



Decarbonisation drives profitable growth in Marine

Roger Holm

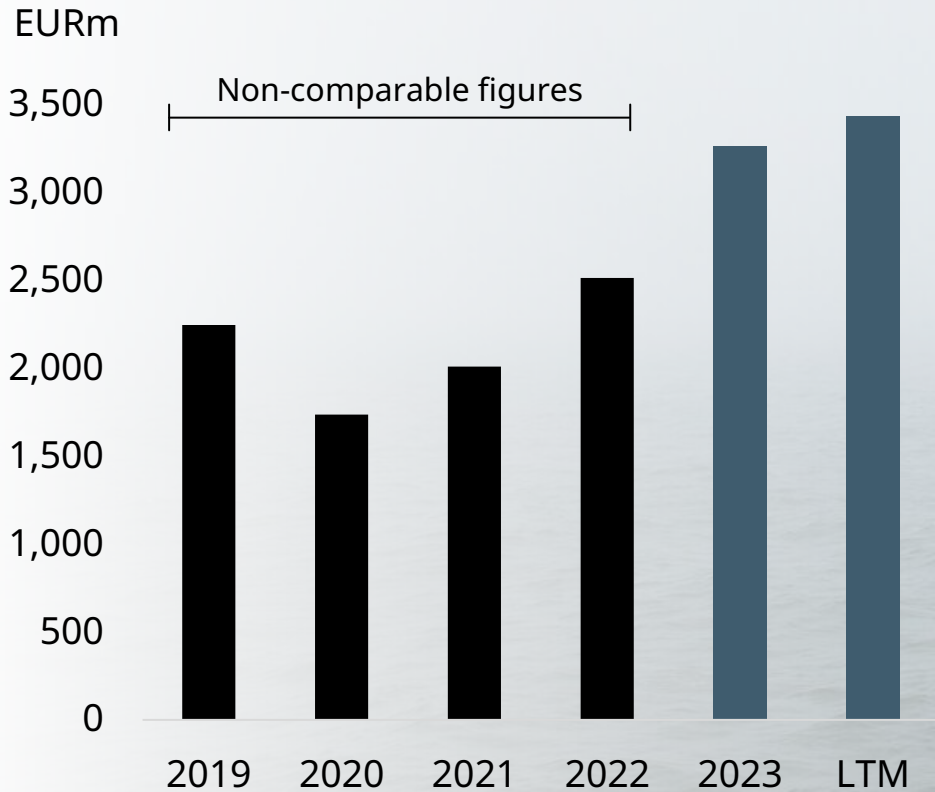
President, Wärtsilä Marine & Executive Vice President



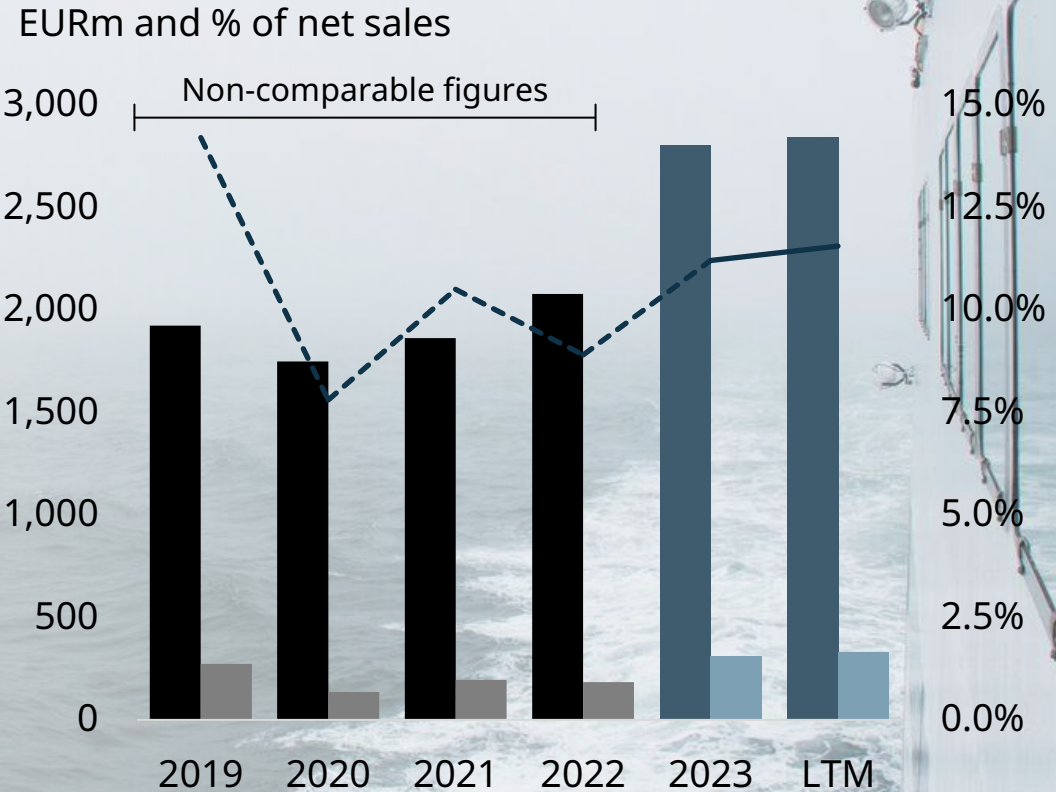
May 7, 2024

We are growing both in sales and in profitability

Marine Order Intake



Marine Net Sales, Comparable Operating Profit



2023 data restated to reflect the redefined organisational structure as of 1 Jan 2024, as Exhaust Treatment and Shaft Line Solutions business units were moved from Marine Systems to Marine Power, and Marine Power changed its name to Marine; 2019-2022 reflect the data as per the organisation structure at that point of time and thus are not comparable with the restated data for 2023 and LTM; LTM = Last twelve months, Q2 2023-Q1 2024

Market

Our marine market is growing:
decarbonisation is transforming the industry,
and our core segments will grow double digit

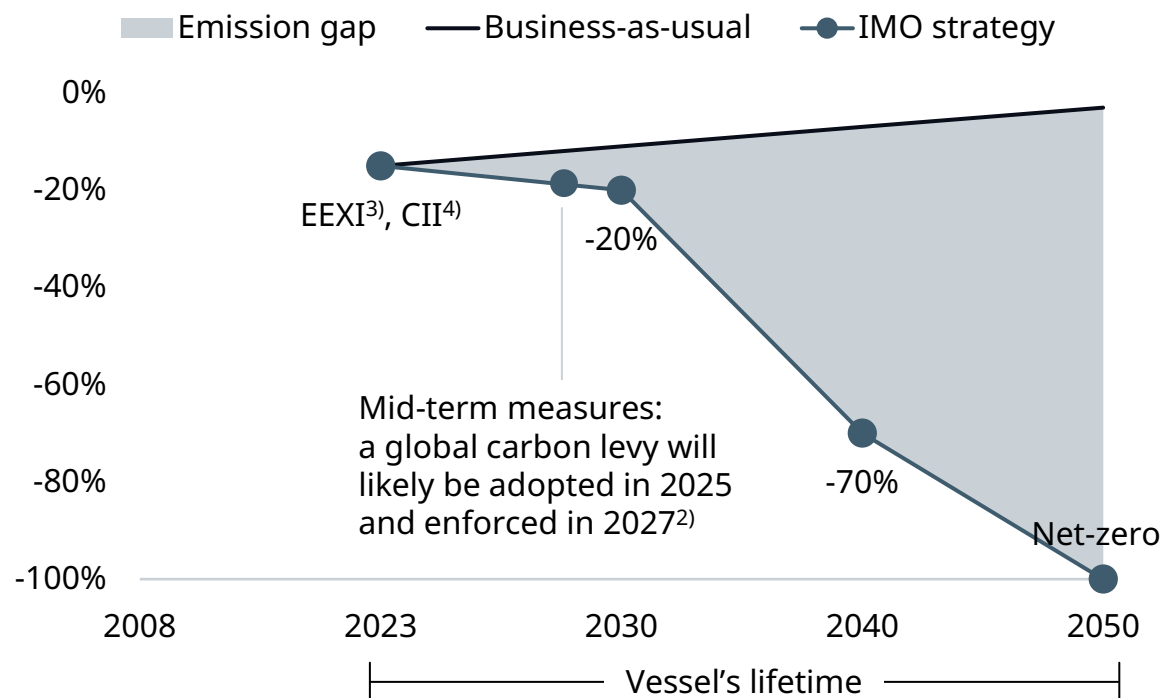


After IMO net-zero commitment last year, the regulatory focus has moved to “mid-term measures”

For vessels operating in EU waters, fuel cost may double due to emission fees up to 2030, compared to 2023

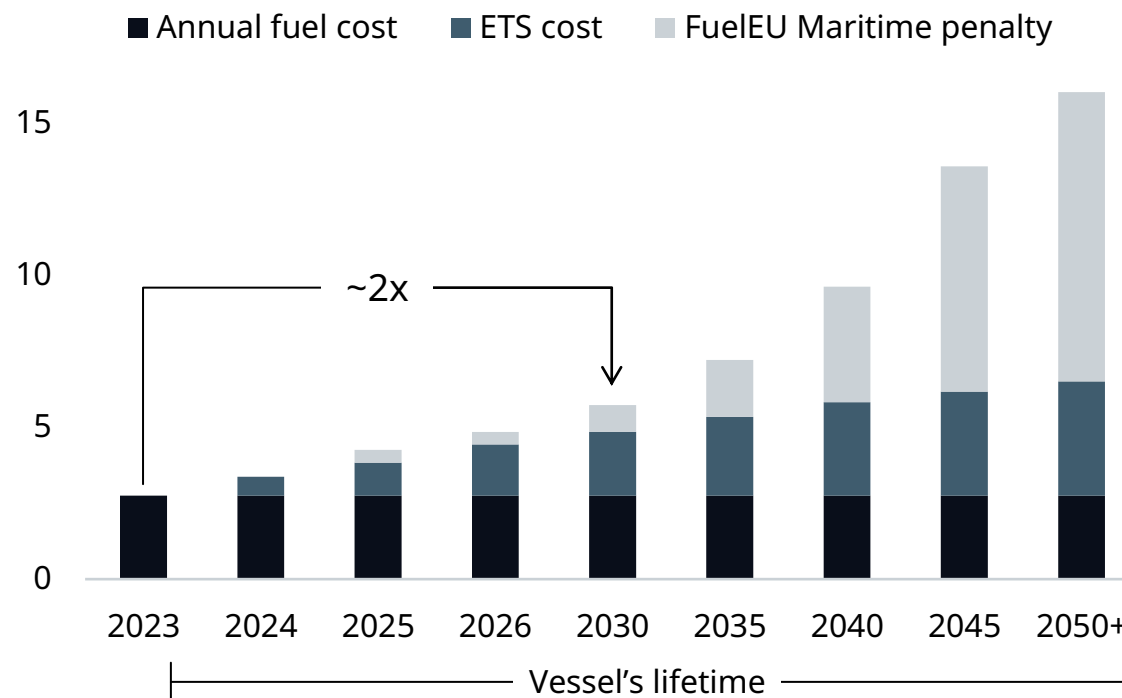
IMO GHG Strategy¹⁾

GHG emission reduction % vs 2008



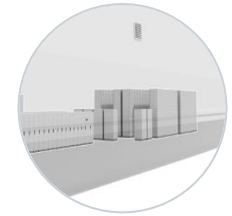
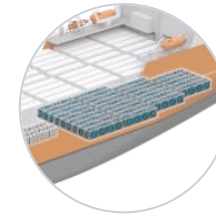
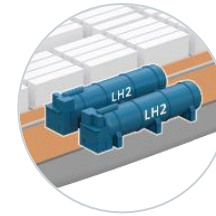
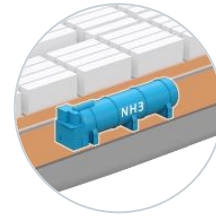
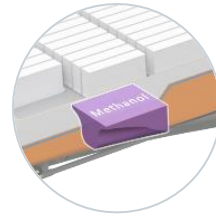
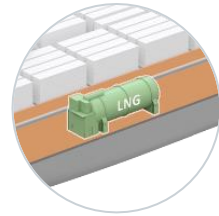
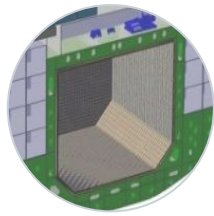
EU Fit-for-55

Fuel-related costs for Handymax bulker operating in EU, EURm³⁾



1) Source: IMO; data refers to well-to-wake Green House Gases (GHG) emissions; 2) E.g., goal-based marine fuel standard, GHG emissions pricing mechanism; 3) Assuming 5 000 tons/year VLSFO (Very Low Sulphur Fuel Oil) consumption subject to EU Fit-for-55, VLSFO at EUR 550/ton; EU ETS allowances from EUR 100/ton today to EUR 230/ton in 2050 (source: Transport & Environment NGO)

Cost of emissions will close the price gap between fossil and sustainable fuels; fuel selection impacts the vessel structure



Fuel type	Low Sulphur Fuel Oil @ 20°C	Liquefied Natural Gas @ -162°C	Methanol @ 20°C	Ammonia @ -33°C	Liquid Hydrogen @ -253°C	Compressed Hydrogen @ 350bar	Marine Battery Rack
Fuel price factor (per GJ) ¹⁾	1x	1.1x – 4.6x ²⁾	2.6x – 5.5x ³⁾	2.4x – 4.3x ⁴⁾	3.6x – 4.6x ⁴⁾	2.1x – 3.1x ⁴⁾	2.0x – 5.3x ⁸⁾
Fuel price factor in 2035, incl. carbon tax ^{1) 5)}	1x	0.8x – 1.4 ²⁾	0.8x – 1.6x ³⁾	0.7x – 1.2x ⁴⁾	1.2x – 1.5x ⁴⁾	0.6x – 1.0x ⁴⁾	0.8x – 2.0x ⁸⁾
Gross tank size factor ⁶⁾	1x	1.7x – 2.4x ⁷⁾	1.7x	3.9x	7.3x	19.5x	~40x (~20x potential)

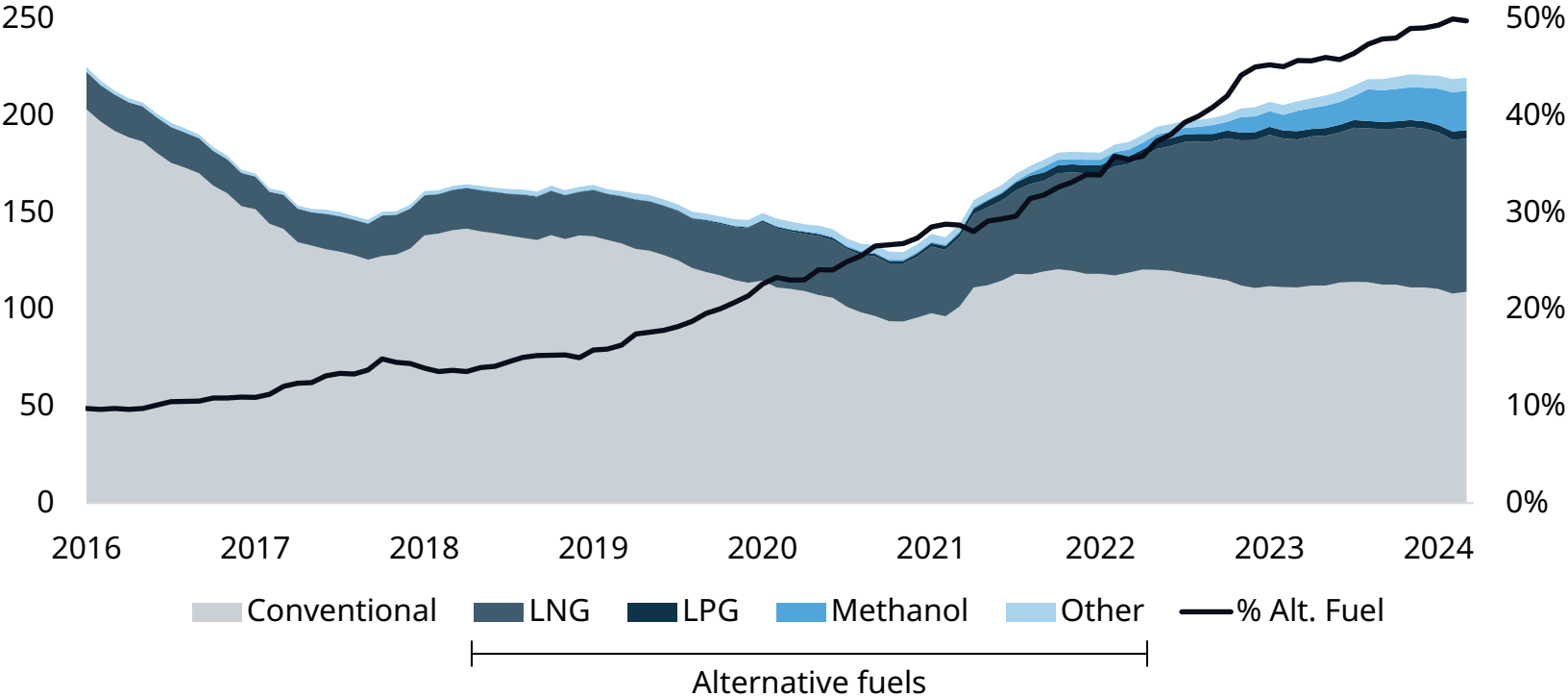
1) Fuel production cost estimate for 2025 and 2035; source: Maersk Mc-Kinney Møller Center for Zero Carbon Shipping – NavigaTE 2023; 2) Price range spans between fossil & electro- methane; 3) Price range spans between bio- & electro- methanol; 4) Price range spans between blue- & electro- ammonia/hydrogen; 5) Assuming 100% consumption subject to EU Fit-for-55, EU allowances at EUR 159/ton (source: Transport & Environment NGO); 6) Gross tank estimations based on Wärtsilä data; 7) 1.7x membrane tanks, 2.4x type C tanks; 8) Shore energy price EUR 0.1-0.27/kWh

The regulatory changes impact maritime now: half of the total shipbuilding orderbook is set to run on alternative fuels

2023 saw the highest-ever alternative fuel capable vessel ordering, excluding gas carriers

Alternative fuels uptake

Orderbook by fuel type, mGT¹⁾



~50%

vessel GT ordered since 2022 is set to run on alternative fuels








~60%

containerships contracted in 2023 - 2024 YTD are set to run on methanol

1) Source: Clarksons Research, March 2024; other includes ammonia, nuclear, ethane, hydrogen, biofuels, and battery/hybrid

We focus on the most high-value, performance-driven segments

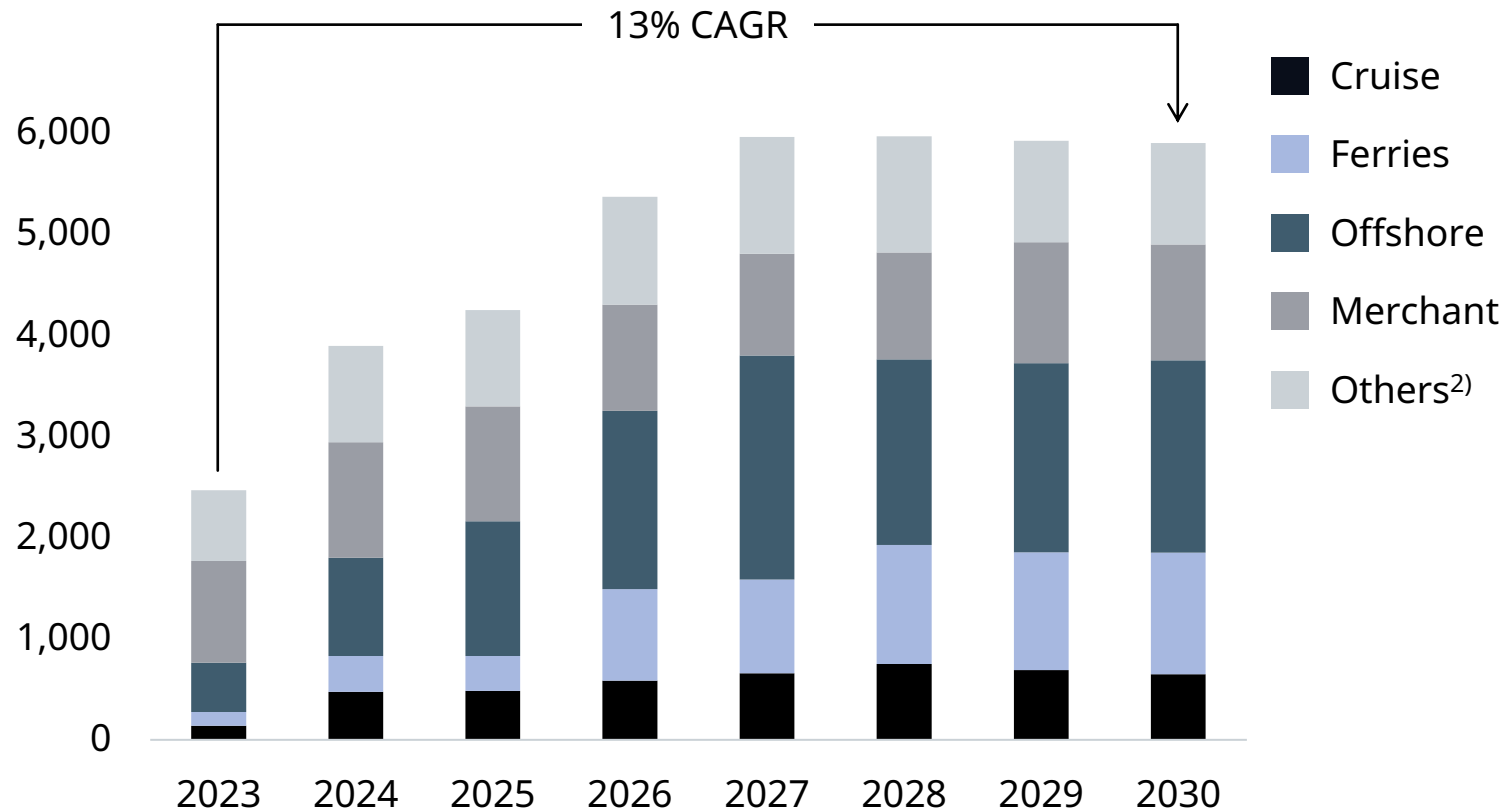
Typical Wärtsilä Marine offering per vessel¹⁾

	Cruise	Ferries	Offshore	Navy	Specials	Merchant	Hy-EI merchant
							
Engines / Hybrid¹⁾	Diesel-Electric	Main Engines Aux Engines Hybrid System	Hybrid-Electric	Aux Engines	Main Engines	Aux Engines Main Engines ⁵⁾	Hybrid-Electric
Propulsion²⁾	Tunnel Thrusters	CPP or Waterjets	Steerable Thrusters Tunnel Thrusters	CPP, FPP or Waterjets	CPP or Steerable Thrusters Tunnel Thrusters	CPP Tunnel Thrusters EST	CPP Tunnel Thrusters EST
Potential³⁾	EUR 15-40m	EUR 10-25m	EUR 5-15m	EUR 5-15m	EUR 5-15m	EUR 2-15m	EUR 25-30m
% of Order Intake⁴⁾	~25%		~5%	~10%	~5%	~50%	-

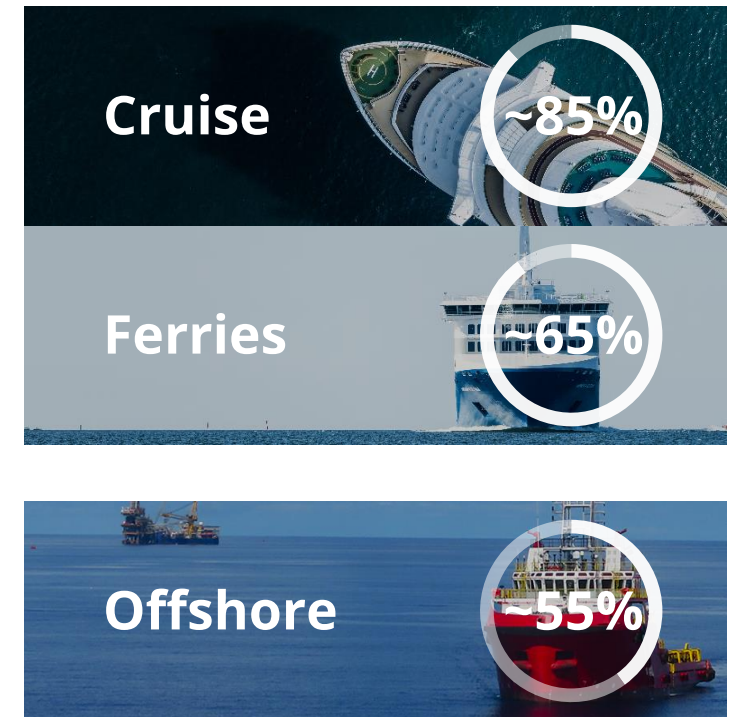
1) Non-exhaustive list; offering depends on vessel specific configuration and may vary substantially. 2) CPP/FPP = Controllable/Fixed Pitch Propeller; EST = Energy Saving Technology, e.g., gate rudder, EnergoProFin, EnergoFlow, EnergoPac; 3) Potential per shipset; it includes catalyst systems and electrical systems; carbon capture is not included, and could unlock additional EUR 2-8m potential; 4) Marine Power equipment order intake, 2023; ~5% in non-vessel markets, mainly simulation and ports; 2-stroke cargo order intake mainly from LNG carriers and containerships; 5) Predominantly 2-stroke main engines, 4-stroke main engines only on small vessels and coastal vessels

Recovery in our key target segments will double the 4-stroke medium speed main engine addressable market by 2030 compared to 2023

Newbuild ordering of 4-stroke medium speed main engines, MW¹⁾



Wärtsilä market share, MW³⁾

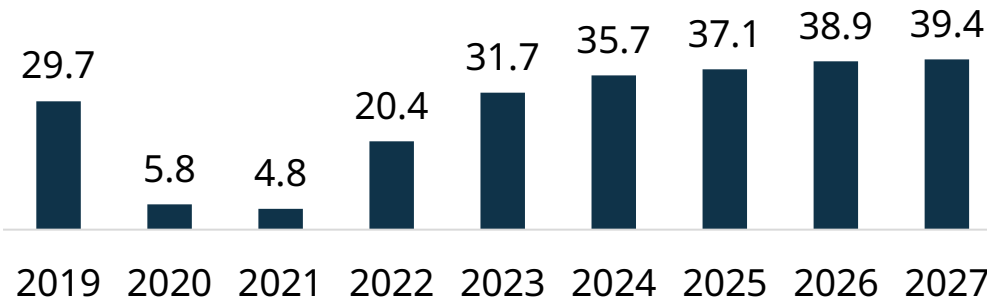


1) Source: Clarksons March 2024 forecasts; 2) Fishing, dredgers, support units, yachts, tugs, etc.; 3) Market share on 4-stroke main and auxiliary engines as per Q4 2023, Wärtsilä estimates, MW

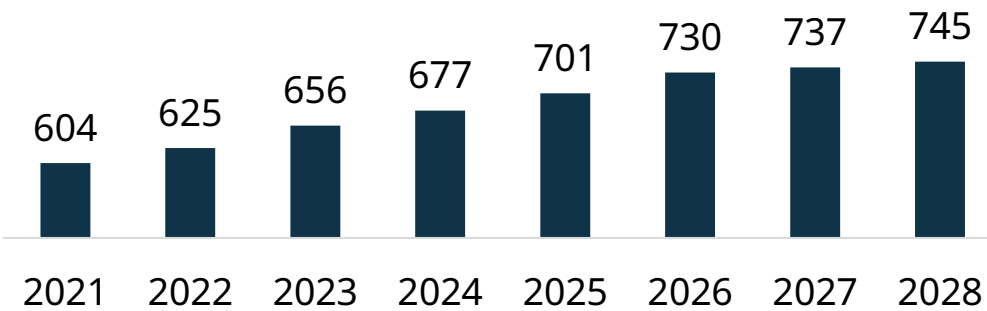
Global cruise capacity is forecast to grow over 10% from 2024 to 2028



Cruise passengers, million passengers



Cruise capacity, 1000x lower berths¹⁾



- ✓ Cruise travel reached 107% of 2019 levels in 2023, with 31.7 million passengers sailing; this compares to overall international tourism arrivals, which are 12% lower than 2019
- ✓ By 2027, cruise is forecast to grow to nearly 40 million passengers (+24% vs 2023)
- ✓ 60% of ships with delivery between 2023 and 2028 are set to run on LNG fuel
- ✓ Methanol is gaining traction, e.g., Celebrity Cruises new Edge Series ship will be equipped with Wärtsilä 46F methanol-ready engines

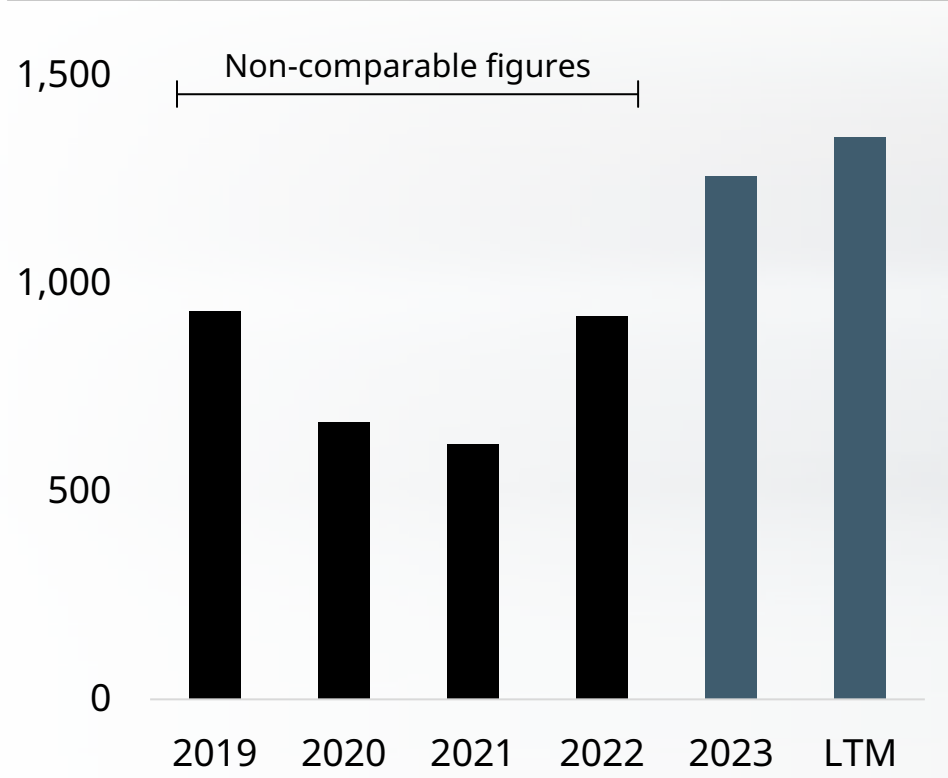
Source: CLIA, the state of the cruise industry 2024; 1) Lower berths indicate cruise capacity, assuming two passengers per stateroom

Equipment

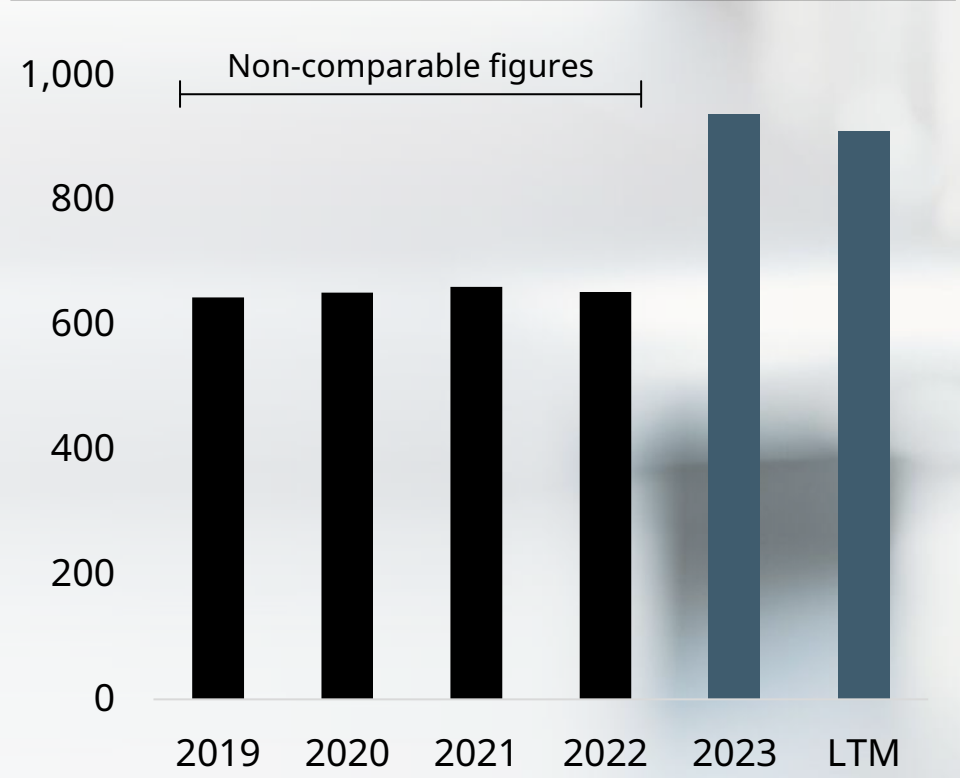
Decarbonisation is strengthening our market position, as we lead in fuel flexibility and fuel efficiency

Our equipment order intake is developing positively; alternative fuel-capable engines account for >60% MW ordered in 2023

Equipment Order Intake, EURm



Equipment Net Sales, EURm



2023 data restated to reflect the redefined organisational structure as of 1 Jan 2024, as Exhaust Treatment and Shaft Line Solutions business units were moved from Marine Systems to Marine Power, and Marine Power changed its name to Marine; 2019-2022 reflect the data as per the organisation structure at that point of time and thus are not comparable with the restated data for 2023 and LTM; LTM = Last twelve months, Q2 2023-Q1 2024

We lead in fuel flexibility and fuel efficiency, having the industry's most comprehensive offering for alternative fuels

We have ~10 years of experience with methanol-fuelled marine engines¹⁾

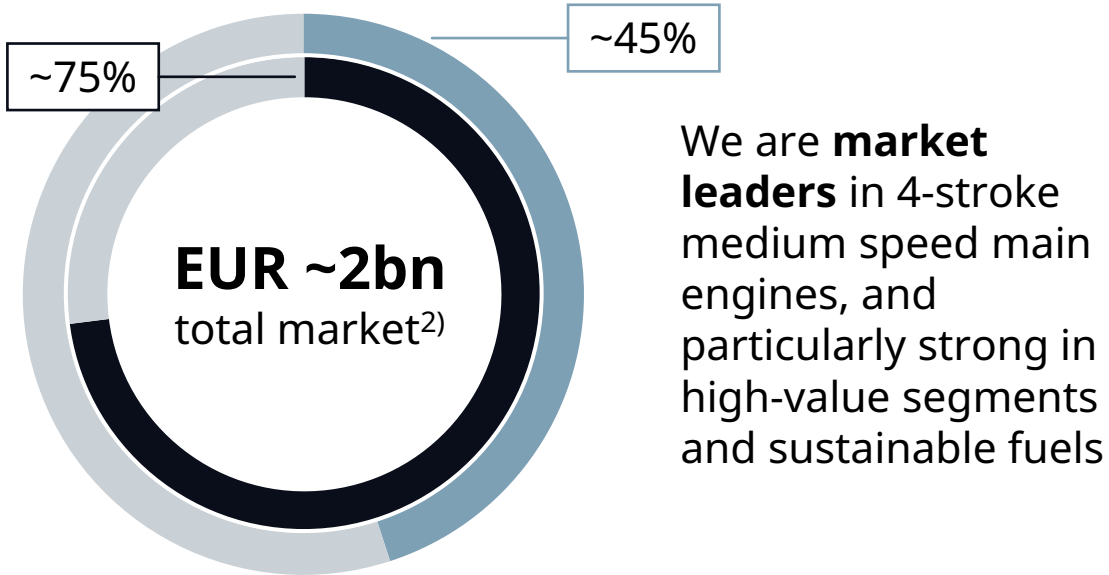
	Fuels ²⁾	2015	2022	2023	2024	2025
LNG	LNG Diesel	Over 15 years of experience on field in Marine				
Methanol	Methanol Diesel	▪ First retrofit	▪ Sales release	▪ First delivery		
Ammonia	Ammonia Diesel			▪ Sales release		▪ First delivery
Hydrogen	Hydrogen	15% ³⁾ hydrogen blends possible on LNG DF engines				▪ 100% hydrogen ⁴⁾



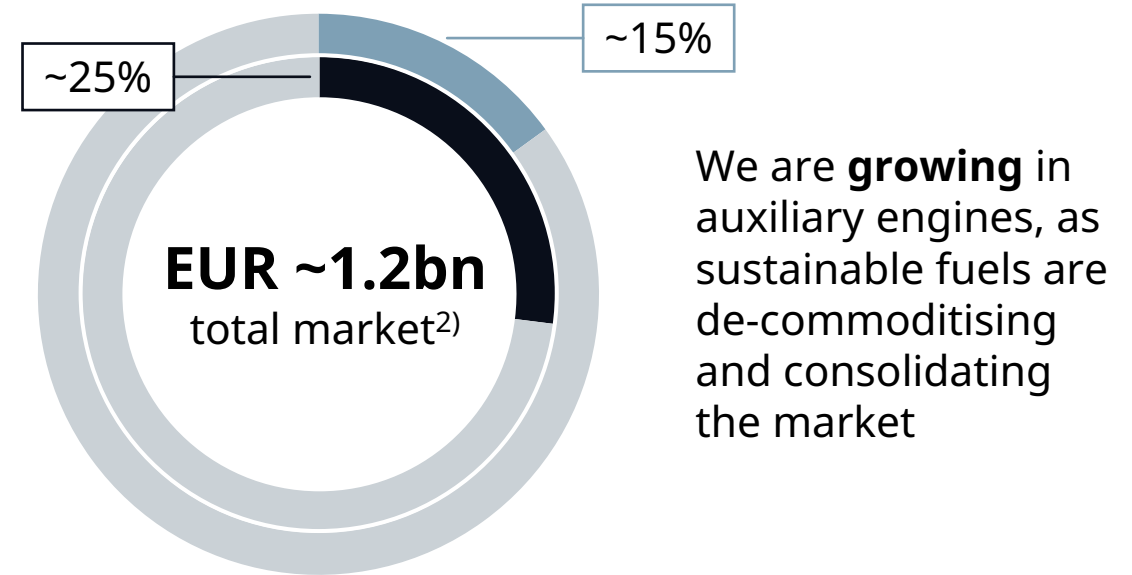
Timeline may be subject to change based on market demand and other factors; hydrogen technology development (both blending and pure hydrogen) is ongoing, with focus on Energy market; 1) First engine methanol conversion on the ferry Stena Germanica in 2015; 2) Multi-fuel engines can switch seamlessly between alternative and conventional fuels anytime; all fuels can be fossil, bio or synthetic; 3) Based on fuel volume; 4) Technology concept

Our market share is stronger on alternative fuel capable engines compared to diesel engines

4-stroke medium speed main engines market share¹⁾



Auxiliary engines market share¹⁾



● Outer circle: Wärtsilä total market share ● Inner circle: Wärtsilä market share on alternative fuel engines

1) Wärtsilä estimates, MW; 2) Average 2024-2028, based on Clarksons March 2024 forecasts and internal models

The uptake of sustainable fuels is strengthening our position as technology leader already today



CMA-CGM chooses Wärtsilä aux engines for their first containerships on methanol

Vessel type: 6x 15 000 TEU¹⁾ containerships

Shipyard: Dalian Shipbuilding

Delivery: 2025

Scope:

- ✓ Wärtsilä 32M multi-fuel auxiliary engines capable of operating on methanol fuel
- ✓ Wärtsilä NOx Reducer (NOR)



Wärtsilä will power Stena's world's first methanol fuelled hybrid Ro-Ro vessels

Vessel type: 2x 147m Ro-Ro's

Shipyard: China Merchants Jinling (Weihai)

Delivery: 2025

Scope:

- ✓ Wärtsilä 32M multi-fuel main engines capable of operating on methanol fuel and with ammonia ready notation
- ✓ Wärtsilä 20 auxiliary engines
- ✓ Wärtsilä fully integrated hybrid system²⁾
- ✓ Wärtsilä propulsion system³⁾
- ✓ Wärtsilä NACOS navigation system

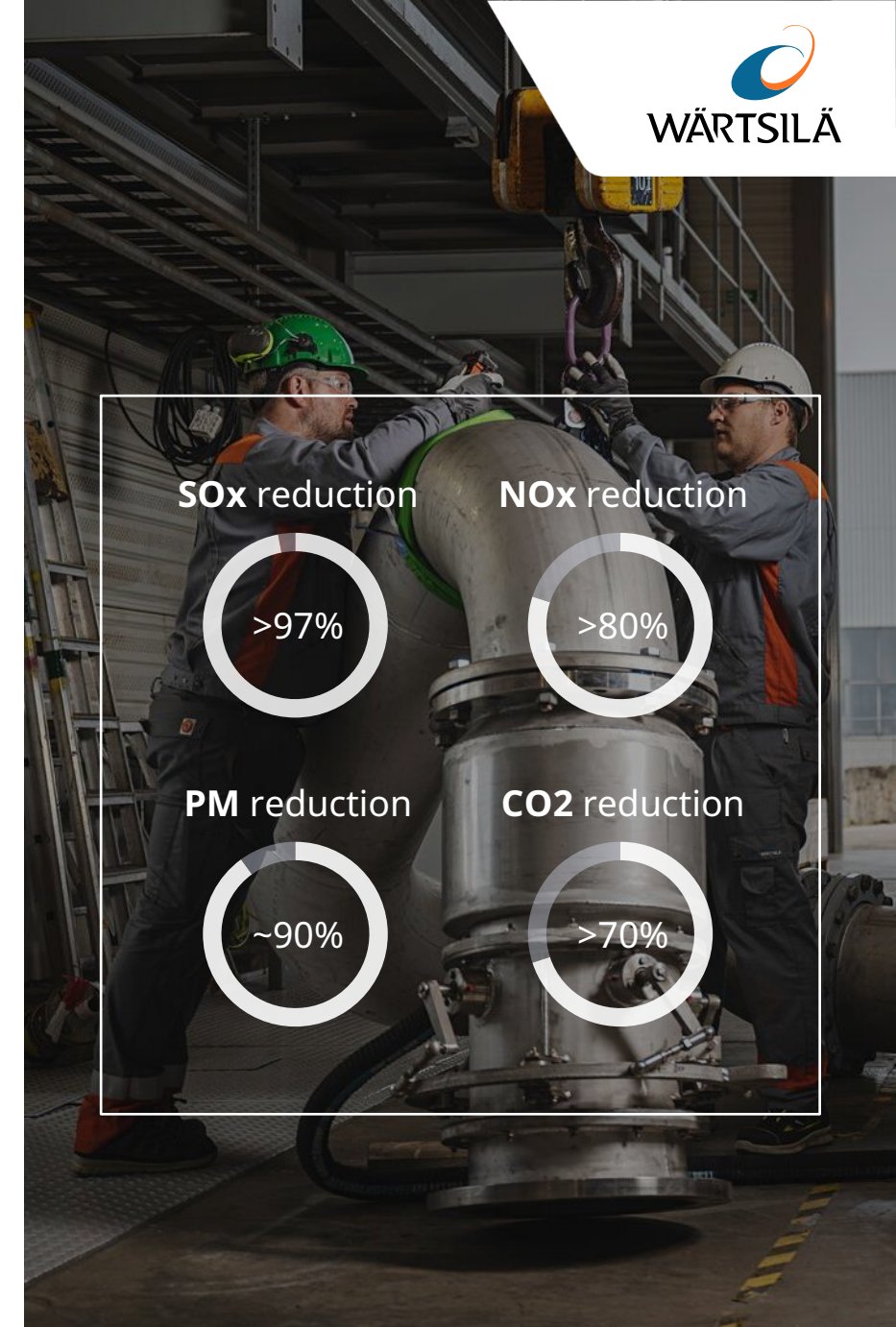
1) Twenty-foot container Equivalent Unit; 2) Including energy management system, power conversion system, shore power solution, battery modules, shaft generators; 3) Controllable pitch propellers, gearboxes, bow thrusters



Onboard Carbon Capture and Storage (CCS) allows to capture >70% of the CO₂ generated onboard

Onboard CCS can unlock EUR ~10bn business in the next 10 years¹⁾

- ✓ Applicable to all carbon-based fuels, vessels types and sizes
- ✓ Captured CO₂ is stored onboard for discharge at port reception facility
- ✓ At our research centre and test facility in Moss, Norway, we simulate vessel installations of onboard carbon capture:
 - Operated for >2 years
 - CO₂ capture capacity: 10 tons/day
 - CO₂ capture rate: ~70%
- ✓ First full-scale system operational on LPG carrier “Clipper Eris” in Q4 2024
- ✓ Commercial release in 2025



1) Newbuild and retrofits, mainly merchant 2-stroke, dependent on speed of regulation, CO₂ tax incentives, development of carbon capture and storage infrastructure, price spread development between fossil and green fuels

We are market leaders in hybrid- and all-electric solutions, with over 25% market share¹⁾



Wärtsilä will power Buquebús' new ferry, the largest battery-electric ship ever built

Vessel type: 1x 130m high-speed catamaran, 2 100 passengers and 225 vehicles capacity

Shipyard: Incat Tasmania

Delivery: 2025

Scope:

- ✓ Wärtsilä fully integrated battery-electric power system, incl. energy management system, power conversion system, DC shore charging system, 40 MWh battery modules, DC hub, electric motors
- ✓ 8x Wärtsilä waterjets and ProTouch propulsion control system



Wärtsilä will supply hybrid solution for self-discharging cargo for Aasen Shipping

Vessel type: 3x 9 500 DWT self-discharging cargo vessels

Shipyard: Royal Bodewes

Delivery: 2025

Scope:

- ✓ Wärtsilä 25 with NOx Reducer (NOR)
- ✓ Wärtsilä fully integrated hybrid system, incl. energy management system, power conversion system, 620 kWh battery modules, DC hub
- ✓ Wärtsilä Wärtsilä gearbox, controllable pitch propeller, ProTouch propulsion control system

1) Battery MWh on 2000+ GT hybrid vessels

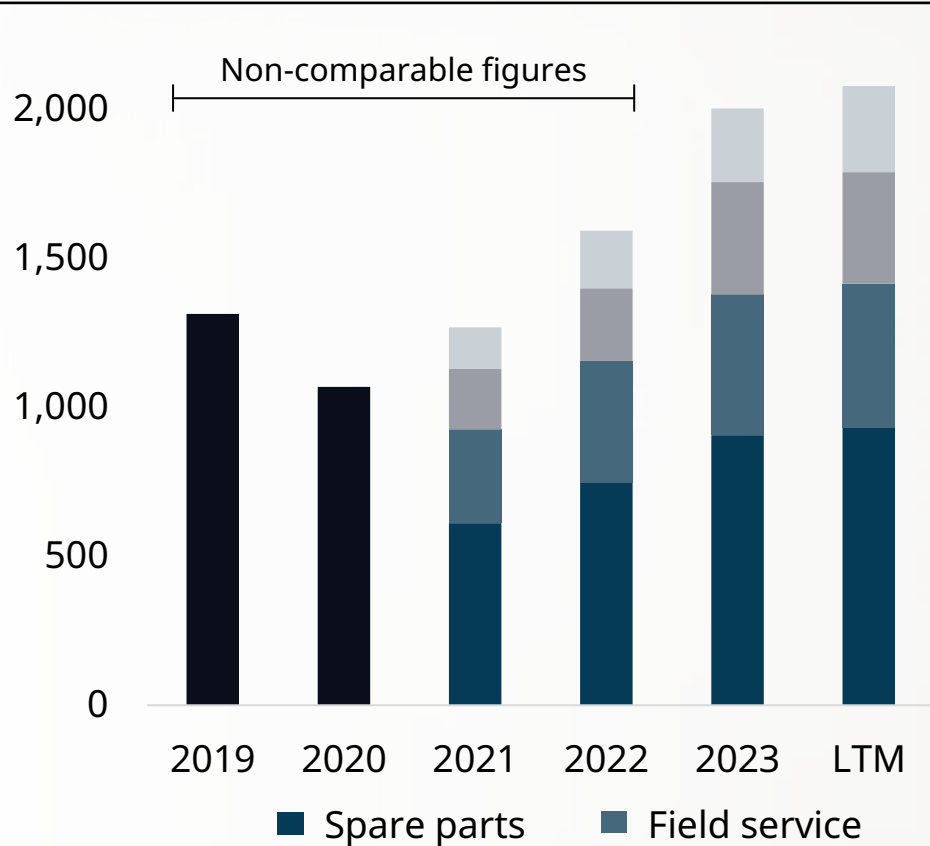
Services

Moving up the service value ladder and decarbonisation-driven retrofits are driving growth in our Services business



Our Services business is growing, supported by a solid installed base, uptake of agreements, and emerging decarb-driven retrofit market

Services Order Intake, EURm



Services Net Sales, EURm

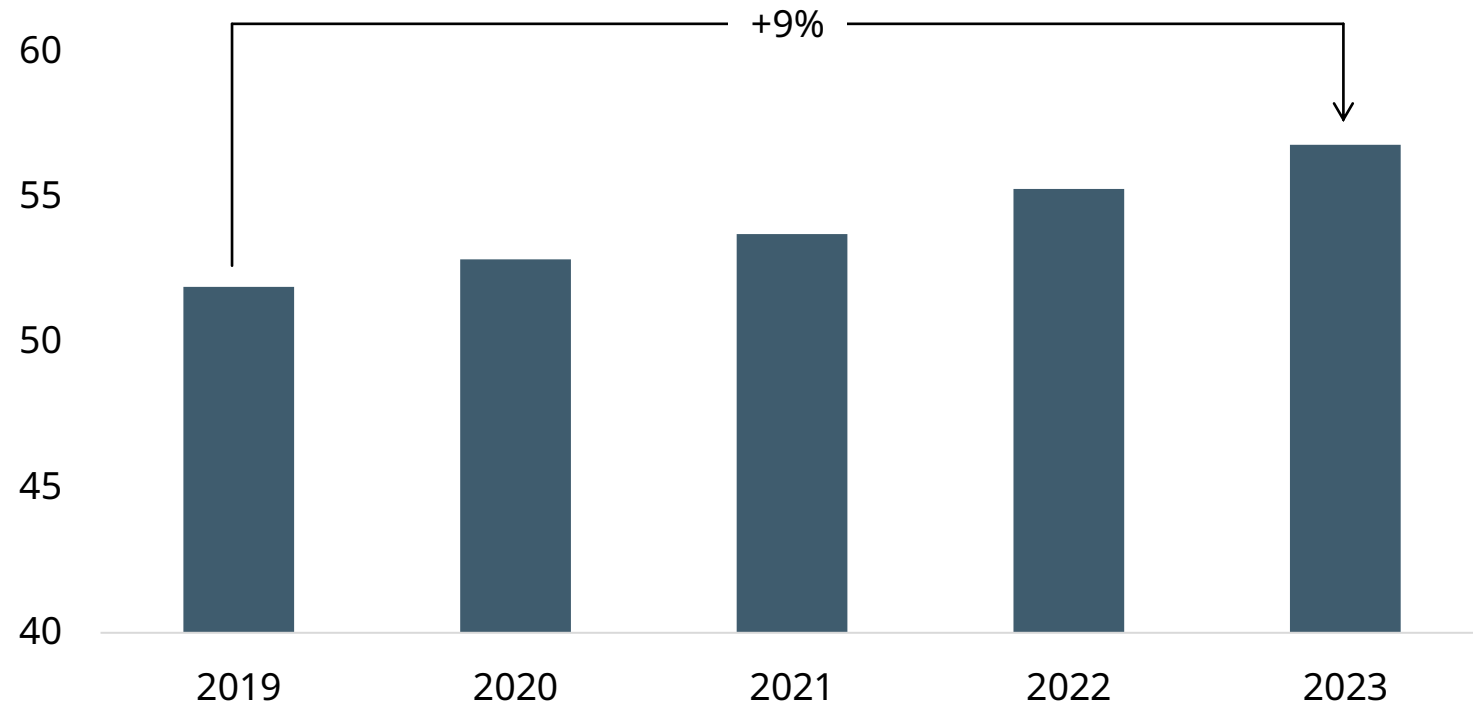


Split by category not available before 2021; 2023 data restated to reflect the redefined organisational structure as of 1 Jan 2024, as Exhaust Treatment and Shaft Line Solutions business units were moved from Marine Systems to Marine Power, and Marine Power changed its name to Marine; 2019-2022 reflect the data as per the organisation structure at that point of time and thus are not comparable with the restated data for 2023 and LTM; LTM = Last twelve months, Q2 2023-Q1 2024

Our installed base generates revenues during over 30 years; it grew by 9% over 2019-23

Marine 4-stroke installed base development

Marine 4-stroke installed base, GW¹⁾



1) Based on 4-stroke lifecycle sales in 2019-2023, excluding Quantiparts

>3,000
customers groups buy from us at least once a year

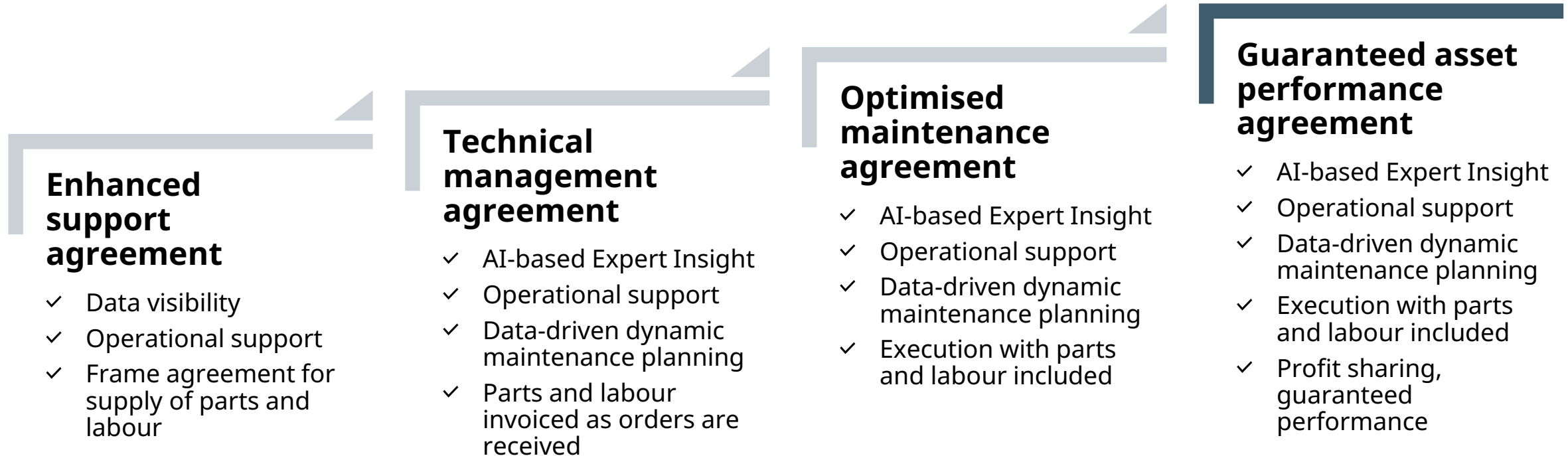
+9%
4-stroke engine installed base growth since 2019

+7%
number of buying customer growth since 2019

We increase sales and profits by moving up our service value ladder

From 1x¹⁾

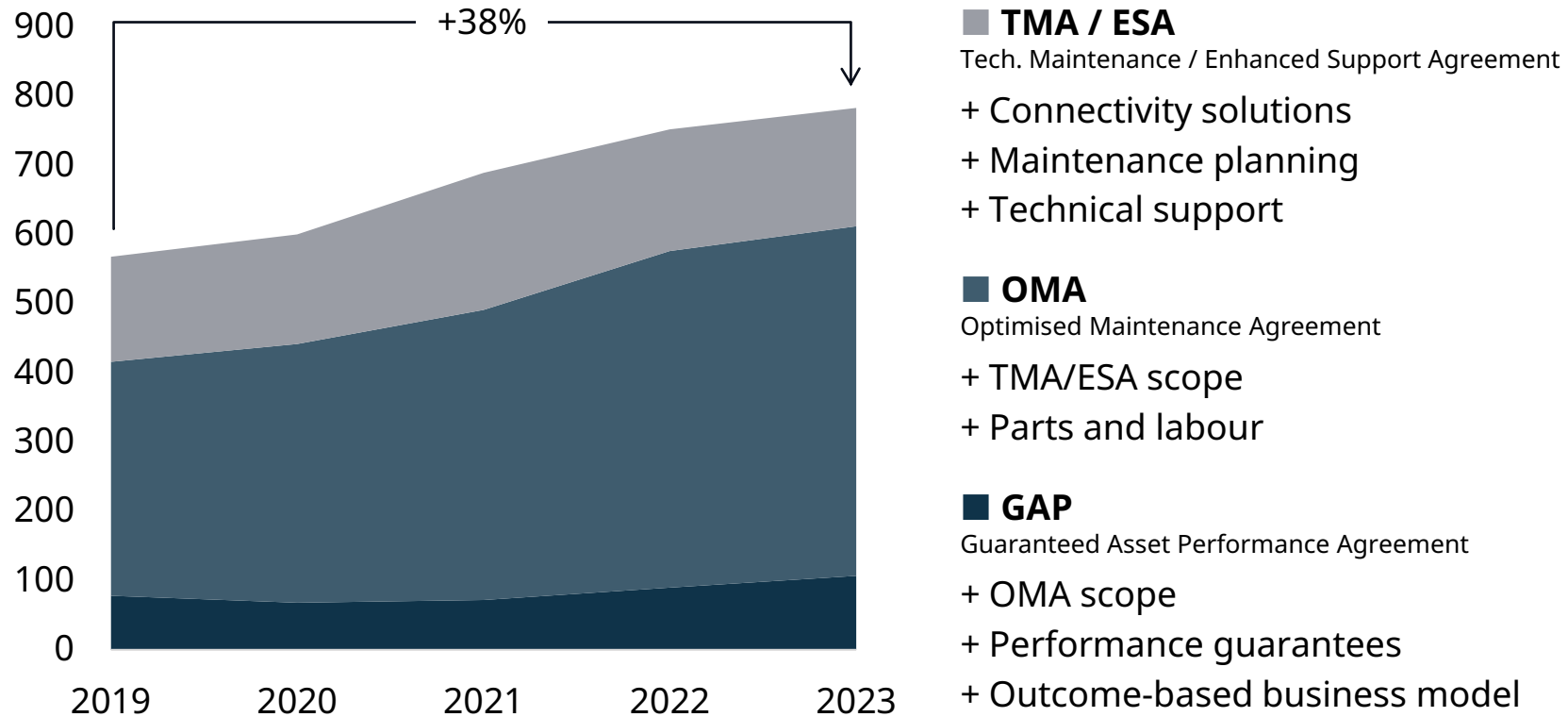
Up to 2-3x¹⁾



1) Sales EUR/kW relative to transactional

Installations under agreement grew by 38% since 2019; healthy 90% renewal rate

Number of vessels under agreement, by agreement scope¹⁾



Sales/kW to installations under OMA and GAP agreement are 2-3x higher compared to transactional

1) Including vessels with 4-strokes, 2-strokes or exhaust treatment under active agreement

Tightening regulations and increasing fuel and emission cost will boost demand for retrofits

Total investments in retrofits are estimated to be EUR 15-20bn over the next decade¹⁾

Propulsion efficiency upgrades	Alternative fuel conversions	Radical power derating	Electrification projects
Propulsion efficiency improvements, e.g., OptiDesign, EnergoFlow, EnergyProFin ³⁾	Engine retrofits to run on alternative fuels on top of conventional diesel	2-stroke power output reduction to optimise efficiency, fuel consumption and emissions at lower speeds	Electrical system ⁴⁾ upgrade, including hybrids and shaft generators to improve OpEx, emissions, safety
700+ vessels contracted	10+ vessels contracted	30+ vessels contracted	30+ vessels delivered ⁵⁾
EUR 20k-1m per shipset	EUR 3-8m per shipset	EUR 5-8m per shipset	EUR 3-8m per shipset

1) Source: Clarksons, incl. ESTs and engines, excl. hybrids and offshore; 2) CII (Carbon Intensity Indicator) applies to cargo, RoPax, cruise ships >5 000 GT (with some exceptions); source: Wärtsilä CII tool, correction factors excluded, ships with D or E rating considered as non-compliant; 3) OptiDesign: optimised propeller for actual operating profile; EnergoFlow: pre-swirl stator; EnergyProFin: propeller cap; OptiDesign, EnergoFlow, EnergyProFin can be sold both combined and as stand-alone; 4) E.g., Energy storage system, power distribution, energy management system; 5) Hybrid upgrades

53%
of the fleet is not CII compliant in 2024²⁾

79%
of the existing fleet will not be CII compliant in 2028 if no action is taken²⁾

We are evolving from equipment supplier to key partner in our customers' decarbonisation journey



CDWE¹⁾ signs an agreement to maximise uptime of new windfarm installation vessel

Guaranteed Asset Performance Agreement (GAP), including parts, labour, 24/7 access to technical support, predictive maintenance

Customer benefits:

- ✓ Extended time-between-overhaul
- ✓ 7.5 years drydocking interval²⁾
- ✓ Minimum guaranteed engine reliability
- ✓ Savings on scheduled maintenance and dry-docking cost



MAERSK

Maersk orders Wärtsilä 2-stroke radical derating for 8x 13k TEU containerships

Wärtsilä Fit4Power, consisting of a reduction of the engine bore size from 96 cm to 72 cm for 2-stroke 12-cylinder RT-FLEX96 engines

Customer benefits:

- ✓ Up to 15% higher engine efficiency
- ✓ Reduced GHG emissions
- ✓ Extended CII compliance for several years
- ✓ Extend vessel lifetime in a sustainable way

1) CDWE - CSBC and DEME Offshore Wind Engineering; 2) Special flag administration and classification society exemption, permitting 7.5 years drydocking intervals, is enabled by a 7.5 years guaranteed extended time-between-overhaul of the equipment under agreement

Strong growth opportunities in marine based on technology leadership, moving up the service value ladder, and favorable vessel contracting mix

	Equipment	Services
Addressable market	(+) (+) (+) Favorable vessel contracting mix	(+) (+) (+) Decarbonisation-driven retrofits (+) Growing installed base
Market share	(+) (+) Decarbonisation: uptake of alternative fuels and emission reduction technology	(+) (+) Moving up the service value ladder



WÄRTSILÄ