



NO_x

SO_x

PM

CO₂

Emsys[®]

The 'SMART' Choice for Emissions Monitoring.

MARPOL ANNEX VI Maritime Emissions Regulations are not just a matter of compliance, they offer the smart operator an opportunity to gain a competitive advantage as well.

Operating your fleet efficiently only occurs when you have the best data with which to make decisions. Emsys provides you with the most comprehensive air emissions data collection and analysis solution, delivered on board in an easily installed, low total cost of ownership package.

Emsys does more, costs less, and lasts longer. Its proven technology was designed in collaboration with one of the industry's most successful operators, and it's fully Type Approved.

Whether you are a shipowner, shipyard, or scrubber supplier, **Emsys is the smart choice.**

Unique 2nd generation laser technology combines gas emissions and Particulate Matter measurement to meet the compliance challenges of the latest revisions of MARPOL Annex VI and the recently introduced North American Emission Control Area (ECA).

Emsys is a solid state, laser driven Emissions and Particulate Matter (PM) Monitoring System. Emsys is Type Approved in line with MARPOL Annex VI, the NO_x Technical Code (2008) and the MEPC 184 (59) Scrubber Guidelines. Emsys is even Type Approved for measurement of Mass Emissions, CO₂ Operational Index and PM. Emsys's cutting-edge design renders it virtually maintenance free, offering users the lowest operating costs in the industry. Installation can be completed in only 3 days in retrofit applications.

Installed within the funnel space, Emsys can monitor up to 10 exhaust stacks. Each stack only requires one penetration for both emissions (NO_x, SO_x and CO₂) and PM sampling. Monitoring for optional gases such as CO and CH₄ is also available. The laser emissions sensor is drift free, rendering it virtually calibration free and only requiring regulatory Zero and Span Calibration checks. GPS interface ensures geographical position recording for assured compliance within ECA zones.

Advantages

- Single enclosure connects to multiple stacks, providing cost-effective solution to demonstrate compliance with MARPOL Annex VI emission regulations
- Highly accurate, calibration free laser-optic sensor
- Single penetration for emissions and PM sampling
- Small footprint – installs in engine room/funnel space for ease of retrofit (No A/C area required)
- Provides emissions and geographic position data for voyage compliance management
- Provides both real-time and historical compliance data
- Virtually maintenance free, providing lowest life-cycle costs

Specifications

- Self-contained unit in a single enclosure with Ethernet connectivity to Emsys display unit or vessels Machinery Automation/Alarm System
- Approximate Dimensions: Length: 1562 mm (61 in.), Height: 876 mm (34 in.), Depth: 482 mm (19 in.)
- Approximate weight. 181 kg (399 lb.)
- Provides emissions data for NO, NO₂, NO_x, SO₂, CO₂, PM and Opacity (CO and CH₄ are available as options)
- GPS position data input for Voyage Compliance Management
- Standard reporting format is easily configured to customers' requirements
- Designed specifically for Maritime Applications

Power Requirements

Voltage Input	230 VAC, 60 Hz
Maximum Power Consumption	2,500 W (Base System)

Ambient Operating Conditions

Temperature Range	0° - 55° C (32° - 131° F)
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System Measurement Characteristics

NO_x	ppm, g/kWh, kg/Tons
SO_x	ppm, %m/m, SO ₂ /CO ₂ Ratio, kg/Tons
CO₂	%, kg/Tons, CO ₂ Index in g, CO ₂ /unit cargo, equivalent mile/km (user selectable)
PM	% Opacity, mg/m ³ , g/kWh
GPS	Latitude/Longitude position, Time (UTC)

Type Approvals - American Bureau of Shipping (ABS)

Revised MARPOL 73/78 Annex VI Regulation 13 - Nitrogen Oxides (NO_x) - NO_x Technical Code 2008, Chapter 6.4 - PROCEDURES FOR DEMONSTRATING COMPLIANCE WITH NO_x EMISSIONS LIMITS ON BOARD - 'Direct measurement and monitoring method (DMM)'

Resolution MEPC. 184 (59), adopted 17th July 2009 - GUIDELINES FOR EXHAUST GAS CLEANING SYSTEMS - Schemes A & B SO₂/CO₂ ratio method for measurement of SO_x emissions

MEPC/Circ.471 - INTERIM GUIDELINES FOR VOLUNTARY SHIP CO₂ EMISSIONS INDEXING FOR USE IN TRIALS - Estimation of mass CO₂ emissions from marine diesel engines and marine boilers for use in the calculation of the CO₂ emission index

Reporting of mass emissions (NO_x, SO₂, CO₂) from marine diesel engines and marine boilers

Measurement of Particulate Matter (PM) from marine diesel engines and marine boilers