mecc alte

Totally Focused. Totally Independent.

Technical Guide

RP^ ; 7 ; P

C-TYPE

DDS
Dynamic Data Support

The world's largest independent producer of alternators 1 – 5,000kVA

c w 57

Standards

Alternators are designed and produced within an ISO 9001 environment. The entire series is manufactured according to, and complies with, the most common specifications such as CEI 2-3, IEC 34-1, EN 60034-1, VDE 0530, BS 4999-5000, NF 51.111, NEMA MG 1-2011, ISO 8528-3. They also comply with other specific standards such as UL1446, UL 1004/4 and /B and CAN/CSA-C22.2 No14-95-No100-95.

Windings and Performances

All windings are 2/3rds pitch to eliminate triplen harmonics within the voltage waveform and to avoid excessive neutral currents in certain parallel operating conditions. A fully interconnected aluminium or copper damper cage is supplied on the rotor of all models (excluding the ECP3 series).

- 12 wire reconnectable:
  50Hz – 380V to 440V and 220/110V to 240/120V (de-rates may apply at certain voltages)
  60Hz – 380V to 480V and 220/110V to 240/120V (de-rates may apply at certain voltages)

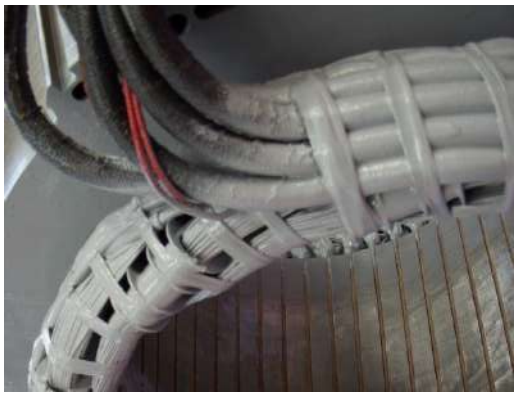
- 6 wire reconnectable:
  50Hz – 380V to 440V and 220V to 240V (de-rates may apply at certain voltages)
  60Hz – 380V to 480V and 220V to 240V (de-rates may apply at certain voltages)

Winding Configurations	Standard		Special (dedicated)			
	12 wire Reconnectable	6 wire Reconnectable	380V and 600V 60Hz	690V 50/60Hz	220-240V 1ph 50Hz	220-240V 1ph 60Hz
ECP3 to ECO38	Std	Option	Option	Option	Option	Option
ECO40	Std	Option	Option	Option	Option (to ECO40)	Option (to ECO40)
Insulation materials	Class H	Class H	Class H	Class H	Class H	Class H
High efficiency	Std	Std	Std	Std	Std	Std
High motor starting	>300%	>300%	>300%	>300%	>300%	>300%
THD (Total Harmonic Distortion)	Typically <3.5% full load L-L	Typically <3.0% full load L-L	Typically <3.5% full load L-L	Typically <3.5% full load L-L	Typically <4.5% full load L-N	Typically <4.5% full load L-N
Interference suppression	VDE 0875 G/N/K, EN61000-6-3, EN61000-6-2, others available on request					

Winding Protection

There are various degrees of protection for the windings following the standard impregnation process, as can be seen here. The TOTAL+ epoxy black coating is recommended for arduous applications.

Winding Protection:	STANDARD	STANDARD+	GREY	GREY+	TOTAL+
ECP3	Std	Option	Option	Option	Option
ECP28 and ECP32	-	Std	Option	Option	Option
NPE32, ECP34 to ECO40	-	-	Std	Option	Option



Grey treatment (marinization) on the left, TOTAL+ treatment shown on the right. The EG43 grey varnish, is an high temperature insulating enamel that forms a tough and flexible film, with excellent moisture and chemical protection. It is water and oil proof, and also protects windings from abrasion. It is applied spraying an over coating layer over the impregnated winding, or dipping the stator in a varnish barrel for superior treatments

The TOTAL+ is a protection system that makes Mecc Alte special. It is the ultimate winding treatment that offers truly superior performances when the environment is really harsh, or the application very demanding. The TOTAL+ is also extremely resistant to the particle abrasion as it adsorbs the impacts.

Protection for Environment

In addition to protection on the windings themselves, the alternators can have increased degree of protection. Standard level is IP23 but the following solutions are also available: IP23 DP with inlet filters, IP23 with only terminal box in IP45, IP43 and IP45. Derates may be applied.

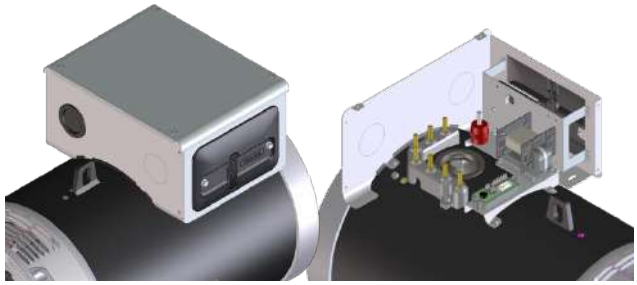
Info: https://www.meccalte.com/downloads/MA0605_Bulletin_IP.pdf

Construction

The robust mechanical structure withstands up to 5G in any direction and 9G vertically and its design permits easy access to the connections and components during routine maintenance check-ups. The mechanical design has used the most advanced FEM techniques. The materials used are: FEP12 steel for the frame, C45 steel for the shaft and cast iron or aluminum pressure die cast for the end-brackets: fans are aluminum die casted either nylon fiber glass loaded, UL compliant materials. Rotors are dynamically balanced according grades 6.3 (up to series 32) or 2.5 (from series 34 onwards) of ISO 1940-1.

Terminals and Terminal Box

Easy access to regulators is possible due to a new AVR panel. Terminal boards have been redesigned into a special L configuration, specifically to ease customer connections; with this kind of terminal board it is posible to place a second terminal board in order to get 12 available terminals. Current transformers are available as an option on series ECO38 with single or dual output.



Excitation and Regulation Systems

All ECP/ECO series have MAUX auxiliary winding to power the digital regulator. Both DSR and the DER1 are available to connect to PC through the DxR2 USB interface and DxR TERMINAL software to interrogate/download alarms & settings for analysis or for cloning other regulators. DER2 has got an integrated USB connection and can be connected to the PC without any optional connection boards. More settings such as LAMS, digital RAM based synchronous external control and soft start are obtainable through the DxR connection. Simple analogue potentiometers are available for the more usual adjustments.

Excitation Systems	DSR	DER1	DER2
ECP3 to ECO38	Std	Option	Option
ECO40	-	Std	Option
Parallel Operation	√	√	√
Mains Parallel	√	√	√
3 Phase Sensing (rms)	-	√	√
Accuracy	+/-1%	+/-0.5%	+/-0.5%
Remote Voltage Control	√	√	√
Alarm Log	√	√	√
Analogue and Digital Configurable	√	√	√
LAMS (Load Acceptance V/f)	√	√	√
APO (Active Protection Output)	√	√	√
Soft Start	√	√	√
High dynamic response	-	-	√
USB connection without external boards	-	-	√

For a given motor start duty a smaller machine may be selected – also enhanced by low sub-transient reactance values for non-linear loads. The whole range is capable of >300% sustained short circuit current for up to 20 seconds.

Optional PMG

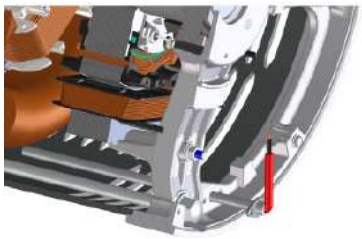
The Mecc Alte PMG is available on ECP28, ECP32, ECP34 and ECO38 as factory-fitted option; alternatively, only the predisposition for the retrofit, for subsequent assembly, is available on option. On series ECO40 is available as a factory-fitted or retro-fitted options.

The complete AVR range is fully compatible with both MAUX and PMG systems; this minimises spare parts management and flexibility of stock as one AVR suits all applications.

The PMG is delivering the same amount of kVA available with the MAUX.

Dew Heater

Our whole range can be fitted with anti-condensation heaters of adequate power sized to alternator kVA. Voltage for heaters must be specified when ordering. New cylindrical cartridge style heaters are available on request and it can be retrofitted.



Accessories

Additional optionals can be fit on our alternator series, such as PTC thermistors or PT100 both on windings and bearings, dew heaters, high and low profile of terminal boxes (on most series), parallel devices (standard from ECO38), current and voltage transformers, air filters, IP43 and IP45 protections and many others.
For more info visit: https://www.meccalte.com/en/products/alternators/accessories/c-type-accessories

Deration coefficients

	Ambient temperature (Celsius)					
Altitude (meters)	25	40	45	50	55	60
≤ 1000	1.07	1	0.96	0.93	0.91	0.89
> 1000 ≤ 1500	1.01	0.96	0.92	0.89	0.87	0.84
> 1500 ≤ 2000	0.96	0.91	0.87	0.84	0.83	0.79
> 2000 ≤ 3000	0.9	0.85	0.81	0.78	0.76	0.73

Notes on short circuit curves

The indicated coefficients have to be used to correct the three phase short circuit curves values as a function of the rated voltage.

50 Hz		*60 Hz*	
Voltage	*Factor*	*Voltage*	*Factor*
380	0.93X	415	0.85X
400	1X	440	0.90X
415	1.04X	460	0.95X
440	1.10X	480	1X

The indicated coefficient have to be used to correct the three phase short circuit curves values as a function of the type of short circuit voltage.

	3 phase	*2 phase L-L*	*1 phase L-N*
Istantaneous	1X	0.87X	1.30X
Minimum	1X	1.80X	3.20X
Sustained	1X	1.50X	2.50X
Max Duration	20 sec.	10 sec.	4 sec.

All the curves are shown for series or parallel star connection at 400V 50 Hz or 480V 60 Hz. If the unit is reconnected from series to parallel star, the additional coefficient is 2X. From series star to series delta, it is 1.72X. From series star to parallel delta, it is 3.44X.

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a w tw	;	V s ° us	U
azs w tw	:	a wu ° us	\a9:
] tw x °w	89	] QR Ows ° y w	@ 8B9c d
R wu °	O z w	QR Ows ° y w	@ 99
c wy s w	QRc 486N	[s ° ^ w www	99=7
h ° v° y ° uz	96:	N ° vw	748777
P vw syw wwww uw	e7; 7=a:	Os s u° y	\d^ 8C; 748

SNu

gN6 h Mew 5c ° w6N t°w P479BaS																				
	deN] QOk48@ 69A				deN] QOk48=76; 7				U48B=6; 7				S487=6; 7				O4B76; 7			
dw°w d s k	A@7g	B77g	B: 7g	BB7g	A@7g	B77g	B: 7g	BB7g	A@7g	B77g	B: 7g	BB7g	A@7g	B77g	B: 7g	BB7g	A@7g	B77g	B: 7g	BB7g
as s wd s kk	: B7g	; 77g	; 8=g	; ; 7g	: B7g	; 77g	; 8=g	; ; 7g	: B7g	; 77g	; 8=g	; ; 7g	: B7g	; 77g	; 8=g	; ; 7g	: B7g	; 77g	; 8=g	; ; 7g
dw°w Qw s Δ	; ; 7g	; @7g	; B7g	=7Bg	; ; 7g	; @7g	; B7g	=7Bg	; ; 7g	; @7g	; B7g	=7Bg	; ; 7g	; @7g	; B7g	=7Bg	; ; 7g	; @7g	; B7g	=7Bg
as s w Qw s ΔΔ	997g	9: 7g	9; 7g	9=; g	997g	9: 7g	9; 7g	9=; g	997g	9: 7g	9; 7g	9=; g	997g	9: 7g	9; 7g	9=; g	997g	9: 7g	9; 7g	9=; g
zSVz	440	**440**	440	404	417	**417**	417	386	400	**400**	400	370	370	**370**	370	342	320	**320**	320	296
	352	**352**	352	323	334	**334**	334	309	320	**320**	320	296	296	**296**	296	273	256	**256**	256	237
zSWz	491	**491**	491	393	468	**468**	468	375	450	**450**	450	360	410	**410**	410	330	360	**360**	360	288
	393	**393**	393	314	374	**374**	374	300	360	**360**	360	288	328	**328**	328	264	288	**288**	288	230
zSkz	550	**550**	550	503	521	**521**	521	479	500	**500**	500	460	450	**450**	450	414	400	**400**	400	368
	440	**440**	440	402	417	**417**	417	383	400	**400**	400	368	360	**360**	360	331	320	**320**	320	294
zSVz	601	**601**	590	546	567	**567**	557	515	550	**550**	540	500	500	**500**	490	454	440	**440**	432	400
	481	**481**	472	437	454	**454**	446	412	440	**440**	432	400	400	**400**	392	363	352	**352**	346	320
zSWz	675	**675**	675	616	645	**645**	645	588	625	**625**	625	570	564	**564**	564	515	500	**500**	500	456
	540	**540**	540	493	516	**516**	516	470	500	**500**	500	456	451	**451**	451	412	400	**400**	400	365
zSkz	735	**735**	735	560	700	**700**	700	535	680	**680**	680	520	630	**630**	630	483	544	**544**	544	416
	588	**588**	588	448	560	**580**	580	428	544	**544**	544	416	504	**504**	504	386	435	**435**	435	333
zS z	825	**825**	825	740	777	**777**	777	700	750	**750**	750	680	690	**690**	690	630	600	**600**	600	544
	660	**660**	660	592	622	**622**	622	560	600	**600**	600	544	552	**552**	552	504	480	**480**	480	435

TNu

gN6 h Mew 5c ° w6N t°w P479BaS																				
	deN] QOk48@ 69A				deN] QOk48=76; 7				U48B=6; 7				S487=6; 7				O4B76; 7			
dw°w d s k	B: 7g	BB7g	C97g	C@7g	B: 7g	BB7g	C97g	C@7g	B: 7g	BB7g	C97g	C@7g	B: 7g	BB7g	C97g	C@7g	B: 7g	BB7g	C97g	C@7g
as s wd s kk	; 8=g	; ; 7g	; @7g	; B7g	; 8=g	; ; 7g	; @7g	; B7g	; 8=g	; ; 7g	; @7g	; B7g	; 8=g	; ; 7g	; @7g	; B7g	; 8=g	; ; 7g	; @7g	; B7g
dw°w Qw s Δ	; B7g	=7; g	=: 7g	==; g	; B7g	=7; g	=: 7g	==; g	; B7g	=7; g	=: 7g	==; g	; B7g	=7; g	=: 7g	==; g	; B7g	=7; g	=: 7g	==; g
as s w Qw s ΔΔ	9; 7g	9=; g	9@=g	9AAg	9; 7g	9=; g	9@=g	9AAg	9; 7g	9=; g	9@=g	9AAg	9; 7g	9=; g	9@=g	9AAg	9; 7g	9=; g	9@=g	9AAg
zSVz	459	492	525	**525**	438	469	500	**500**	420	450	480	**480**	383	410	440	**440**	336	360	384	**384**
	367	394	420	**420**	350	375	400	**400**	336	360	384	**384**	306	328	352	**352**	269	288	307	**307**
zSWz	524	557	590	**590**	500	532	563	**563**	480	510	540	**540**	435	460	490	**490**	384	408	432	**432**
	419	446	472	**472**	400	426	450	**450**	384	408	432	**432**	348	368	392	**392**	307	326	346	**346**
zSkz	590	634	660	**660**	563	604	625	**625**	540	580	600	**600**	484	520	540	**540**	432	464	480	**480**
	472	507	528	**528**	450	483	500	**500**	432	464	480	**480**	387	416	432	**432**	346	371	384	**384**
zSVz	623	669	722	**722**	587	649	680	**680**	570	630	660	**660**	515	570	600	**600**	456	504	528	**528**
	498	535	578	**578**	470	519	544	**544**	456	504	528	**528**	412	456	480	**480**	365	403	422	**422**
zSWz	720	762	810	**810**	688	730	775	**775**	665	705	750	**750**	605	636	677	**677**	532	564	600	**600**
	576	610	648	**648**	550	584	620	**620**	532	564	600	**600**	484	509	542	**542**	426	451	480	**480**
zSkz	778	843	882	**882**	741	803	840	**840**	720	780	816	**816**	665	720	756	**756**	576	624	653	**653**
	622	674	706	**706**	593	642	672	**672**	576	624	653	**653**	532	576	604	**604**	461	499	522	**522**
zS z	930	970	970	**970**	885	925	925	**925**	860	900	900	**900**	790	830	830	**830**	688	720	720	**720**
	744	776	776	**776**	708	740	740	**740**	688	720	720	**720**	632	664	664	**664**	550	576	576	**576**

5 Eo u HRNN

f s s ww / ww5R] @77: ; 4; 0			RP^ ; 7 8d; P	RP^ ; 7 9d; P	RP^ ; 7 : d; P	RP^ ; 7 8Z; P	RP^ ; 7 9Z; P	RP^ ; 7 : Z; P	RP^ ; 7 gZ; P
Xd	Q° wu 4s ° uz wsu s uw	%	286,7	240,1	258,7	246,3	270	234,9	175,9
X'd	Q° wu 4s ° s °w wsu s uw	%	23,3	22,1	21,7	20,1	19,8	18,7	16,7
X"d	Q° wu 4s ° t s °w wsu s uw	%	14,7	12,5	11,8	10,6	10,5	9,52	9
Xq	b sv s w4s ° uz wsu s uw	%	115,9	110,7	111,8	115,9	157,1	145,9	122,1
X'q	b sv s w4s ° s °w wsu s uw	%	115,9	110,7	111,8	115,9	157,1	145,9	122,1
X"q	b sv s w4s ° t s °w wsu s uw	%	29,2	28,4	27,3	24,9	24	16,8	14,8
X_2	] wys ° w4 w w uw wsu s uw	%	19,1	18,2	17,3	13	12,4	14,6	12,5
X_0	l w w w uw wsu s uw	%	3,62	3,21	3,1	2,9	2,9	2,48	2,28
ds s ww									
Xd	Q° wu 4s ° uz wsu s uw	%	238	199,3	214,7	204,4	224,1	195	146
X'd	Q° wu 4s ° s °w wsu s uw	%	19,3	18,4	18	16,7	16,4	15,5	13,8
X"d	Q° wu 4s ° t s °w wsu s uw	%	12,2	10,4	9,79	8,76	8,72	7,9	7,47
Xq	b sv s w4s ° uz wsu s uw	%	96,2	91,9	92,8	96,2	130,4	121,1	101,4
X'q	b sv s w4s ° s °w wsu s uw	%	96,2	91,9	92,8	96,2	130,4	121,1	101,4
X"q	b sv s w4s ° t s °w wsu s uw	%	24,2	23,5	22,7	20,7	19,9	13,9	12,3
X_2	] wys ° w4 w w uw wsu s uw	%	15,8	15,1	14,4	10,8	10,3	12,1	10,4
X_0	l w w w uw wsu s uw	%	3,62	3,21	3,1	2,9	2,9	2,48	2,28
Kcc	dz u° u ° s °		0,36	0,5	0,4	0,49	0,45	0,44	0,59
T'd	e s °w ° wu s	sec	0,16	0,13	0,14	0,14	0,15	0,18	0,18
T"d	d t s °w ° wu s	sec	0,019	0,019	0,021	0,021	0,019	0,019	0,015
T'do	^ w u° u ° ° wu s	sec	2,55	2,7	2,8	2,9	3,1	3,1	3,7
Ta	N s w ° wu s	sec	0,017	0,03	0,031	0,04	0,04	0,052	0,071

m Eo u HRNN

Io	R u° s ° u w s sv	A	0,9	0,9	0,5	0,8	0,9	0,7	0,7
Ic	R u° s ° u w s x sv	A	4,1	3,7	3,4	3,7	4,3	4,2	4,3
^ w sv						4			
^ w sv w 97 wu5		,				300			
Uws v° ° s °		W	19703	21356	22833	24135	26316	28632	30915
ewww z wUs °uSsu 4eUS		%	<2	<2	<2	<2	<2	<2	<2
h s wx Q° 5/eUQ0x sv ZZ6Z]		%	2,6 / 2,6	2,7 / 2,8	2,4 / 2,5	2,5 / 2,5	2,2 / 2,4	2,1 / 2,1	2,2 / 2,2
h s wx Q° 5/eUQ0 sv ZZ6Z]		%	2,9 / 2,9	2,5 / 2,6	2,6 / 2,5	2,3 / 2,4	2,4 / 2,5	2,4 / 2,4	2,5 / 2,5

5 Eo u HRaN

f s s ww / ww5R] @77: ; 4; 0			RP^ ; 7 8d; P	RP^ ; 7 9d; P	RP^ ; 7 : d; P	RP^ ; 7 8Z; P	RP^ ; 7 9Z; P	RP^ ; 7 : Z; P	RP^ ; 7 gZ; P
Xd	Q° wu 4s ° uz wsu s uw	%	286,7	240,1	258,7	246,3	270	234,9	175,9
X'd	Q° wu 4s ° s °w wsu s uw	%	23,3	22,1	21,7	20,1	19,8	18,7	16,7
X"d	Q° wu 4s ° t s °w wsu s uw	%	14,7	12,5	11,8	10,6	10,5	9,52	9
Xq	b sv s w4s ° uz wsu s uw	%	115,9	110,7	111,8	115,9	157,1	145,9	122,1
X'q	b sv s w4s ° s °w wsu s uw	%	115,9	110,7	111,8	115,9	157,1	145,9	122,1
X"q	b sv s w4s ° t s °w wsu s uw	%	29,2	28,4	27,3	24,9	24	16,8	14,8
X_2	] wys ° w4 w w uw wsu s uw	%	19,1	18,2	17,3	13	12,4	14,6	12,5
X_0	l w w w uw wsu s uw	%	3,62	3,21	3,1	2,9	2,9	2,48	2,28
ds s ww									
Xd	Q° wu 4s ° uz wsu s uw	%	238	199,3	214,7	204,4	224,1	195	146
X'd	Q° wu 4s ° s °w wsu s uw	%	19,3	18,4	18	16,7	16,4	15,5	13,9
X"d	Q° wu 4s ° t s °w wsu s uw	%	12,2	10,4	9,79	8,76	8,72	7,9	7,47
Xq	b sv s w4s ° uz wsu s uw	%	96,2	91,9	92,8	96,2	130,4	121,1	101,3
X'q	b sv s w4s ° s °w wsu s uw	%	96,2	91,9	92,8	96,2	130,4	121,1	101,3
X"q	b sv s w4s ° t s °w wsu s uw	%	24,2	23,5	22,7	20,7	19,9	13,9	12,3
X_2	] wys ° w4 w w uw wsu s uw	%	15,8	15,1	14,4	10,8	10,3	12,1	10,4
X_0	l w w w uw wsu s uw	%	3,62	3,21	3,1	2,9	2,9	2,48	2,28
Kcc	dz u° u ° s °		0,36	0,5	0,4	0,49	0,45	0,44	0,59
T'd	e s °w ° wu s	sec	0,16	0,13	0,14	0,14	0,15	0,18	0,18
T"d	d t s °w ° wu s	sec	0,019	0,019	0,021	0,021	0,019	0,019	0,015
T'do	^ w u° u ° ° wu s	sec	2,55	2,7	2,8	2,9	3,1	3,1	3,7
Ta	N s w ° wu s	sec	0,017	0,03	0,031	0,04	0,04	0,052	0,071

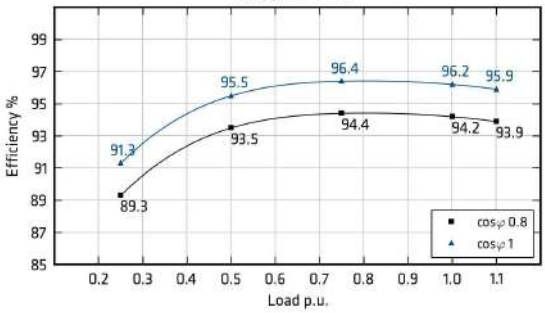
m Eo u HRaN

Io	R u° s ° u w s sv	A	0,9	0,9	0,5	0,8	0,9	0,7	0,7
Ic	R u° s ° u w s x sv	A	4,1	3,7	3,4	3,7	4,3	4,2	4,3
^ w sv						4			
^ w sv w 97 wu5		,				300			
Uws v° ° s °		W	19361	21305	22092	23148	23701	24386	25342
ewww z wV wxws uwSsu 4e\5			<40	<40	<40	<40	<40	<40	<40
h s wx Q° 5/eUQ0x sv ZZ6Z]		%	2,6 / 2,6	2,7 / 2,8	2,4 / 2,5	2,5 / 2,5	2,2 / 2,4	2,1 / 2,1	2,2 / 2,2
h s wx Q° 5/eUQ0 sv ZZ6Z]		%	2,9 / 2,9	2,5 / 2,6	2,6 / 2,5	2,3 / 2,4	2,4 / 2,5	2,4 / 2,4	2,5 / 2,5

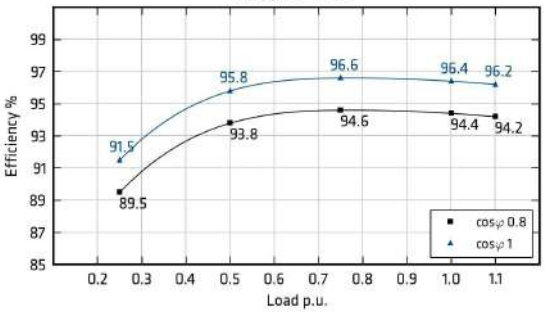
r l SNu

[vw		: B7g =7U					; 77g =7U					; 8=g =7U					; ; 7g =7U				
		75B=	75=	75A=	8	88B	75B=	75=	75A=	8	88B	75B=	75=	75A=	8	88B	75B=	75=	75A=	8	88B
RP^; 7 8d; P	%	89,1	93,3	94,2	94,1	93,9	89,3	93,5	94,4	94,2	93,9	89,2	93,3	94,1	94,0	93,7	89,0	93,1	93,9	93,8	93,5
RP^; 7 9d; P	%	89,4	93,5	94,3	94,1	93,9	89,5	93,8	94,6	94,4	94,2	89,4	93,7	94,5	94,2	93,9	89,2	93,5	94,1	93,9	93,7
RP^; 7 : d; P	%	90,2	93,7	94,6	94,4	94,3	90,3	93,9	94,8	94,6	94,4	90,1	93,7	94,7	94,5	94,3	89,8	93,4	94,4	94,2	94,0
RP^; 7 8Z; P	%	90,5	94,0	94,9	94,7	94,5	90,5	94,1	95,0	94,8	94,5	90,3	94,0	94,9	94,6	94,2	90,0	93,8	94,5	94,4	94,2
RP^; 7 9Z; P	%	91,0	94,1	94,9	94,8	94,6	91,1	94,2	95,1	95,0	94,8	91,1	94,1	94,9	94,7	94,4	90,5	94,0	94,6	94,4	94,2
RP^; 7 : Z; P	%	91,4	94,1	95,0	94,8	94,6	91,5	94,3	95,2	95,0	94,8	91,3	94,2	95,0	94,7	94,4	90,8	93,8	94,4	94,5	94,4
RP^; 7 gZ; P	%	91,5	94,2	95,1	94,8	94,5	91,6	94,4	95,3	95,1	94,8	91,4	94,2	95,1	94,9	94,6	90,8	93,7	94,6	94,4	94,2

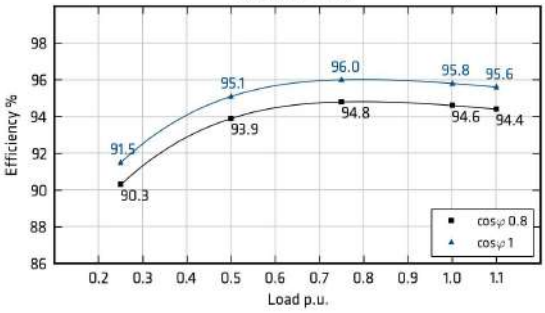
zS V z
400/230 50Hz



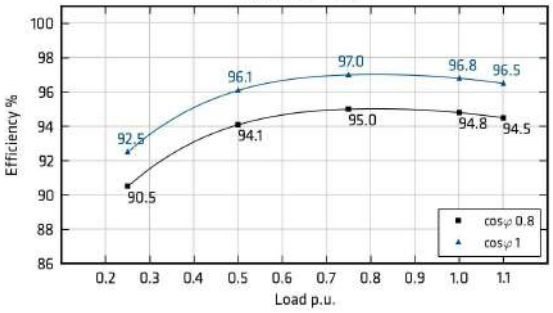
zS Wz
400/230 50Hz



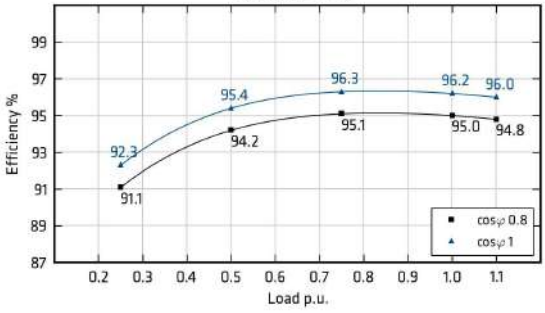
zS k z
400/230 50Hz



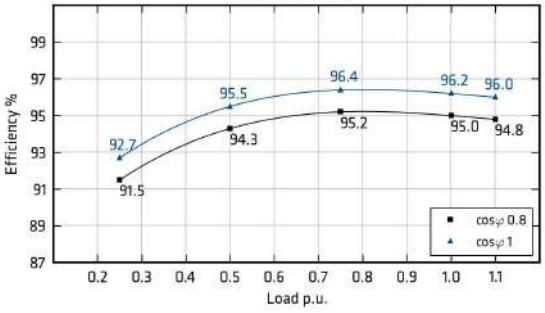
zS V z
400/230 50Hz



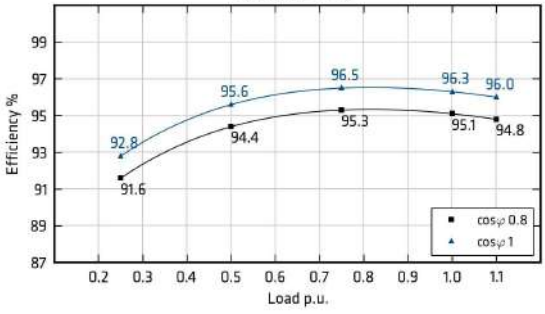
zS Wz
400/230 50Hz



zS k z
400/230 50Hz



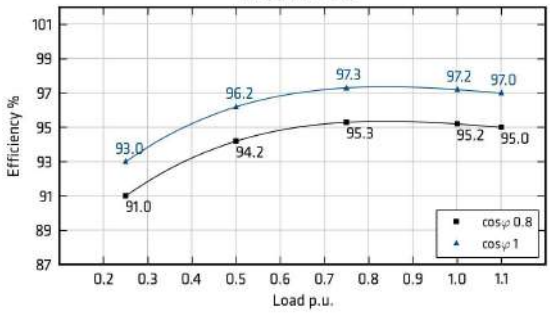
zS z
400/230 50Hz



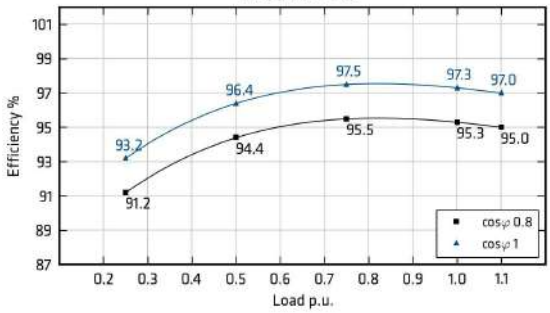
r l TNu

[vw		; 8=g @7U					; ; 7g @7U					; @7g @7U					; B7g @7U				
		75B=	75=	75A=	8	88B	75B=	75=	75A=	8	88B	75B=	75=	75A=	8	88B	75B=	75=	75A=	8	88B
RP^; 7 8d; P	%	90,4	93,3	94,5	94,4	94,2	90,6	93,8	94,9	94,8	94,7	90,8	94,0	95,2	95,1	94,9	91,0	94,2	95,3	95,2	95,0
RP^; 7 9d; P	%	90,6	93,5	94,6	94,5	94,3	90,9	94,0	95,1	95,0	94,8	91,1	94,2	95,3	95,2	94,9	91,2	94,4	95,5	95,3	95,0
RP^; 7 : d; P	%	90,5	93,9	95,2	95,0	94,7	90,7	94,5	95,5	95,3	95,1	90,9	94,7	95,7	95,5	95,3	91,1	94,9	95,8	95,6	95,3
RP^; 7 8Z; P	%	91,0	94,7	95,5	95,3	95,1	91,1	94,8	95,7	95,6	95,5	91,1	94,9	95,8	95,7	95,6	91,3	95,1	96,0	95,8	95,6
RP^; 7 9Z; P	%	92,1	94,8	95,6	95,5	95,1	92,1	94,9	96,0	95,9	95,6	92,2	95,0	96,1	96,0	95,7	92,3	95,2	96,3	96,2	95,9
RP^; 7 : Z; P	%	91,4	94,8	95,8	95,7	95,3	91,5	95,0	96,1	96,0	95,7	91,7	95,2	96,4	96,2	95,9	92,1	95,5	96,6	96,4	96,0
RP^; 7 gZ; P	%	91,4	94,8	95,9	95,8	95,4	91,7	95,1	96,3	96,1	95,8	92,0	95,4	96,7	96,5	96,2	92,2	95,6	96,8	96,6	96,1

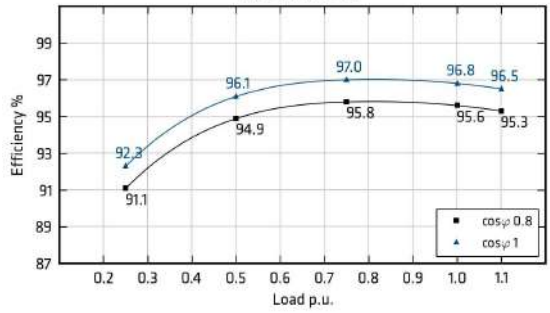
zSVz
480/277 60Hz



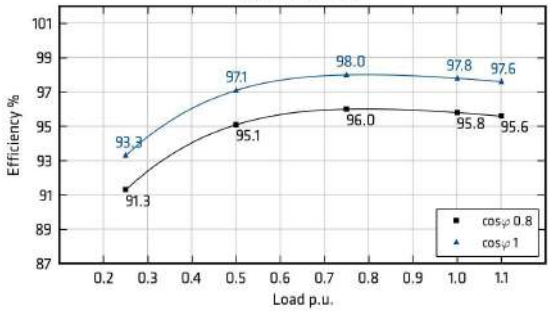
zSWz
480/277 60Hz



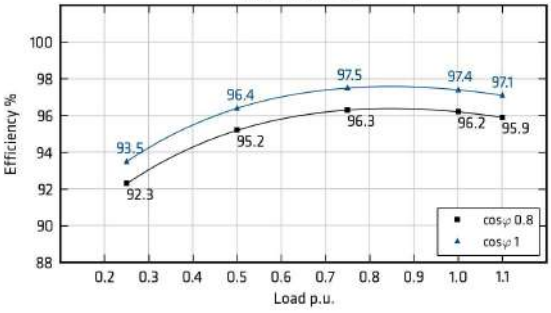
zSkz
480/277 60Hz



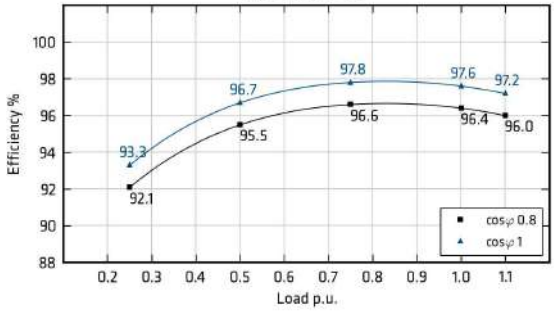
zSVz
480/277 60Hz



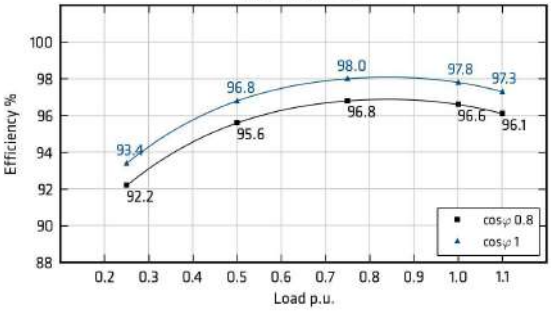
zSWz
480/277 60Hz



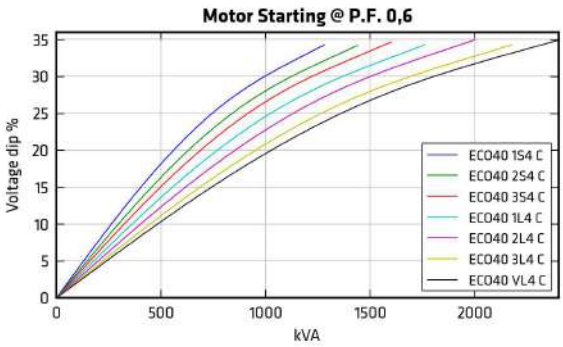
zSkz
480/277 60Hz



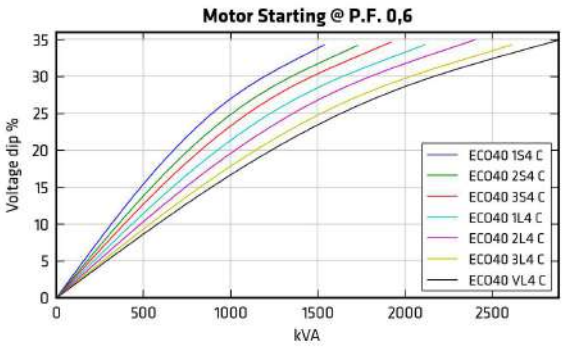
zS z
480/277 60Hz

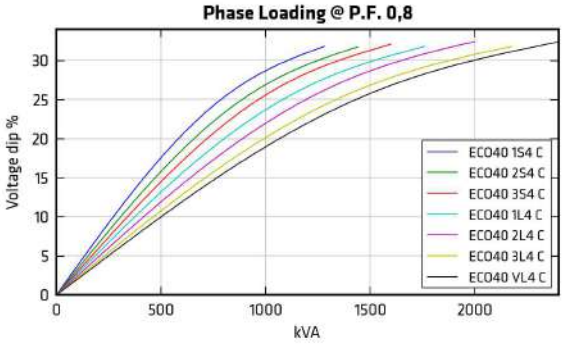


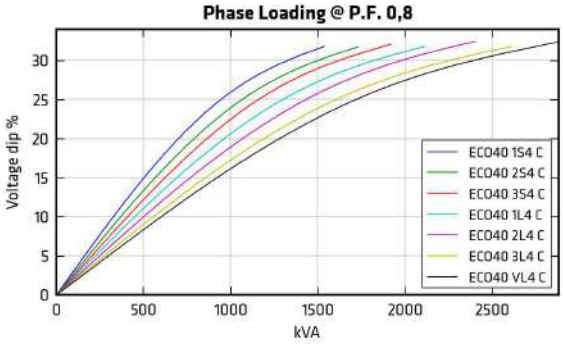
zSS H S

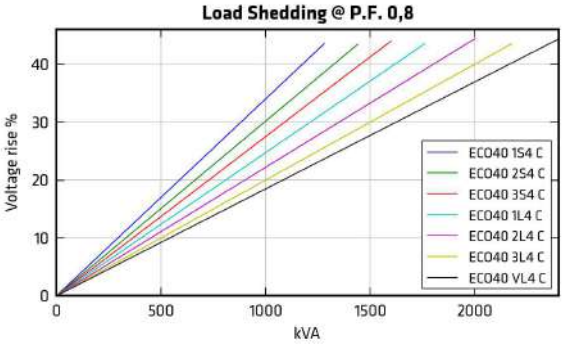


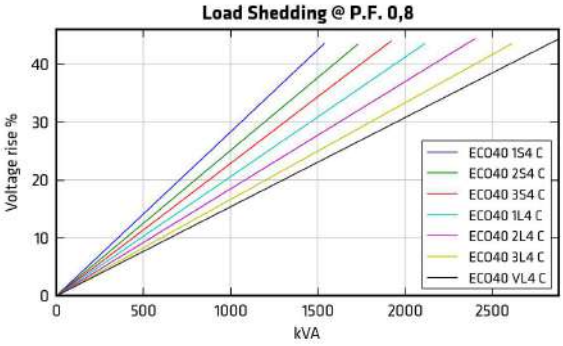
z S H S











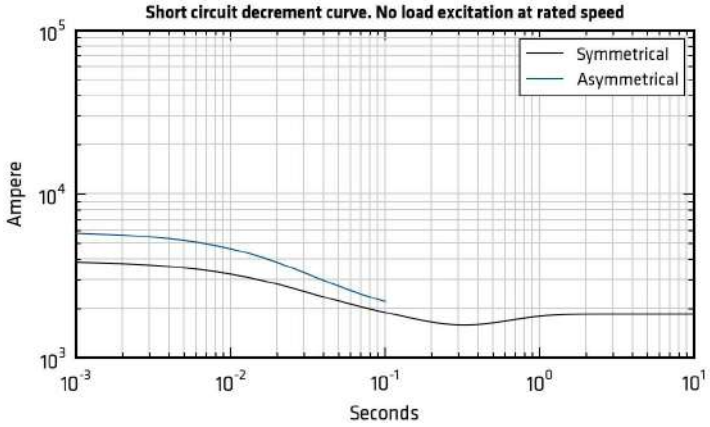
V vw us w s °w u w s s x u ° xs w xsu syw°x ° v°us ww3 ws w uwww s x D

a w Ssu u wx°u°w u wu /aSPPCB t w ww w xsu 7 5@u w D
aSPPH ° /Nc Pu /aS w 00675B
R s w5ezwaSPP s w xsu 7 5 ° 888C9 maSPPH ° /Nc Pu /7 5 00675B c5ez° ws zs zw sywxs s s y° w w s x7 5 ° w ° s w zw
w zs us t w wsv zw x7 5@u w°x zw sv ° u °vwww 888C9 ° w t °yyw /8C, z°yzw s w5C5
V z° w s w8s 877 gN sv ° w ° s x7 5 ° w ° s w ° sywxs s 88C gN sv ° w ° s x7 5@5

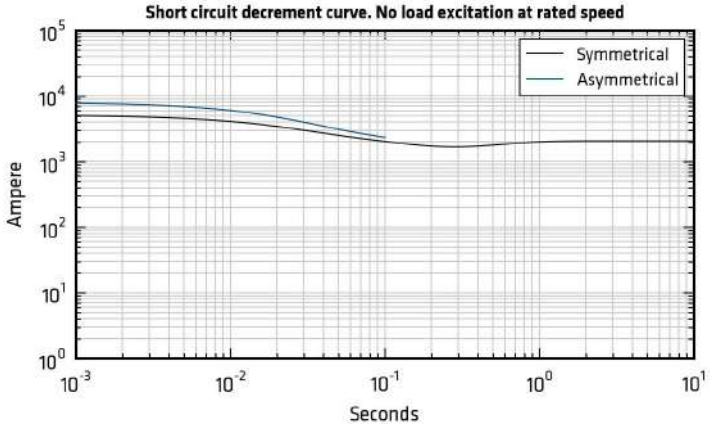
g sywu wx°u°w u wu /gPPCD
gPPH/; 776g w CB °x=7 U EgPPH/; B76g w CB °x@7 U
R s w5gPP s ; 8=g @7 U ° 85 : B mgPPH/; B76; 8=Cp9c5ez° ws zs zw sywxs s s y° w w s ; 8=g ° w ° s w zw w zs us t w wsv
zw w xsu 7 5@u w°x zw sv ° u °vwww 85 : B ° w t °yyw /: : , z°yzw s w5C5
V z° w s w8s 877 gN sv ° w ° s ; 8=g ° w ° s w ° sywxs s 8: gN sv ° w ° s ; B7g5

SNu E

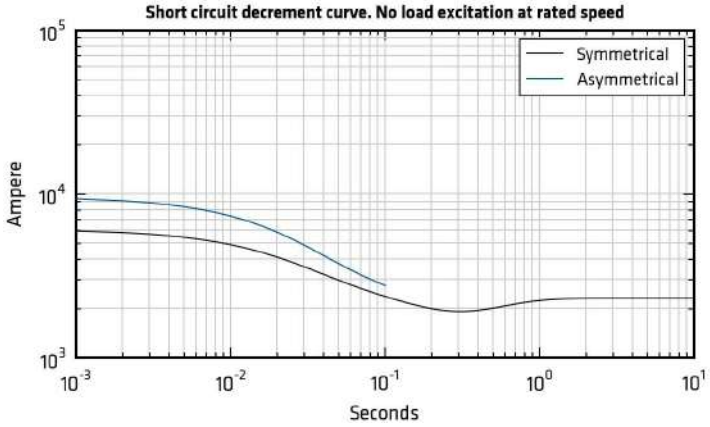
RP^ ; 7 8d; P



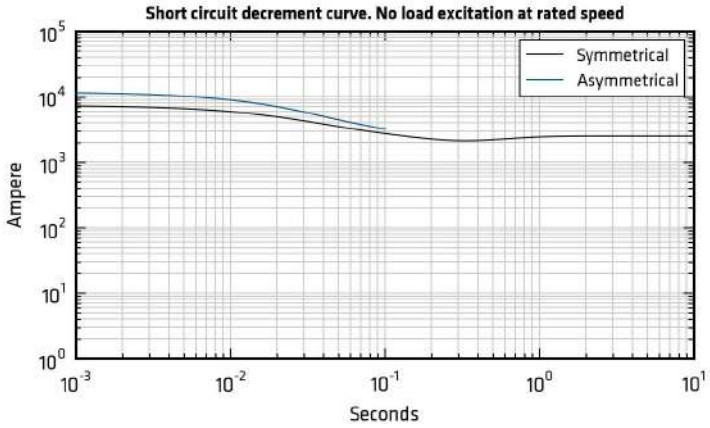
RP^ ; 7 9d; P



RP^ ; 7 : d; P



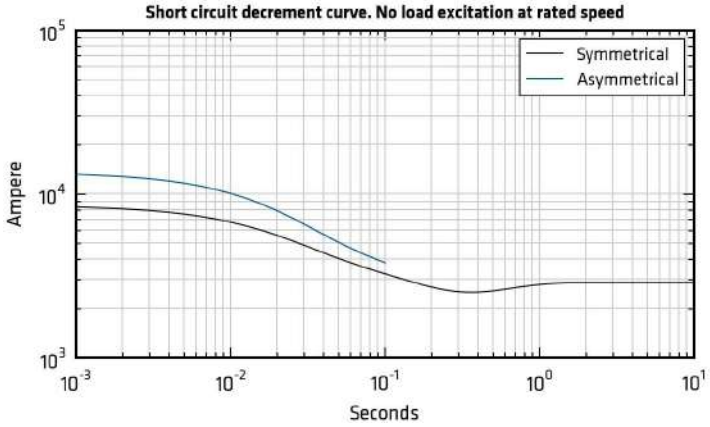
RP^ ; 7 8Z; P



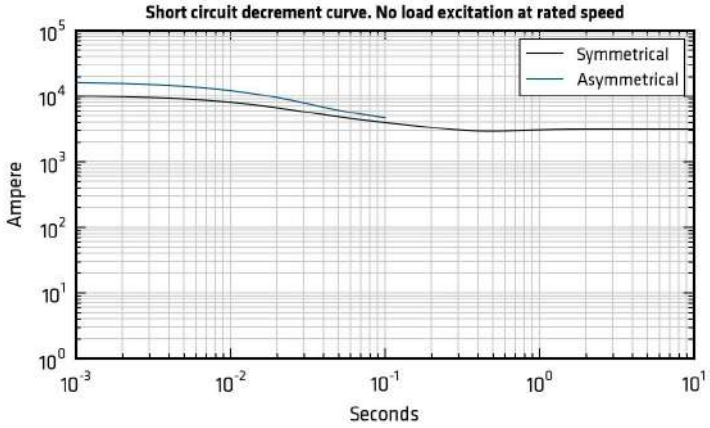
1a ws w ww st w s syw@

SNu E

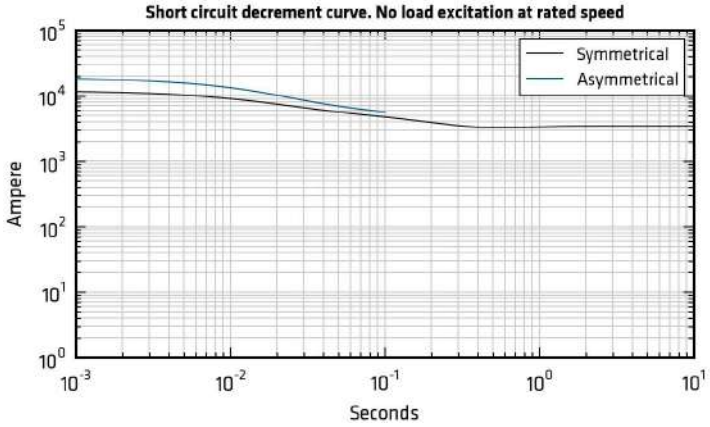
RP^ ; 7 9Z; P



RP^ ; 7 : Z; P



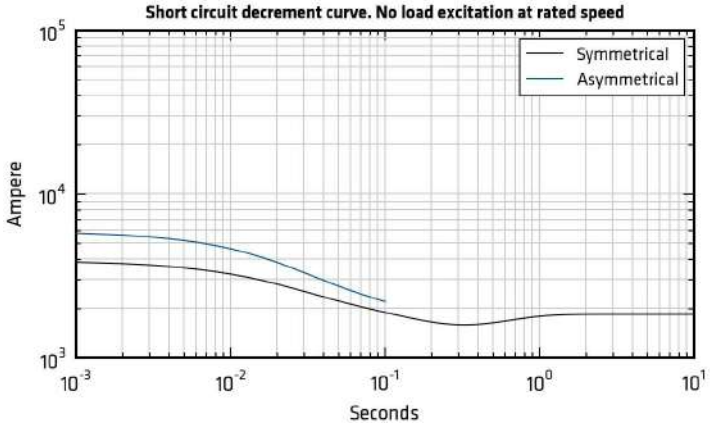
RP^ ; 7 gZ; P



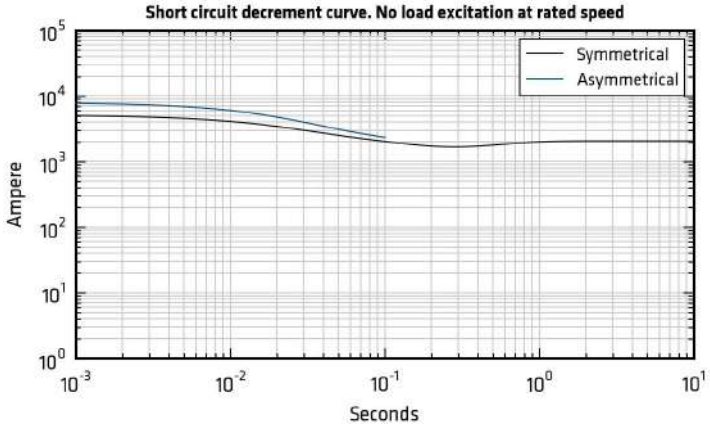
1a ws w ww st w s syw@

TNu E

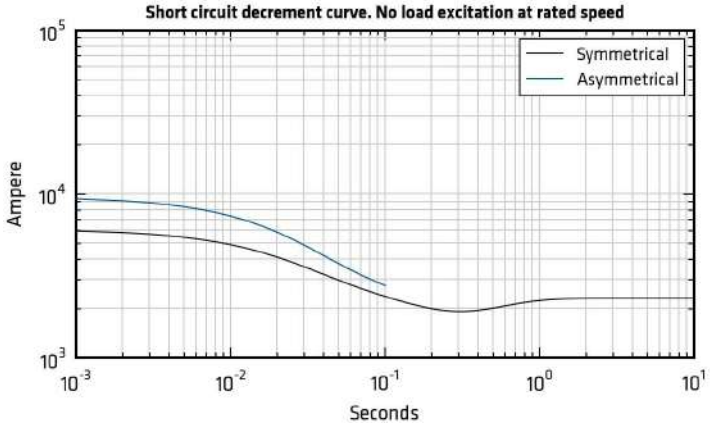
RP^ ; 7 8d; P



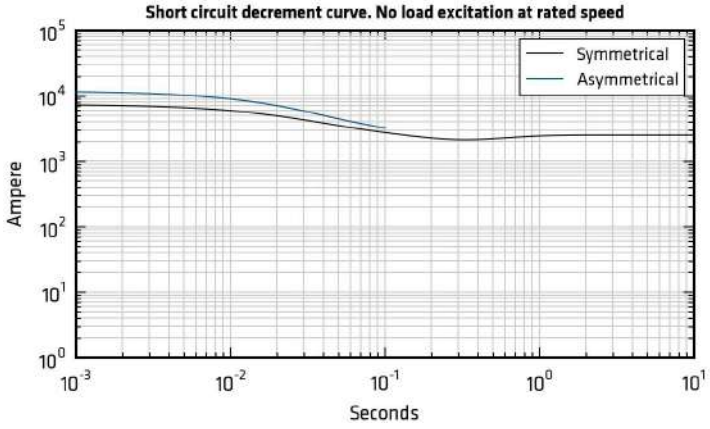
RP^ ; 7 9d; P



RP^ ; 7 : d; P



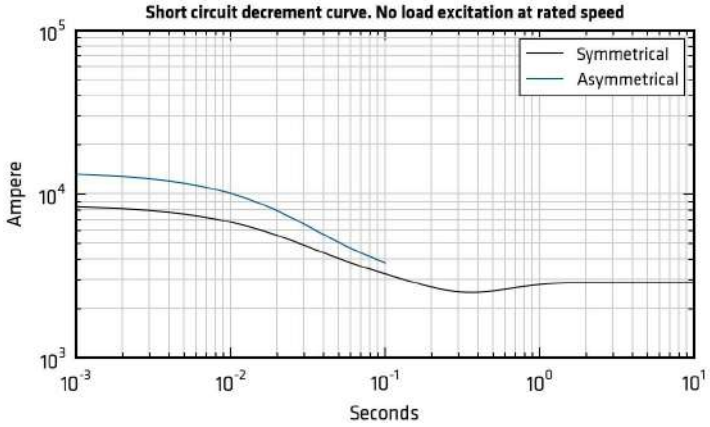
RP^ ; 7 8Z; P



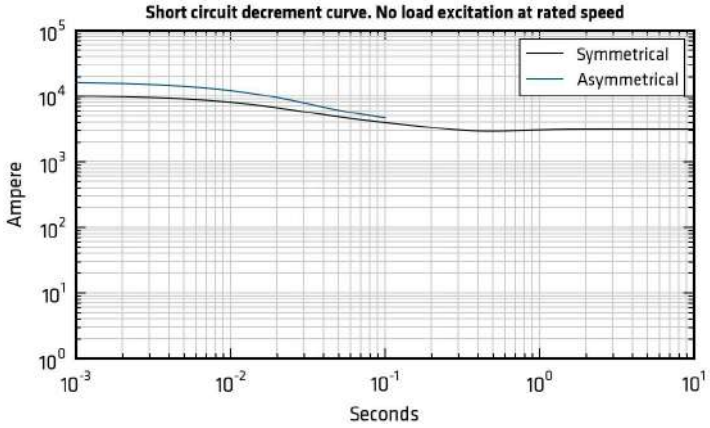
1a ws w ww st w s syw@

TNu E

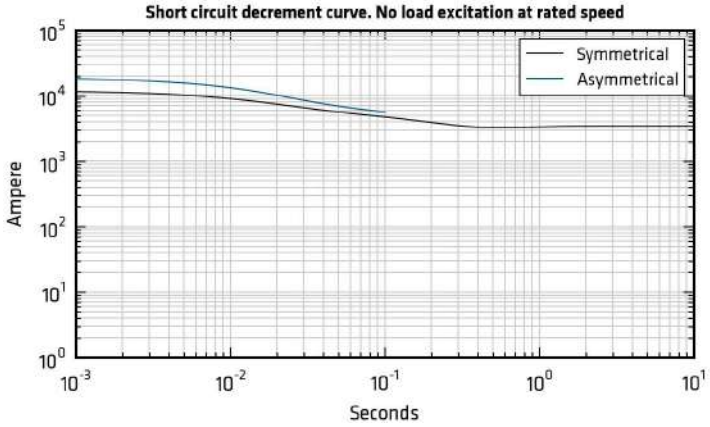
RP^ ; 7 9Z; P



RP^ ; 7 : Z; P



RP^ ; 7 gZ; P

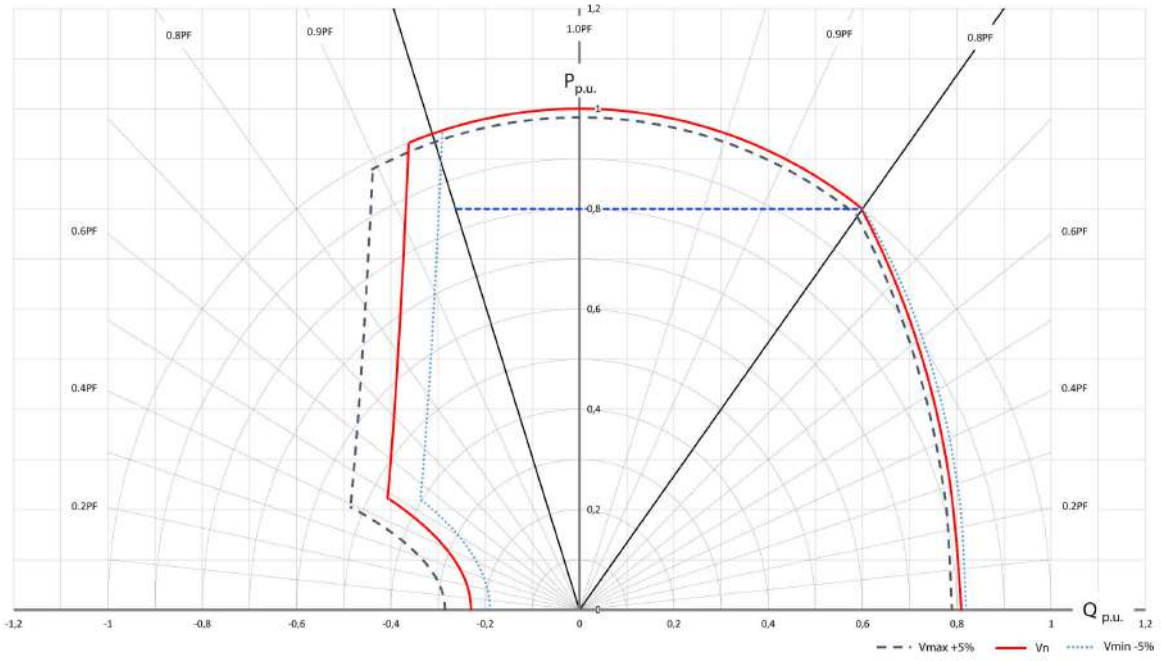


1a ws w ww st w s syw@

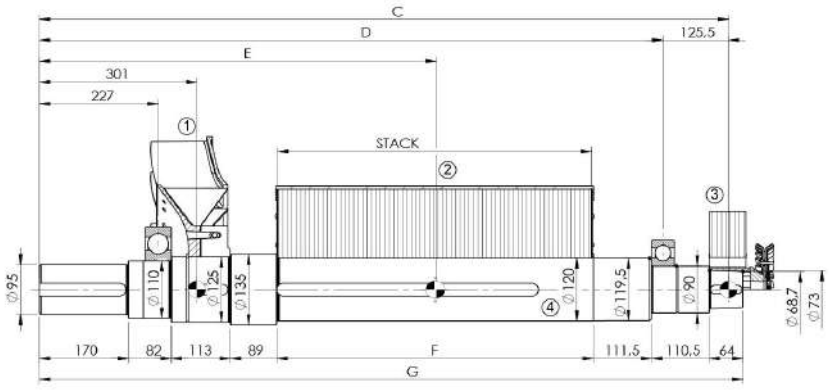
m o

Qs s		RP^ ; 7 8d; P		RP^ ; 7 9d; P		RP^ ; 7 : d; P		RP^ ; 7 8Z; P		RP^ ; 7 9Z; P		RP^ ; 7 : Z; P		RP^ ; 7 gZ; P	
		=7U	@7U	=7U	@7U	=7U	@7U	=7U	@7U	=7U	@7U	=7U	@7U	=7U	@7U
Qs w usyw								P w							
d s h ° v° y c w ° s uw/97 P0	Ω	0,017		0,013		0,014		0,01		0,009		0,009		0,008	
c h ° v° y c w ° s uw/97 P0	Ω	4,488		4,881		5,176		6,025		1,376		1,5		1,592	
d s R u° w c w ° s uw/97 P0	Ω	8,85		8,85		8,85		8,85		8,85		8,85		8,85	
c R u° w c w ° s uw/97 P0	Ω	0,317		0,317		0,317		0,317		0,05		0,05		0,05	
h wŷz xu wwyw ws	kg	1049,0		1133,0		1208,0		1323,0		1458,0		1536,0		1752,0	
f t s s uw sy w°u	kN/mm	5,0		5,9		6,5		6,1		6,5		6,8		6,9	
N° x	m^3/min	54,0	64,8	54,0	64,8	54,0	64,8	54,0	64,8	54,0	64,8	54,0	64,8	54,0	64,8
] ° w w w s 8 6A	dB(A)	94/82	98/88	94/82	98/88	94/82	98/88	94/82	98/88	94/82	98/88	94/82	98/88	94/82	98/88

p



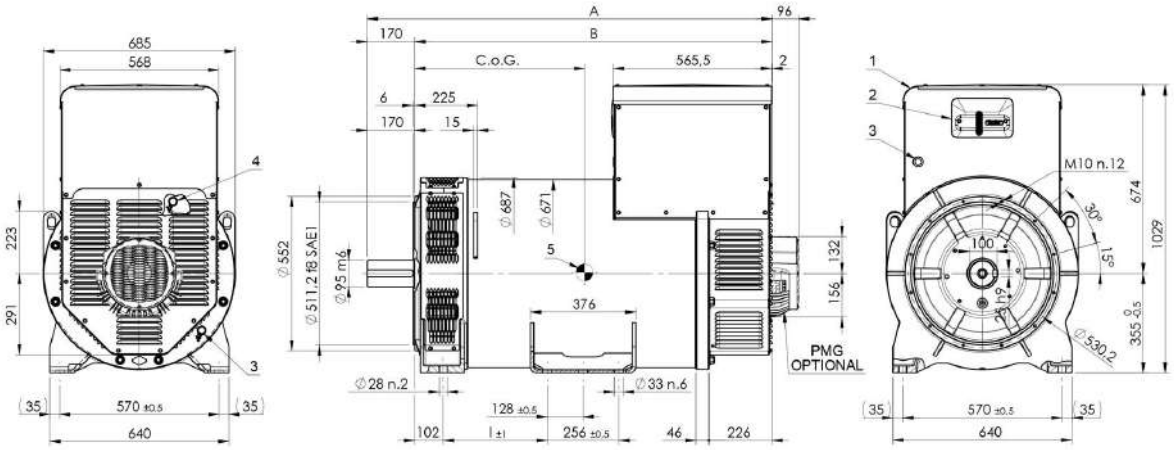
MOMENTS OF INERTIA - DOUBLE BEARING



POS.	1		2		3		4		TOTAL	
COMPONENT	FAN		MAIN ROTOR		EXCITER ROTOR		SHAFT *			
	WEIGHT	J	WEIGHT	J	WEIGHT	J	WEIGHT	J	WEIGHT	J
TYPE	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]
ECO40 1S / 4C	12,4	0,4387	215,8	4,4392	37,3	0,4415	83,3	0,1435	348,8	5,4629
ECO40 2S / 4C			249,1	5,1183					382,1	6,1420
ECO40 3S / 4C			277,9	5,7070					410,9	6,7307
ECO40 1L / 4C			306,8	6,2966			98,0	0,1703	454,5	7,3471
ECO40 2L / 4C			339,8	6,8833					487,6	7,9338
ECO40 3L / 4C			353,3	7,1545					501,0	8,2050
ECO40 VL / 4C			435,0	8,8036			107,0	0,1866	591,7	9,8704

DIMENSION / TYPE	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
ECO40 1S / 4C	1052,5	927,0	580,5	340,0	1080,0
ECO40 2S / 4C			603,0		
ECO40 3S / 4C			623,0		
ECO40 1L / 4C	1217,5	1092,0	643,0	505,0	1245,0
ECO40 2L / 4C			685,5		
ECO40 3L / 4C			695,5		
ECO40 VL / 4C	1317,5	1192,0	755,5	605,0	1345,0

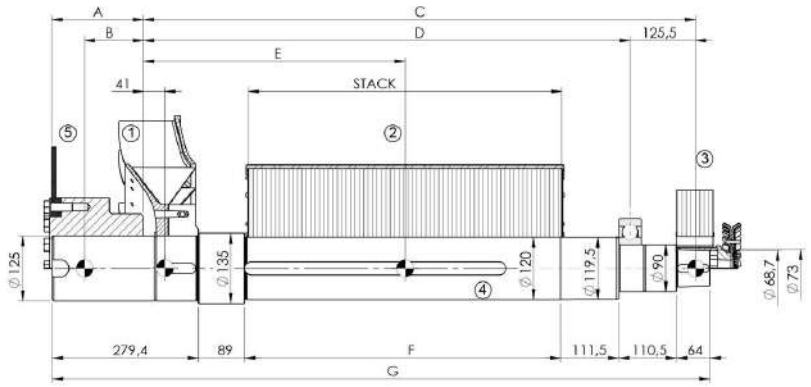
* Shaft mass and inertia also include rotor keys



TIPO / TYPE TYPE / TYPE	CoG [mm] Standard version	CoG [mm] PMG version	A [mm]	B [mm]	I [mm]
ECO40 1S / 4C	446	457	1183	1013	207
ECO40 2S / 4C	457	467			
ECO40 3S / 4C	467	477			
ECO40 1L / 4C	515	525	1348	1178	372
ECO40 2L / 4C	539	548			
ECO40 3L / 4C	545	554			
ECO40 VL / 4C	601	609	1448	1278	372

1)	REMOVABLE COVER FOR ACCESS TO MAIN TERMINALS
2)	REMOVABLE PANEL FOR ACCESS TO AVR
3)	RUBBER GROMMET - DG21
4)	SCREWS M16 FOR GROUNDING
5)	CENTER OF GRAVITY (C.o.G.) - NO OPTIONAL MOUNTED

MOMENTS OF INERTIA - SINGLE BEARING

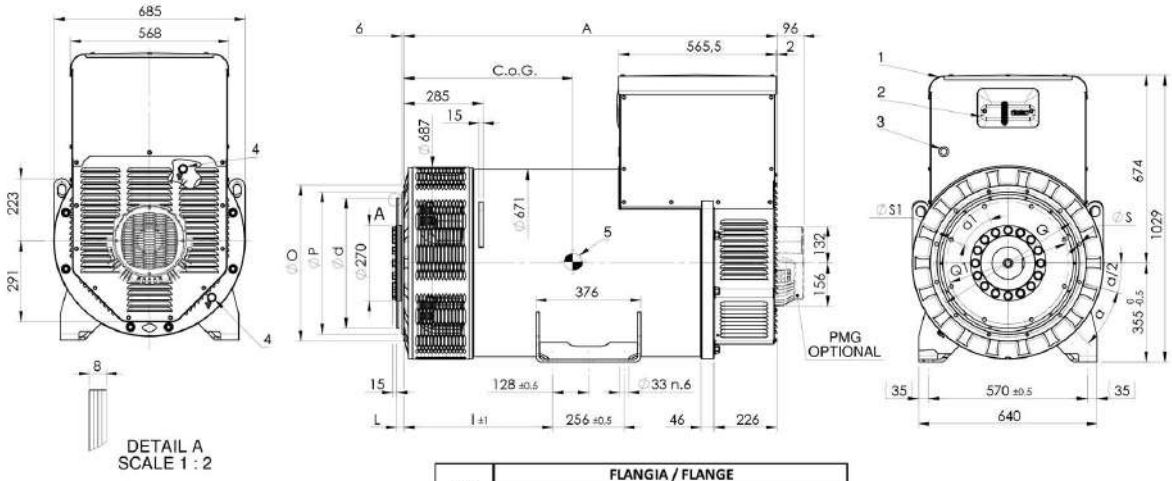


SAE N.	5 | SHAFTS COUPLING FLEX PLATE			
	A	B	WEIGHT [kg]	J [kgm²]
14	175,7	112,8	55,1	0,7503
18	165,7	113,8	58,2	1,0848

POS.	1		2		3		4		TOTAL	
COMPONENT	FAN		MAIN ROTOR		EXCITER ROTOR		SHAFT *			
	WEIGHT	J	WEIGHT	J	WEIGHT	J	WEIGHT	J	WEIGHT	J
TYPE	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]
ECO40 1S / 4C	12,4	0,4387	215,8	4,4392	37,3	0,4415	83,5	0,1541	349,0	5,4735
ECO40 2S / 4C			249,1	5,1183					382,3	6,1526
ECO40 3S / 4C			277,9	5,7070					411,1	6,7413
ECO40 1L / 4C			306,8	6,2966			98,2	0,1809	454,7	7,3577
ECO40 2L / 4C			338,5	6,8582					486,4	7,9193
ECO40 3L / 4C			353,3	7,1545					501,2	8,2156
ECO40 VL / 4C			435,0	8,8036			107,2	0,1972	591,9	9,8810

* Shaft mass and inertia also include rotor keys

DIMENSION / TYPE	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
ECO40 1S / 4C	792,5	667,0	326,1	340,0	994,4
ECO40 2S / 4C			348,6		
ECO40 3S / 4C			368,6		
ECO40 1L / 4C	957,5	832,0	388,6	505,0	1159,4
ECO40 2L / 4C			431,1		
ECO40 3L / 4C			441,1		
ECO40 VL / 4C	1057,5	932,0	501,1	605,0	1259,4



TIPO / TYPE	CoG [mm]		A	l
TYPE / TYPE	Standard version	PMG version	[mm]	[mm]
ECO40 1S / 4C	482	493	1073	369
ECO40 2S / 4C	494	504		
ECO40 3S / 4C	505	515		
ECO40 1L / 4C	553	563	1238	534
ECO40 2L / 4C	578	587		
ECO40 3L / 4C	585	593		
ECO40 VL / 4C	642	650	1338	534

SAE N.	FLANGIA / FLANGE BRIDE / FLANSCH					
	O	P	Q	S	N	α
1	560	511,2	530,2	12	12	30°
1/2	654	584,2	619,1	14	12	30°
0	711	647,7	679,5	14	16	22,5°

SAE N.	GIUNTI A DISCHI / DISC COUPLING DISQUE DE MONOPALIER / SCHEIBENKUPPLUNG					
	d	L	Q1	S1	N1	α1
14	466,72	25,4	438,15	13,5	8	45
18	571,50	15,7	542,92	16,7	6	60

1)	REMOVABLE COVER FOR ACCESS TO MAIN TERMINALS
2)	REMOVABLE PANEL FOR ACCESS TO AVR
3)	RUBBER GROMMET DG-21
4)	SCREWS M16 FOR GROUNDING
5)	CENTER OF GRAVITY (C.o.G.) IN CONFIGURATION SAE 1 FLYWHEEL 14 -NO OPTIONAL MOUNTED

Mecc Alte SpA (HQ)
Via Roma
20 – 36051 Creazzo
Vicenza – ITALY
T: +39 0444 396111
F: +39 0444 396166
E: info@meccalte.it
aftersales@meccalte.it

Mecc Alte Portable
Via Roma
20 – 36051 Creazzo
Vicenza – ITALY
T: +39 0444 396111
F: +39 0444 396166
E: info@meccalte.it
aftersales@meccalte.it

Mecc Alte Power Products srl
Via Melaro
2 – 36075 Montecchio
Maggiore (VI) – ITALY
T: +39 0444 1831295
F: +39 0444 1831306
E: info@meccalte.it
aftersales@meccalte.it

Zanardi Alternatori srl
Via Dei Laghi
48/B – 36077 Altavilla
Vicenza – ITALY
T: +39 0444 370799
F: +39 0444 370330
E: info@zanardialternatori.it

United Kingdom
Mecc Alte U.K. LTD
6 Lands' End Way
Oakham
Rutland LE15 6RF
T: +44 (0) 1572 771160
F: +44 (0) 1572 771161
E: info@meccalte.co.uk
aftersales@meccalte.co.uk

Spain
Mecc Alte España S.A.
C/ Rio Taibilla, 2
Polig. Ind. Los Valeros
03178 Benijofar (Alicante)
T: +34 (0) 96 6702152
F: +34 (0) 96 6700103
E: info@meccalte.es
aftersales@meccalte.es

China
Mecc Alte Alternator Haimen LTD
755 Nanhai East Rd
Jiangsu HEDZ 226100 PRC
T: +86 (0) 513 82325758
F: +86 (0) 513 82325768
E: info@meccalte.cn
aftersales@meccalte.cn

India
Mecc Alte India PVT LTD
Plot NO: 1, Sanaswadi
Talegaon
Dhamdhere Road Taluka:
Shirur. District:
Pune - 412208
Maharashtra, India
T: +91 2137 619600
F: +91 2137 619699
E: info@meccalte.in
aftersales@meccalte.in

U.S.A. and Canada
Mecc Alte Inc.
1229 Adams Drive
McHenry, IL, 60051
T: +1 815 344 0530
F: +1 815 344 0535
E: info@meccalte.us
aftersales@meccalte.us

Germany
Mecc Alte Generatoren GmbH
Ensener Weg 21
D-51149 Köln
T: +49 (0) 2203 503810
F: +49 (0) 2203 503796
E: info@meccalte.de
aftersales@meccalte.de

Australia
Mecc Alte Alternators PTY LTD
10 Duncan Road, PO Box 1046
Dry Creek, 5094, South
Australia
T: +61 (0) 8 8349 8422
F: +61 (0) 8 8349 8455
E: info@meccalte.com.au
aftersales@meccalte.com.au

France
Mecc Alte International S.A.
Z.E.La Gagnerie
16330 ST.Amant de Boixe
T: +33 (0) 545 397562
F: +33 (0) 545 398820
E: info@meccalte.fr
aftersales@meccalte.fr

Far East
Mecc Alte (F.E.) PTE LTD
19 Kian Teck Drive
Singapore 628836
T: +65 62 657122
F: +65 62 653991
E: info@meccalte.com.sg
aftersales@meccalte.com.sg

mecc alte

www.meccalte.com