# CLIA FACT SHEET: EXHAUST GAS CLEANING SYSTEMS (EGCS)



The cruise industry is reducing emissions at sea and in port, with an increasing number of ships sailing today using alternative fuels or able to incorporate zero-carbon fuels in the future, when they become available at scale. Cruise companies are investing billions of dollars in new ships, new engines, propulsion, and emissions improvement technologies to meet ambitious objectives.

CLIA member cruise lines are taking action now to reduce emissions. That is where Exhaust Gas Cleaning Systems (EGCS), also known as Scrubbers, come in. These systems are widely adopted as an authorized equivalent technology to comply with low-sulphur emission requirements, while also reducing particulate matter and nitrogen oxides. Used on thousands of ships worldwide – not just cruise ships – they achieve emissions reductions equivalent to or even better than low-sulphur fuel (MGO), as reflected in many credible scientific studies. There is, on the other hand, no scientific basis to support a ban on EGCS.

### WHAT ARE EXHAUST GAS CLEANING SYSTEMS?

EGCS are an effective solution used by thousands of ships worldwide, including cruise ships, to effectively remove sulfur from exhaust gas. The technology allows ships to outperform lower-sulfur fuels such as MGO (marine gas oil). EGCS use is validated by credible science. Several studies have specifically analyzed washwater and found that washwater discharges from cruise ships equipped with EGCS meets or exceeds major international and domestic water quality standards, and that EGCS do not cause short- or long-term adverse effects on marine organisms.

# ARE EXHAUST GAS CLEANING SYSTEMS ONLY ON CRUISE SHIPS?

No. EGCS have been used for decades by land-based industrial and manufacturing companies to clean emissions streams. They are a technology used to protect the environment from harmful emissions, adapted for use at sea. EGCS are used broadly across the maritime industry, not just on cruise ships. There are thousands of ships around the world that use this technology.

### **DID YOU KNOW?**

EGCS technology installed on ships is designed to remove 98% of sulphur and over 50% of particulate matter, with a 12% reduction in NOx.





# HOW DO EXHAUST GAS CLEANING SYSTEMS WORK?

With towers high up on ships and treatment plants located below decks, EGCS treat exhaust gases by injecting seawater or an alkaline washwater into the exhaust stream. The water washes and neutralizes SO2 (sulphur oxides) and reduces nitrogen oxides (NOx) before release. EGCS turn

SO2 into sulphate, which is a natural and major component of seawater. Filter systems and other technology on most ships additionally capture small-size particulate matter. Filter residue and processed tank residue are not allowed to be discharged at sea or incinerated onboard. It is safely retained and offloaded to shoreside reception facilities for proper disposal. Land-based industries send significantly more residue to these facilities than cruise ships.

## ARE EXHAUST GAS CLEANING SYSTEMS REGULATED?

Yes, the use of EGCS and discharge of washwater is highly regulated. With EGCS, cruise ships can sail while meeting or exceeding environmental standards around the world, including those set by the International Maritime Organization (IMO), which is the primary regulating body for all of the maritime sector globally. In the U.S., international regulations are strengthened through the Vessel General Permit and the Vessel Incidental Discharge Act, where applicable. The output of EGCS is continuously monitored with the discharge of wastewater recorded in a logbook (noting date, time and location of disposal) as required by law. Among values continuously monitored to assure compliance are pH and temperature, as set by regulation.

# **SCIENTIFIC STUDIES ON EGCS**

The following studies address common questions about EGCS discharge water quality, the accumulations from discharge water in ports, and effects on marine life:

• A <u>CE Delft report</u>, which analyzed approximately 300 EGCS washwater samples and concluded that the washwater samples were well within stringent European water quality standards.

### DID YOU KNOW?

EGCS is validated by credible science and there is no scientific basis to support a ban on EGCS.

- <u>DNV GL conducted a two-year study</u> that found washwater samples from 53 cruise ships equipped with EGCS to be below the limits set by major international water quality standards.
- A study conducted by the Japanese Ministry of Land, Infrastructure, Transport and Tourism, found the impact of EGCS on water quality and marine life to be insignificant.
- A Netherlands study indicated that <u>Washwater from EGCS has negligible impact on the</u> environment: New Study (croceanx.com).

### FOR MORE INFORMATION ON THE ENVIRONMENTAL AND SUSTAINABILITY EFFORTS OF THE CRUISE INDUSTRY, VISIT <u>CRUISING.ORG</u>.

