



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

20-1993266-PDA
03-Jun-2020
02-Jun-2025
Houston ESD - Ship Equipment

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

NORSK ANALYSE AS

located at

WIRGENESVEI 10, BARKAAKER, TONSBERG, Norway, 3157

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product Monitoring System, Emissions

Model ShipCEMS

This Product Design Assessment (PDA) Certificate remains valid until 02/Jun/2025 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping


Jess G. Totten, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

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Tier: 2 - PDA Issued

Product: Monitoring System, Emissions

Model: ShipCEMS

Intended Service:

Continuously monitors the concentration (parts per million and percentage) of the exhaust gases most associated with air pollution from ships, Mobile Offshore Drilling Units (MODU) and other sources of air pollution in the marine environment; including the primary gases: sulphur dioxide (SO₂) and carbon dioxide (CO₂), optionally NO_x and CO.

Description:

Marine and Offshore Applications - an emission monitoring system that monitors exhaust emissions from maritime vessels and Mobile Offshore Drilling Units (MODU). The system is intended for use to verify SO_x emissions from vessels with Exhaust Gas Cleaning Systems installed to meet the requirements of the Revised MARPOL Annex VI Regulation 14 under the guidance of MEPC 259(68). The system also provides the calculation of CO₂ Index, based on operational data as per the requirements of MEPC.Circ. 471. The system analyzes exhaust gas species including Sulphur Dioxide (SO₂), Carbon Dioxide (CO₂) and provides mass totals of these gases using the calculations contained within the NO_x Technical Code (2008).

The ShipsCEMS analyzer system consists of a sensor and probe assembly with a power supply and communication unit. The system monitors CO₂ and SO₂ emitted from stacks or exhaust ducts. The analyzer outputs the measured gas based on 4-20 mA signals or as Modbus/Profibus TCP/IP to provide ppm or percentage ranges.

Rating:

Power Supply: 120 - 230VAC Nominal 50/60 Hz;
Enclosure Rating: IP 44 (Analyser Cabinet);
Ambient Temperature Range: 0-55°C
Primary gases: SO₂, CO₂

Components:

ShipCEMS Analyser Cabinet inclusive Analyser Module & Peltier Cooler. - Analyser probe, ShipCEMS Sample Conditioning System incl. Tube Bundle - ShipCEMS Front End PLC, Solenoids and Calibration Gas Cylinder

Service Restriction:

Unit Certification is not required for this product.

If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. When used for continuously monitoring of exhaust gas from an exhaust gas cleaning system, the installation shall comply with the requirements in MEPC 259(68) Sections 6 through 8.
3. For each installation, an Onboard Monitoring Manual (OMM) is to be submitted to the flag Administration for approval as per Chapter 6.4.17 of the Revised MARPOL Annex VI and NO_x Technical Code (2008) and Section 8 of MEPC 259(68).
4. For installation, the span gases are to be provided in order to comply with the requirements of Chapter 6 of the Revised MARPOL Annex VI and NO_x Technical Code (2008).
5. Survey during installation is to be in accordance with Section 5/13.3 of the ABS Guide for Exhaust Emission Abatement.
6. Requirements of MEPC.259(68), Chapter 6.6 and 6.7 regarding SO₂ losses have to be observed.
7. Each particular application and installation is to be specifically approved in conjunction with the relevant system. Equipment is not to be installed in weather exposed areas.

Notes/Drawing/Documentation:

Drawing No. P301-1001, General Arrangement Drawing Analyzer Cabinet External View, Revision: 01, Pages: 1

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Tier: 2 - PDA Issued

Drawing No. P301-1003, General Arrangement Drawing Analyzer Cabinet Interior Hook-Up Locations, Revision: 01, Pages: 1
Drawing No. P301-1202, General Arrangement Drawing Sample Probe, Revision: 01, Pages: 1
Drawing No. P301-1210, General Arrangement Drawing Counter Flange, Revision: 01, Pages: 1
Drawing No. P301-1801, General Arrangement Drawing Sample Conditioning System External View Hook-Up Details, Revision: 02, Pages: 1
Drawing No. P301-1901, General Arrangement Drawing Emergency Stop Optional, Revision: 02, Pages: 1
Drawing No. P301-3001, System Diagram Cabinet Stream Switching System, Revision: 03, Pages: 1
Drawing No. P301-3002, System Diagram System Conditioning System (SCS), Revision: 01, Pages: 1
Drawing No. P301-3002, System Diagram Analyser Cabinet, Gas Dryer, Optional, Revision: 02, Pages: 1
Drawing No. P301-5001, Termination Drawing - Overview, ShipCEMS System – 230VAC, Revision: 01, Pages: 1
Drawing No. P301-5002, Termination Diagram 230VAC & 24/48DC Power Distribution, Revision: 02, Pages: 1
Drawing No. P301-5003A, Termination Diagram – Analog, Signal Distribution/Interface, Revision: 01, Pages: 1
Drawing No. P301-5004, Termination Diagram, Sample Conditioning System (SCS), Revision: 01, Pages: 1
Drawing No. P301-5005, Termination Diagram, Sample Probe (SP), Revision: 01, Pages: 1
Drawing No. P301-6001, System Block Diagram, P&ID, Revision: 01, Pages: 1
Drawing No. P301-8001, Single Line Power Distribution 230V, Revision: 01, Pages: 1
Drawing No. P301-8002, Single Line Power Distribution 460V, Revision: 01, Pages: 1

Terms of Validity:

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STANDARDS

ABS Rules:

Rules for Conditions of Classification, Part 1 2020 Marine Vessels Rules 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:
Marine Vessels Rules: 4-9-3/11, 4-9-9/13.1, 4-9-9/Table 1;

Rules for Conditions of Classification, Part 1 - 2020 Offshore Units and Structures 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:
Mobile Offshore Units Rules: 4-3-4/5;

Section 5 of the ABS Guide for Exhaust Emission Abatement (Updated May 2020)

National:

NA

International:

(1) Resolution MEPC. 259(68) - 2015 Guidelines for Exhaust Gas Cleaning Systems
(2) Revised MARPOL 73/78 Annex VI Regulation 13 – Nitrogen Oxides (NOx) and the NOx Technical Code 2008, Chapter 6.4 - 'Direct measurement and monitoring method (DMM)'.

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- (3) MEPC/Circ.471 - Interim Guidelines for Voluntary Ship CO2 Emission Indexing for Use In Trials – Calculation of the CO2 emission index from operational data.
- (4) IACS E10 - Test Nos. 3-11 & 13-18;

Government:
NA

EUMED:
NA

OTHERS:

Reporting of totalized mass emissions (NO_x, SO_x, CO₂, CO and CH₄) from marine diesel engines and marine boilers – to Manufacturers Standards utilizing the calculations contained in the NO_x Technical Code (2008).