

**Environmental Technologies and Practices**  
**CLIA Global Oceangoing Cruise Lines - August 2021**

This table provides aggregated data across CLIA's global oceangoing cruise line membership. The table reflects the number of ships equipped with certain technologies, corresponding passenger capacities (lower berth at double occupancy) and the percentage of the entire fleet represented.

INVESTMENTS, COMMITMENTS AND PRACTICES	AUGUST 2021			NOTES
	SHIPS REPORTING (267 Total Fleet)	CAPACITY LOWER BERTH DOUBLE OCCUPANCY (555,657 Est. Total Fleet)	AGGREGATE % OF REPORTING CAPACITY	
Oceangoing Ships Reporting	242	537,248	96.7%	<p>Cruise lines continue to transform the modern fleet to protect the oceans, air and destinations enjoyed by millions of passengers each year.</p> <p>CLIA's Waste Management Policy is available <a href="#">here</a>. Each year, cruise line CEO's verify implementation of the Policy as a condition of membership. The Policy is incorporated into each ship's Safety Management System (SMS) and is subject to third party and internal auditing.</p> <p>Additional environmental reports, including third party research on air and waste water performance, are available <a href="#">here</a>. Many individual cruise line sustainability reports are publicly available on company websites.</p>
New Ships On Order	62	176,648		
Ships (to be) added to the fleet between 1 January and 31 December of 2021	11	24,888		
Ships (planned to be) removed from the fleet between 1 January and 31 December of 2021				
Ships actually removed from the CLIA fleet since voluntary shutdown began due to global COVID-19 Pandemic in March 2020	20 (7 Recycled; 13 Sold out of CLIA)	32,700 (13,083 Recycled; 19,635 Sold out of CLIA)		
Average age of fleet as of 1 January of 2021	14.2			
EXHAUST GAS CLEANING SYSTEMS (EGCS)				
Ships fitted with exhaust gas cleaning systems (EGCS)	142	411,593	76.6%	<p>EGCS systems remove 99% of sulfur &amp; well over 50% of particulate matter, including elemental &amp; organic carbon. Catalytic filter &amp; other systems further reduce particulate matter by over 30% &amp; reduce nitrogen oxides by up to 12%.</p> <p>Existing &amp; forecast EGCS installations are for hybrid or open loop systems and many include wash water filters. Some include a catalytic filter on the engine exhaust prior to the EGCS, as well as continuous monitoring equipment to automatically record all parameters. A variety of technologies further clean the EGCS wash water stream including fine-mesh filtration, purification, centrifugal separation &amp; dissolved air with flocculant. EGCS wash water filter residue &amp; process tank residue are disposed of ashore.</p> <p>Additional information on EGCS performance is available <a href="#">here</a> and <a href="#">here</a>.</p>
- Ships fitted with open loop EGCS	82	212,062	39.5%	
- Ships fitted with open loop EGCS and additional wash water filters	60	154,124	28.7%	
- Ships fitted with hybrid EGCS	60	199,531	37.1%	
- Ships fitted with hybrid EGCS and additional wash water filters	42	142,622	26.5%	
New build ships committed to be fitted with EGCS	34	79,000		

LIQUIFIED NATURAL GAS (LNG)				
Ships able to operate on LNG in port	6	27,512	5.1%	LNG has virtually zero sulfur emissions, a 95% to 100% reduction in particulate emissions, an 85% reduction in NOx emissions, and up to a 20% reduction in greenhouse gas emissions.
Ships using LNG as primary fuel for propulsion	4	20,940	3.9%	
New build ships committed to use LNG as primary fuel for propulsion	22	92,568		
ALTERNATIVE FUELS				
Ships capable of using alternative fuels other than LNG (methanol, biodiesel etc.)	175	405,100	75.4%	<p>Many cruise ships are equipped to operate on both biodiesel and traditional fossil fuels.</p> <p>Several companies are exploring fuel cell and equivalent technologies for future new builds or retrofit projects.</p> <p>Ships use Marine Gas Oil (MGO) in many regions to comply with IMO ECAs (North America &amp; Caribbean Sea, North Sea and Baltic Sea), as well as EU Mediterranean Sea ports, the Arctic, China's emission control area, Australian ports and to meet other locally imposed requirements. Ships may also use Very Low Sulphur Fuel Oil (VLSFO) or Ultra Low Sulphur Fuel Oil (ULSFO) in these regions to comply with emissions requirements. Ships fitted with EGCS will generally use this equivalent technology unless its use is not permitted, and will use MGO where specifically required.</p>
SHORE SIDE ELECTRICITY / COLD IRONING				
Ships fitted with Shore Side Electricity (SSE) systems	65	185,372	34.5%	The following 14 ports/specific berths visited by CLIA oceangoing ships are fitted with shore side electricity capacity:
Ships planned to be retrofitted with SSE systems	58	120,342	22.4%	Greater than 10MW: Brooklyn, Halifax, Hamburg Altona, Montreal, San Diego, San Francisco Berth 35, Los Angeles, Long Beach, San Pedro Berths 92 & 93, Seattle, Shanghai, and Vancouver Canada Place.
New build ships committed to be fitted with SSE systems	51	164,352		7-9 MW: Juneau
ADDITIONAL AIR POLLUTION & ENERGY EFFICIENCY TECHNOLOGIES				
Ships fitted with particulate filters	29	78,056	14.5%	Some ships equipped with Selective Catalytic Reduction systems (SCR) use them in every port and when transiting inbound and outbound.
Ships fitted with Selective Catalytic Reduction (SCR) Systems	27	51,878	9.7%	
Ships capable of complying with NOx Tier III limits	29	66,246	12.3%	
Ships that have air lubrication systems fitted	17	60,730	11.3%	

Ships with low friction anti-fouling hull coatings installed	229	505,770	94.1%
--	-----	---------	-------

**WASTE WATER**

Ships that have an advanced waste water treatment system on board, approved, used and capable of meeting or exceeding IMO MARPOL Annex IV discharge norms	169	398,104	74.1%
New build ships that will have an advanced waste water treatment system on board, approved and capable of meeting or exceeding IMO MARPOL Annex IV discharge norms.	62	176,648	
Ships that have a waste water treatment system on board, approved and capable of meeting the discharge standards of the IMO MARPOL Annex IV Baltic Sea Special Area	48	105,451	19.6%

Many ships are equipped with advanced waste water treatment systems (AWTS) that are capable of exceeding MARPOL Annex IV requirements and are operated to meet or exceed the more stringent sewage discharge criteria in Alaskan waters and/or the Baltic Sea Special Area, as well as gray water requirements under the U.S. Vessel General Permit (VGP).

CLIA Member Lines recognize the extraordinary eutrophication situation in the Baltic Sea. CLIA supports the special area requirements for MARPOL ANNEX IV waste and works with the local and regional authorities for its success, including the existing commitment to provide adequate Port Reception Facilities.

By CLIA policy, bio-residual from advanced waste water treatment systems may be landed ashore, dried and incinerated, or discharged at sea in accordance with MARPOL Annex IV when the ship is more than 12 nm from nearest land while moving at a speed greater than 4 knots.

**OTHER**

Ships with a Biofouling Management Plan	231	531,506	98.9%
Ships fitted with Water Fuel Emulsion (WFE) technology/treatments	52	118,165	22.0%