

Sea Sentry

Type approved and MEPC 259(68) accredited Wash Water Monitor for Ship Exhaust Gas Cleaning Systems





Sea Sentry Wash Water Monitoring

Sea Sentry is a turnkey solution for monitoring intake and discharge from an exhaust gas cleaning system (EGCS) for compliance with global regulations.

Having been designed specifically for the application, Sea Sentry builds on 10 years experience in wash water monitoring in the maritime industry. Sea Sentry is Type approved and MEPC 259(68) accredited. The system incorporates sensors for PAH fluorescence (reported as phenanthrene equivalence, PAH_{phe}), Turbidity (to ISO 7027:1999), pH and Temperature.

Exhaust emissions from marine diesel engines release gases and particulates that can be detrimental to human health and the environment. To reduce this pollution the IMO has established new regulations through its Marine Environment Protection Committee (MEPC). Ships operating both globally and in Emission Control Areas must now reduce NO_x, SO_x and particulate emissions. With the global sulphur limit now 0.5% in 2020, the shipping industry must implement strategies to meet this target.

▲ Applications

- **Monitors wash water from ship exhaust gas cleaning systems against regulatory limits**
- **Suitable for both new ship and retrofit installations**
- **Compatible with Open Loop, Closed Loop and Hybrid systems**

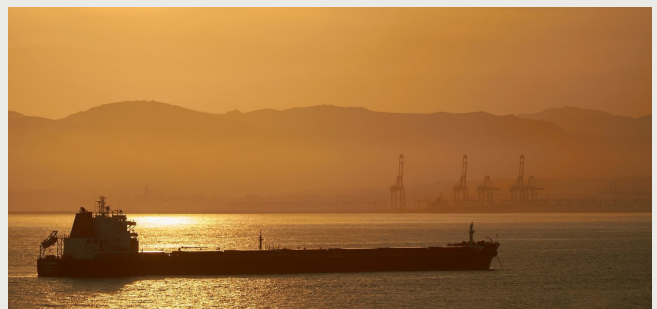
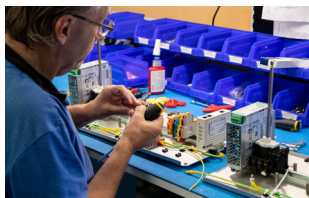
▲ Features

- **Fully integrated turnkey solution** to monitor exhaust gas wash water and meet IMO regulations
- **DNV-GL Type Approved, DNV-GL and Class NK accredited** in compliance with IMO MEPC 259(68)
- Suitable for retro fit and new installation of **open, closed loop and hybrid scrubber system**
- **Full PAH Range** – Full 0 – 4,500µg/L PAH_{phe} measurement which provides full compatibility with all scrubber system flow rates
- **Two year calibration intervals** on the PAH+ and Turbidity sensors allowing for longer periods of uninterrupted monitoring
- **Easy to use onboard sensor check** - the new Chelsea solid standards kit allows verification of the sensor calibration onsite with easy to operate, robust and stable solid standards as part of the commissioning process, without the need for liquids or chemicals.
- **Chelsea designed sensors and cabinet** – as designers and manufacturers of both the sensors and complete system, Chelsea knows the science and the technology



Complete turnkey solution

- **One cabinet, all parameters** - pH, temperature, turbidity and PAH sensors as standard, covering all requirements of the IMO regulations
- **Full range PAH_{phe} readings**
- **Integrated corrections** – the PAH_{phe} measurement is corrected for the environmental effects of turbidity, UV absorbance and temperature interference within the system, resulting in high quality data displayed automatically on the user interface
- **Reliable operation** - the inclusion of a de-bubbler within the system ensures air bubbles are removed from the wash water before the measurements are taken, thus eliminating a source of error.
- **Integral sensor cleaning** - Integrated air purge anti fouling system, keeping sensor windows clean, enabling accurate optical measurements



Operational support

- **On board verification of sensors** with easy to operate, robust and stable solid calibration standards as part of the commissioning process.
- Experienced engineers provide **support during installation** and offer certified commissioning
- **Training** provided online, remotely or onsite.
- **Technical support** provided by Chelsea's scientists and engineers
- **Spares provision**
- **Sensor calibration**

Ease of integration

- **Flexible inlet/outlet connections** - Standard BSP fitting, allowing integrators the flexibility of adding the flanges suited to the overall system.
- **Flexible power supply and data interface** including 85 – 264 VAC, 45 – 65 Hz, 90 – 350 VDC, Modbus TCP/IP RJ45, and 4 – 20mA analogue outputs.
- Chelsea provide **one point of contact** with technical expertise and knowledge on all aspects of the wash water monitoring system

Green ship solutions from Chelsea Technologies

Established over 50 years ago, Chelsea Technologies specialises in the design, development and manufacture of a range of sensors and systems for the marine, maritime, environmental and defence markets. Sea Sentry is based on our high precision PAH and turbidity sensors, which have a proven record in a wide range of monitoring applications.

Sea Sentry and FastBallast, our real-time sensor for monitoring ballast water discharges in accordance with IMO and USCG regulations, provide ship operators with the confidence that they are able to demonstrate compliance with increasingly stringent environmental directives.



Features

- **Fully integrated turnkey solution** to monitor exhaust gas wash water and meet IMO regulations
- **DNV-GL Type Approved, DNV-GL and Class NK accredited** in compliance with IMO MEPC 259(68)
- Suitable for retro fit and new installation of **open, closed loop and hybrid scrubber system**
- **Full PAH Range**
- **Two year calibration intervals** on the PAH+ and Turbidity sensors allowing for uninterrupted monitoring
- **Easy to use onboard sensor check**
- **Chelsea designed sensors and cabinet**

Specifications

Power supply	Universal 85 - 264 VAC, 45 - 65 Hz, 90 - 350 VDC
Dimensions	1300 (H) x 600 (W) x 300 mm (D)
Operating pressure	Up to 4.0 bar
Ambient operating temp	0 - 50 °C
Sample flow	3 - 40 L/min
PAH range	0 - 4500 µg/L PAH _{phe} (LOD: 0.07 µg/L), (Turbidity, UV absorbance and temperature corrected)
Turbidity range	0 - 1000 FNU (LOD: 0.15 FNU) ISO 7027: 1999(E) compliant
pH range	0 - 12 (LOD: 0.01) BS 2586:1979 compliant
Temperature range	0 - 50 °C (LOD: 0.13 °C)
Absorbance range	0 - 3.500 cm ⁻¹ (LOD: 0.002 cm ⁻¹)
System outputs	Modbus TCP/IP (RJ45) 4-20 mA Analogue Outputs
Display/user interface	10.1" capacitive toughened glass touchscreen, 1280 x 800 resolution
Sample inlet/outlet	3/4" BSP parallel fitting
IP rating	Electronics enclosure IP65
Air-purge pressure	5.0 - 5.5 bar
Pressure relief valve	6.0 bar (vented to the bilge)
Regulatory Approvals	Type Approval, DNV-GL MEPC 259(68) compliance from DNV.GL & ClassNK

*In view of our continual improvements, the designs and specifications of our products may vary from those described.



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