mecc alte

Portable

Totally Focused. Totally Independent.

TOTALLY FOCUSED ON

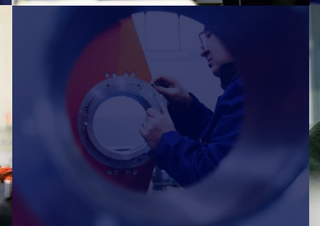
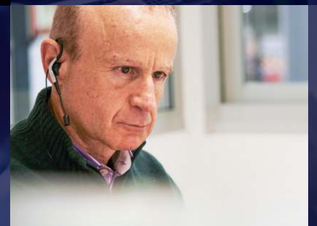
WORLD-CLASS PORTABLE ALTERNATORS

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









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OUR UNIQUE COMPANY

TOTALLY FOCUSED. TOTALLY INDEPENDENT.

We only make one kind of product. That's why we've been totally focused on producing high quality alternators since we were established in 1947. Today, we have factories or distribution centres in every continent and we're the world's largest independent producer of alternators. Our independence is very important to us… and to our customers because we never compete with any of them in the end market (we don't sell complete generator sets). We believe that we're a totally unique company because of the special combination of qualities that set us apart from our competitors. We offer the highest levels of global support to our customers and we put them at the forefront of every single decision we make, which continually spurs us on in terms of our continuous development, product innovation and constantly evolving product ranges.

TOTALLY COMMITTED TO GLOBAL PRODUCTION

We manufacture the world's widest range of low voltage alternators 1 – 5,000kVA via our 'made for manufacturing' product design in Italy, the UK, China and India. Our network of factories is supported by wholly-owned subsidiaries across the globe who specialise locally in the sales, distribution and aftersales for all Mecc Alte products. This global support ensures that our customers get the assistance they need… wherever they are.

TOTALLY COMMITTED TO QUALITY

We've reached the highest possible quality standards in every area of design, production and sales. At Mecc Alte, our constant pursuit of quality begins well before the actual production process with careful checks on semi-processed parts and sample testing of electrical components. We build over 1.400 alternators every day, over 450,000 a year. We have a complete range of products and our production process is totally integrated. This ensures that every production phase, from the design and selection of materials right through to manufacture and aftersales assistance, complies with the strictest international and organisational standards.

OUR UNIQUE PEOPLE

We employ over 1,200 unique people throughout the world. Every one of them is totally committed to the global support that we offer to our customers… and to ensuring that every single alternator we produce meets the world-class standards that Mecc Alte is renowned for.

OUR ITALIAN HERITAGE, EXPERIENCE AND EXPERTISE

70 YEARS 1947–2017



Mecc Alte was established in 1947 in Alte, Vicenza, Italy and has continuously evolved from its humble beginnings into a global brand in the 21st century.

Our strategic decision in the early 70s to specialise in only producing alternators has allowed us to attain a leading global position in the electromechanical field.

The Carraro family has retained sole ownership and, as an independently-owned private company, has focused on achieving the highest possible levels of specialisation, quality and service. We concentrate on servicing our customers and, what's more, we never compete with them in the end market.

Mecc Alte is in the business of transforming mechanically generated energy into electrical energy – so we only sell alternators. We are proud to be a flexible and fast-acting company and our 100% ownership of our supply and distribution channels gives us complete control in the market place.

We have extensive experience. We know what is needed from the industry we serve and we aim to provide it.

OUR LEADING BRANDS

mecc alte

Industrial and Marine Products

Our main brand – a manufacturer and supplier of synchronous alternators 4 pole from 3.5kVA through to 5,000kVA and 2 pole alternators 5kVA to 2,000kVA.

- 3.5 – 5,000kVA
- 1 phase brushless – capacitor for light towers
- Slipring/Compound in 2 and 4 pole up to 24kVA
- Brushless compound in 2 and 4 pole to 98.5kVA with AVR option
- Brushless AVR in 2 and 4 pole to 5,000kVA
- 400Hz up to 200kVA
- 6 pole alternators
- Specialised technologies
- Variable speed
- Permanent magnet generators
- Generators for renewable applications (water and wind turbine)
- Mercurio DC system and hybrid systems for telecom applications 5kW to 15kW

mecc alte Power Products

Specialised Power Products

Focusing on MV and HV products for power generation and producing synchronous and asynchronous generators suitable for hydropower applications.

Low, medium and high voltage alternators, designed for demanding applications

- 1 – 5MVA
- LV – voltage up to 690V / MV up to 7,200V / HV up to 13,800V
- > 4, 6, 8 pole
- Separate circuit cooling by air or water is available

Hydropower alternators

- Synchronous alternators up to 10MVA, 380 – 15,000V, up to 32 pole, water or air-cooled, horizontal or vertical mounting
- Asynchronous alternators up to 700kW, low speed, water or air-cooled
- D2G – permanent magnet generators, steady speed without invertor up to 500kW

mecc alte Portable

Portable 2 Pole Products 1 – 17kVA

A company that specialises in the volume manufacturing of small 2 pole portable units 1.2kVA to 17kVA.

- 1 phase brushless capacitor excited units with optional AVR or Brush + AVR
- 3 phase with slipring compound control or Brush + AVR

zanardi

Welders and Specialised Products

A factory specialising in customised power solutions making tailor-made specialised alternators and welding generators.

- 2 and 4 pole welding alternators with auxiliary output
- AC 130-220A and 200-500A DC
- Special products tailored to meet customers' requirements
- Water-cooled, DC, lighting, totally enclosed, variable speed, short units
- Asynchronous alternators
- Wound component parts
- Permanent magnet generators

MANUFACTURING PROCESS



We are a volume producer with complete control over our factories and have a truly international manufacturing base. All our factories incorporate the latest technologies and manufacturing processes, producing a truly global product that is consistent worldwide. This ensures physical characteristics,



technical features, quality and performance are guaranteed wherever in the world it is manufactured.

Our facilities cover over 60.000m². We have over 1,200 employees and over 30 CNC-controlled robots. We continue to invest in our future through increasing global capacity and this ensures that we are able to support the growth of our clients. We can react to any market demands and always ensure that we can instantly maximise any growth opportunities for our customers.

Every alternator we produce is made with highly selected materials and components – all tested in conformity to ISO 9001 quality specification and in conformity to ISO 18001 process qualification for health and safety.

Our production process consists of various stages of advanced manufacturing technologies. Each working phase is carried out using state-of-the-art equipment to ensure high performance, great reliability and precision. Robotic machining and winding operation processes enable the highest degree of precision which ensures maximum results in consistent quality. Operating to an effective environmental management system, we have ISO 14001 which ensures we minimise our impact on the environment.

Italy – Mecc Alte SpA
Producing alternators from 1 – 5,000kVA

Italy – Mecc Alte Power Products
Producing alternators from 100 – 5,000kVA

UK – Mecc Alte UK
From 5 – 3,000kVA 4 pole

China – Mecc Alte Haimen
Producing from 7kVA through to 3,000kVA

India – Mecc Alte India
Producing 5 – 420kVA 4 pole and 7.5 – 48kVA 2 pole

Italy – Mecc Alte Portable
Manufacturing portable alternators 1 – 17kVA 2 pole

Italy – Zanardi
Producing specialised products and welding alternators

With an integrated supply chain (we also own our own lamination factory) and 100% ownership of our sales and worldwide distribution, we are perfectly positioned to professionally serve all world markets… and further enhance our reputation as a global leader in alternator manufacturing.

PORTABLE PRODUCTS RANGE

Mecc Alte has been at the forefront of alternator design and manufacturing for many years and our extensive product and market expertise has led to the development of an innovative portable generator range.

Designed to be exceptionally versatile, these portable products are manufactured to be suitable for all applications where an easy transportable energy source is needed. Our portable alternators are available with a 50 or 60Hz frequency, all with 2 poles ranging from 1 – 18kVA available either as single bearing or as twin bearing with a double support. In order to couple them to a prime mover it is possible to choose among a wide range of shafts, flanges and couplings. The 2 pole rotors have a damper cage and the stator windings have a shortened pitch to reduce the harmonic content. The single phase units are designed brushless and have a high operating reliability. Minimal maintenance is required as there are no collectors or sliding contacts. The three phase range is designed with brushes and a slip ring and is transformer-controlled. This enables a high pick-up capacity ideal for motor start applications.

For more specialist applications, a high performance range of Automatic Voltage Regulator (AVR) machines is available. The ES range is single phase AVR-controlled but designed with brushes and a slip ring to allow for good voltage regulation and improved motor starting; supply loads different than power factor 1.0 such as modern electronics or pumps. The ET alternators are a three phase version of this type of machine. Both types have adjustable voltage output, a stabilizing point and under frequency protection as standard.

In addition, we can also supply a capacitor-controlled AVR, the RCM/2, which improves voltage control to 2.5% available on the machines without brushes.

The single phase portable series is manufactured according to, and to comply with, the most common specifications such as CEI 2-3, IEC 34-1, EN 60034-1, IEC 34-1, VDE 0530, BS 4999-5000, NF C 51-111, CAN/CSA-C22.2 No100-95. It also complies with the European Community Standards: 72/23, 98/37, 89/336. The three phase portable series is manufactured according to CEI 2-3, IEC 34-1, EN 60034-1, IEC 34-1, VDE 0530, BS 4999-5000, NF C 51-111.



PORTABLE PRODUCTS RANGE

1 PHASE BRUSHLESS CAPACITOR-CONTROLLED

S15W Series – 1.2kVA to 2.8kVA 3000rpm 50Hz or 1.45kVA to 3.4kVA 3600rpm 60Hz

S16W Series – 2.5kVA to 5.7kVA 3000rpm 50Hz or 3kVA to 6.8kVA 3600rpm 60Hz

S16W HD Series – 2.5kVA to 5.7kVA 3000rpm 50Hz or 3kVA to 6.8kVA 3600rpm 60Hz (heavy-duty rear foot version)

S20W Series – 6kVA to 8.5kVA 3000rpm 50Hz or 7.2kVA to 10.2kVA 3600rpm 60Hz

S16F Series – 5.5kVA to 6.5kVA 3000rpm 50Hz or 6.6kVA to 7.8kVA 3600rpm 60Hz

S20F Series – 8.5kVA to 12kVA 3000rpm 50Hz or 10.5kVA to 14.4kVA 3600rpm 60Hz

3 PHASE TRANSFORMER-CONTROLLED

T16F Series – 6kVA to 7.5kVA 3000rpm 50Hz or 7.2kVA to 9kVA 3600rpm 60Hz

T20F Series – 10kVA to 15kVA 3000rpm 50Hz or 12kVA to 18kVA 3600rpm 60Hz

AVR RANGE

ES16F Series – 1 phase – 4.5kVA to 5.5kVA 3000rpm 50Hz or 6kVA to 7.5kVA 3600rpm 60Hz

ES20F Series – 1 phase – 8.5kVA to 11.8kVA 3000rpm 50Hz or 10.2kVA to 14.2kVA 3600rpm 60Hz

ET16F Series – 3 phase – 5.5kVA to 6.5kVA 3000rpm 50Hz or 6.6kVA to 7.8kVA 3600rpm 60Hz

ET20F Series – 3 phase – 9kVA to 13.5kVA 3000rpm 50Hz or 11kVA to 16.5kVA 3600rpm 60Hz

GENERAL PRODUCT FEATURES





The different control systems dictate the different features between the three phase and single phase product ranges.

SINGLE PHASE

The single phase brushless capacitor-controlled alternators have a self-energising design built with an auxiliary winding. This is angle-shifted compared to the power winding and charged by a capacitor.

MECHANICAL STRUCTURE

Covers are manufactured through die-casting in high resistance aluminium alloy and the shaft is C45 steel. Ventilation is performed through fans splined onto the shaft. The rotor is designed with slots which affords greater reliability in case of overspeed. Bearings are sealed for life, and sourced from premium brand manufacturers, the standard protection degree is IP21 or IP23; upon specific requests, higher protection levels such as IP45 and IP54 can be achieved.

INSULATION AND IMPREGNATION

Insulation is of Class H standard. Impregnation is made with premium tropicalised epoxy resins by dipping and dripping. Rotors are processed with an innovative roll and dip system that achieves market-leading impregnation levels. Other special treatments for particular environmental conditions are available on request, such as GREY protection using a grey EG43 varnish or TOTAL+ protection which uses a black severe environment protection to give the ultimate winding treatment and assures superior performances in harsh or demanding environments. (Please refer to the Insulation Protection Systems Handbook for more information.)

SELF-ENERGISING

An auxiliary winding, angle-shifted compared to the power winding and charged by a capacitor, ensures the generators are self-energising.

SELF-ADJUSTMENT

The rectification of the inducted voltage from the inverse field of the rotor, as a function of the charging current, ensures a good adjustment of the generator's output voltage.

REDUCED SPEED RUNNING

The self-protection of the portable series allows it to operate on a reduced speed without fear of damage to the alternator.

TRANSIENT VOLTAGE VARIATIONS AND RESPONSE TIMES

When introducing the full 100% resistive load, the temporary voltage drop is lower than 10%. This resets the rated value that is made to less than 0.1 second.

RADIO INTERFERENCE SUPPRESSION

The standard generators meet all safety requirements included in 89/336 directive about electromagnetic compatibility. Upon request, we are available to study and produce EMC filters according to more restrictive specifications.



THREE PHASE

The three phase units are transformer-controlled with a brush slipring compound type regulation and have the following general features as standard.

MECHANICAL STRUCTURE

Covers are manufactured through die-casting in high resistance aluminium alloy and the shaft is C45 steel. Ventilation is performed through fans splined onto the shaft. The rotor is designed with slots which affords greater reliability in case of overspeed. Bearings are water-resistant, the standard protection degree is IP23; upon specific requests, higher protection levels such as IP45 can be achieved.

INSULATION AND IMPREGNATION

Insulation is of Class H standard. Impregnation is made with premium tropicalised epoxy resins by dipping and dripping. Rotors are processed with an innovative roll and dip system that achieves market-leading impregnation levels. Other special treatments for particular environmental conditions are available on request, such as GREY protection using a grey EG43 varnish or TOTAL+ protection which uses a black severe environment protection to give the ultimate winding treatment and assures superior performances in harsh or demanding environments. (Please refer to the Insulation Protection Systems Handbook for more information.)

VOLTAGE ADJUSTMENT

The no-load output voltage may be adjusted by +/-5% operation by adjusting the air gap of the transformer.

TEMPORARY VOLTAGE DROPS

Introduction of the rated voltage, starting from idle to rated speed, causes a temporary voltage drop lower than 9%.

RESPONSE TIMES

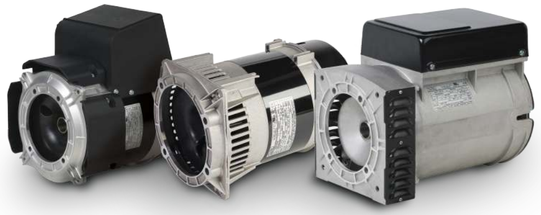
For a sudden introduction of the rated load under a constant speed, the voltage returns to the rated voltage in less than 0.1 seconds.

RADIO INTERFERENCE SUPPRESSION

The standard generators meet all safety requirements included in 89/336 directive about electromagnetic compatibility. Upon request, we are available to study and produce EMC filters according to more restrictive specifications.



INNOVATIVE PRODUCT FEATURES



We are a leading manufacturer and have built in some advanced features that make our generators stand out from the crowd.

DAMPERS AND SKEWED ROTOR

The rotor is skewed and fitted with dampers, this means efficiency is slightly compromised in order to offer improved waveform. This superior waveform system guarantees a limited harmonic distortion suitable for modern loads such as speed control tools and sensitive electrically-controlled equipment.

VOLTAGE FLEXIBILITY

The 220/110V 4 wire terminal is the standard although we can offer the multi-functional 230/115/57V winding where Centre Tap to Earth (CTE) is required. In addition, we can also offer dedicated 110/55V for volume when specifically requested along with other voltage combinations.



AUTOMATIC VOLTAGE REGULATOR OPTION: RCM/2 - CAPACITOR AVR

The RCM/2 regulator is designed as an up-fit for the capacitor-controlled 1 phase alternators. With careful selection of replacement capacitors, the RCM/2 improves steady state regulation and eliminates the on load, off load voltage characteristic of the standard capacitor-controlled 1 phase alternators.

AUTOMATIC VOLTAGE REGULATOR RANGE: ASR (ANALOGUE SIMPLIFIED REGULATOR)

New slipring Analogue Simplified Regulator (ASR) range – for greatly improved motor starting when compared to the standard capacitor control 1 phase machines. The 3 phase models gain greater voltage stability compared to the standard range. Fitted with unique voltage setting point and exclusive under frequency protection.

AMAZING ADAPTABILITY

We offer a customised product with a vast number of end covers and options e.g. Schuko/CEE socket. We can offer 12V direct current options for battery charging. We offer twin bearing kits on some models. We also offer top boxes and, on our alternators, the degrees of protection can be upgraded to IP23 and IP45 and even IP54 under special request. We also have a variety of coupling styles to suit most prime movers.

In addition, we can offer customized solutions and offer control boxes, breakers and panel meters for volume-specific requirements.

OPERATIONAL CONSIDERATIONS

We are proud that our alternators have many features built in as standard. This enables them to be used in a multitude of applications and environments.

We encourage our customers to understand where the alternator will be used and to consider the implications of its operating environments. This will enable us to recommend the correct alternator and to suggest any additional processes or requirements that may need to be considered to extend the alternator's performance and lifespan.

If an alternator is to be operated outside the normal temperature and altitude parameters of 40°C ambient (and 1000m above sea level), then the following de-rates must be applied.

In addition, other considerations should be made if a machine is to be operated in harsh environments. We can supply additional protection levels such as IP43, IP45 and even IP54 in some cases. If the environment is humid, we can supply anti-condensation heaters.

We can also upgrade the insulation protection system and offer alternative solutions such as GREY EG43 severe environment protection or TOTAL protection with a black rubber coating. This is supplied on the winding for the harshest of environments. (See Insulation Systems Manual.)



	Operating Ambient Temperature				
Operating Altitude	**25°C**	**40°C**	**45°C**	**50°C**	**55°C**
< 1000m	1.07	1	0.96	0.93	0.91
1000m to 1500m	1.01	0.96	0.92	0.89	0.87
1500m to 2000m	0.96	0.91	0.87	0.84	0.83
2000m to 3000m	0.9	0.85	0.81	0.78	0.76

OUR ACCESSORIES RANGE

Our customers can be confident that they can specify a product suitable for a given application. Therefore, if required, we can offer a large range of accessories that can be fitted to our alternators to further enhance performance.

ECOLOGIZER ECO1/ECO2

In case of power drop, the ecologizer is a device which, by controlling an actuator, operates on the engine governor reducing its speed and allowing a reduction in fuel consumption, acoustic and atmospheric pollution.

REGULATOR RCM/2

A patented electronic device designed to improve precision on output voltage on capacitor-controlled alternators. This enables the alternator to reach higher performances as far as voltage stability is concerned, regardless of changes in engine speed, load and temperature conditions.

BATTERY CHARGING WINDINGS

All alternators are available with an optional 12V direct current (DV) battery charging winding and battery charging terminals.

TWO BEARING KITS

For the portable range, it is possible to buy a kit that can be retro-fitted to the alternator to create two bearings with a parallel key way and additional front feet. (This option is available factory-made on the larger single phase and three phase machines.)

END COVERS

A vast variety of end covers with sockets, breakers and changeover switches is available. Schuko and CEE sockets can be fitted to end covers in many variations to enable quick and easy assembly.

TOP BOXES

Many variations of top boxes are available fitted with sockets, circuit breakers and changeover switches. These can be directly fitted to the alternators.

INGRESS PROTECTION

Machines are IP21 as standard. Upgrade kits or options for IP23 and IP45 are available on most models.



Ecologizer ECO1/ECO2



Regulator RCM/2



Battery Charging Windings



Top Boxes



End Covers



Two Bearing Kit

OUR QUALITY, SERVICE AND AFTERSALES

We have reached the highest possible quality standards in every area of design, production and sales. With us, the pursuit of quality begins long before actual production, with checks on semi-processed parts and sample tests on electronic components.

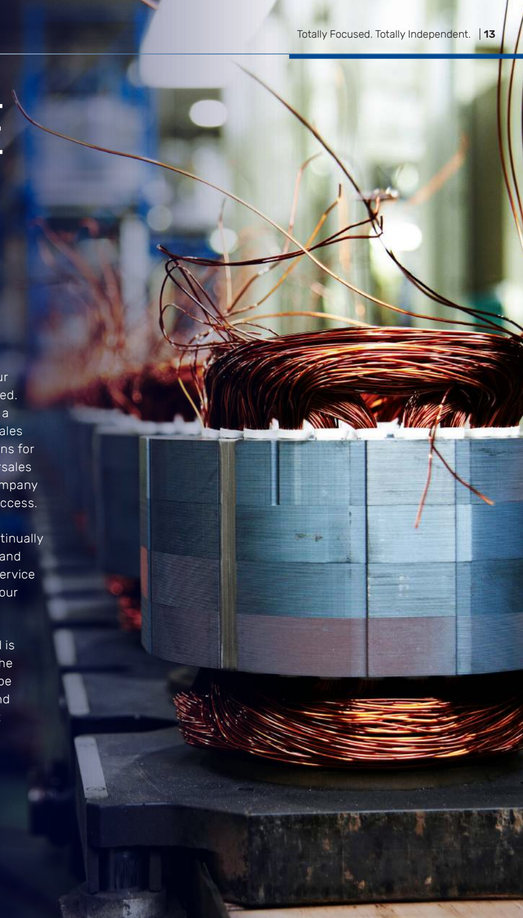
These tests are performed with rapid aging methods by means of alternating exposure to extreme temperatures. Our quality is enhanced during the production process with computerised equipment making checks on electronic and electrical circuits. The high quality of our finished products is due to a perfect combination – high performance and maximum reliability. That quality is certified by international bodies such as the Canadian Standards Association (CSA), the Underwriters Laboratories (UL) and Det Norske Veritas (DNV) and Bureau Veritas, further supported by our ISO 9001 accreditation from Registro Italiano Navale (RINA).

Every quality mark is a guarantee of the rigorous assessment of prototypes and a commitment to continuous audits by external inspectors to monitor product consistency – and product quality.

This quality assurance allows us to be proud of our products. Our products are now globally recognised. This high market acceptance has originated from a combination of effective marketing through our sales and distribution facilities, established training plans for our many customers, and consistently great aftersales service. We are a professional and responsible company and understand that a good reputation breeds success.

We recognise that our reputation depends on continually delivering high standards of support – whenever and wherever it is required. With an extensive global service and aftersales network, you can be assured that your product will be supported anywhere in the world.

Our quality is certified by international bodies and is supported by our ISO 9001 accreditation across the whole group. This quality assurance allows us to be proud of our products and gives you peace of mind knowing our alternators are built with the highest possible quality standards.



GLOBAL COMMUNICATION

We are proud of the relationship that we have with each and every one of our customers. Effective communications with them are an integral part of our operations.

We appreciate the importance of developments in electronic communication and recognise the World Wide Web as a continually-evolving global communication tool. Our website holds up-to-the-minute company and product information. Operating as an online database, customers have access to product and commercial documents and downloads for support 24 hours a day, 7 days a week, 365 days a year.

Visit **www.meccalte.com**

SUPPORT

Through our global companies, we offer worldwide support. In addition, our dedicated support website provides latest model information, spare parts listings, test report data and useful pre and post sales tools.

We have a dedicated and flexible download centre where drawings and technical information is readily available in a dedicated user-friendly area.

Visit **www.meccalte.support.com** for further info.

BROCHURES

MECC ALTE TECHNICAL GUIDES BILINGUAL ITALIAN/ENGLISH

- Parallel Operation
- Regulators
- Thermal Probes & Heaters
- Shaft Stiffness
- Standard Conditions of Sale
- Spare Parts Lists
- Ratings Book
- Motor Starting Capability
- Insulation Protection Systems
- Digital Regulator

MECC ALTE PRODUCT GUIDE

- Industrial Range
- Power Products Range
- Zanardi Range

MECC ALTE MINI GUIDES

- 400Hz
- Rail
- Marine
- Irrigation
- Telecoms
- PTO

All available to download at: **www.meccalte.com**



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 A. Volta
1 37038 Soave
Verona – ITALY
T: +39 0456 173411
F: +39 0456 101880
E: info@meccalte.it
aftersales@meccalte.it

Mecc Alte Power Products

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

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

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