

Continuous Emission Monitoring System for marine exhaust gas



Exhaust gas emissions from the maritime industry are subject to international and national laws and regulations. It is required for ship owners to establish compliance with new environmental requirements.

Exhaust gas emissions from ships are subject to constantly stricter international, national and local regulations defined by the International Maritime Organization (IMO). ShipCEMS is designed to prove the compliance with the limits set for airborne pollution in MARPOL Annex VI.

Inspired by environmental concerns, ShipCEMS is designed to monitor and report traces of SO₂, CO₂ and other gas substances that are contributing to local and global emission challenges. Our ShipCEMS is the clever choice for ship owners to assure that the forthcoming IMO regulations for emission control areas are met.

The ShipCEMS design is based on a careful selection of maritime standard components; hence ship movements, vibrations and temperature loadings are attended to during system design. Our solution uses a heated sample treatment throughout to assure measuring the true composition of the exhaust gas.

ShipCEMS can be customised to individual requirements, covering all types of exhaust cleaning systems and all ship fuels from heavy fuel oil to low sulphur fuel oil or LNG-fuelled ships.

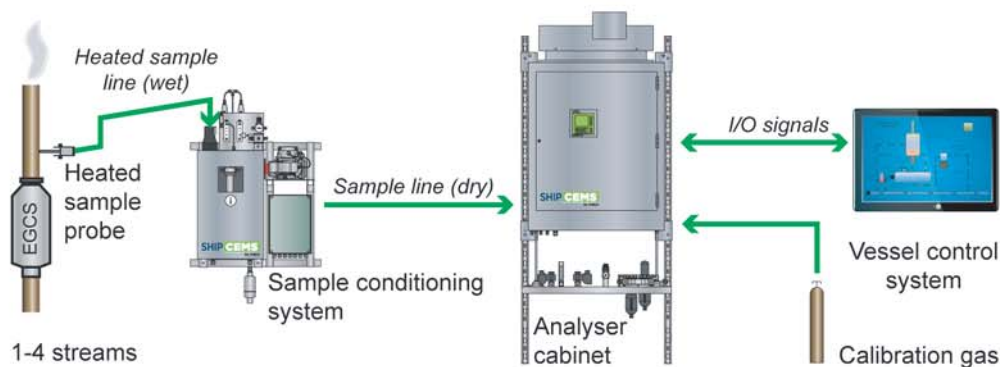
ShipCEMS can be installed on all vessels, such as cruise ships, ferries, tankers, gas carriers, bulk carriers and offshore supply vessels.

- Continuous monitoring of SO₂ and CO₂
- NO_x and Oxygen monitoring as options



- Extractive measuring technology for demanding applications
- Rugged design for marine environment and operations
- Continuous operation with automatic analyser calibration
- Low-cost maintenance, long service lifetime
- Measures on a dry basis (no need to measure moisture in exhaust gas).

SHIP CEMS



A typical ShipCEMS installation comprises:

- Flange mounted sample probe
- Sample Conditioning System(s)
- Analyser Cabinet

ShipCEMS can monitor up to four streams simultaneously due to sample stream switching. One sample probe and one Sample Conditioning System must be installed for each exhaust funnel to be monitored. Only one Analyser Cabinet is required, taking care of the necessary stream switching.

Technical specifications

Measuring range:

- SO₂: Default 0-50 ppm
Max 0-1000 ppm
- CO₂: Default 0-10%
Max 0-15%
- NO_x: on request
- O₂: on request
- CO: on request
- Other gases on request

Type Approvals:

- DNV GL
- Lloyd's Register
- ABS
- Bureau Veritas
- RINA

Measuring principles:

- Industry standard NDIR measuring technology

Calibration gas (span) requirements:

- 40 ppm SO₂
- 8 mol% CO₂
- Rest N₂
- Consumption: 5 l/calibration

Air requirements:

- Air quality according to:
ISO 8573-1:2010 [4: 3: 4]
- Consumption: 15 l/min/funnel

Analyser Cabinet:

- Dimension: 900 x 300 x 2100 mm
- Weight: 143 kg

Sample Conditioning System:

- Dimension: 730 x 330 x 1240 mm
- Weight: 52 kg

Heated sample probe:

- Length: 254 mm
- Flange diameter: DN-65 / PN6*
- Weight: 10 kg

Ingress protection:

- IP44

Materials:

- Cabinets: SS316L
- Tubing: PFA/PTFE
- Fittings: SS316
- Sample probe counter flange:
SS316L (Hastelloy is optional)

Power requirements:

- 230 / 110 VAC

Power consumption:

- Analyser Cabinet: 590 W
- Sample Conditioning System:
690 W
- Heated sample probe: 350 W
- Heated sample line: 67 W/m

Communication:

- 4-20 mA analogue outputs
- Digital alarm outputs
- Modbus - (optional)
- Profibus - (optional)
- * Others on request

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Please note that datasheet specifications are subject to change without prior notice!