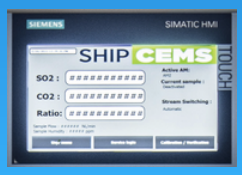
SHIP CEMS EXTENDED



Exhaust gas emissions from ships are subject to 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 emissions from any ship exhaust 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 tem- perature loadings are attended to during system design.

Our solution uses a heated sample treatment throughout to assure measuring the true composition of the exhaust.

The user interface is simple and intuitive and is interacting with the operator by a 7” colour touch-screen. If two analyser modules are installed, the system is fully redundant.

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.

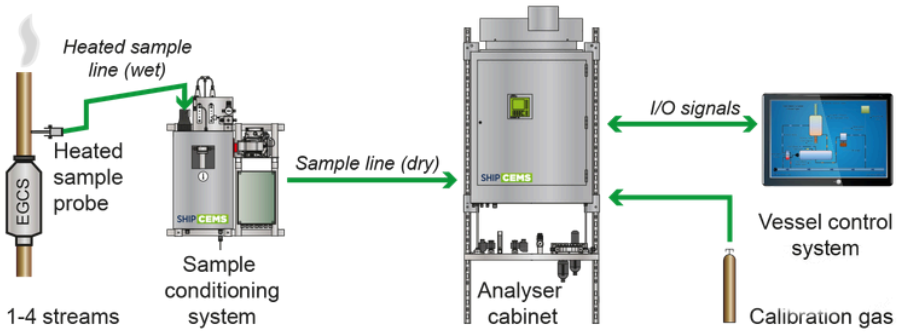
ShipCEMS can be installed on all vessels, like cruise ships, ferries, tankers, gas carriers, bulk carriers and offshore supply vessels.

- Continuous monitoring of SO_2 and CO_2
- Raw gas monitoring of SO_2, NO_x, CO, CO_2, O_2, CH_4
- Extractive measuring technology for demanding applications
- Rugged design for marine environment and operations
- Continuous operation with automatic analyser calibration
- Optional redundant analyser module
- Low-cost maintenance, long service lifetime
- Measures on a dry basis (no need to measure moisture in exhaust gas).
- Remote operation via ShipCEMS Connect

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

www.norskanalyse.com **www.shipcems.com**

SHIP CEMS
COMPACT



A typical ShipCEMS installation includes a Sample Probe, Sample Conditioning System and Analyser Cabinet.

Through stream switching, ShipCEMS can monitor up to four exhaust streams simultaneously. Each funnel requires its own Sample Probe and Conditioning System, while one Analyser Cabinet handles all measurements.

Technical specifications

Standard measuring range
- SO_2: 0-200/0-250 ppm
- CO_2: 0-10/0-15 mol%

Extended measuring range
- SO_2: 0-200 ppm
- CO_2: 0-10 mol%
- NO_x: 0-2000 ppm
- CO: 0-2000 ppm
- CH_4: 0-10000 ppm
- N_2O: 0-500 ppm
- NH_3: 0-500 ppm

Streams:
- 1-4 engines
-

Measuring principles
- IR spectroscopy

Calibration gas (span) requirements:
- Measured components
- Rest N_2
- Consumption: 5 l/calibration

Zero gas requirements (when applicable):
- Nitrogen or instrument air according to ISO8573-1:2010 (4.3.4)
- Consumption: 5L/min (only during 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 (SHS):
- Dimension: 730 x 330 x 1240 mm
- Weight: 52 kg

Heated sample probe:
- Length: 254 mm
- Weight: 10 kg
- Flange diameter:
  DIN flange:
  - DN65 / PN6
  - DN65 / PN10/16
  JIS flange:
  - 10K / DN65

Ingress protection:
- IP44

Ambient temperature:
- 5-55 °C

Materials:
- Cabinets: SS316L
- Tubing: PFA/PTFE
- Fittings: SS316

Power requirements:
- 230 or 120 VAC

Power consumption:
- Analyser Cabinet: 590 W
- SHS: 690 W
- Heated sample probe: 350 W
- Heated sample line: 67 W/m

Communication:
- Modbus
- Profibus
- Analog / Digital
- Others on request

Remote Diagnostics via ShipCEMS Connect:
- GSM
- LAN

Type Approvals

DNV · LR · RINA · ClassNK · ABS · Bureau Veritas · KR · CCS

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