

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

NAMEPLATE DATA	4	POLE	50	HZ / CYCLES	7,50	KW
K132M-4	FRAME	3	PHASE	F	INS.CLASS	88,70
400	VOLTS	13,8	AMPS	DELTA	CONNECTION	IC411
1495	RPM	S1	DUTY			
MAJOR CONTENTS		UNIT	TEST VALUE	STANDARD VALUE		
(95°C) PHASE RESISTANCE OF WINDING		OHM	1,6008			
NO LOAD CURRENT		AMP	5,191			
NO LOAD INPUT		kW	296,4			
CORE LOSS(Pfe)		kW	182,3			
WINDAGE FRICTION LOSS(Pfw)		kW	73,5			
STATOR WINDING LOSS(Pcu1)		kW	319,1			
ROTOR WINDING LOSS(Pcu2)		kW	283,5			
STRAY LOAD LOSS(Ps)		kW	41,4			
LOCKED ROTOR CURRENT		A	94,9			
LOCKED ROTOR INPUT @ FULL LOAD		W	35624,6			
LOCKED ROTOR TORQUE		N.m	115,2			
PULL OUT TORQUE		N.m	135,8			
LOCKED ROTOR CURRENT/RATED CURRENT		P.U.	6,86			
LOCKED ROTOR TORQUE/RATED TORQUE		P.U.	2,40			
PULL OUT TORQUE/RATED TORQUE		P.U.	2,74			
FULL LOAD TORQUE		N.m	49,6			
FULL LOAD CURRENT		A	14,118			
FULL LOAD SLIP		%	3,587			
INPUT @ FULL LOAD		KW	8,405			
FULL LOAD SPEED		r/min	1446			
EFFICIENCY @ FULL LOAD		%	89,2			
EFFICIENCY @ 75% LOAD		%	89,7			
POWER FACTOR @ FULL LOAD			0,86			
STATOR WINDING TEMPERATURE RISE		K	59			
D.E. BEARINGS TEMPERATURE BY PT100		°C	73,9			
SOUND PRESSURE LEVEL		dB(A)	62			
VIBRATION		mm/s	0,9			
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1495	RPM	S1	DUTY				

NO LOAD TEST

V (unit)	mul.	HZ	A1 (unit)	A2 (unit)	A3 (unit)	mul.	W1 (unit)	W2 (uni t)	mul.	RESISTANCE
436,8	1	50	3,595	3,544	3,449	2	-696,5	903,9	2	1,00980
418,5	1	50	3,080	3,024	2,950	2	-563,4	740,1	2	1,00980
399,1	1	50	2,638	2,584	2,517	2	-459,9	606,5	2	1,00980
361,2	1	50	2,055	2,024	1,952	2	-313,1	438,9	2	1,00980
315,7	1	50	1,633	1,589	1,531	2	-212,1	311,5	2	1,00980
280,2	1	50	1,388	1,350	1,294	2	-152,7	243,8	2	1,00980
232,8	1	50	1,111	1,084	1,029	2	-95,2	170,1	2	1,00980
192,1	1	50	0,903	0,875	0,818	2	-57,4	117,9	2	1,00980
147,7	1	50	0,698	0,677	0,627	2	-26,6	77,4	2	1,00980
103,4	1	50	0,552	0,514	0,476	2	-3,2	46,4	2	1,00980

data calculation of no load

V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'
109,2%	1,09	7,059	414,8	1,192	75,47	339,33
104,6%	1,05	6,036	353,4	1,095	55,19	298,21
99,8%	1,00	5,159	293,2	0,996	40,32	252,88
90,3%	0,90	4,021	251,6	0,815	24,49	227,11
78,9%	0,79	3,169	198,8	0,623	15,21	183,59
70,1%	0,70	2,688	182,2	0,491	10,94	171,26
58,2%	0,58	2,149	149,8	0,339	7,00	142,80
48,0%	0,48	1,731	121,0	0,231	4,54	116,46
36,9%	0,37	1,335	101,6	0,136	2,70	98,90

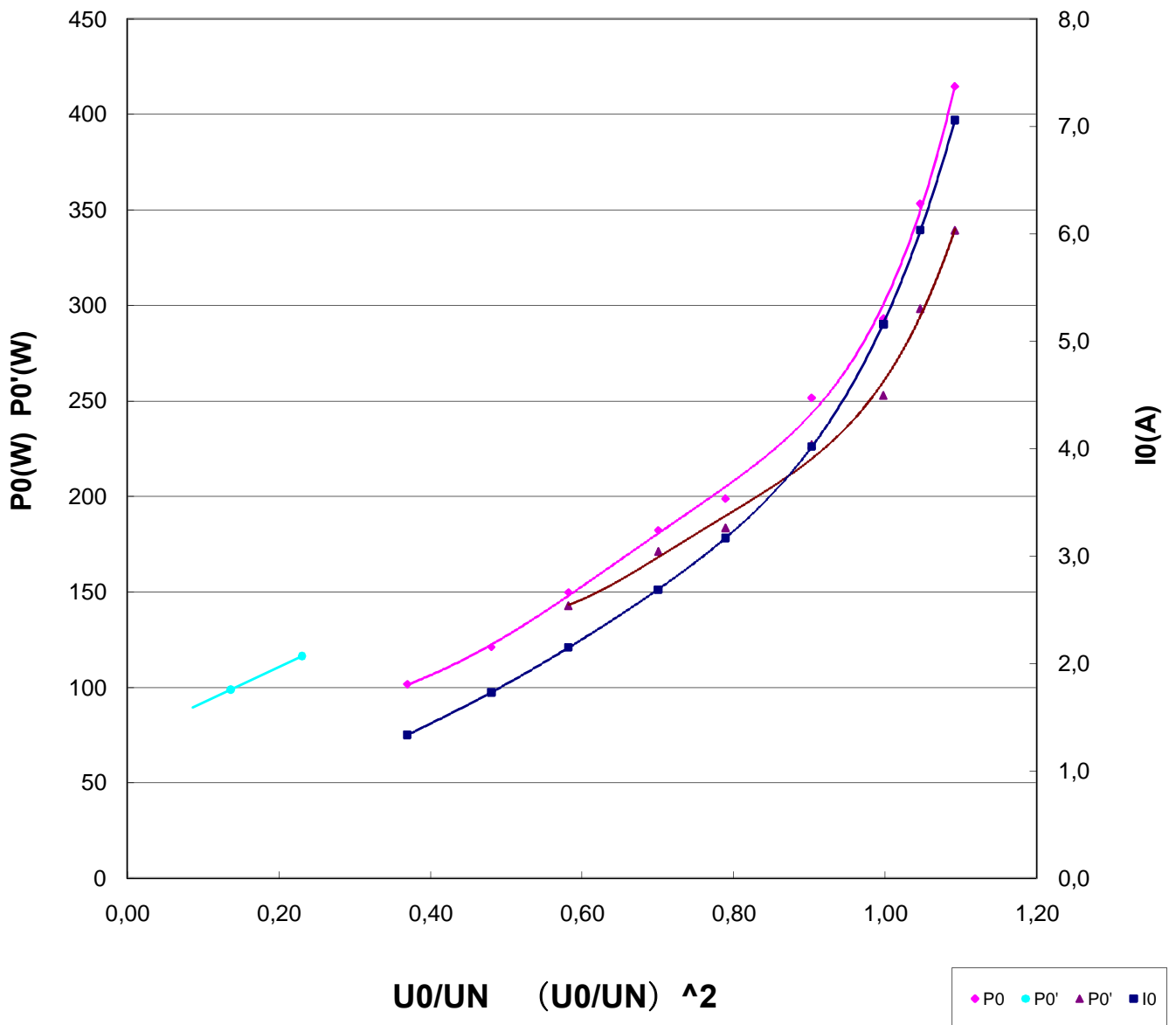
RESULTS AT: 400 Volts			
N.L.AMP	N.L.LOSS	WINDAGE/FRICTION Pfw	CORE LOSS Pfe
5,191	296,426	73,5	182,3
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400	VOLTS	13,8	AMPS	DELTA	CONNECTION
1495	RPM	S1	DUTY		88,70 EFF(IE2)

NO LOAD



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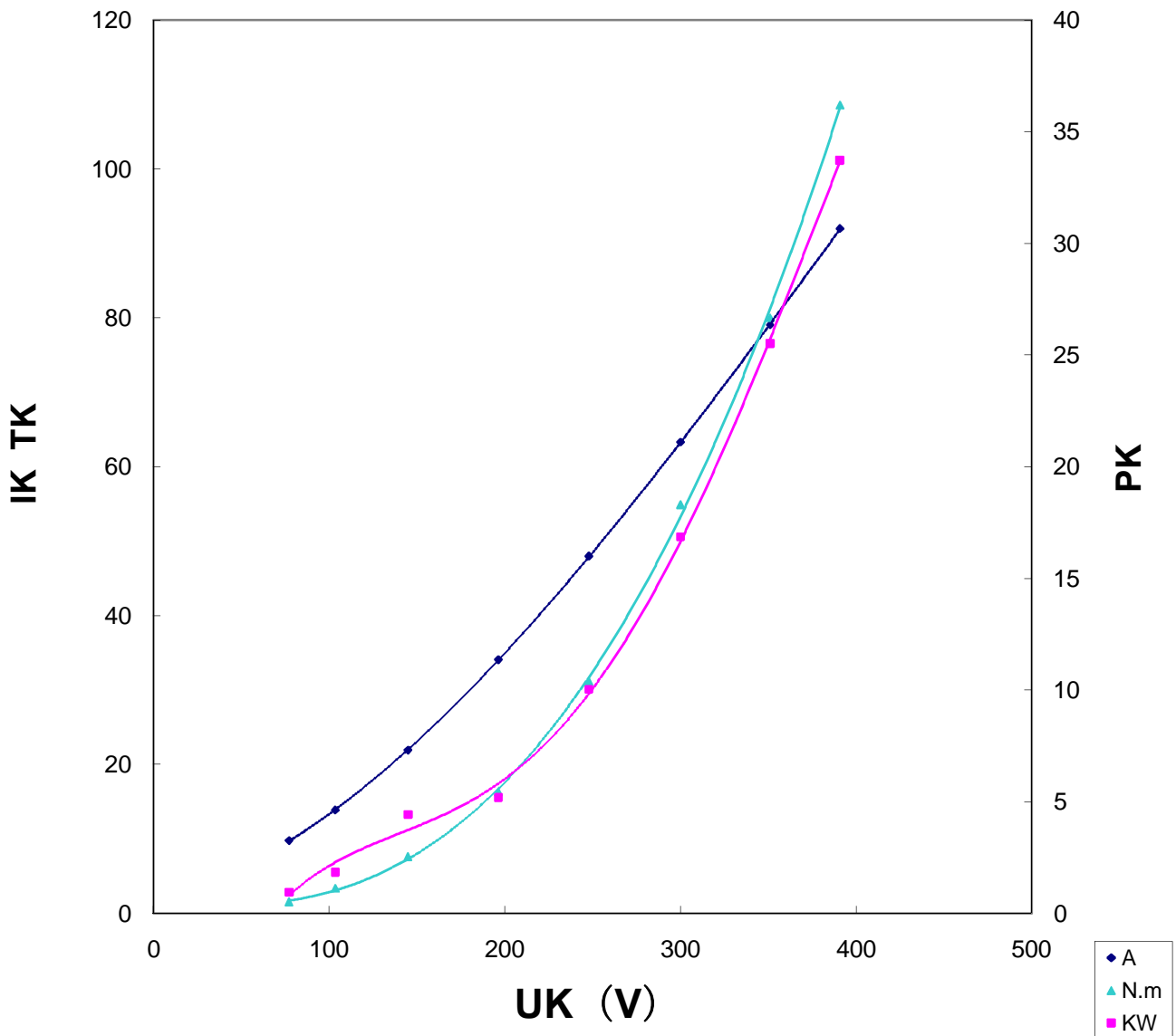
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1495	RPM	S1	DUTY						
LOCKED ROTOR TEST									
V (unit)	mul.	A1 (unit)	A2 (unit)	A3 (unit)	mul.	W1 (unit)	W2 (unit)	mul.	TORQUE (Kg.m)
390,8	1	4,631	4,600	4,561	20	-32,5	1718,6	20	11,08
351,1	1	3,981	3,963	3,910	20	-48,7	1324,3	20	8,16
300,1	1	3,188	3,189	3,115	20	-60,5	903,2	20	5,60
247,9	1	2,421	2,425	2,350	20	-58,9	560,3	20	3,18
196,4	1	1,723	1,742	1,647	20	-51,7	311,3	20	1,66
145,0	1	2,217	2,253	2,108	10	-66,1	287,4	20	0,77
103,6	1	1,401	1,420	1,348	10	-33,0	125,2	20	0,34
77,3	1	0,985	0,992	0,963	10	-17,4	64,2	20	0,15
data calculation of locked rotor									
UK	IK	PK	TK	LOG	LOG	LOG	LOG	LOG	LOG
V	A	KW	N.m	cosφ	UK	IK	LOGPK	LOGTK	LOGTK
390,8	91,95	33,722	108,58	0,542	2,5920	1,9635	1,5279	2,0357	2,0357
351,1	79,02	25,512	80,01	0,531	2,5454	1,8978	1,4067	1,9031	1,9031
300,1	63,28	16,854	54,90	0,512	2,4773	1,8012	1,2267	1,7396	1,7396
247,9	47,98	10,028	31,14	0,487	2,3943	1,6810	1,0012	1,4933	1,4933
196,4	34,08	5,192	16,29	0,448	2,2931	1,5325	0,7153	1,2119	1,2119
145,0	21,93	4,426	7,59	0,804	2,1614	1,3410	0,6460	0,8801	0,8801
103,6	13,90	1,844	3,35	0,740	2,0154	1,1429	0,2658	0,5248	0,5248
77,3	9,80	0,936	1,50	0,714	1,8882	0,9911	-0,0287	0,1770	0,1770
performance collection of locked rotor									
	at rated		at rated		at 2.5 times rated		at 100V		
	volts		current		current				
VOLTS (V)	400		103,244		200,0		100,0		
AMPS (A)	94,9		13,8		34,60		13,335		
INPUT (KW)	35,625		1,832		5,6		1,720		
TORQUE (N.m)	115,196		3,323						
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400	VOLTS	13,8	AMPS	DELTA	CONNECTION	
1495	RPM	S1	DUTY			

LOCKED



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TEMPERATURE RISE TEST

TIME (h:min)	V	A1 (unit)	A1 (unit)	A1 (unit)	mul.	W1 (unit)	W2 (unit)	mul.	T1 °C	T2 °C	T3 °C	T4 °C
18:00	400	2,797	2,787	2,787	5,0	1631,6		5	62,7		70,8	29,6
18:30	400	2,782	2,779	2,780	5,0	1638,2		5	64,3		72,3	29,5
19:00	400	2,814	2,807	2,800	5,0	1640,4		5	65,7		73,7	29,85
19:30	400	2,749	2,751	2,745	5,0	1608,8		5	66,5		74,3	29,80
20:00	400	2,733	2,731	2,729	5,0	1598,0		5	66,4		73,8	29,85
average value of the last three points				13,81056 A		8078,667		W	66,2		73,9	29,8

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)	12	22	32	42	52	62	72				
RESISTANCE (Ω)	1,0399	1,0368	1,0342	1,0316	1,0293	1,0274	1,0256				

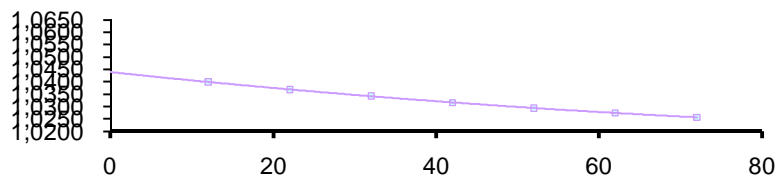
WINDING RESISTANCE(COLD)

Δ	U1 to V1	U1 to W1	V1 to W1	AVERAGE RESISTANCE	MINIMUM RESISTANCE	AMBIENT TEMPERATURE
	0,85950	0,8606	0,8558	0,8586333	0,8558	30,5
Y	U	V	W	AVERAGE RESISTANCE	MINIMUM RESISTANCE	AMBIENT TEMPERATURE
					0	

resistance curve when break off electricity

$$y = 0,00000x^2 - 0,00034x + 1,04383$$

RESISTANCE (Ω)



TIME(s)

resistance value at 0 sec
30 S (Ω)
full load curent

1,04383
1,034687
14,12 A

calculation value of temp.rising 59,00
calculation value of temp.rising 56,16
modify value of temp. rising 59

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1495	RPM	S1	DUTY						

LOAD TEST

V	HZ	A1 (unit)	A2 (unit)	A3 (unit)	mul.	W1 (unit)	W2 (unit)	mul.	RPM
400	50	3,561	3,385	3,130	5	1345,1	699,3	5	1434,0
400	50	3,120	3,137	2,891	5	1252,8	587,6	5	1442,0
400	50	2,738	3,035	2,784	5	1206,4	480,2	5	1448,0
400	50	2,653	2,444	2,252	5	972,0	464,1	5	1454,0
400	50	2,012	2,123	2,145	5	845,1	288,1	5	1463,0
400	50	1,820	1,899	1,834	5	750,5	213,0	5	1471,0
400	50	1,730	1,671	1,554	5	647,9	201,4	5	1476,0
400	50	1,415	1,355	1,349	5	491,9	82,1	5	1485,0
400	50	1,241	1,230	1,251	5	421,1	-3,8	5	1488,0

95	(°C) PHASE RESISTANCE OF WINDING	1,6008	Ω	Pfe= 182,3	W	Pfw= 73,5	W
	θ=	59,00	K	t2= 29,8	°C		

Calculated Results	OUTPUT W	INPUT W	AMPS A	Pcu1 W	SLIP %	Pcu2 W	Ps W	EFF %	P.F.
120,3	9026,0	10222,0	16,79	451,5	4,4865	430,2	58,6	88,30	0,879
109,1	8184,8	9202,0	15,25	372,1	3,943	340,9	48,3	88,95	0,871
100,4	7529,2	8433,0	14,26	325,6	3,535	280,1	42,3	89,28	0,854
85,9	6442,1	7180,5	12,25	240,2	3,127	211,3	31,2	89,72	0,846
67,7	5078,6	5666,0	10,47	175,4	2,515	133,5	22,8	89,63	0,781
57,6	4318,1	4817,5	9,26	137,1	1,971	88,7	17,8	89,63	0,751
50,7	3802,8	4246,5	8,26	109,2	1,631	64,5	14,2	89,55	0,742
33,4	2502,3	2870,0	6,87	75,4	1,020	26,6	9,8	87,19	0,603

% LOAD	OUTPUT W	INPUT W	AMPS A	Pcu1 W	SLIP %	Pcu2 W	Ps W	EFF %	P.F.
125	9375	10635,2	17,37	482,9	4,45	443,4	62,69	88,15	0,884
110	8250	9289,7	15,44	381,6	3,99	348,2	49,54	88,81	0,868
100	7500	8404,7	14,12	319,1	3,587	283,5	41,42	89,24	0,859
75	5625	6272,2	11,1	198,6	2,722	160,4	25,79	89,68	0,813
50	3750	4186,8	8,21	107,9	1,588	61,9	14,00	89,57	0,736
25	1875	2206,0	6,19	61,4	0,725	14,2	7,97	85,00	0,514

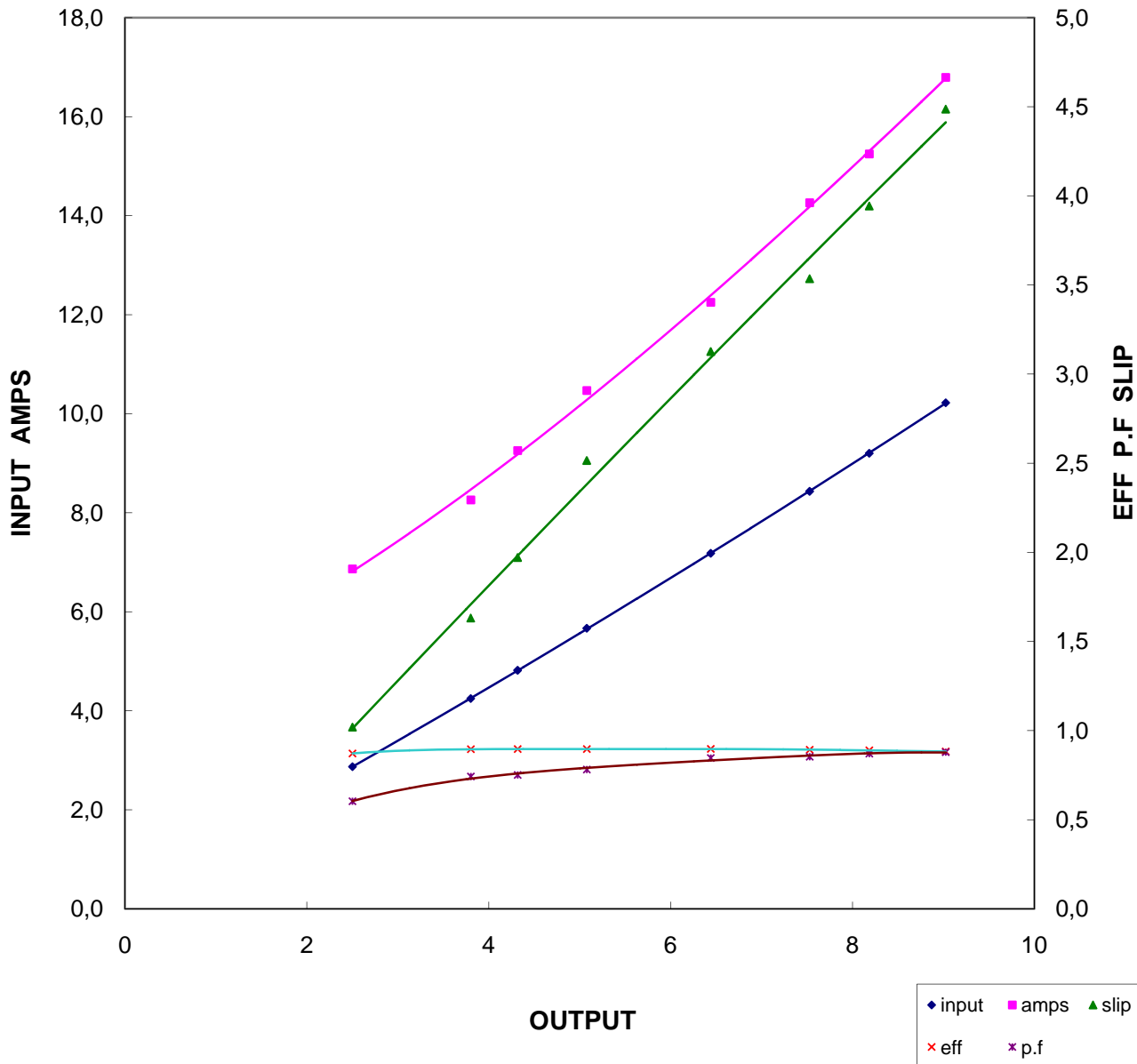
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400 VOLTS	13,8	AMPS	DELTA	CONNECTION	
1495 RPM	S1	DUTY			

LOAD CURVE



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