



Marine & Offshore

Certificate number: 32147/B0 BV

File number: ACE4/484/5

Product code: 2572I

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

MECC ALTE SPA

Creazzo (VI) - ITALY

for the type of product

ALTERNATING CURRENT GENERATORS (Power 100kW and over)

ECO/ECP series.

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships
IEC 60034 series (2017), IEC 60092 - 301 (1980)

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate is a renewal of certificate N° 32147/A2 BV expiring on 30/01/2018

This certificate will expire on: 24 Nov 2022

For Bureau Veritas Marine & Offshore,

At BV VENEZIA, on 14 Dec 2017,

Sandro BRUSEGAN



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Three phases Synchronous A.C Generators Type ECO & ECP.

Enclosure class :	IP 23 (IP45)
Winding Insulation :	Class H
Temperature rise limits :	Class B, F or H
Voltage class	Up to 690 V
Power class	100 to 3226 kVA
Frequency class	50 or 60 Hz
Speed	1500 or 1800 rpm

Rating class H : [kVA] Amb 45°C

TYPE	50Hz			60Hz				
	380V	400V	415V	440V	450V	460V	480V	690V
ECP34 2S/4	101	101	101	121	121	121	121	121
ECP34 1L/4	130	130	130	144	150	156	156	156
ECP34 2L/4	144	144	144	163	168	173	173	173
ECP34 3L/4	149	154	154	177	180	184	184	184

ECO38 1S/4	173	173	173	211	211	211	211	211
ECO38 2S/4	192	192	192	230	230	230	230	230
ECO38 3S/4	216	216	216	259	259	259	259	259
ECO38 1L/4	230	240	230	288	288	288	288	288
ECO38 2L/4	278	288	288	326	336	346	346	346
ECO38 3L/4	336	336	336	403	403	403	403	403

ECO40 1S/4	384	384	384	432	446	461	461	461
ECO40 2S/4	432	432	432	490	504	518	518	518
ECO40 3S/4	480	480	480	557	566	576	576	576
ECO40 1L/4	528	528	518	605	619	634	634	634
ECO40 1.5L/4	595	595	595	672	693	714	714	714
ECO40 2L/4	653	653	653	749	766	783	783	783
ECO40 VL/4	720	720	720	864	864	864	864	864

ECO43 1S/4	768	768	768	922	922	922	922	922
ECO43 2S/4	893	893	893	1018	1044	1071	1071	1071
ECO43 1M/4	984	984	984	1181	1181	1181	1181	1181
ECO43 2M/4	1104	1104	1008	1248	1296	1344	1344	1344
ECO43 2L/4	1248	1248	1248	1423	1460	1498	1498	1498
ECO43 VL/4	1344	1344	1344	1613	1613	1613	1613	1613

ECO46 1S/4	1440	1440	1440	1650	1690	1730	1730	1730
ECO46 1.5S/4	1584	1584	1584	1804	1852	1900	1900	1900
ECO46 2S/4	1730	1730	1730	1970	2020	2080	2080	2080
ECO46 1L/4	2016	2016	2016	2300	2360	2420	2420	2420
ECO46 1.5L/4	2208	2208	2208	2515	2580	2650	2650	2650
ECO46 2L/4	2400	2400	2400	2730	2800	2880	2880	2880
ECO46 VL/4	2592	2688	2592	2956	3043	3131	3226	3226

Rating class F : [kVA] Amb 45°C

TYPE	50Hz			60hz				
	380V	400V	415V	440V	450V	460V	480V	690V
ECP34 2S/4	92.4	92.4	92.4	111	111	111	111	111
ECP34 1L/4	118	118	118	132	137	142	142	142
ECP34 2L/4	132	132	132	150	154	158	158	158
ECP34 3L/4	135	140	140	163	166	169	169	169

ECO38 1S/4	158	158	158	194	194	194	194	194
ECO38 2S/4	176	176	176	211	211	211	211	211
ECO38 3S/4	198	198	198	238	238	238	238	238
ECO38 1L/4	211	220	211	264	264	264	264	264
ECO38 2L/4	255	264	264	299	308	317	317	317
ECO38 3L/4	308	308	308	370	370	370	370	370

ECO40 1S/4	352	352	352	396	409	422	422	422
ECO40 2S/4	396	396	396	449	462	475	475	475
ECO40 3S/4	440	440	440	510	519	528	528	528
ECO40 1L/4	484	484	475	554	568	581	581	581
ECO40 1,5L/4	546	546	546	616	635	655	655	655
ECO40 2L/4	598	598	598	686	702	718	718	718
ECO40 VL/4	690	690	690	829	829	829	829	829

ECO43 1S/4	704	704	704	845	845	845	845	845
ECO43 2S/4	818	818	818	933	957	982	982	982
ECO43 1M/4	902	902	902	1082	1082	1082	1082	1082
ECO43 2M/4	1008	1008	920	1133	1180	1227	1227	1227
ECO43 2L/4	1144	1144	1144	1304	1338	1373	1373	1373
ECO43 VL/4	1232	1232	1232	1478	1478	1478	1478	1478

ECO46 1S/4	1300	1300	1300	1470	1520	1560	1560	1560
ECO46 1.5S/4	1452	1452	1452	1653	1697	1741	1741	1741
ECO46 2S/4	1540	1540	1540	1750	1800	1850	1850	1850
ECO46 1L/4	1825	1825	1825	2070	2130	2200	2200	2200
ECO46 1.5L/4	2024	2024	2024	2305	2365	2429	2429	2429
ECO46 2L/4	2160	2160	2160	2450	2520	2600	2600	2600
ECO46 VL/4	2375	2463	2375	2709	2789	2870	2957	2957

For class B rating temperature rises, multiply class H rating by 0,792

For degree of protection IP45 (fitting an air inlet filter and air outlet filter), multiply class H rating by 0,74.

For 50°C ambient temperature, multiply class H rating (or class F, or class B) by 0,97.

2. DOCUMENTS AND DRAWINGS:**2.1) Mecc Alte Version A0:**

- MCH-2010-005, dated 29/01/2010.
- MCH-2011-100, dated 08/10/2012.
- MCH-2009-007, dated 10/02/2009.
- CLP 054, dated 28/04/2008.
- MCH-2009-117, dated 17/12/2009.
- MCH-2012-010, dated 14/02/2012.

2.2) Mecc Alte Version A2:

- A4641 rev 11 , dated 10/02/2011.
- A4642 rev 11 , dated 10/02/2011.
- A4643 rev 08 , dated 10/02/2011.
- A4644 rev 08 , dated 10/02/2011.
- A9090 rev 00 , dated 30/09/2014.
- A9373 rev 00 , dated 26/02/2015.
- A9503 rev 03 , dated 27/10/2015.
- A9504 rev 03 , dated 27/10/2015.
- MCH-2015-069 rev 3, Overall dimensions coupling MD35, dated 27/10/2015.
- MCH-2015-069 rev 3, Overall dimensions coupling B3B14, dated 27/10/2015.

2.3) Data sheet Specification

-ECP34-1L4, ECP34-2L4, ECP34-3L4, ECP34-1S4, ECP34-2S4, ECO38-1L4, ECO38-2L4, ECO38-3L4, ECO38-1S4, ECO38-3S4, ECO40-1L4, ECO40-1_5L4, ECO40-2L4, ECO40-1S4, ECO40-2S4, ECO40-3S4, ECO40-VL4, -ECO43-1M4, ECO43-2M4, ECO43-2L4, ECO43-1S4, ECO43-2S4, ECO43-VL4, ECO46-1L4, ECO46-1_5L4, ECO46-2L4, ECO46-1S4, ECO46-1_5S4, ECO46-2S4, ECO46-VL4, dated 22-Aug-2017

3. TEST REPORTS:**Mecc Alte Version A0:**

- All tests witnessed by BV's Surveyor, dated : 08/02/2011, 18/09/2012, 24/09/2009, 24/09/2012, 30/03/2011.
- Tests reports N°1139989/1139983/1139992/1139985/1138872/1139993, stamped Accepted and Reviewed on 16/01/2013.
- Tests reports N°1142998/1131793/1350615/1139996/1139990, stamped Accepted and Reviewed on 16/01/2013.

Mecc Alte Version A2:

N° 1885887 dated 09/06/2016, 1889552 dated 01/06/2016, 1901647 dated 01/06/2016, 1901647 dated 06/06/2016, 1889224 dated 25/03/2016, 1887605 dated 22/12/2015, 1887978 dated 21/12/2015, 1889069 dated 25/05/2016, 1889224 dated 07/02/2017.

4. APPLICATION / LIMITATION:

- 4.1 - BUREAU VERITAS Rules and Regulations for the Classification of Steel Ships.
- 4.2 - Alternator located within area or adjacent area protected by fire water cannot be exposed to direct spray.

5. PRODUCTION SURVEY REQUIREMENTS:

- 5.1 - The generators are to be supplied by **MECC ALTE SPA** in compliance with the type and the requirements described in this certificate.
- 5.2 - This type of product is within the category IBV of Bureau Veritas Rule Note NR320.
- 5.3 - BV product certificate is required.
- 5.4 - **MECC ALTE SPA** has declared to Bureau Veritas the following production site(s):

MECC ALTE Spa
Via Roma 20
36051 Creazzo
Vicenza
ITALY

MECC ALTEUK Ltd
6 Lands' End Way, Oakham
Rutland LE15 6RF
UNITED KINGDOM

6. MARKING OF PRODUCT:

- Name plate according to IEC 60034-1
- Society's brand as relevant
- @ or \ conformity marking, as relevant.

7. OTHERS:

- 7.1 - It is **MECC ALTE**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.
- 7.2 - This Certificate supersedes the Type Approval Certificate n° 32147/A2 BV issued on 24/11/2017 by the Society.

*** END OF CERTIFICATE ***