

Cruise toward a sustainable future



OUR CUTTING-EDGE SOLUTIONS WILL HELP **FUTURE-PROOF** YOUR VESSELS

Over the last 25 years the cruise industry has changed as it has become accessible to a more diverse passenger set. This increased interest has also brought increased attention and heightened expectations. Today cruise ship owners must focus on the next 25 years, as mounting concerns about the impact of the shipping industry's impact on marine environments drive both increased regulations and consumer pressure for the cruise industry to adapt.

Sustainability initiatives are leading the way in defining the future of the cruise industry. The market predicts that climate concerns and sustainability demands will only increase in the years to come. Becoming environmentally friendly has been identified by the cruise lines as the most relevant way for the industry to continue to succeed and grow.

One of the primary challenges cruise owners face in increasing sustainability is selecting the right fuel and the right technology for today – and tomorrow. With vessel lifespans of approximately 35 to 40 years, it can be difficult to predict the total lifecycle investment and return for the different possible scenarios.

Improving Flexibility

Fuel flexibility is the best way for ship owners to invest strategically in sustainable solutions and technology and adapt cruise vessels to comply with the IMO 2030 and 2050 targets.

By using LNG, a cruise vessel is able to dramatically improve on air quality and reduce overall Greenhouse Gas (GHG) emissions compared with other liquid fuels available today. Furthermore, this option forms an excellent base for transitioning towards a wide range of more environmentally friendly fuels of the future. →

→ There are a number of gas and liquid fuel options in the development pipeline that are being tested successfully on Wärtsilä engines. At the moment there is no clear winner as production and bunkering infrastructure will play an important role in determining the outcome. Furthermore, it could well be that there will be a long transition period with a multitude of fuels in the market and fluctuating prices varying on geographical locations and other market dynamics. Therefore, Wärtsilä recommends a flexible fuel strategy based on the options available today and with insight into future solutions. This approach mitigates risk and reduces environmental impact in the short and long term.

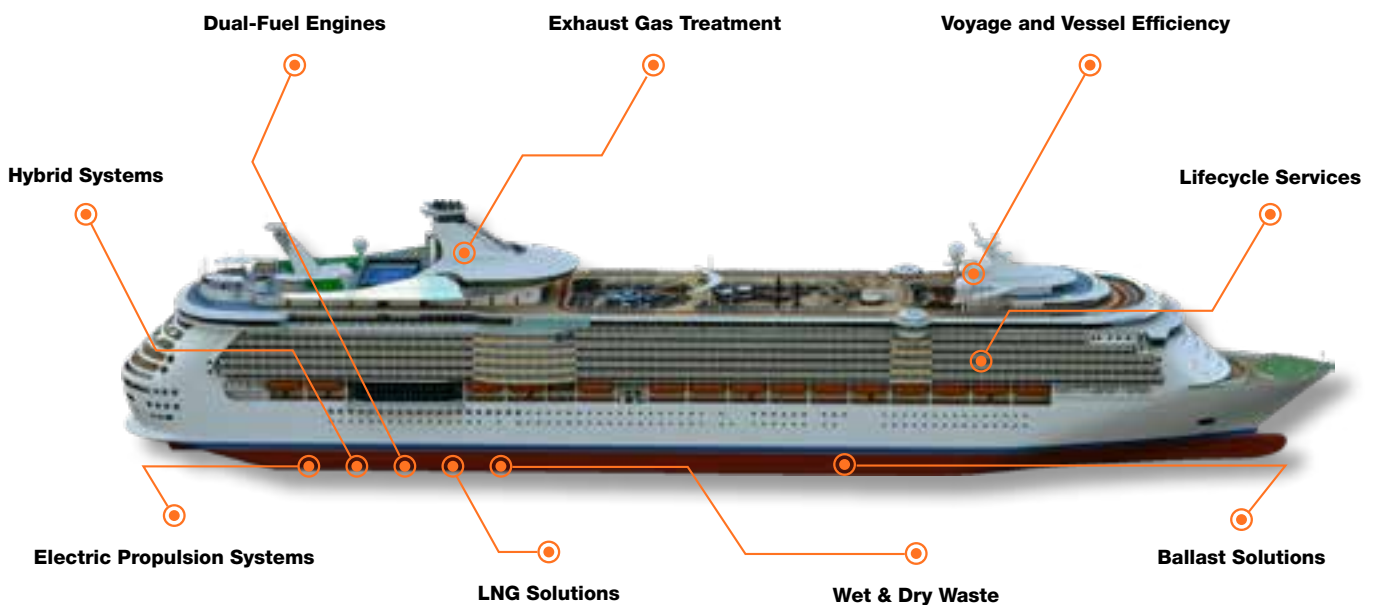
ADDITIONAL POWER SOURCES

There are a number of solutions being investigated in the market today – such as energy from solar, wind and fuel cells. However, two of the most feasible solutions available in the market at the moment are:

1. Hybrid/battery systems: By integrating hybrid battery storage systems with Wärtsilä engines or using propulsion and shaft generators, GHG emissions can be reduced by 5-12%.

2. Cold Ironing: In port, emissions can be all but removed with cold ironing. This process also reduces the amount of fuel needed as well as the engine running hours, producing savings in fuel and maintenance costs.

INTEGRATED SOLUTIONS TO REDUCE ENVIRONMENTAL IMPACT



Reducing Emissions

EXHAUST GAS CLEANING SYSTEM

With IMO 2020 regulations now in force, one solution to meet compliance is to integrate an exhaust gas cleaning system in a new build or existing vessel. With years of experience in this area for marine applications, we offer a wide range of products that are fully certified and offer legislative compliance.

Cruise ship owners also have options to improve sustainability beyond exhaust emissions. It's important to remember there isn't a one-size-fits-all solution to making the cruise industry environment-friendly.



Managing Waste

→ WATER & WASTE SOLUTIONS

Thanks to membrane filtration, effluent quality after Wärtsilä's Waste Water System treatment is higher than required by international IMO MARPOL regulations and many local regulations, helping future-proof vessels. This process will become more important as the number of environmentally sensitive areas increase and regulations become tougher.

- Using digital twin technology/mathematical modelling and route planning, Wärtsilä's Smart Water & Waste System reduces energy consumption, operational costs and secures compliance with regulations. It helps to minimise manual work and reduce human error.
- Wärtsilä's fresh water solutions recover waste heat and reduce fresh water bunkering requirements.

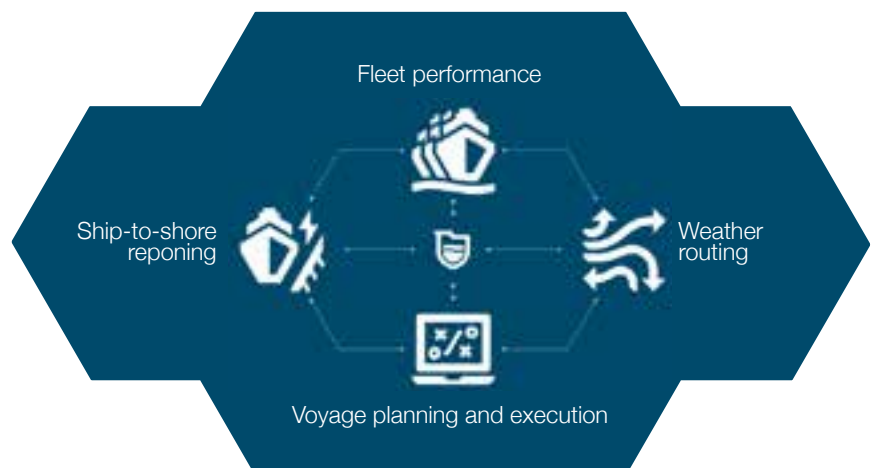


Wärtsilä can provide a fully integrated waste treatment plant where reliable and efficient use of the system is safeguarded. With this integrated system, we can exceed all maritime requirements for dry waste and wet waste worldwide.

Vessel and Voyage Efficiency

With an increasingly complicated onboard environment, digital solutions and wider connectivity are becoming more effective and central to improving energy efficiency and creating a competitive advantage. This means not only considering how to best sail and maintain your assets, but also how to meet service power needs while keeping customers safe and happy. Wärtsilä solutions give you a high level of transparency through reliable data and predictive insights – enabling you to optimise energy efficiency at the fleet, voyage and vessel levels. These insights deliver improved performance, cost savings, and a reduction in emissions.

Our solutions use predictive analytics to allow for more proactive operations. We combine data collected from your vessels with your near-future plans and third-party information like weather forecasting data. The end result is insight into current and potential incidents and issues that need attention, increasing safety while improving efficiency.



Comprehensive Lifecycle Services

A major contributor to sustainability and reduced emissions is efficiency. Having the right solution is one part of the puzzle. Making sure everything is performing to its optimum is another. Our comprehensive range of services includes everything from OEM parts supply, product support comprising field services, technical advice, performance optimisation, environmental solutions and crew training, to full lifecycle solutions.

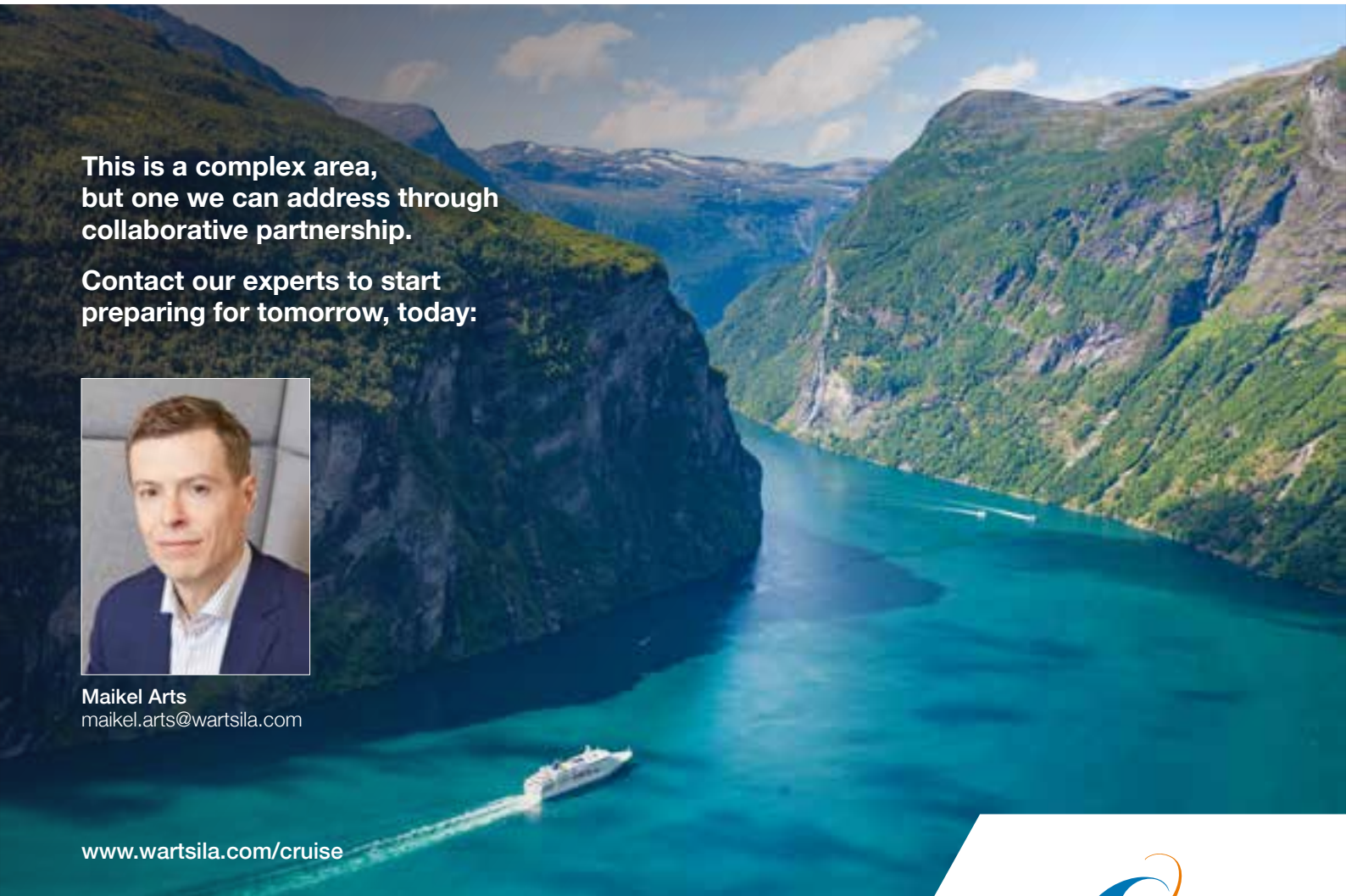
Wärtsilä's Lifecycle Solutions are a comprehensive offering of high-tech solutions and services to maintain, improve and optimise your fleet's profitability and environmental compliance throughout the total



**SAVINGS ON
FUEL AT A FLEET-
WIDE LEVEL CAN
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ANNUALLY**

lifecycle. We'll even go so far as to guarantee your asset's performance, truly sharing the risk with you. For example, on a multi-billion euro annual fuel bill, savings of EUR 14 million annually are possible – while at the same time reducing total emissions.

Building a strategy based on customer needs and taking the whole vessel into account is critical to developing the right solution for harmonious operation, optimising performance and building a sustainable future – for both the industry and the environment.



**This is a complex area,
but one we can address through
collaborative partnership.**

**Contact our experts to start
preparing for tomorrow, today:**



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