



# TYPE APPROVAL CERTIFICATE

**Certificate No.** : CPH39948-AC001                      **Initial Approval** : 2nd September, 2019  
**Product** : Gas Monitoring System  
**Manufacturer** : Norsk Analyse AS  
Wirgenesvei 10, 3167 BARKAKER, Norway

**Product Description** : Type : ShipCEMS  
Intended for the measurement of SO2 and CO2 concentrations in exhaust gas  
" See Appendix 1 "

**Approval Condition** : " See Appendix 1 "

**THIS IS TO CERTIFY** that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturers and Type Approved Equipment".

Pt. 6, Ch. 2, Art. 301 of the Rules for Classification, Steel Ships  
MEPC.259(68) and MARPOL Annex VI and NOx Technical Code 2008

This Certificate is valid until 1st September, 2024

Issued at Busan, Korea on 2nd September, 2019



This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "<http://e-cert.krs.co.kr>" by using the tracking No (ME19023538727) and certificate No.(CPH39948-AC001).



**KOREAN REGISTER OF SHIPPING**

*General Manager of  
Marine & Ocean Equipment Team*

- Note :**
1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
  2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
  3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
  4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

## Appendix 1

# Product Description and/or Approval Condition

Certificate No : CPH39948-AC001

Date of Issue : 2nd September, 2019

## A. Product Description

### 1. Product Specification

- 1) System Description (Type : ShipCEMS)  
ShipCEMS is a system that monitors SO<sub>2</sub> and CO<sub>2</sub> concentrations in exhaust gas by sampling the gas into the gas analyzer through the probes with heated hoses and the gas conditioning system.
- 2) System comprising;
  - A) Analyser Cabinet(AC)
    - Siemens Ultramat 6 (online process analyser for SO<sub>2</sub> and CO<sub>2</sub> )
    - Siemens Logo PLC with display unit
    - Peltier cabinet cooler system
    - Solenoid valves
    - Condense trap filter
  - B) Sampling Conditioning System(SCS)
    - Dryer
    - Filter
    - Gas pump
    - Junction box
  - C) Sampling Probes(SC-SP)
    - GAS222.17 (Manufacturer: Buhler GmbH)
- 3) Software version: V3.X(LOGO) V1.X(Wago)

### 2. Approved Drawings and Documents

- 1) Approved Documents
  - P301-1001 Rev.01, P301-1001.2 Rev.01, P301-1003 Rev.01, P301-1003.2 Rev.01,
  - P301-1202 Rev.01, P301-1202.2 Rev.01, P301-1801 Rev.01, P301-1801V Rev.01,
  - P301-1802 Rev.01, P301-1802V Rev.01, P301-1901 Rev.01, P301-1903 Rev.01,
  - P301-3001 Rev.01, P301-3001.2 Rev.01, P301-3002 Rev.01, P301-3003 Rev.01,
  - P301-5001 Rev.01, P301-5001A Rev.01, P301-5001B Rev.01, P301-5001C Rev.01,
  - P301-5001D Rev.01, P301-5001W Rev.01, P301-5002 Rev.01, P301-5002.2 Rev.01,
  - P301-5002V Rev.01, P301-5003A Rev.01, P301-5003B Rev.01, P301-5003C Rev.01,
  - P301-5003C.2 Rev.01, P301-5003D Rev.01, P301-5003D.2 Rev.01, P301-5003W Rev.01,
  - P301-5004 Rev.01, P301-5004V Rev.01, P301-5005 Rev.01, P301-6001 Rev.01,
  - P301-6002A Rev.01, P301-6002B/C/D Rev.01, P301-8001 Rev.01, P301-8002 Rev.01,
  - P301-8201.2 Rev.01, P301-9802 Rev.01
- 2) Software document
  - NA-E-INS-047 ShipCEMS PLC Software procedure Rev.01
- 3) Manuals
  - User Manual : NA-E-USM-001 (Jan. 2019)
  - Installation Manual : NA-E-INS-014 (Jan. 2019)

### 3. Test Reports, etc.

- 1) Environmental Test
  - Test Report No.DANAK-19/13168 dated on 2013-06-21 issued by DANAK
- 2) Performance Test
  - NA-ETST-022 Rev.03 witnessed by KR surveyor dated on 2019-05-09
  - Report witnessed by DNV-GL dated on 2014-06-23

## B. Approval Condition

### 1. Application & Limitation

- 1) This approval is granted on the basis of the approved documentation and test reports.
- 2) Degree of protection shall be complied with Rule Pt.6 Ch.1 Sec.2 201.2.(5).
- 3) Unless specially directed by the Administration, this approval is not to be construed as a substitute for a flag Administration's approval.

**Appendix 1**

**Product Description and/or Approval Condition**

**Certificate No :** CPH39948-AC001

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- 4) The manufacturer should inform this Society of all kinds of the equipment including software. If the changes are recognized to affect functionality of the approved equipment, type test to confirm the reliability of the revised equipment may be performed in the presence of our surveyor.
- 5) Installation is to be in accordance with manufacture's instruction.
- 6) When the product is used in installations intended to comply with MEPC.259(68), installation and performance as per requirement in MEPC.259(68) Annex section 6,7,8 are to be confirmed by the Society.
- 7) Implementation of time-out alarm in the external system to be considered if not receiving "Measurement Vaild" after "select engine ##" is activated.

**2. Individual Product Cert. and Drawing Approval Requirement**

- 1) Individual product Certification is not required.

**3. Marking**

- 1) The product or packing is to be marked with the manufacturer's name and type designation on a suitable position.

**4. Others**

- 1) Test condition

Approved Testing	Approved location	Remark
EMC	All locations including the bridge and deck zone	-
Temperature	+5 ~ +55°C	-
Vibration	Acceleration ±1.0g	-
Degree of protection	IP44	-

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