BUILT FOR LIFE AT SEA

The world’s largest independent producer of alternators 1 – 5,000kVA
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Throughout the world, each person we employ is totally committed to the global support that we offer you… and to ensuring that every solution we produce meets the world-class standards that Mecc Alte is renowned for.
Whatever you want, you can have it with Mecc Alte. As a world leading alternator manufacturer we offer a diverse range of marine alternators from small water-cooled specialised products through to a fully advanced marine product; supplied into both essential and non-essential duties, from the very small to the very large vessels.

There is a wide range of requirements in marine applications. It is important to have a standard product that suits the vast majority of these – either by standard features or simple additions. The ‘12 wire reconnectable, multi-purpose winding accommodates a wide range of voltage and Hz requirements. Outside of this there are many dedicated windings if required – such as 690V 50/60Hz for windfarm support vessels.

The IACS IP23 mandatory requirement is a standard feature. Enhancements can be supplied extending ingress protection to IP43 to IP45 levels. It is recognised that certain installations require higher levels of protection due to engine room fire protection systems. Derates will apply.

While the standard build fulfills the mandatory requirements of most installations – including 300% SCC for up to 10 seconds; there are build options available if required to satisfy a given specification.

### Temperature Rise

<table>
<thead>
<tr>
<th>Temperature Rise</th>
<th>Class H</th>
<th>Class F</th>
<th>Class B</th>
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<td>RINA</td>
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Mecc Alte alternators are fitted with innovative features, as standard, to ensure high levels of performance and reliability. All standard products are extremely versatile and can be adapted to suit even the most demanding applications. This product is supported by an experienced, professional team who are able to ensure exceptional support globally - both pre and post order. In addition, unique special and customised machines are available to suit specific applications, such as stainless steel framed, low magnetism machines for naval minesweeper vessels or vertical-mounted shaft drive machines.

**STANDARDS AND CERTIFICATION**

The BV, DNV and BKI batch type and line approval highlights the company’s competence in this market sector. Additional testing and certification can be provided through all major classification societies such as ABS, BV, CCS, DNV, GL, KR, LR, NK, RINA, or others where design approvals are already in place.

**CONSTRUCTION**

- Rigid steel frames (FeP12)
- Rotor is dynamically balanced with ½ key [ISO 8821], conforms to class G.2.5 (ISO 1940)
- Squirrel damper ‘cage’ windings in the rotor for parallel operation
- Digital AVR’s (Automatic Voltage Regulators) are used throughout the range, ensuring ease of replacement and maximum performance

**INSULATION AND IMPREGNATION**

Insulation materials used provide a system insulated to Class H level. Superior processes are employed to add an EG43 compound after insulation over the main and exciter windings to give marine standards of protection. Mecc Alte offers a range of insulation systems from GREY to VT Total+ protection for operating in the harshest of environments.

**EXCEPTIONAL EXCITATION**

The ‘MAUX’ (Mecc Alte Auxiliary Winding) is used throughout the range and has been a proven standard for Mecc Alte in all market sectors. MAUX is a brushless excitation system deriving power from a dedicated auxiliary winding within the main stator. This winding is protected by four layers of polyester in addition to the clear varnish and EG43 severe environment protection used in marine applications. Fitted within the main stator, it minimises overall dimensions of the alternator and ensures a compact machine.

The MAUX system ensures high levels of performance within compact dimensions and surpasses industry requirements giving >300% forced current (short circuit maintenance) for 20 seconds.

PMG excitation is an option on all frames, if needed, to satisfy more traditional specification requirements.

**BEARINGS**

- Sealed for life high quality bearings up to the ECO38 frame
- Regreasable bearings for ECO40 (drive end only on 2 bearing machines), ECO43 and ECO46

**PROTECTION**

Standard protection is IP23 but for marine applications we also offer additional protection. We can also offer inlet filters, IP43, IP45 and IP54 protection levels if required. On larger machines, we can offer CACA or CACW cooling by special order on request.

**CONTROL SYSTEM**

- Insulation materials used provide a system insulated to Class H level. Superior processes are employed to add an EG43 compound after insulation over the main and exciter windings to give marine standards of protection. Mecc Alte offers a range of insulation systems from GREY to VT Total+ protection for operating in the harshest of environments.
TOUGH ENVIRONMENTS. NO PROBLEM.

RELIABILITY
Fewer components throughout the range, as well as within individual machines, enhances the reliability of our products.

That’s why, according to the military standard MIL-HDBK-217F, the reliability predictions are a failure rate of just 75.82 fpmh (failures per million hours) and 13,189 hours mtbf (mean time between failures). Standardised components provide a high level of interchangeability and reduces the level of spares needed to be kept on vessels.

MINIMUM MAINTENANCE
Mecc Alte marine alternators are built with low maintenance in mind. Bearings have up to 30,000 hours’ life expectancy, and windings have high degrees of protection. Where maintenance is necessary, access is very simple and the commonality of parts ensures global spares availability.

COMPACT DIMENSIONS
Mecc Alte marine alternators are amongst the most compact and lightweight alternator packages available. Machines are high efficiency, demonstrating the technical processes and advanced design of Mecc Alte products.

REGULATORS
Simplicity and effectiveness are key in our “MAUX” control system. Mecc Alte uses highly reliable DSR and DER AVRs (Digital Simplified and Digital Enhanced Regulators). This makes life simple, as either of these can work on any machine in the Mecc Alte range. They’re highly effective, too, because voltage control up to +/-0.5% is available and both are available for parallel operation.

The DER regulator has more features and includes automatic 3ph sensing and soft start abilities.

These digital regulators bring additional benefits such as finer adjustments, remote monitoring, 3ph/3ph sensing and real-time data logging. Software is supplied by Mecc Alte.

QUALITY ASSURANCE
Products are built in accordance with ISO 9001, accredited by RINA, batch and line production and product approvals are also provided by Det Norske Veritas, Bureau Veritas and BKI; approvals are also provided by the Canadian Standards Authority (CSA) and the Underwriters Laboratory (UL).

Designs are executed according to the most common specifications such as CEI 2-3, IEC 34-1, EN 60034-1, VDE 0530, BS 4999-5000, CAN/CSA-C22.2 No 14-95 – No100-95.

ACCESSORIES / OPTIONS
A large number of accessories are available on request, including:
- Anti-condensation heaters
- Temperature detectors (thermistors or PT100) for windings and bearings
- Higher degrees of mechanical protection with optional inlet filters, IP43, IP45 or IP55 (CACW/CACA by special order)
- Parallel operation CTs
- Gland plates (specific to each contract)
- Wide option of Advanced Winding Protection systems

MARINE CAPABILITIES
POWER FROM WITHIN
BUILT FOR LIFE AT SEA
### 400V 3 PHASE 50 Hz

| Model | ECP3 1S 4C | ECP3 2S 4C | ECP3 2L 4C | ECP3 3L 4C | ECP28 1V5 4C | ECP28 2V5 4C | ECP3 1S 4C | ECP28 2S 4C | ECP34 1M 4C | ECP34 2S 4C | ECP3 2L 4C | ECP34 2M 4C | ECP3 1L 4C | ECP34 1S 4C | ECP3 2M 4C | ECP34 3S 4C | ECP34 1M 4C | ECP34 2S 4C | ECP3 2L 4C | ECP34 1S 4C | ECP3 2M 4C | ECP34 1M 4C | ECP34 2S 4C |
|-------|------------|------------|------------|------------|--------------|--------------|------------|-------------|--------------|-------------|------------|--------------|------------|-------------|------------|----------------|---------------|----------------|--------------|----------------|--------------|
| NV     | ECP3 1S 4C | ECP3 2S 4C  | ECP3 2L 4C | ECP3 3L 4C | ECP28 1V5 4C | ECP28 2V5 4C | ECP3 1S 4C | ECP28 2S 4C | ECP34 1M 4C | ECP34 2S 4C | ECP3 2L 4C | ECP34 2M 4C | ECP3 1L 4C | ECP34 3S 4C | ECP3 2M 4C | ECP34 1S 4C | ECP3 2L 4C | ECP34 1S 4C | ECP3 2M 4C |
| CHS    | 5.5        | 6.5        | 6.2        | 5.8        | 5.8          | 6.0          | 5.5        | 6.7          | 6.7          | 6.7          | 6.7        | 6.7          | 6.7        | 6.7        | 6.7        | 6.7        | 6.7        | 6.7        | 6.7        |
| CIR    | 6.0        | 7.0        | 7.2        | 8.0        | 8.0          | 8.5          | 8.5        | 9.0          | 9.0          | 9.0          | 9.0        | 9.0          | 9.0        | 9.0        | 9.0        | 9.0        | 9.0        | 9.0        | 9.0        |
| ABS    | 6.5        | 7.5        | 8.0        | 8.5        | 8.5          | 9.0          | 9.0        | 9.5          | 9.5          | 9.5          | 9.5        | 9.5          | 9.5        | 9.5        | 9.5        | 9.5        | 9.5        | 9.5        | 9.5        |
| KR     | 7.0        | 8.0        | 8.5        | 9.0        | 9.0          | 9.5          | 9.5        | 10.0         | 10.0         | 10.0         | 10.0       | 10.0         | 10.0       | 10.0       | 10.0       | 10.0       | 10.0       | 10.0       |

### iVA @ Temperature Rise / Ambient °C / 0.8 PF

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### Power from Within
### 450V 3 PHASE 60 Hz

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### kVA @ Temperature Rise / Ambient °C / 0.8 PF

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### Society

- ABS
- DNV
- KR
- LR
- RINA
- CRB
- BV
- ABS
- CRS
- KR
- BV
- ABS
- CRS

**Note:** Further details such as model numbers and specific specifications are not visible in the image provided.
UNBEATABLE MARINE POWER
WHEN CONDITIONS ARE HARSH, YOU NEED A RELIABLE PARTNER

WEATHER-DUTY MARINE

What makes Mecc Alte heavy-duty marine alternators so suited to the harsh environments where you operate? Quite simply, it’s all about outstanding design and high quality manufacture.

Mecc Alte uses only premium class H insulation material. Impregnation processes are achieved with the latest impregnation technologies, like Vacuum Pressure Impregnation (VPI) or with the use of dedicated roll and dip or trickle machines. The impregnation process is undertaken twice in the main stator, which assures the best quality for the final customer.

This premium impregnation quality process is perfect for the vast majority of applications, however in order to achieve the same results in insulation reliability when environmental or operating conditions are demanding, it is possible to consider one of the additional protection systems offered by Mecc Alte.

**PROTECTION SYSTEMS**

- **STANDARD INSULATION SYSTEM**
  - **PROTECTION LEVEL: STANDARD**
    - The Standard protection level is referred to a generator which has the sole impregnation resin applied to all the active parts and is standard on the Mecc Alte generator series.

- **STANDARD+ INSULATION SYSTEM**
  - **PROTECTION LEVEL: STANDARD+**
    - With the Standard + protection system in addition to the usual impregnation resin, the stator exciter is protected with a further layer of grey varnish EG43.

- **GREY INSULATION SYSTEM**
  - **PROTECTION LEVEL: GREY**
    - Not only the exciter stator is coated with the EG43 but also the main power stator. This protection level, which is available as an option on some families and as a standard on some others, is the standard for marine and nearly all most demanding application.

- **GREY+ INSULATION SYSTEM**
  - **PROTECTION LEVEL: GREY+**
    - With this protection level, the main stator is coated with the grey EG43 varnish and the exciter stator is upgraded to have the black severe environment protection.

- **TOTAL+ INSULATION SYSTEM**
  - **PROTECTION LEVEL: TOTAL+**
    - Available as an option on the whole industrial range. With this protection level, the grey EG43 varnish on main and exciter stator is upgraded to a black severe environment protection. In addition all the active rotating components have an overcoat of the grey varnish EG43.

- **VT PLUS INSULATION SYSTEM**
  - **PROTECTION LEVEL: VT PLUS**
    - The ultimate solution to be used when the application or the environment is abusing the insulation of the generator. The main and exciter stator is black severe environment in addition the bottom internal third of the stator also has black coating. There are additional insulation papers adding protection in critical areas such as the exciter and the main stator plus enhanced anti-rust paint treatments.
The V-Type has been built for endurance and reliability. Developed with harsh environments in mind, this new member of our range is our most resilient alternator yet.

The V-Type has undergone rigorous testing which has resulted in a product that is designed to enable reliable power generation when faced with forces of nature.

KEY BENEFITS INCLUDE:

- VT PLUS is an exclusive winding treatment with a specification that's designed to add an extra level of resilience on top of the VPI impregnation.
- Reinforced tape around the lower radius of the stator, providing an external covering for additional protection of the NDE winding head base
- Taped and VTP™ treated exciter stator
- 30,000 premium bearing hours for increased reliability
- Lower lamination slats reinforced with TOTAL+ insulation protection
- MAVR to protect the USP and interlink the controllers
- Premium paint with anti-rust treatment
- Extended warranty

It all adds up to a range that’s tough to beat. Whatever the location.
Mecc Alte achieves the highest possible quality standards in every area of design, production and sales. 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 ageing methods, including alternating exposure to extreme temperatures. Our quality is enhanced during the production process with computerised equipment making checks on electronic and electrical circuits. The result is a perfect combination of high performance with maximum reliability. All certified by international bodies such as the Canadian Standards Association (CSA), the Underwriters Laboratories (UL), 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 both product consistency and quality. This level of quality assurance enables us to be globally accepted and recognised. Market acceptance worldwide is based on our global sales and distribution facilities, established training plans for customers, and consistently great aftersales service. We are a professional and responsible company and understand that a good reputation breeds success.

So, wherever you are, you’re never very far from Mecc Alte quality.