Statement of Compliance

This is to confirm that the undernoted product has been tested in accordance with the relevant requirements of MEPC.259(68) in respect of emission testing.

Emission Monitoring System
MCA 10 maritime

Company

Dr. Födisch Umweltmesstechnik AG
Zwenkauer Strasse 159
04420 Markranstädt
Germany

Product Description: Emission Monitoring System

Type

MCA 10 maritime
Measuring SO_2 and CO_2 at up to two different sample points

This is to Confirm:

The "MCA 10 maritime" is found to be suitable as a continuous monitoring system of:

- SO_2 and CO_2 according MEPC.259(68)

The functional testing has been demonstrated under surveillance and to the satisfaction of DNV GL in accordance with MEPC.259(68).

According to MEPC.259(68), 6.6, the extractive exhaust gas samples will be maintained at a sufficient temperature to avoid condensed water in the sampling system and hence loss of SO_2.

According to MEPC.259(68), 6.8, both gas concentrations (CO_2 and SO_2) will be measured at the same residual water content in the sample and therefore no dry-to-wet conversion factors are required in the calculation of the CO_2/SO_2 ratio.

The "MCA 10 maritime" is found to be in compliance with the requirements of MEPC.259(68), Chapter 6 "Emission Testing" as well as with relevant requirements of Revised MARPOL Annex VI and NO_X Technical Code 2008 and meets the following requirements:

-	Principle of detection	MEPC.259(68), 6.2
-	Accuracy	NTC 2008; Appendix III, 1.6
-	Precision	NTC 2008; Appendix III, 1.7
-	Noise	NTC 2008; Appendix III, 1.8
-	Zero and span drift	NTC 2008; Appendix III, 1.9 and 1.10
-	Calibration curve	NTC 2008; Appendix IV, 5.5.1
-	Interference effect	NTC 2008; Appendix IV, 9

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Location: DNV GL SE, Hamburg, Germany
Signing Date: 2021-02-15

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Technical Data

Analyzer			
Component	Sensor type	Small range	Large range
SO_2	NDIR	0 - 100 ppm	0 - 250 ppm
CO_2	NDIR	0 – 12 vol.-%	0 - 25 vol.-%
Sample Handling Components			
Probe + Probe filter	Stainless-steel heated probe with with ceramic or sintered stainless steel filter		
Sample Line	heated sample gas line		
Feeding Unit	air-jet ejector integrated in MCA 10 maritime		

This is to Note

1. In order to completely fulfill the requirements of MEPC.259(68) for "continuous emission monitoring" additional equipment (e.g. data recording and processing device) will have to be installed.
2. In case ambient temperature is below +25°C or above +35°C the system may only be operated with analyser cabinet. The ambient temperature should be between +5°C and +45°C for correct operation within the analyser cabinet.
3. The emission monitoring system shall be installed, calibrated and operated in compliance with the "Multi Component Analyser MCA 10 maritime - Onboard Monitoring Manual".
4. For SO_2 and CO_2 monitoring according MEPC.259(68) the calibration interval with calibration gas could be prolonged up to one year without exceeding the zero and span drift according NTC 2008, Appendix III, 1.9 and 1.10, if the daily automatic zero point with instrument air and span check alignment using the adjustment filter wheel, an internal drift correction of the "MCA 10 maritime", is carried out.

   The calibration needs to be checked with calibration gas latest after measurement relevant parts of the "MCA 10 maritime" have been replaced.
5. A system leakage test should be performed every 6 months.

Documents:

- Multi Component Analyser MCA 10 maritime - Onboard Monitoring Manual
  Version 1.1, 15.02.2021

- MCA 10 maritime - Test Report
  "For SO_2 and CO_2 measurements according to Revised IMO MARPOL Annex IV and the Compliance guideline MEPC.259(68)"
  Version 1.1, 12.02.2021

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Signing Date: 2021-02-15