

FUTURE FUNNEL


The Pathways to Decarbonization



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Sulphur Oxide (SOx) reduction

FUTURE FUNNEL GEN 0

De-SOx System available today (IMO 2020 Global Sulphur Cap).



Particulate Matter (PM) and Black Carbon (BC) reduction

FUTURE FUNNEL GEN 2

Remove Particulate Matter and Black Carbon for expected rules in 2023.

Additional ULEV and LEV class Notations.

2020

2021

2023

2024

FUTURE FUNNEL GEN 1

TIER III NOx compliance.

NOx Tier III standards are in effect since January 1st 2016 to North American and Carribean ECA and since 1st January 2021 to Baltic and North Sea.



Nitrogen Oxide (NOx) reduction

FUTURE FUNNEL GEN 3

Integrated Carbon Capture and Storage System, IMO 2030 goal.

All ships above 400GT require to develop and approve EEXI and decarb plan by Jan 2023.

Cargo and cruise ships above 5000GT require to achieve CII rating C or better from 2023.

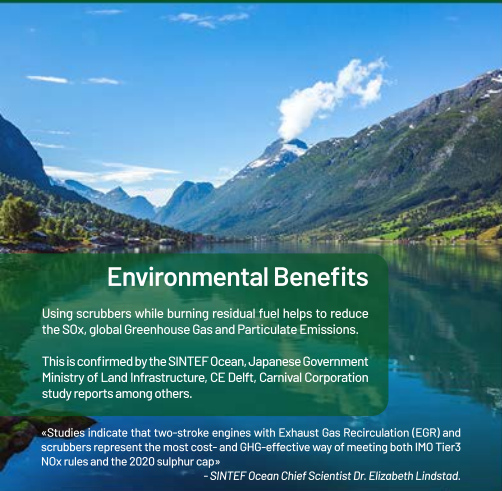


Carbon Dioxide (CO₂) reduction



Hybrid System

Hybrid system enables both open and closed loop operation to meet all operational conditions.



Environmental Benefits

Using scrubbers while burning residual fuel helps to reduce the SOx, global Greenhouse Gas and Particulate Emissions.

This is confirmed by the SINTEF Ocean, Japanese Government Ministry of Land Infrastructure, CE Delft, Carnival Corporation study reports among others.

«Studies indicate that two-stroke engines with Exhaust Gas Recirculation (EGR) and scrubbers represent the most cost- and GHG-effective way of meeting both IMO Tier3 NOx rules and the 2020 sulphur cap»

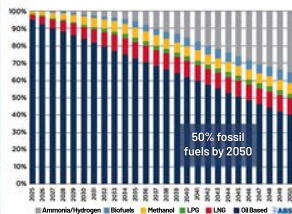
- SINTEF Ocean Chief Scientist Dr. Elizabeth Lindstad.

Even under current plans,

50%

of all vessels will be powered
by fossil fuel engines in

2050



WHY TECO₂₀₃₀ FUTURE FUNNEL?

CO₂

PM
BC

SO_x

NO_x



Complies with both 0.1% and 0.5% Sulphur emission regulations.



High SO_x removal efficiency up to 99.9%.



High quality, simple design and produced to the highest standards.



Full turnkey solution; 3D scanning, engineering and prefabrication, installation and commissioning.



Adaptable for future emission legislations.



Able to run dry.



Low maintenance and easy operation.



Optimized design through advanced simulation.



Possible to install during voyages, only quick dock is needed for underwater work.



Open loop, hybrid or hybrid ready.



Customizable design to all ships and all engine types.



Low CAPEX and OPEX.