MINIMUM RESISTANCE	AMBIENT TEMPERATURE
					0	



resistance value at 0 sec	2,62933	calculation value of temp.rising	59,3
30 S (Ω)	2,602152	calculation value of temp.rising	56,16
full load curent	8,40 A	modify value of temp. rising	58,5

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1440	RPM	S1	DUTY			

LOAD TEST

V	HZ	A1 (unit)	A2 (unit)	A3 (unit)	mul.	W1 (unit)	W2 (unit)	mul.	RPM
400	50	9,85	10,05	9,79	1	5758		1	1432
400	50	8,82	8,99	8,77	1	5122		1	1441
400	50	8,32	8,48	8,27	1	4765		1	1445
400	50	6,89	7,03	6,85	1	3662		1	1456
400	50	6,29	6,41	6,25	1	3112		1	1462
400	50	5,47	5,58	5,44	1	2306		1	1472
400	50	4,09	4,17	4,07	1	1022		1	1490

95	(°C) PHASE RESISTANCE OF WINDING	4,3295 Ω	θ=	59,28 K	Pfe= 214,9 W	t2=	7,0 °C	Pfw= 65,3 W		
Calculated Results	OUTPUT W	INPUT W	AMPS A	Pcu1 W	SLIP %	Pcu2 W	Ps W	EFF %	P.F.	
119,1	4765,8	5758,0	9,90	424,0	4,980	254,9	33,0	82,77	0,840	
107,0	4278,0	5122,0	8,86	340,0	4,321	197,4	26,4	83,52	0,834	
99,7	3987,6	4765,0	8,36	302,5	4,028	171,1	23,5	83,69	0,823	
76,3	3053,8	3662,0	6,92	207,5	3,223	104,4	16,1	83,39	0,764	
64,2	2569,6	3112,0	6,32	172,9	2,783	75,8	13,4	82,57	0,711	
46,1	1844,7	2306,0	5,50	130,8	2,051	40,2	10,2	79,99	0,606	
16,4	657,6	1022,0	4,11	73,1	0,732	5,4	5,7	64,35	0,359	

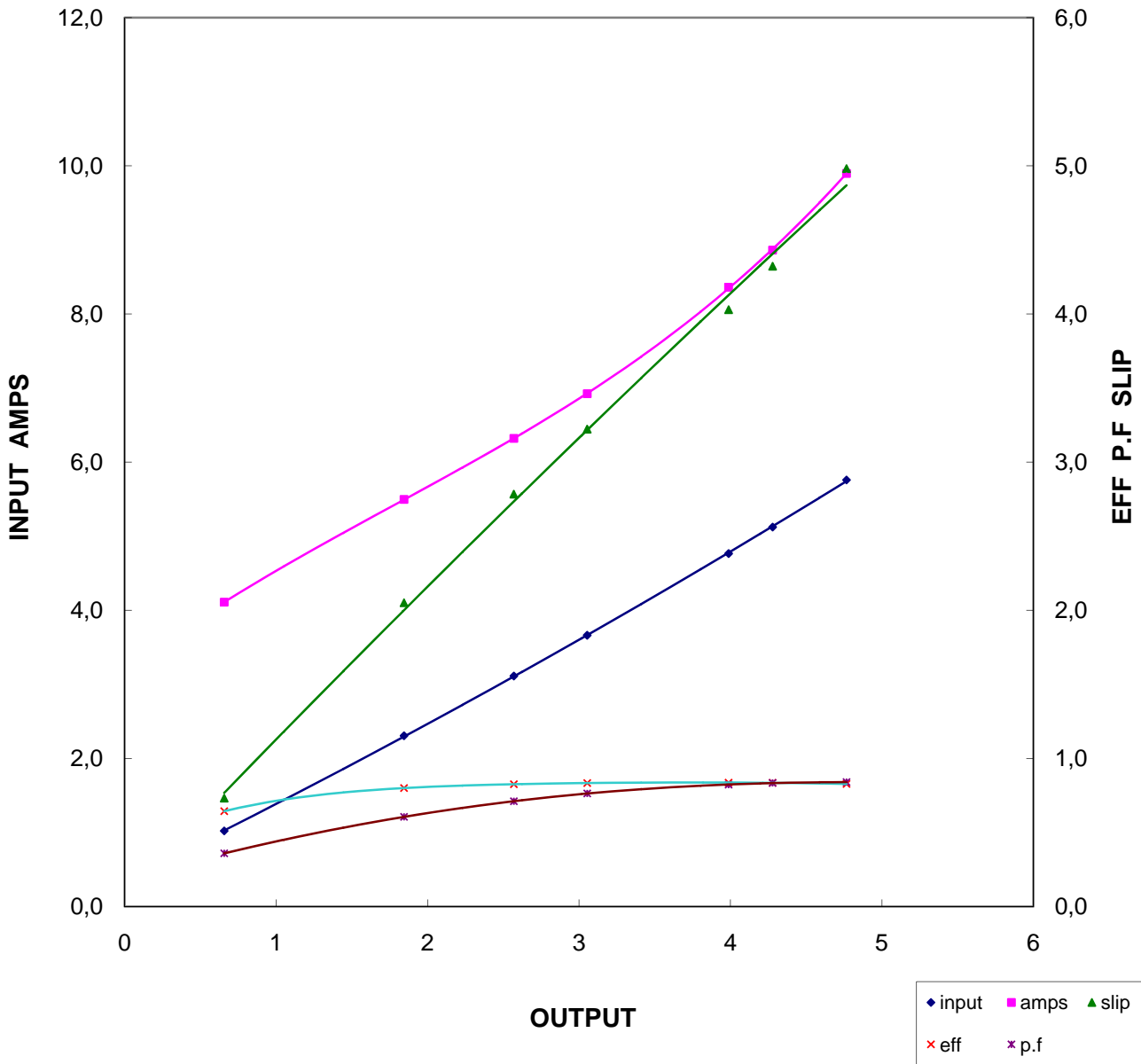
% LOAD	OUTPUT W	INPUT W	AMPS A	Pcu1 W	SLIP %	Pcu2 W	Ps W	EFF %	P.F.
125	5000	6054,2	9,98	431,0	4,95	267,6	33,51	82,59	0,876
110	4400	5286,8	9,15	362,5	4,51	212,5	28,19	83,23	0,834
100	4000	4775,3	8,35	302,2	4,018	171,1	23,50	83,76	0,825
75	3000	3599,0	6,8	203,0	3,182	101,2	15,78	83,36	0,759
50	2000	2474,0	5,68	139,5	2,223	47,1	10,85	80,84	0,629
25	1000	1392,3	4,51	88,0	1,113	12,1	6,84	71,82	0,446

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1440 RPM	S1	DUTY			

LOAD CURVE



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