

Exhaust Gas Cleaning Systems

🚻 Exhaust Gas Cleaning



The EGCS family

Inline & U-Type



🚻 Exhaust Gas Cleaning

A **wide range of EGCS** to meet all DeSOx needs:

- Open Loop and Hybrid
- Inline and U-Type configuration
- From 1750 to 5000 mm in diameter
- From 5 to 48 MW rated engines power

Turn your fleet green with Ecospray advanced air quality systems: based on a proprietary multi-pollutant technology, they are available both for retrofit and newbuilding, on board of any vessel.

What's new: Smart scrubber

A new IoT-based desulphurization solution, managed using artificial intelligence. The advanced remote AI-enabled control & monitoring system is the technical core of our solution, allowing constant optimization and best-in-class performances to the EGCS.



Benefits



Guarantee constant compliance with IMO regulations.



Significant savings in terms of performance and maintenance through remote monitoring and advanced life cycle analysis.



Substantial reduction in operating costs, longer equipment life and fuel savings by optimizing system operations.

Overview Ensure compliance

IMO established tough marine SOx regulations aiming to reduce air pollution related to fuel sulfur content, including the 2020 Global Sulfur Cap.



26%

Fact & figures

Ecospray, with his experience gained thanks to more than 600 successful certified installations can help shipowners to meet IMO SOx limits without switching to more expensive low-sulfur fuel, by installing his proven technology DeSOx EGCS.

Certified systems



Main benefits

Why choose Ecospray EGCS?

- 1. Time-tested systems: more than15 years of **experience** in exhaust gas cleaning.
- 2. Proven and certified **performances**.
- 3. Flexible, compact and easy to install.
- 4. Reliable equipment, tested and optimized by thousands of hours of operation at sea.
- 5. Skilled project management to assure hassle-free installation.
- 6. Global after sales Service (operations support; performance optimization, lifecycle management, spares and consumables).
- 7. Thanks to **One**, our signature platform, **everything is now connected**: from real-time awareness to performance, analytics, and maintenance services, your system is under control.
- 8. Lower environmental impact in terms of air emissions and wash water.
- Additional Class Notations i.e. the Ultra-Low Emission Vessel (ULEV) can be obtained implementing a mix of ourtechnologies: Advanced Wash Water Filtration, Wet ElectroStatic Precipitator for black smoke and PM abatement, Water Fuel Emulsion for NOx, PM and fuel consumption reduction.

Performance

SO ₂ Removal	$SO_2 (ppm) / CO_2 (\% v/v) \le 4.3$
SW turbidity (DeSOx Tower discharge)	< 25 FNU
SW pH (after dilution)	≥ 6,5 at 4 mt from OB (IMO) ≥ 6,0 at OB
SW PAH (DeSOx Tower discharge)	< 50 microg/L normalized at 45 t/MW(MCR)/h

The EGCS Open Loop system

Our EGCS systems are available in two different configurations: Open Loop and Hybrid systems.

The EGCS – Open Loop system uses only seawater to remove SOx bringing it below the IMO limit without the addition of any reagent like caustic soda or sodium carbonate.

The **Open Loop** configuration is characterized by simplicity and flexibility both in terms of installation, thanks to a limited number of components, and in terms of operation and maintenance. The Open Loop system represents the most cost-effective solution in terms of CAPEX and OPEX in order to meet sulfur regulations without using low Sulfur fuel. The DeSOx tower (scrubber), made in corrosion resistant alloy, can operate either in wet or dry conditions.

Options:

- WESP and Catalytic Dry Filter to remove PM, soot and uncombusted HC.
- Advanced Wash Water filtration system specifically engineered for maneuvering operation or ship alongside to avoid foam at the overboard and to further reduce PM in the wash water discharge.
- Water Fuel Emulsion for NOx, PM and fuel consumption reduction.
- Proprietary gas cooling (TTSMS-Thermal Transient Shock Mitigation System) to reduce the temperature of the gases (fogging technology) to prevent thermal shock to the DeSOx tower.



The EGCS Hybrid system

The Hybrid version can operate as an Open Loop EGCS or in Closed Loop by recirculating the seawater added with an alkaline additive to remove SOx, with no discharge overboard.

The **Hybrid system** can easily switch between Open Loop and Closed-Loop operation mode. In open-loop, the SO_2 removal is controlled only by sea water injection, while in closed loop the SO_2 removal is controlled by the addition of a reagent to the wash water. In Closed Loop mode the water blow down is sent to a water treatment system and then either discharged overboard when in compliance situation, or temporarily sent to a holding tank in case "zero-discharge" mode is required.

Options:

- Plume reducer systems.
- WESP and Catalytic Dry Filter to remove PM, soot and uncombusted HC.
- Water Fuel Emulsion for NOx, PM and fuel consumption reduction.
- Proprietary gas cooling gas cooling (TTSMS-Thermal Transient Shock
- Mitigation System) to reduce the temperature of the gases (fogging technology) to prevent thermal shock to the DeSOx tower.



Key Features Designed for your needs

The core of our system is the **DeSOx tower**, available in a wide range of sizes to serve different kind of ships.

- **1.** Proprietary spraying technology to **maximize efficiency** and **minimize pressure drop**.
- 2. High efficiency reflecting in low power consumption.
- 3. DeSOx tower made in corrosion resistant materials.
- 4. Multiple inlets design available.
- 5. Compact design to minimize installation downtime and costs.
- 6. **TTSMS** (Thermal Transient Shock Mitigation System) for inline scrubbers: consists of an inlet evaporative gas cooling system to mitigate the thermal transient shocks in the DeSOx tower during the start up in hot conditions.



Technical Information

Inline



Maximum nominal power	Tower size	Demister type	Tower diameter (D)	Tower height (H) Dry weig		Avg. El. Power consumption
MW	-		mm	mm	kg	kW
6	1750	Chevron	1.750	8.000	4.200	85
8	2000	Chevron	2.000	9.800		110
9	2100	Chevron	2.100	8.400	5.300	125
10	2200	Chevron	2.200	10.200	6.400	140
12	2400	Chevron	2.400	10.500	7.100	175
14	2600	Chevron	2.600	10.800	8.000	210
16	2800	Chevron	2.800	11.000	9.000	255
18	3000	Chevron	3.000	11.200	12.400	290
20	3200	Chevron	3.200	11.500	13.300	300
23	3400	Flat	3.400	11.000	13.800	345
26	3600	Flat	3.600	11.500	15.000	390

Note: Not binding weights and dimensions

Technical Information

U-Type



Maximum nominal power	Tower size	Demister type	Tower diameter (D)	Tower height (H)	Tower width (W)	Dry weight	Avg. El. Power consumption
MW	-		mm	mm	mm	kg	kW
6	1800	Chevron	1.800	8.370	3.800	6.000	85
8	2000	Chevron	2.000	9.260	4.200	6.800	110
10	2200	Flat	2.200	8.900	4.550	6.900	140
12	2400	Flat	2.400	9.200	5.000	7.800	170
14	2600	Flat	2.600	8.900	5.250	8.900	195
16	2800	Flat	2.800	7.700	5.700	10.300	240
18	3000	Flat	3.000	8.250	6.000	12.000	270
20	3200	Flat	3.200	8.800	6.500	14.050	290
23	3400	Flat	3.400	9.340	6.850	16.000	330
26	3600	Flat	3.600	9.860	7.200	17.600	375
33	4000	Flat	4.000	10.800	8.050	21.000	480
39	4300	Flat	4.300	11.600	8.600	24.600	565
48	4600	Flat	4.600	12.500	9.200	28.100	695
58	5000	Flat	5.000	13.500	10.100	34.200	840

Note: Not binding weights and dimensions

Technology Map

$\langle \rangle \rangle$

Exhaust Gas Cleaning

Advanced DeSOx

Exhaust Gas Cleaning Systems Smart Scrubber Wet Technology Dry and Semi-Dry Technology

Catalytic Abatement

DeNOx SCR Diesel Oxidation Catalyst Methane Slip Reduction Water Fuel Emulsion

Filtration

Wet Electrostatic Precipitator Diesel Particle Filtration Baghouse Filters Filter Cassettes

Clean

Fuel

Pre-Treatment and Upgrading

Pre-Treatment Smart Blending Biogas Upgrading Nitrogen Rejection Unit

Liquefaction

Methane and Biomethane Liquefaction

Green Power Generation

Lean Gas To Power Lean Gas To Power

Decarbonization Carbon Capture Utilization & Sequestration

Fuel Cell Carbon Friendly Fuel Cells

69

Air and Water Treatment

Advanced Water Filtration Wash Water Filtration

Sanitization Air and Surface Sanitization

Fogging Fogging

Gas Cooling Gas Cooling



Get in Touch. Book a Meeting.

Our experts are available to schedule a web call to explain any detail around our technology and solutions.

Book Online

or call +39 0131 854611



Visit our website **ecospray.eu**