



TYPE APPROVAL CERTIFICATE
No. MAC0146022XP

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

<i>Description</i>	Marine Emission Monitoring System
<i>Type</i>	ShipCEMS
<i>Applicant</i>	NORSK ANALYSE AS Wirgenesvei 10 3157 Barkaker NORWAY
<i>Manufacturer</i>	NORSK ANALYSE AS
<i>Place of manufacture</i>	Nyångsgaten 5 66434 Grums SWEDEN
<i>Reference standards</i>	Rules for the Classification of Ships - Part C - Machinery, Systems and fire protection - Ch.3, Sect.6, Tab.1.

Issued in **Gdansk** on **December 19, 2022**. *This Certificate is valid until* **May 21, 2026**

RINA Services S.p.A.

This certificate consists of this page and 1 enclosure

TYPE APPROVAL CERTIFICATE

No. **MAC0146022XP**

Enclosure - Page 1 of 1

ShipCEMS

Product Description:

The ShipCEMS Continuous Exhaust Emission Monitoring System is to analyse sulphur dioxide and carbon dioxide in wet marine exhaust flue. The ShipCEMS 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 to provide ppm or percentage ranges.

Technical Data:

Analyzer System Cabinet	Online Analyzer Module for analysis of SO ₂ and CO ₂ LOGO! PLC with LOGO! TD unit for alarm display and auto calibration / TCP/IP module for Modbus/Profibus Peltier cabinet cooler system Solenoid valves for stream switching and validation and for analyser calibration 24 VDC power supply 48 VDC power supply (for Peltier cooler only) Terminals for power and signal interfaces
Sample Conditioning System Cabinet	Heated oven cabinet Sample gas pump Sample gas filter Sample gas dryers Sensors for flow, temperature and moisture Junction box
Sample Probes	SC-SP

Rating:

Power Supply : 230V /120V AC Nominal 50/60 Hz

Enclosure Rating : IP 44 (Analyser Cabinet)

Primary gases : SO₂, CO₂

Reference Documents:

Drawing Booklet Approved with HMMC 6875 dated 3 May 2016

Info Booklet filed with HMMC 6945 dated 3 May 2016

Test Report filed with HMMC 7246 dated 13 June 2016

Drawing Booklet Approved with PLEL 987 dated 22 May 2021

Info Booklet filed with PLEL 988 dated 22 May 2021

Application Fields:

The ShipCEM Monitoring System may be used for the exhaust gas monitoring system in accordance with IMO resolution MEPC.340(77) as amended and NO_x technical code 2008.

Remarks:

This certificate amends and annuls previously issued certificate MAC052621XP

Installation requirements and calibration shall be observed as per MEPC.340(77) annex 9 and last amended NO_x technical code 2008 , appendix 4 .

Correct configuration and set up for each delivery to be tested during commissioning after installation.

The WM cabinets shall be mounted on vibration dampers according to the manufacturer instructions

Installation to be made in accordance with maker's specifications.

Acceptance condition

The acceptance of the a.m. product on board ships and other units classed with RINA is subject to the satisfactory outcome of testing as per RINA Rules.

Gdansk December 19, 2022