Certificate No:
TAA00002ZV

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Emission Monitoring System

with type designation(s)
MCA 10 maritime

Issued to
Dr. Födisch Umweltmesstechnik AG
Markranstädt, Sachsen, **Germany**

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Temperature	**A**
Humidity	**B**
Vibration	**A**
EMC	**A**
Enclosure	**B**

Issued at **Hamburg** on **2021-05-03**
This Certificate is valid until **2026-04-29**.
DNV local station: **Hamburg – CMC North/East**

Approval Engineer: **Jens Dietrich**

for **DNV**

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description

MCA 10 maritime
Analyzer Cabinet for continuous measurement of SO2 and CO2 at up to two different sample points
-Heated probe switching valve box mounted on top of the cabinet.
-Analyzer principle: NDIR

-Measuring ranges: SO2: Small range 0…100 ppm, Large range 0…250ppm
CO2: Small range 0…12 vol.-%, Large range 0…25% vol.-%

-Sample line: Heated sample gas line
-Feeding Unit: Cabinet integrated air-jet ejector
-Visualisation and configuration by Touch-Panel-PC in cabinet door
-Calibration for zero point (with instrument air) and span point (with test gas or optical filter) manually or automatically

Available interfaces to external systems:
-Analogue outputs: 4…20mA
-Digital outputs: Failure, maintenance, maintenance request, measuring range switch over, etc.
-Modbus RTU,
-Modbus TCP/IP,
-Profibus,
-Profinet.

Power supply: 400VAC/50Hz/3ph or 230VAC/50Hz
Degree of protection: IP54

Software versions:
PC SW-Version: 4.01
MCA SW-Version: 3.62
SPS SW Version: 3.62.

Approval conditions
The Type Approval covers hardware and software listed under Product description.

As long as the units are covered by this Type Approval, a product certificate according to Pt.4 Ch.9 Sec.1 will not be required. Correct configuration and set up for each delivery to be tested during commissioning after installation.

Software control
All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

EMC filter Phoenix Contact NEF-1-3-2794110 (or equivalent) has to be used for power supply of internal analyzer module.

Vibration dampers according to drawing have to be used for cabinet installation.

Compliance with MEPC.259(69) is stated by DNV GL Statement of Compliance 27975892. Conditions are to be observed. In order to completely fulfil the requirements of MEPC.259(68) for “continuous emission monitoring” additional equipment (i.e. data recording and processing device) will have to be installed.

Tests carried out
-Applicable tests according to DNV GL CG-0339, December 2019.
-Test based on MEPC.259(68) requirements,
-Functional Performance Test

Marking of product
Cabinet and Analyzer are labelled with: Name of Manufacturer, Type designation, Serial Number, Power supply ratings.

Periodical assessment
The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:
- Ensure that type approved documentation is available

- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.