Monitoring Scrubbers

Why Emsys?

- The Emsys-iS is compact, lightweight, and really simple to install. It can measure up to 4 scrubbers from a single enclosure. To further keep our system small the Heated lines contain the power supply for each probe. Thus only one power supply is necessary, making retrofit applications far simpler.
- Emsys systems use a laser sensor. The single biggest advantage of this is the quicker reaction time. Typically IR and UV analysers can take up to a minute to measure SO2 accurately, Emsys takes less than 10 seconds due to its unique Quantum Cascade Laser sensor.
- Emsys systems do not require any air conditioning within the laser enclosure. Not only does this allow the system to be sited very close to the exhaust stacks, but also removes the need for refrigerant gases. This eliminates the requirement for storing or disposing of refrigerant gases and reduces maintenance time and costs.
- Emsys systems measure the gases 'Hot and Wet'. This means that we don't have complicated 'gas conditioning' apparatus which is usually expensive to maintain. We also return the measured gas to the stack so there are no issues with toxic gases in enclosed spaces.
- Emsys is Type Approved by ABS, DNV-GL, and KR with an option for siting the main enclosure on the 'weather deck'. In some applications this capability makes the retrofit procedure far easier
- The Emsys Maritime Team have experience with many different types of Scrubber. Our unique Patented technology was specifically designed for maritime applications and can be customised to exact application requirements.

Technical Specification

Model Number	Emsys-iS
Ambient Temperature	0-+55 ºC
Measurement Method	Extractive using Heated Filter Probes and Heated Sampling Lines, Hot-Wet sampling on a 'round-robin' basis. Sample returned to process
Measurement Technique	Multi-Channel QCL laser, IR Absorption Spectroscopy
Laser Classification	CLASS 1 BS EN 60825-1:2007 Safety of laser products Equipment classification and requirements (identical to IEC 60825-1 2007)
Repeatability	+/- 2%
Accuracy	+/- 2%
Linearity	R2 for a linear fit is ≥ 0.9990. Error < 2% of full scale when analyzed to MCERTS standard
Measurement Rate	Up to 10 Hz
T90 Time	>10s for all gases except NH3
Zero Noise (2 sigma)	< detection limit for each component
Span Noise (2 sigma)	< 2% of full range for each component
24 hour zero drift	< detection limit for each component
24 hour span drift	< 2% of full range for each component
Pathlength (Cell internal)	2m
Cell temperature	180 ºC
Cell pressure	300 Torr ±50 Torr
NO	0-2000 ppm (LOD 5ppm)
NO2	0-500ppm (LOD 1ppm)
CO	0-3000 ppm (LOD 5ppm)
CO2	0-15 % (LOD 0.1%)
SO2	0-200 / 0-500 / 0-1000 ppm (LOD 3ppm / 1ppm)
H2O	0-20 % (LOD 0.1%)
CH4	0-3000 ppm (LOD 5ppm)
Environmental Specification	Tested to IACS-E10
Analyzer Equivalence	ISO 8178/1 Part 7
Type Approvals	ABS, DNV-GL, Korean Register
# of Measurement Points	Single Enclosure – Up to 4, Multiple Enclosures (Up to 3) 12 points
Power Supply	230 VAC – Power requirement (kW) subject to # of points & length of Heated Sample Line
Air Supply	NOT REQUIRED
Enclosure Air Conditioning	NOT REQUIRED
Enclosure Rating	IP55 standard / IP56 Optional (weather deck mounting)
Enclosure dimensions	800mm (H) x 600mm (W) x 300mm (D)
Exhaust duct sizes	300mm – 5metres
	IACS E10
Communications Protocol	MODBUS RTU
Typical Applications	MARPOL Annex VI (NOx), engine testing, EGCS compliance monitoring, methane slip measurement, mass emissions totalizing, funnel smoke monitoring, charterer's CSR reporting, Class Notation compliance
US Patent	8,184,296,B2
EU Patent	EP 2 394 153 B1
Heated Filter Probe / PAB Enclosure / PM Enclosure Rating	IP65