



Marine &amp; Offshore

Certificate number: 42658/B0 BV

File number: AP 4630

Product code: 3926H

*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***Norsk Analyse AS**

Tønsberg - NORWAY

*for the type of product***EXHAUST GAS MONITORING AND RECORDING DEVICE**

ShipCEMS

Emission Monitoring System measuring SO<sub>2</sub>/CO<sub>2</sub>**Requirements:**

Bureau Veritas Rules for the Classification of Steel Ships  
 IMO revised MARPOL Annex VI and NOx Technical Code 2008  
 IMO Resolution MEPC.259(68).

EC Code: 31

*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: 12 Feb 2026**

**For Bureau Veritas Marine & Offshore,**  
 At BV GOTHENBURG, on 12 Feb 2021,  
 Magne MOLLER



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 4 page(s)

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION :

- Product model or type designation :  
**ShipCEMS**

-Product description:

The ShipCEMS Continuous Exhaust Emission Monitoring System is to analyse sulphur dioxide and carbon dioxide in wet marine exhaust flue., according to MEPC.258(68) MARPOL.

### 1.1 - Technical Specifications:

Analyser System cabinet	<ul style="list-style-type: none"> <li>• Online Analyser Module for analysis of SO<sub>2</sub> and CO<sub>2</sub></li> <li>• LOGO! PLC with LOGO! TD unit for alarm display and auto calibration, TCP/IP Module for Bus Communication</li> <li>• Peltier cabinet cooler system</li> <li>• Solenoid valves for stream switching and validation and for analyser calibration</li> <li>• 24 VDC power supply</li> <li>• 48 VDC power supply (for Peltier cooler only)</li> <li>• Terminals for power and signal interfaces</li> </ul>
Sample Conditioning System cabinet	<ul style="list-style-type: none"> <li>• Heated oven cabinet</li> <li>• Sample gas pump</li> <li>• Sample gas filter</li> <li>• Sample gas dryers</li> <li>• Sensors for flow, temperature and moisture</li> <li>• Junction box</li> </ul>
Sample Probes	<ul style="list-style-type: none"> <li>• SC-SP</li> </ul>

### 1.2 - External Interfaces:

Parameter	Signal type (ShipCEMS side)	Comment
Select engine #1	DI	<ul style="list-style-type: none"> <li>• CC = Engine X is selected.</li> <li>• Only one engine to be selected at a time.</li> </ul>
Select engine #2	DI	
Select engine #3	DI	
Select engine #4	DI	
SO <sub>2</sub> (ppm)	AO	<ul style="list-style-type: none"> <li>• SO<sub>2</sub>, 4-20 mA (ppm)</li> </ul>
CO <sub>2</sub> (mol %)	AO	<ul style="list-style-type: none"> <li>• CO<sub>2</sub>, 4-20 mA (mol %)</li> </ul>
SCS common alarm	DO	<ul style="list-style-type: none"> <li>• OC=Alarm or power off (SCS cabinet)</li> <li>• CC=No fault</li> </ul>
AC common alarm	DO	<ul style="list-style-type: none"> <li>• OC=Alarm or power off (AC cabinet)</li> <li>• CC=No fault</li> </ul>
Measurement valid	DO	<ul style="list-style-type: none"> <li>• OC=Not valid measurement or power off</li> <li>• CC=Valid measurement</li> </ul>
Maintenance in progress	DO	<ul style="list-style-type: none"> <li>• OC=Maintenance not in progress</li> <li>• CC=Maintenance in progress</li> </ul>

### 1.3 - Rating:

Power Supply : 230VAC Nominal 50/60 Hz  
 Enclosure Rating : IP 44 (Analyser Cabinet)  
 Primary gases : SO<sub>2</sub>, CO<sub>2</sub>

**2. DOCUMENTS AND DRAWINGS :****For Modificaton B0 version:****Norsk Analyse AS:**

- ShipCEMS Continuous Emission Measurement System User Manual, NA-E-USM-001, dated May 2020.
- ShipCEMS Continuous Emission Measurement System Installation Manual, NA-E-INS-014, dated May 2020.
- Drawing Package\_ShipCEMS:
  - P301-1001, Rev. 01, General Arrangement Drawing Analyzer Cabinet(AC) External View;
  - P301-1001.2, Rev. 01, General Arrangement Drawing Analyzer Cabinet(AC2) External View;
  - P301-1003, Rev. 01, General Arrangement Drawing Analyzer Cabinet(AC) Internal View;
  - P301-1003.2, Rev. 01, General Arrangement Drawing Analyzer Cabinet(AC2) Internal View;
  - P301-1801/P301-1801V, Rev. 01, General Arrangement Drawing Sample Conditioning System External View Hook-Up Details;
  - P301-1802/P301-1802V, Rev. 01, General Arrangement Drawing Sample Conditioning Internal View;
  - P301-1901, Rev. 02, General Arrangement Drawing Emergency Stop Optional;
  - P301-1903, Rev. 02, General Arrangement Drawing Gas Dryer Optional;
  - P301-3001, Rev. 02, System Diagram Analyzer Cabinet(AC);
  - P301-3001.2, Rev. 01, System Diagram Analyzer Cabinet(AC2);
  - P301-3002, Rev. 01, System Diagram Sample Conditioning System;
  - P301-3003, Rev. 02, System Diagram Analyser Cabinet Gas Dryer Optional;
  - P301-5001, Rev. 02, Termination Diagram - Overview - ShipCEMS System;
  - P301-5001A4, Rev. 02, Termination Diagram - Analog - ShipCEMS System;
  - P301-5001B4, Rev. 02, Termination Diagram - Modbus RTU - ShipCEMS System;
  - P301-5001C4, Rev. 02, Termination Diagram - Modbus TCP/IP - ShipCEMS System;
  - P301-5001D4, Rev. 02, Termination Diagram - Profibus DP - ShipCEMS System;
  - P301-5002.2, Rev. 01, Termination Diagram 230/120VAC & 24/48DC Power Distribution Analyser Cabinet(AC2);
  - P301-5002, Rev. 02, Termination Diagram 230VAC & 24/48DC Power Distribution Analyser Cabinet(AC);
  - P301-5002V, Rev. 01, Termination Diagram 120VAC & 24/48DC Power Distribution Analyser Cabinet(AC);
  - P301-5003A, Rev. 01, Termination Diagram - Analog Signal Distribution/Interface Analyser Cabinet(AC);
  - P301-5003B, Rev. 01, Termination Diagram Signal DistributionWith Modbus RS 485 Analyser Cabinet(AC);
  - P301-5003C, Rev. 01, Termination Diagram Signal DistributionWith Modbus TCP/IP Analyser Cabinet(AC);
  - P301-5003C.2, Rev. 01, Termination Diagram Signal DistributionWith Modbus TCP/IP Analyser Cabinet(AC2);
  - P301-5003D.2, Rev. 01, Termination Diagram Signal DistributionWith Profibus Analyser Cabinet(AC2);
  - P301-5003D, Rev. 02, Termination Diagram Signal DistributionWith Profibus Analyser Cabinet(AC);
  - P301-5004, Rev. 01, Termination Diagram Sample Condition System;
  - P301-5004V, Rev. 01, Termination Diagram Sample Condition System;
  - P301-5005, Rev. 01, Termination Diagram Sample Probe(SP);
  - P301-6001, Rev. 01, System Block Diagram P&ID Distribution Overview;
  - P301-6002A4, Rev. 01, System Block Diagram -#4 Analog Signal and Power Distribution Overview;
  - P301-6002B/C/D, Rev. 01, System Block Diagram - Signal and Power Distribution Overview;
  - P301-8001, Rev. 01, Single line Power Distribution 230V;
  - P301-8002, Rev. 01, Single line Power Distribution 400V;
  - P301-8201.2, Rev. 01, Network MAP;
  - P301-9802, Rev. 01, Fieldbus Specification ShipCEMS Interface Unit.

**3. TEST REPORTS :****Delta:**

- Test report No.: DANAK-19/13168, dated 21 June 2013.

**4. APPLICATION / LIMITATION :**

- 4.1 - BUREAU VERITAS Rules and Regulations for the Classification of Steel Ships.
- 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**
- 4.4 - 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.
- 4.5 - The Exhaust Emissions Monitoring System is in accordance with Notation **CLEANSHIP SUPER.**
- 4.6 - The Gas analysers must be operated and calibrated in accordance with the manufacturer's recommendations.
- 4.7 - The Exhaust Emissions Monitoring System must satisfy the accuracy and calibration requirement specified in the NO<sub>x</sub> Technical Code and MEPC Resolutions.(MEPC.103(49) - Guideline for on-board NO<sub>x</sub> verification procedure-direct measurement and monitoring method & MEPC.130(53) - Guidelines for on-board exhaust gas SO<sub>x</sub> cleaning systems).
- 4.8 - Installation of ShipCEMS on-board seagoing vessels.
- 4.9 - Equipment covered by this Type Approval certificate can be installed on ships contracted for construction before 1 January 2022. On or after this date of 1 January 2022, equipment is to comply with IACS UR E10 Rev 7.

**5. PRODUCTION SURVEY REQUIREMENTS:**

- 5.1 - The above products are to be supplied by **Norsk Analyse AS** in compliance with the type described in this certificate.
- 5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.
- 5.3 - **Norsk Analyse AS** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.
- 5.4 - For information, **Norsk Analyse AS** has declared to Bureau Veritas the following production site(s):

**Norsk Analyse AB  
Nyängsgatan 5,  
S-66434 Grums,  
Sweden**

**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.

**7. OTHERS:**

- 7.1 - It is **Norsk Analyse AS'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 No. 42658/A0 BV issued on 18 Nov 2015 by the Society.

**\*\*\* END OF CERTIFICATE \*\*\***