



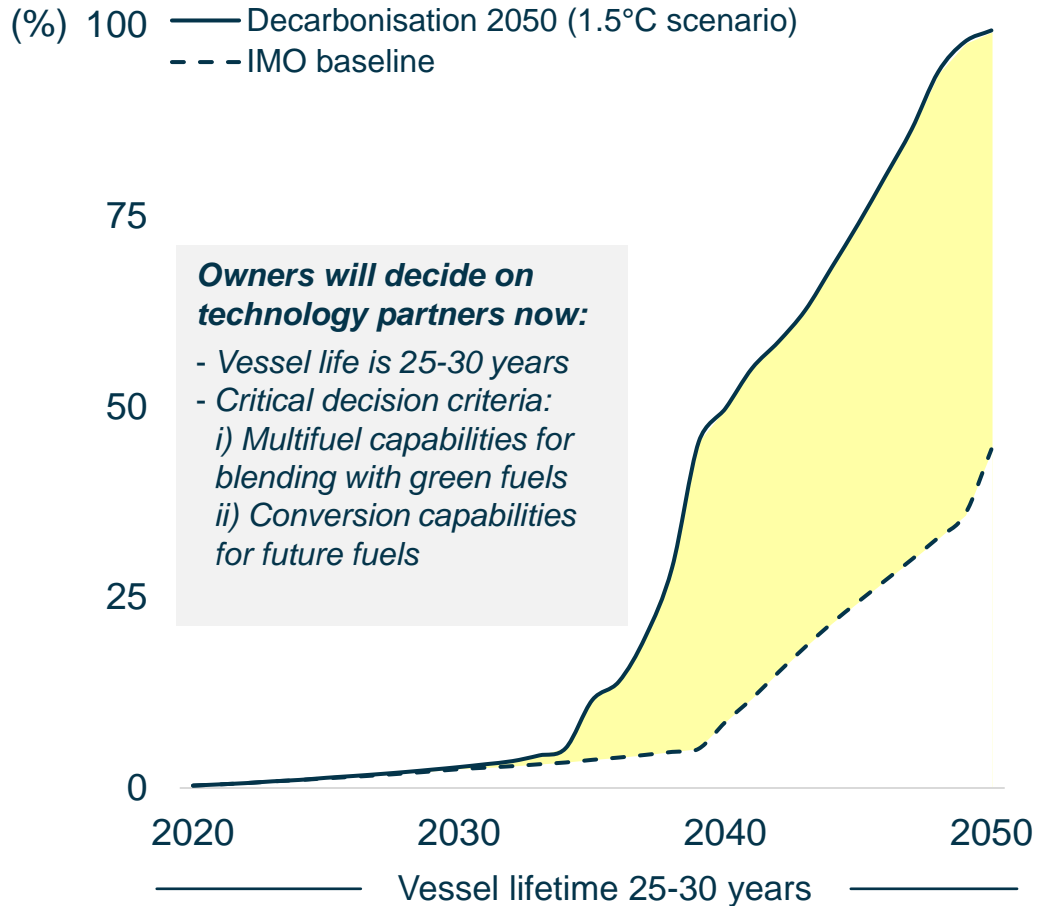
Next step in shaping the decarbonisation of Marine and Energy

Håkan Agnevall
President & CEO

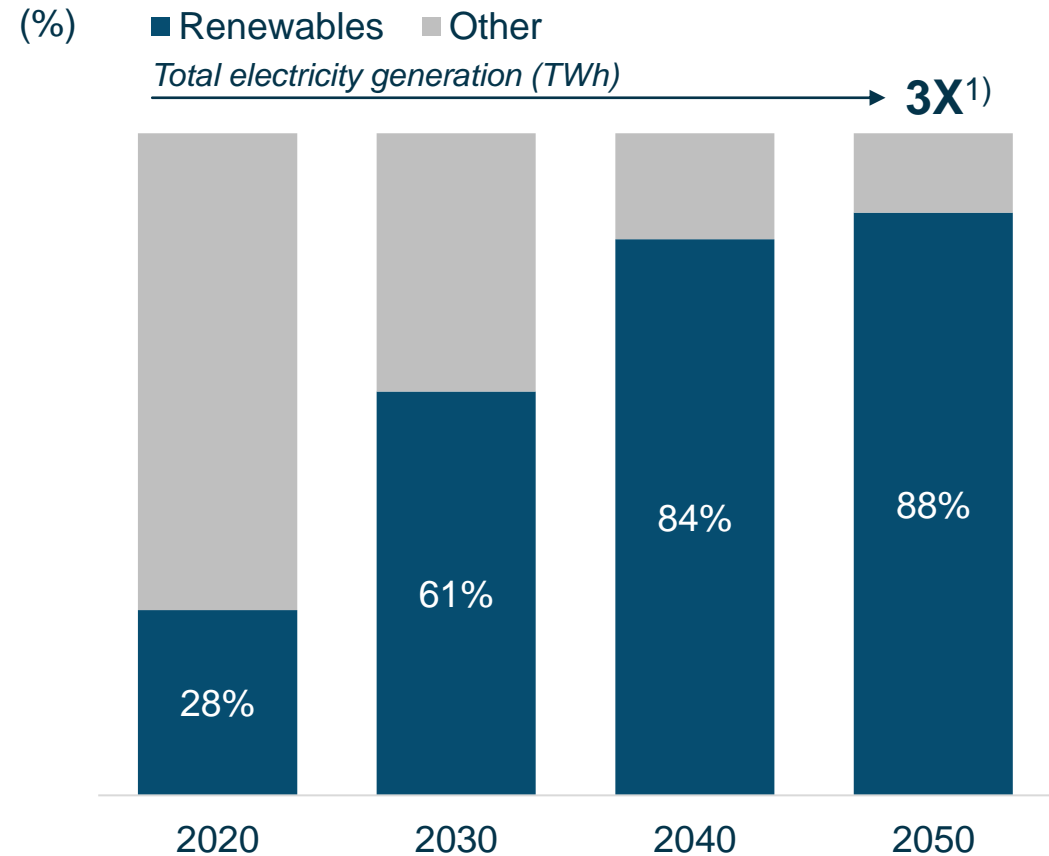


Decarbonisation of Marine and Energy is accelerating

Share of carbon neutral and zero carbon fuels in maritime



Share of renewables in global electricity generation



Source: DNV Maritime Forecast 2050 model, Wärtsilä Internal estimates 1) Total electricity generation (TWh) from 2020 to 2050, IEA World Energy Outlook 2021 (Net Zero Emissions Scenario)

Our purpose

”Enabling sustainable societies through

We shape our markets by generating transformative results through collaboration, partnerships, market insight, and active engagement in ecosystems.

The long-term environmental, social, and economic impact of our operations drives our priorities and behavior. We take pride in diversity, providing equal opportunities and demonstrating high ethical standards.

We care about the communities in which we operate, and our people want to make a difference for our customers and partners. We are committed to giving back to society.

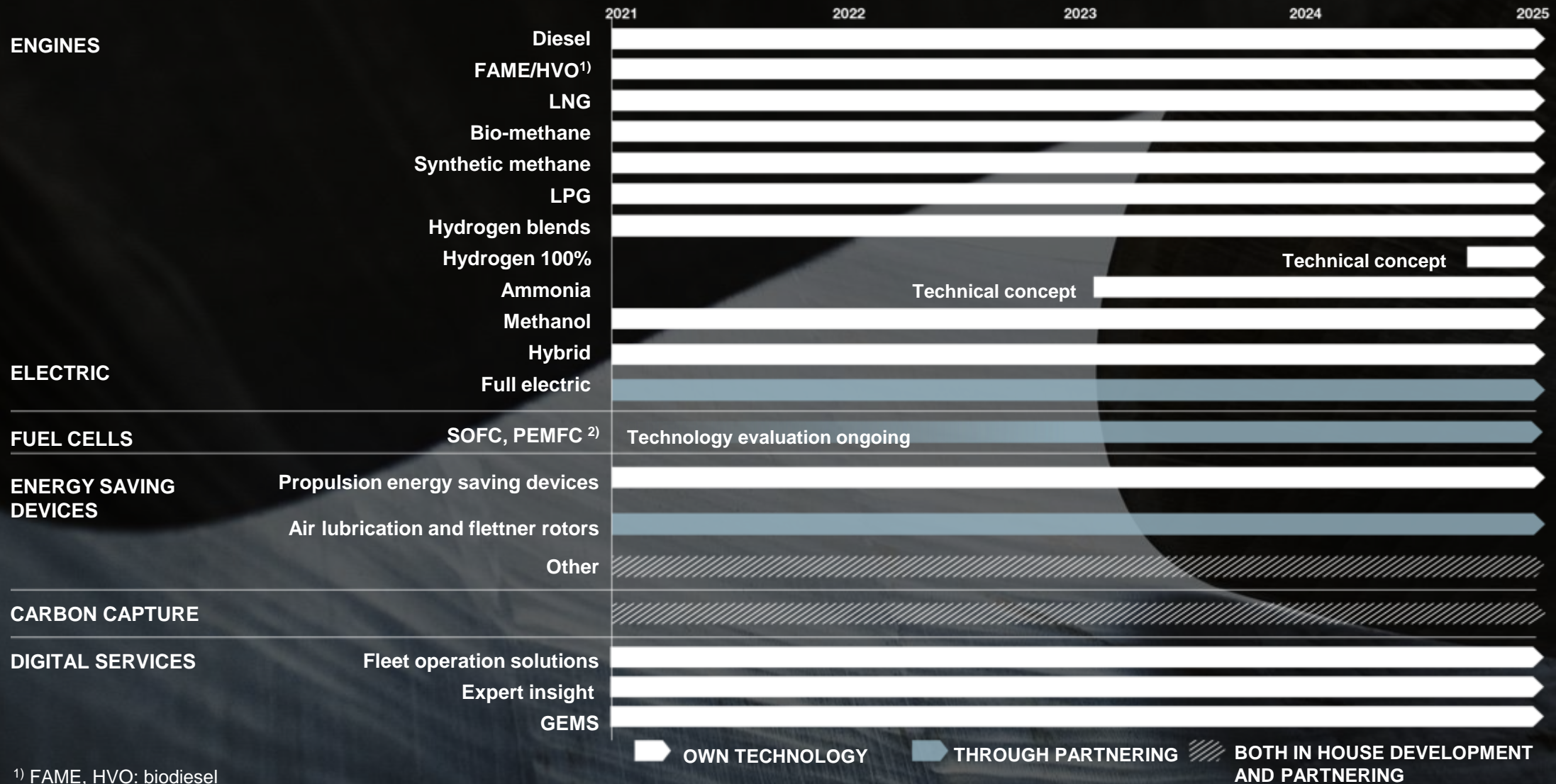
innovation in technology and services”

We believe in challenging the status quo. We believe in implementing ideas that results in new solutions and new ways of working.

We are known as a thought-leader in the industry. We deliver products and services which are reliable, efficient and solve customers’ needs.

We believe our customers’ success is our success. We serve our customers and partners with a cooperative and data driven approach over the entire lifecycle.

Broad solution offering to support our customers in decarbonisation



¹⁾ FAME, HVO: biodiesel

²⁾ SOFC: solid oxide fuel cell, PEMFC: proton exchange membrane fuel cell

Leading the decarbonisation journey with a strong commitment to R&D and through partnering for a broad solution offering



Proactive dialogue on customers' specific technology roadmap

Competence & experience to engage in a credible customer dialogue on "all" technologies

Solution offering for "most" technologies

Leveraging leadership in core technologies and partnering for complementary technologies

Key takeaways

- Working with **many of the new technologies** for decades
- Conversion to new fuels requires only a **limited number of new engine parts**
- Large **technology synergies between Marine and Energy**
- Transformation manageable with a **stable R&D allocation of ~3% of net sales**

Significant value creation potential in Services

2-5X ¹⁾

AGREEMENTS &
PERFORMANCE-BASED
AGREEMENTS

RETROFITS &
UPGRADES

OPTIMISED
MAINTENANCE

1X ¹⁾

TRANSACTIONAL

- Spare parts
- Field services

MOVING UP THE SERVICE VALUE LADDER

¹⁾ Customer spending ratio EUR/kW

Driving customer success both in Marine and Energy. Good progress made in fuel flexibility, balancing power and services

Wärtsilä hits methanol milestone with first newbuild engine order



Offshore Wind Installation Vessel being built for Dutch contracting company Van Oord will be powered by five Wärtsilä 32 engines capable of operating with methanol

Wärtsilä signs long-term service agreement with Brittany Ferries



Technical support via a 10-year long-term service agreement for a broad scope of solutions installed on Brittany Ferries' latest RoPax vessel

110 MW of balancing power to support Italy's focus on sustainable energy



Wärtsilä's fast-starting internal combustion engine technology will be used to balance the power system and ensure its stability when the share of renewables is increased

Guaranteed Asset Performance agreement ensures reliability for Senegal power plant



10-year Guaranteed Asset Performance agreement with Malicounda Power SAS of Senegal. The contract covers 130 MW power plant located in Mbour

Capwatt (Maia) - Portugal



Testing of green hydrogen and natural gas blend fuel. Testing blends of up to 10 vol.% green hydrogen. This will be one of the first cases where hydrogen is used to lessen the carbon footprint of an existing gas fuelled Wärtsilä power plant

Wärtsilä and Anglo-Eastern reach major milestone



Wärtsilä and Anglo-Eastern reach major milestone in connecting over 500 FOS enabled ships to improve safety and environmental sustainability

STH – towards a more sustainable future

- Smart Technology Hub is the next step in **shaping the decarbonisation of Marine and Energy**
 - Innovation for new products and solutions
 - Future fuels development
 - ROPAX Aurora Botnia as our floating test lab
 - Region of Vaasa as a **key location for many industrial companies and talent**
 - Proximity to the harbour with great possibilities in **green shipping and smart port development**



Wärtsilä is well-positioned for the decarbonisation transformation

Leader in

- **Carbon neutral & zero carbon fuels**
 - Available today: biofuels, methanol, up to 25% hydrogen blends
 - 2023: ammonia concept
 - 2025: 100% hydrogen concept
- **Energy efficient fuels**
- **#1 in marine hybrid power systems**
- **Power system optimisation**
 - Energy storage
 - Grid balancing power

Pioneer in

- **Marine electric drivetrain**
- **Carbon capture**
- **Marine optimisation and autonomous solutions**
- **Partnering for complementary technologies**
 - Fuel cells
 - Air lubrication
 - Flettner rotors

Developing a performance culture

- Being **successful by making our customers successful**
- **Clear leadership and delegated profit & loss responsibilities**
- **Caring for people and professional development**
- **Discipline in risk management** for capturing and executing projects
- **Improve speed and make decisions close to where customer value is created**
- **Mindset of continuous improvement**





Decarbonising the marine industry

Roger Holm

President Wärtsilä Marine Power and Executive Vice President Wärtsilä

Sean Fernback

President Wärtsilä Voyage and Executive Vice President Wärtsilä



We are 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



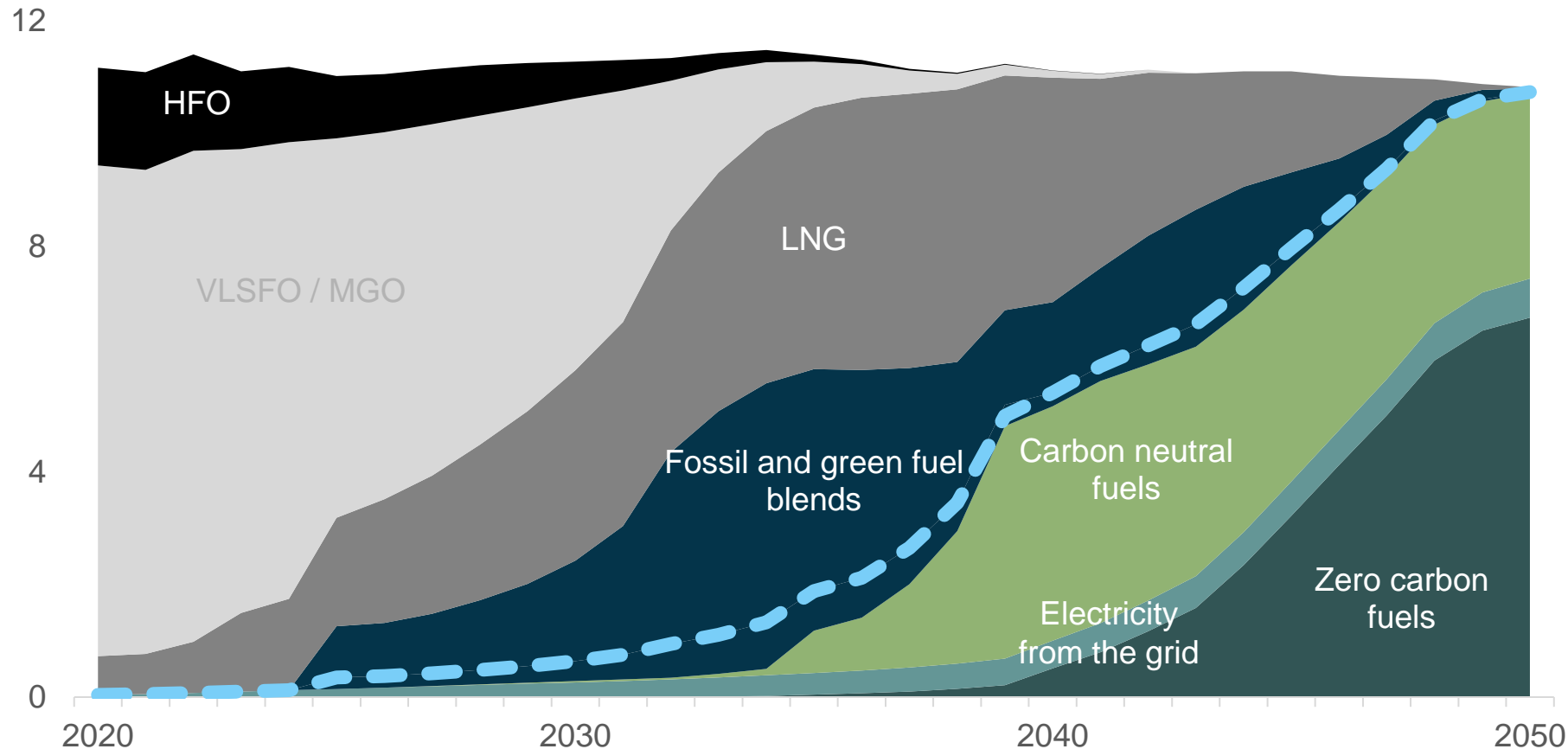
Our services business drives stability, profitability and growth. Increased opportunities thanks to decarbonisation of the existing fleet

Adoption of new fuels is the key to decarbonising the maritime industry

High energy prices accelerate decarbonisation


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

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

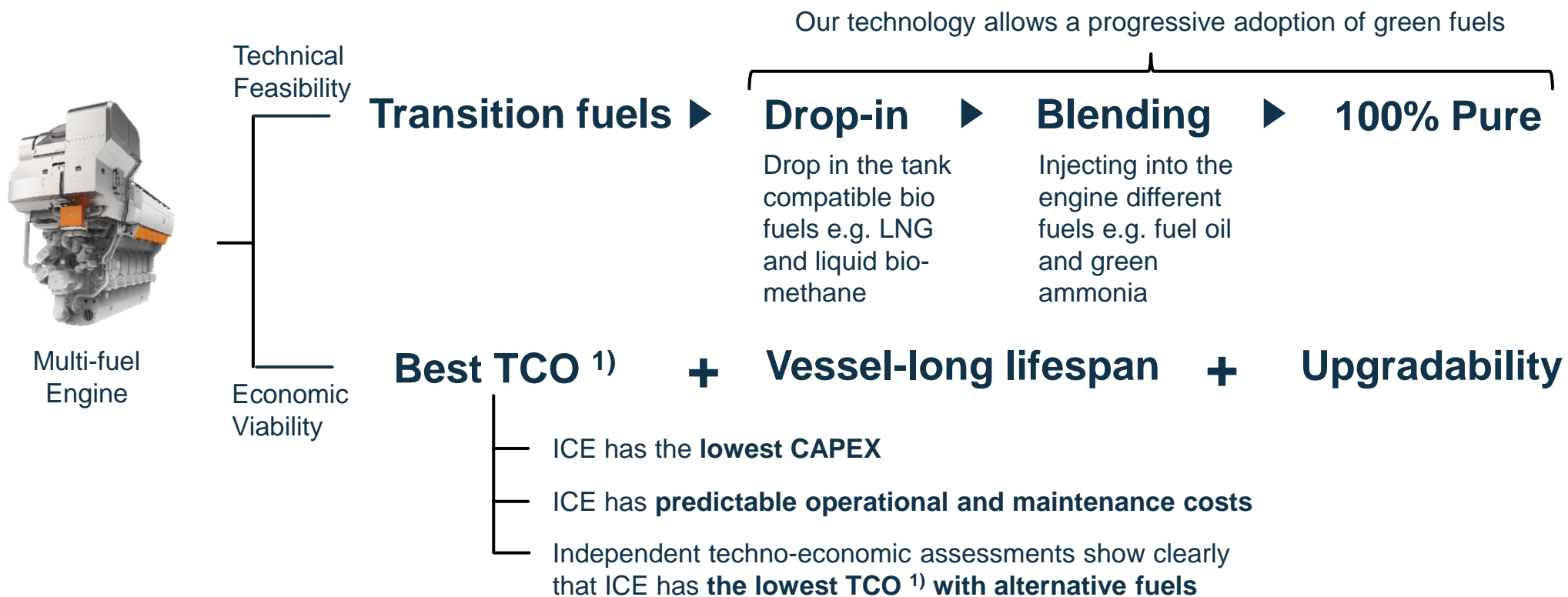


2050 is a single vessel's lifespan away - customers need to invest in fuel flexibility to avoid risk of stranded assets:

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

 Carbon neutral and zero carbon fuels in maritime

Infrastructure and availability of green fuels need time to mature. Our multi-fuel technology is the only viable upgrade path



Source: 1) DNVGL Maritime Forecast ed. 2020 and Lloyd's Register Techno-Economic Assessment of Zero Carbon Fuels ed. 2020

STH will deliver the worlds first ammonia and hydrogen 4 stroke medium speed engines

The first W32 methanol engines will be delivered in early 2023

Several milestones on low/zero carbon technologies and products are planned for the upcoming years

Methanol

- 2015: First engine conversion ZA40S
- 2023: Delivery of first W32 methanol engines. Sales release of additional new build engines and engine conversion packages

Ammonia

- 2022: Combustion and performance testing, optimization with different engine concepts and different engines platforms
- 2023: Ammonia concept ready

Hydrogen

- 2022-2023: Combustion testing on different % blends and up to 100% hydrogen
- 2025: Hydrogen concept ready

Newly launched engines are a stepping stone in our strategic path to shape decarbonisation of the maritime industry



W46TS-DF

- Best-in-class fuel efficiency and emissions performance
- First order booked for Royal Caribbeans' Utopia of the Seas



W32 Methanol

- Multifuel engine based on Wärtsilä's proven 32 engine technology
- Fuel tanks and fuel handling system
- First order booked for Van Oords' offshore wind construction vessel

The most environmentally friendly ferry in the world is an integrated part of our R&D testing

- Equipped with several Wärtsilä solutions:
 - Engines
 - LNG storage and supply systems
 - Thrusters
 - Catalysers
 - Integrated electrical and automation systems
 - Nacos Platinum control systems for navigation, automation, power and propulsion
 - Wärtsilä's Data Bridge platform
- All the Wärtsilä equipment and systems aboard the Aurora Botnia are covered by a 10-year Wärtsilä Optimised Maintenance agreement



**RoPax Ferry of The Year 2021
& Shippax Ro-Pax Design &
Technology Award 2022**

700+ vessels globally supported with lifecycle agreements: 90% of cases are solved remotely

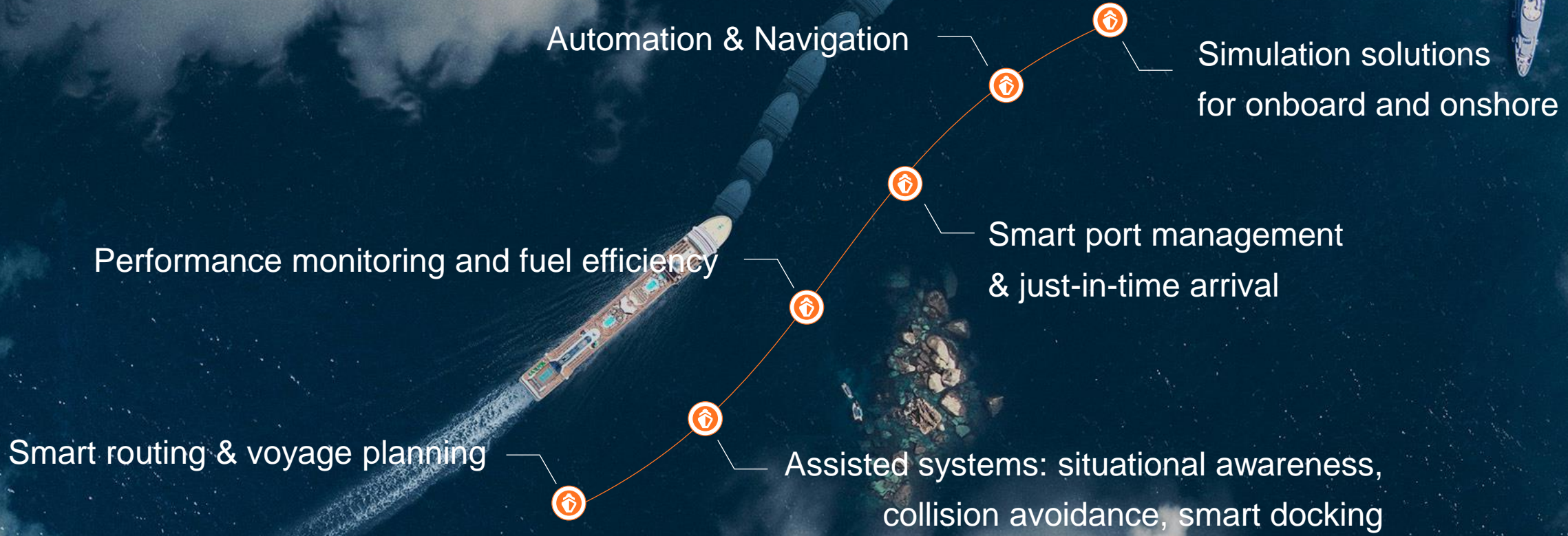
STH is the home of one of our advanced remote control centers



Wärtsilä signed an agreement renewal with Maran Gas

- Wärtsilä supports Maran Gas with an optimised maintenance agreement for a fleet of 21 LNG carrier vessels powered by Wärtsilä's 50DF engines
- The maintenance agreement has been recently renewed for 5 years
- The scope of the agreement includes:
 - Scheduled parts and maintenance work for the engines and turbochargers
 - Workshop services
 - Remote operational support
 - Dynamic maintenance planning
 - Wärtsilä's Expert Insight digital predictive maintenance solution

Our digital solutions will help our customers accelerate their journey to maritime decarbonisation





Decarbonising the energy sector

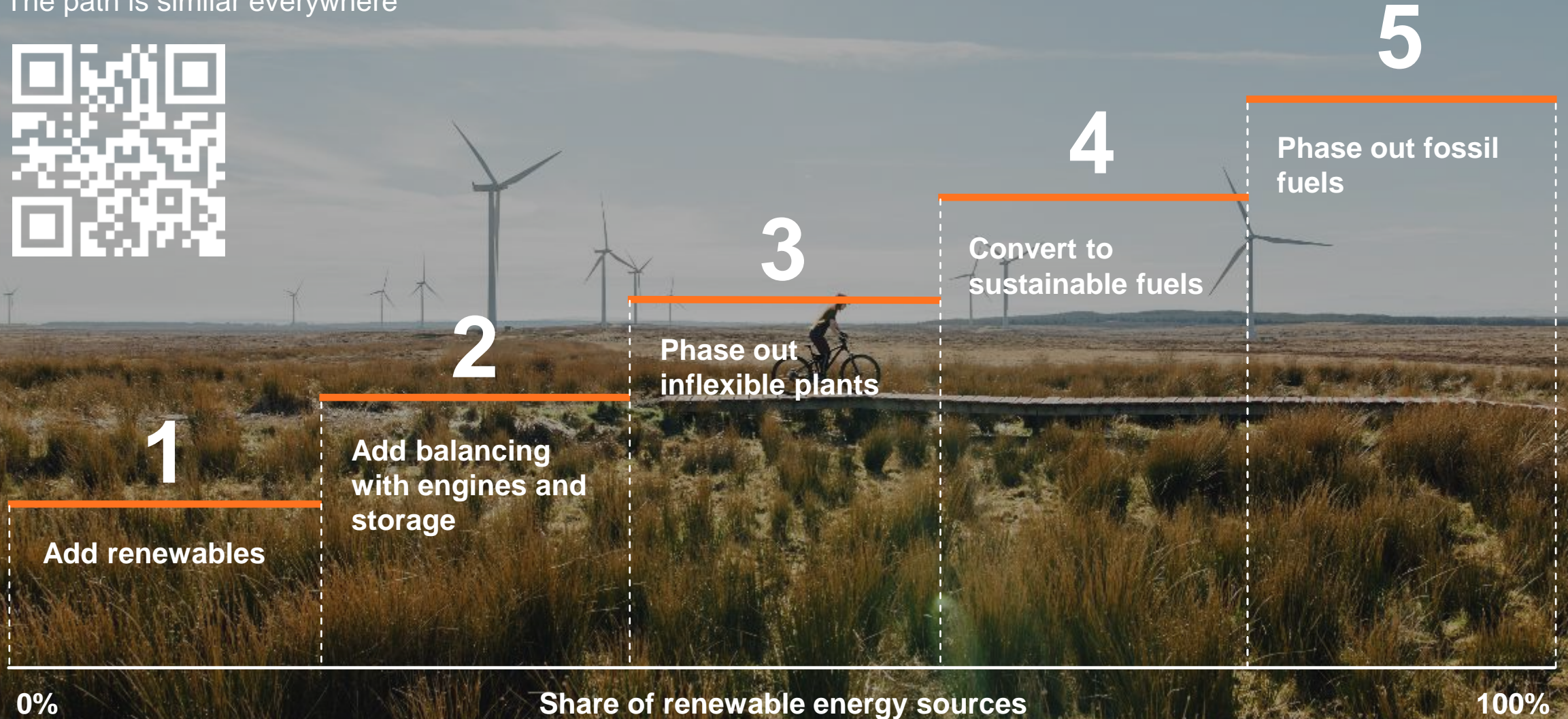
Sushil Purohit, President Wärtsilä Energy and Executive Vice President Wärtsilä

In theory, decarbonisation seems like a very simple task

“Just replace fossil fuels with renewable energy.”

Our power system modelling demonstrates the optimal path towards 100% renewable energy systems

The path is similar everywhere



**STH – a world-leading centre for research, innovation,
engineering and manufacturing**



Whichever fuel becomes the leading choice of the future, we will ensure our engines run efficiently and reliably

By working in collaboration with our partners around the world we can reduce emissions, improve reliability, decrease costs and boost efficiency

Capwatt (Maia) - Portugal



Testing of green hydrogen and natural gas blend fuel. Testing blends of up to 10 vol.% green hydrogen. This will be one of the first cases where hydrogen is used to lessen the carbon footprint of an existing gas fuelled Wärtsilä power plant.

Burns & McDonnell, WEC Energy Group, EPRI and Wärtsilä - USA



Demonstration project will test blends of hydrogen and natural gas to be used in a Wärtsilä engine at a plant in Michigan. With a goal of achieving net zero carbon emissions by 2050.

H-Flex-E by City of Vaasa, Vaasan Sähkö, EPV Energia and Wärtsilä - Finland



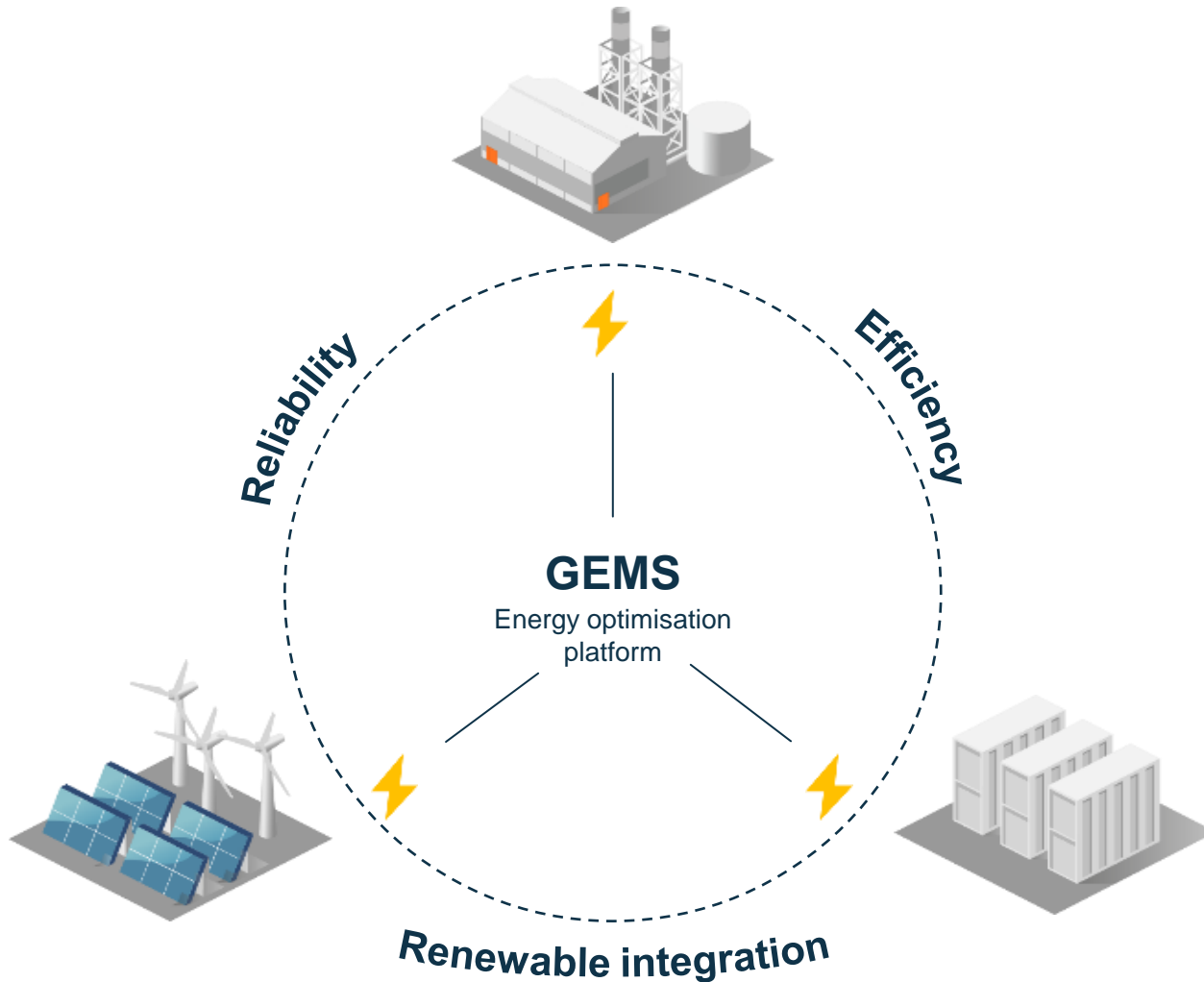
A new wind power-to-hydrogen-to-electricity project. The goal is to build a Power-to-X-to-Power system in Vaasa aimed at utilising emissions-free hydrogen in power generation, industry and traffic applications.

Soletair Direct air capture unit at STH - Finland




Enabling cleaner air for Wärtsilä employees by returning indoor carbon dioxide levels to those of prehistory. The captured CO₂ can be integrated into an electrolyser and synthesis unit, where it can be converted to fuels or other hydrocarbons.

Wärtsilä Decarbonisation Services is a holistic long-term solution to decarbonising your power generation



- **Modelling for optimisation**
- **Decarbonisation roadmap**
- **Optimising the assets and implementing the roadmap**
- **Outcome based partnership**



A transition to renewable energy systems is about making an investment in our future – We believe in the power of collaboration to grasp this opportunity



WÄRTSILÄ