

ΠΕΡΙΒΑΛΛΟΝΤΙΚΗ ΔΕΣΜΕΥΣΗ, ΚΑΙΝΟΤΟΜΙΑ ΚΑΙ ΑΠΟΤΕΛΕΣΜΑΤΑ ΤΟΥ ΚΛΑΔΟΥ ΚΡΟΥΑΖΙΕΡΑΣ

\$23,5 ΔΙΣ.

επενδύθηκαν σε νέα πλοία με
τεχνολογίες ενεργειακής απόδοσης
και καθαρότερα καύσιμα

40% ΣΤΟΧΟΣ

μείωσης των εκπομπών αερίου του
άνθρακα μέχρι το 2030
(σε σύγκριση με το 2008)

ΣΥΣΤΗΜΑΤΑ ΠΡΟΗΓΜΕΝΗΣ ΕΠΕΞΕΡΓΑΣΙΑΣ ΛΥΜΑΤΩΝ (AWTS)

Τα συστήματα AWTS εφαρμόζουν προηγμένη τριτοβάθμια επεξεργασία στην απόρριψη υγρών αποβλήτων. Το αποτέλεσμα είναι συχνά ισοδύναμο με αυτό των καλύτερων εγκαταστάσεων επεξεργασίας ξηράς και -σύμφωνα με την πολιτική της CUA- πολύ ανώτερο από τις διεθνείς απαιτήσεις.

99% ΤΗΣ ΝΕΑΣ ΧΩΡΗΤΙΚΟΤΗΤΑΣ

σε παραγγελία θα υποστηρίξει τα συγκεκριμένα συστήματα
(και θα διαμορφώσει την παγκόσμια χωρητικότητα στο 78,5%)



70% ΤΗΣ ΠΑΓΚΟΣΜΙΑΣ ΧΩΡΗΤΙΚΟΤΗΤΑΣ

εξυπηρετείται από συστήματα προηγμένης επεξεργασίας λυμάτων
(+5% στην παγκόσμια χωρητικότητα σε σχέση με το 2019)

ΥΓΡΟΠΟΙΗΜΕΝΟ ΦΥΣΙΚΟ ΑΕΡΙΟ (LNG)

Το LNG επιφέρει σχεδόν μηδενικές εκπομπές θείου, μείωση 95% έως 100% στις εκπομπές σωματιδίων, μείωση 85% στις εκπομπές NOx και μείωση έως 20% στις εκπομπές αερίων θερμοκηπίου.

25 ΠΛΟΙΑ ΚΙΝΗΣΗΣ LNG

σε παραγγελία ή υπό κατασκευή



49% ΤΗΣ ΝΕΑΣ ΧΩΡΗΤΙΚΟΤΗΤΑΣ

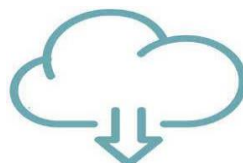
βασίζεται στο LNG ως κύριο μέσο πρόωσης
(+51% στη μελλοντική παγκόσμια χωρητικότητα σε σχέση με το 2018)

ΣΥΣΤΗΜΑΤΑ ΚΑΘΑΡΙΣΜΟΥ ΚΑΥΣΑΕΡΙΩΝ (EGCS)

Τα συστήματα EGCS μειώνουν τα επίπεδα οξειδίου του θείου έως 98%, ενώ επιφέρουν τυπική μείωση των συνολικών σωματιδίων κατά 50% και άνω (συμπεριλαμβανομένων του στοιχειακού και οργανικού άνθρακα και της αιθάλης) και μείωση των οξειδίων του αζώτου έως 12%.

69% ΤΗΣ ΠΑΓΚΟΣΜΙΑΣ ΧΩΡΗΤΙΚΟΤΗΤΑΣ

χρησιμοποιεί τα EGCS για να πληροί ή να υπερβαίνει τις
απαιτήσεις ατμοσφαιρικών εκπομπών
(+25% σε σχέση με το 2018)



96% ΤΗΣ ΝΕΑΣ ΧΩΡΗΤΙΚΟΤΗΤΑΣ

που δεν βασίζεται σε LNG θα είναι εξοπλισμένη με EGCS
(+21% σε σχέση με το 2019)

ΙΚΑΝΟΤΗΤΑ ΠΑΡΑΚΤΙΑΣ ΕΝΕΡΓΕΙΑΚΗΣ ΥΠΟΣΤΗΡΙΞΗΣ

Τα κρουαζιερόπλοια έχουν τη δυνατότητα να λειτουργούν με παράκτια ηλεκτροδότηση σε 14 λιμάνια παγκοσμίως, μειώνοντας έτσι τις συνολικές εκπομπές όσο βρίσκονται στο λιμάνι.

32% ΤΗΣ ΠΑΓΚΟΣΜΙΑΣ ΧΩΡΗΤΙΚΟΤΗΤΑΣ

είναι ικανό να λειτουργεί με παράκτια ηλεκτροδότηση
(+13% σε σχέση με το 2019)

25% ΘΑ ΕΚΣΥΓΧΡΟΝΙΣΤΕΙ

ώστε να μπορεί να λειτουργεί με παράκτια ενεργειακή υποστήριξη
(+47% στη χωρητικότητα σε σχέση με το 2019)



50% ΝΕΑ ΠΛΟΙΑ

σε παραγγελία θα είναι συμβατά
με τα ηλεκτρικά συστήματα ξηράς
(+27% σε σχέση με το 2019)

Environmental Technologies and Practices

CLIA Global Oceangoing Cruise Lines - August 2020

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.

	AUGUST 2020			
INVESTMENTS, COMMITMENTS AND PRACTICES	SHIPS REPORTING (272 Total Fleet)	CAPACITY LOWER BERTH DOUBLE OCCUPANCY (559,996 Est. Total Fleet)	AGGREGATE % OF REPORTING CAPACITY	NOTES
Oceangoing Ships Reporting	258	551,610	98.5%	Cruise lines continue to transform the modern fleet to protect the oceans, air and destinations enjoyed by millions of passengers each year.
New Ships On Order	76	211,904		CLIA’s Environmental Protection Policy is available here . Each year, cruise line CEO’s verify implementation 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. Additional environmental reports, including third party research on air and waste water performance, are available here . Many individual cruise line sustainability reports are publicly available on company websites. Note the ‘New Ship on Order’ and ‘Ships (to be) removed’ statistics are dynamic and subject to fluctuation as a consequence of the pandemic.
Ships (to be) added to the fleet between 1 January and 31 December of 2020	18	36,337		
Ships (to be) removed from the fleet between 1 January and 31 December of 2020	4	5,643		
Average age of fleet as of 1 January of 2020	15.5			
EXHAUST GAS CLEANING SYSTEMS (EGCS)				
Ships fitted with exhaust gas cleaning systems (EGCS)	136	381,644	69.2%	EGCS systems remove 99% of sulfur & well over 50% of particulate matter, including elemental & organic carbon. Catalytic filter & other systems further reduce particulate matter by over 30% & nitrogen oxides by up to 12%.
- Ships fitted with open loop EGCS	85	217,658	39.5%	
- Ships fitted with open loop EGCS and additional wash water filters	58	145,952	26.5%	Existing & forecast EGCS installations are for hybrid or open loop systems. Some systems include a catalytic filter on the engine exhaust prior to the EGCS. Continuous monitoring equipment to automatically record all parameters is standard on EGCS installed onboard. A variety of technologies further clean the EGCS wash water stream including fine-mesh filtration, purification, centrifugal separation and dissolved air with flocculant. EGCS wash water filter residue & process tank residue are disposed of ashore.
- Ships fitted with hybrid EGCS	51	163,986	29.7%	
- Ships fitted with hybrid EGCS and additional wash water filters	35	115,292	20.9%	EGCS wash water sample analysis shows that average PAH and nitrate levels are well below IMO wash water criteria and there is little to no contribution from the EGCS process to concentrations of a number of trace metal parameters (Arsenic, Cadmium, Lead, Mercury, Selenium and Thallium). Sample analysis shows average wash water concentrations are below the limits for comparable land-based industrial point source waste water standards and average wash water concentrations also compare favorably
New ships on order committed to be fitted with EGCS	37	103,034		

				to water quality standards with strict criteria. Studies are available here and here. MAMPEC computer modeling shows that the impacts of using exhaust gas cleaning systems in open loop mode are small and that in most ports, and for most substances, the increase in concentrations attributable to EGCS wash water is less than 0.1% of the limit values in the new European Environmental Quality Standards (EQS) for priority substances for 2021 and onwards under the Water Framework Directive 2013/39/EU. A link to the CE Delft Report can be found here.
LIQUIFIED NATURAL GAS (LNG)				
Ships able to operate on LNG in port	4	17,024	3.1%	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	2	10,452	1.9%	
New ships on order committed to use LNG as primary fuel for propulsion	25	104,158		
ALTERNATIVE FUELS				
Ships capable of using alternative fuels other than LNG (methanol, biodiesel etc.)	179	402,670	73.0%	Many cruise ships are equipped to operate on both biodiesel and traditional fossil fuels. Several companies continue to explore fuel cell and equivalent technologies for future new builds or retrofit projects. Ships use Marine Gas Oil (MGO) in many regions to comply with IMO ECAs (North America & Caribbean Sea, North Sea and Baltic Sea), 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. In December 2019, the cruise industry joined other maritime industry associations to sponsor a proposal to IMO to establish the world’s first collaborative International Maritime R&D Board (IMRB), which aims to generate around \$5 billion over a ten-year period to identify the technical and operational solutions associated with the deployment of zero-carbon fuels and propulsion technologies. These solutions will be required in order for international shipping to satisfy the IMO’s Vision and Levels of Ambition in its <i>Initial Strategy on Reduction of GHG Emissions from Ships</i>.
SHORE SIDE ELECTRICITY / COLD IRONING				
Ships fitted with Shore Side Electricity (SSE) systems	68	177,482	32.2%	The following 14 ports / specific berths visited by CLIA oceangoing ships are fitted with shore side electricity capability:

Ships planned to be retrofitted with SSE systems	66	136,240	24.7%	Greater than 10MW: Brooklyn, Halifax, Hamburg Altona, Kristiansand, Montreal, San Diego, San Francisco Berth 35, Los Angeles, Long Beach, San Pedro Berths 92 & 93, Seattle, Shanghai, and Vancouver Canada Place. 7-9 MW: Juneau
New ships on order committed to be fitted with SSE systems	38	124,760		
ADDITIONAL AIR POLLUTION & ENERGY EFFICIENCY TECHNOLOGIES				
Ships fitted with particulate filters	36	97,948	17.8%	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	17	31,232	5.7%	
Ships capable of complying with NOx Tier III limits	17	30,915	5.6%	
Ships that have air lubrication systems fitted	15	53,574	9.7%	
Ships with low friction anti-fouling hull coatings installed	204	421,252	76.4%	
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	168	386,524	70.1%	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 forthcoming Baltic Sea Special Area, as well as gray water requirements under the U.S. Vessel General Permit (VGP).
New ships on order that will have an advanced waste water treatment system on board, approved and capable of meeting or exceeding IMO MARPOL Annex IV discharge norms.	75	212,984		CLIA members recognize the extraordinary eutrophication situation in the Baltic Sea. While the requirements of the IMO Baltic Sea Special Area do not take effect for existing ships until 2021, by CLIA Policy, when operating in the Baltic, ships are to discharge MARPOL Annex IV waste ashore where adequate port reception facilities are available under a ‘no special fee’ arrangement.
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	40	82,382	14.9%	By CLIA policy, bio-residual from advanced waste water systems may be landed ashore, dried and incinerated or discharged at sea when the ship is more than 12 nm from nearest land while moving at a speed greater than 4 knots.
OTHER (NEW IN 2020)				
Ships with a Biofouling Management Plan	237	545,953	99.0%	
Ships fitted with Water Fuel Emulsion (WFE) technology/treatments	64	148,185	26.9%	