



Marine & Offshore

Certificate number: 56706/A0 BV

File number: AP4837

Product code: 3926I

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

ABB Engineering (Shanghai) Ltd.

Shanghai - CHINA

for the type of product

EXHAUST GAS MONITORING AND RECORDING DEVICE

Continuous Gas Emission Monitoring System GAA610-M

Requirements:

BUREAU VERITAS Rules and Regulations for the Classification of Steel Ships/Offshore Units/Yachts
IMO Res. MEPC.259(68) - 2015 Guidelines for exhaust gas cleaning systems
Appendix 3 of the NOx Technical Code 2008

EC code : 31 for cabinet and analyzer
33 for sample probe

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 will expire on: 19 Apr 2024

For Bureau Veritas Marine & Offshore,

At BV SHANGHAI, on 19 Apr 2019,

Jennifer Zhang



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.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

- Product model or type designation :

GAA610-M

- Product description :

GAA610-M is a continuous gas emission system which meets meets IMO revised MARPOL Annex VI and IMO Resolutions MEPC.259(68). It is consists of the following parts : Sampling probe, Heated sample gas line, Sample conditioning system and Analyzer system.

1.1 - Approval Range :

Item	Designation	Description
Cabinet	System Cabinet	protection class : IP54
Analyzer	AO2000 Analyzer (Uras26)	
Sampling probe	JES-301	Sample probe for use on Marine applications
Sample Conditioning System	SCC-C SCC-F	Sample gas cooler Sampe gas feed Unit
AC Cabinet (Option)	T-29	Air conditioning unit

1.2 - Technical Specifications :

Power supply	115/230 VAC, 50/60 Hz
Primary gases	SO ₂ , CO ₂ (NDIR sensor) O ₂ (Electrochemical sensor)
Measuring range	CO ₂ --- 0-20% vol SO ₂ --- 0-250/0-500 ppm SO ₂ /CO ₂ Raion (Calculated) --- 0-250 O ₂ --- 0-25% vol
Operation temperature	5 to 55°C

2. DOCUMENTS AND DRAWINGS :

ABB :

- Analyzer Sample System Hook-up Diagram, No. AUS-4498-00125-02-000, dated 10-03-2017.
- Sample Probe Drawing, No. AUS-4498-00125-02-100, dated 10-03-2017.
- General Arrangement Drawing, No. AUS-4498-00125-02-102, dated 04-08-2016.
- Foundation & Installation Drawing, No. AUS-4498-00125-02-103, dated 10-03-2017.
- Analyzer Sample System Schematic Diagram, No. AUS-4498-00125-02-201, dated 10-03-2017.
- Wiring Diagram, No. AUS-4498-00125-02-301, dated 03-08-2015.
- Second Generation Bill Of Material, No. AUS-4498-00125-02-003, dated 02-07-2018.
- Data Sheet of GAA610-M - Advanced Emission Gas Monitoring System, No. DS/GAA610-M-EN, dated 2018.
- AO2000 Series Instuction for Installation Start-Up and Operation, No. 41/24-100 EN Rev.7, dated Dec. 2012.
- SCC-C Sample Gas Cooler Operator's Manual, No. 42/23-55 EN Rev. 2, dated M ar. 2007.
- SCC-F Sample Gas Feed Unit Operator's Manual, No. 42/23-51 EN Rev. 2, dated Feb. 2005.

JCT :

- JES-301 Operating Manual, No. BA_D_JES301_V2.1, dated 2017.

PENTAIR :

- T-Series Air Conditioner Instruction Manual Rev. G, No. 89104464, dated 2016.

3. TEST REPORTS :

Unilab (Shanghai) CO., Ltd.:

- Test Report, No. ULM04720180327001, dated 11-07-2018.

Marine Environment Engineering and Reliability Laboratory of No.704 Research Institue of CSIC :

- Enclosure Protection test Report (IP5X), No. S714-FC-2018, dated 05-01-2019.
- Enclosure Protection test Report (IPX4), No. S714-FS-2018, dated 05-01-2019.

ABB :

- ABB Analyser Uras26 Performance Test Report, Report TP/Uras26/MEPC-EN Rev.A, dated 27-11-2015.

SiTiIAS :

- Test Report, No. A16-022-WT, dated 08-11-2016.

4. APPLICATION / LIMITATION :

- 4.1 - BUREAU VERITAS Rules and Regulations for the Classification of Steel Ships/Offshore Units/Yachts.
4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
4.3 - BUREAU VERITAS Environmental Category, **EC Code: 31** for cabinet and analyze and **33** for sample probe.
4.4 - The equipment fulfils the EMC requirements for installation in General power distribution zone.
4.5 - Use of the Exhaust Emissions Monitoring System must be included in the engine's technical file and detailed in the ship's on-board monitoring manual, which must be approved by the Administration.
4.6 - The Gas analysers must be operated and calibrated in accordance with the manufacturer's recommendations.
4.7 - The installation shall comply with the Manufacturer's recommendation described in documentations.
4.8 - The Exhaust Emissions Monitoring System must satisfy the accuracy and calibration requirement specified in the NOx Technical Code and MEPC Resolutions.MEPC.259(68).

5. PRODUCTION SURVEY REQUIREMENTS :

- 5.1 - The GAA610-M are to be supplied by **ABB Engineering (Shanghai) Ltd.** 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 - For information, **ABB Engineering (Shanghai) Ltd.** has declared to Bureau Veritas the following production site(s):

ABB Engineering (Shanghai) Ltd.
No. 4528, Kangxin Highway,
Pudong New District, Shanghai,
Shanghai
Shanghai
CHINA

6. MARKING OF PRODUCT :

- Maker's name or trade mark.
- Serial number of the units.
- Equipment type number or model identification under which it was type-tested.
- \ or @ conformity marking, as relevant.

7. OTHERS :

It is **ABB Engineering (Shanghai) Ltd.**'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.

*** END OF CERTIFICATE ***