Profitable growth by focusing on decarbonisation and services

Roger Holm, President, Marine Power & Executive Vice President
Decarbonisation will transform the marine industry during a single vessel’s lifespan at unprecedented pace.

Fuel flexible engine technology takes the industry on the only upgrade path that balances decarbonisation targets with financial viability.

Our services business drives stability, profitability and growth. Increased opportunities thanks to decarbonisation of the existing fleet.
Marine Power product portfolio provides upgradable solutions for a net-zero future

- Propulsion equipment
- 4-stroke medium speed engines
- NOx reducers (SCR)
- Energy & power management systems
- Hybrid systems (including batteries)
- Fuel gas supply systems (storage)
- Transactional services
- Agreements
- Performance-based agreements
- Project services
Transform – We play a central role in maritime decarbonisation
Decarbonisation targets are shaping the future of our industry. Banks, cargo owners and public opinion have increasing influence in the speed of change.

- **2021** Today
- **2023** EEXI, CII
- **2026** CII - 40% carbon intensity
- **2030** - 70% carbon intensity & 50% in total GHG emissions
- **2050**

**Regulations**
- 2021: Today
- 2023: EEXI, CII
- 2026: CII - 40% carbon intensity
- 2030: - 70% carbon intensity & -50% in total GHG emissions
- 2050: - 70% carbon intensity & -50% in total GHG emissions

**Fuels**
- Fossil fuels
- Drop-in blending
- Green fuels

**Banks, Cargo Owners and Public opinion**
- Green financing (e.g. Poseidon Principles)
- Green cargo (e.g. Sea Cargo Charter)
- Cargo owner’s own targets and mounting public pressure

**Average vessel lifetime 25-30 years**
CII introduces to the maritime industry a clear rating framework for differentiating vessels based on their GHG emissions performance.

Key takeaways:
- CII will categorise ships from A to E.
- Cargo owners can easily establish their own requirements on ratings to match own decarbonisation targets.
- If a ship wishes to remain in the same category it will have to progressively improve GHG performance.
Ship owners need to plan their future fleet against moving targets and find trusted partners capable of future upgrades.

**New build**

- Invest in upgradable assets and a partner able to deliver upgrades throughout the asset's lifecycle.
- Build zero carbon ships.
- Build alternative fuel-ready assets.

**Existing fleet**

- Install energy saving devices and power limiters.
- Convert to an alternative fuel or sell/scrap the asset.

**IMO GHG Strategy**

- **EEDI** - 10%
- **EEXI**
- **CII** - 5%
- **CII** - 7%
- **EEDI** - 20%
- **EEDI** - 30%
- **CII** - 9%
- **CII** - 11%
- **CII** - 10%
- **CII** - 7%
- **CII** - 5%
- **CII** - 9%
- **CII** - 11%

**Average lifetime of a vessel 25-30 years**

2020, 2023, 2024, 2025, 2026, 2030, 2035, 2040, 2045, 2050
Transition to green fuels will be slow yet relentless. 2050 is a single vessel’s lifespan away – customers need to invest in fuel flexibility to avoid risk of stranded assets

Move from a single-fuel industry to a multi-fuel one

Distribution of fuel types for Decarbonisation 2050 (1.5°C scenario), EJ

Owners will decide on technology partners now:

- Vessel life is 25-30 years
- Critical decision criteria:
  i) Multifuel capabilities for blending with green fuels
  ii) Conversion capabilities for future fuels

Source: DNV Maritime Forecast 2050 model, Wärtsilä internal estimates
Fuel conversions will play a vital role in the fuel transition for both existing and new vessels built during this and next decade. Fuel selection impacts the vessel structure.
Infrastructure and availability of green fuels need time to mature. Our multi-fuel technology is the only viable upgrade path

Our technology allows a progressive adoption of green fuels

Transition fuels

- **Drop-in**
  - Drop in the tank compatible bio fuels e.g. LNG and liquid bio-methane

- **Blending**
  - Injecting into the engine different fuels e.g. fuel oil and green ammonia

- **100% Pure**

**Best TCO**

- ICE has the **lowest CAPEX**
- ICE has **predictable operational and maintenance costs**

**Vessel-long lifespan**

**Upgradability**

Source: 1) DNVGL Maritime Forecast ed. 2020 and Lloyd’s Register Techno-Economic Assessment of Zero Carbon Fuels ed. 2020
**Front-runner in alternative fuel engine technology.** Our portfolio goes beyond – we power vessels throughout the path towards decarbonisation.

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- Own technology
- Through partnering
- Both in house development and partnering

1) FAME, HVO: biodiesel 2) SOFC: solid oxide fuel cell, PEMFC: proton exchange membrane fuel cell
Perform – Focus on decarbonisation and services
Our strategy focuses on decarbonisation and services

Four clear growth drivers

- **Maintain leading position** in 4S medium speed engines and grow market share in auxiliary engines
- **Increase sales for transactional business**
- **Tap into fuel conversions, energy saving devices, efficiency upgrades and hybridisation of existing fleet**
- **Expand agreements penetration and fuel/emission savings based agreements**

66% Services ¹) 34% Equipment ¹)

¹) Net sales LTM Q321
We are strengthening the focus on customers with small transaction amounts and are seeing a positive trend in order intake.

Categorisation per customer type

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<th>Spend ratio EUR/kW</th>
<th>% of installed base</th>
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<td>1X 1)</td>
<td>&lt;70% 2)</td>
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<td>0.65X</td>
<td>&gt;30% 2)</td>
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1) 1X refers to average EUR/kW for all transactional business customers. 2) % of installed base in GW excluding QuantiParts.

Turning volume into value

Optimised lead management process: opportunities are identified 18-36 months in advance.

Results show order intake for customers that typically buy a smaller amount per annum is developing favourably:

- +12% LTM/Q3 2021 vs LTM/Q3 2020
- +4% LTM/Q3 2021 vs LTM/Q3 2019
Our retrofit business has the potential to grow by 3X by 2030 1)

CII requires continuous improvement of vessel GHG performance

Vessels built 2010-2030 will need to evaluate options for use of alternative fuels

Our offering

4-stroke ▪ Methane slip reduction
▪ Fuel blending and full fuel conversion packages

2-stroke ▪ Technology for conversion to gas operations and methane slip reduction

1) subject to green fuels availability
We have proved to our agreement customers that 2.5% fuel consumption savings are achievable. Global fuel bill of the maritime industry is EUR 96bn.

Fuels will be more expensive in the future: maximising fuel efficiency will be of paramount importance.

- Alternative fuels (ammonia, hydrogen, methanol) are expected to be 2-4x more expensive than fossil fuels.
- Introduction of taxes for carbon based fuels and adoption of ETS will significantly increase the price of fossil fuels.

Delivering guaranteed performance is a journey with our customers.

1. **Becoming a partner**: resolving complexity and setting joint targets based on needs.
2. **Developing and executing an extensive upgrade plan**.
3. **Dynamic maintenance planning** followed-up and executed in real time.

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1) estimation based on current fuel prices, not considering carbon taxation or ETS.
We aim to double the number of vessels covered by agreements

From 1X \(^2\)  \rightarrow \text{Up to 2X-3X} \(^2\)

Enhanced support

Optimised maintenance with budget

Optimised maintenance

Performance based agreements

12\(^1\)

59\(^1\)

28\(^1\)

<1\(^1\)

94\% Renewal rate

Confirms that long term agreements create value for our customers

- Major overhauls represent a considerable spike in cash flow for customers
- With agreements, customers pay a monthly fee which flattens the peaks of major overhauls
- Our strength in combining software, analytics and data driven solutions with technology expertise allows us to manage operational risks

1) \% of number of vessels under agreement; 2) €/kW multiple compared to pure transactional sales
Guaranteeing performance and sharing risk results in stronger partnerships and unprecedented value

Savings for fuel expenses per annum

- **2.5%**
  - For a fleet of Cruise ships

Reduction of unscheduled maintenance costs over a 2-year period

- **-69%**
  - For a fleet of LNG carriers

Savings by increasing time between overhauls, and minimising interruptions and downtime in operations

- **~14M€**
  - For a fleet of LNG carriers
Well-positioned to lead the decarbonisation transformation

Decarbonisation will transform the marine industry during a single vessel’s lifespan at unprecedented pace

Fuel flexible engine technology takes the industry on the only upgrade path that balances decarbonisation targets with financial viability

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