

# Cruise Ship Solutions by Wärtsilä

SAFER

CLEANER

BETTER  
FOR YOU

# Connecting the dots to serve you better



Understanding the needs of cruise operators is central to Wärtsilä's approach in providing solutions that achieve outstanding levels of efficiency, safety, reliability and environmental compliance. At the same time, passenger comfort is always at the top of our agenda when preparing a customised offering to cruise professionals. We call this our 'connecting the dots' policy; in other words, your needs become our priority. This is what has made Wärtsilä an industry leader.

## A MORE COMPREHENSIVE OFFERING

No other company in the world can match Wärtsilä's extensive portfolio of products, systems and solutions. We serve the cruise ship sector with complete power and propulsion systems, electrical and automation technology, a range of environmental solutions and much more, all of which are tailored to suit your operational needs. Furthermore, we are able to fully integrate these products and systems to ensure greater efficiency and lower operating costs. We also minimise vibration and noise for better onboard comfort. Our broad offering is supported by years of experience and extensive in-house know-how.

## YOUR MOST VALUED BUSINESS PARTNER

By working closely with our customers and listening carefully to their needs, Wärtsilä strives to be the most valued business partner. We can provide a 'one-stop-shopping' service through our unrivalled portfolio, which means that we can be involved from the very early stages of the newbuild project. With a single, reliable supplier of integrated systems and solutions, not only are procurement procedures eased, but the entire construction time and costs can also be reduced. And we go still further; since Wärtsilä has the most complete global service network in the industry, we can be your business partner supporting you throughout the entire lifecycle of the ship.

## WÄRTSILÄ – EASING THE WAY TO EFFICIENCY

One in every three vessels sailing the seven seas has a Wärtsilä solution onboard. This amazing fact is indicative

of the broad scope of our offering and the depth of our experience. By having the capabilities and competences to provide a completely integrated range of onboard solutions, we can ease your way to efficiency and lower your costs, from project planning to daily operations.

## THE LATEST IN ELECTRICAL AND AUTOMATION SYSTEMS

### INTEGRATED VESSEL CONTROL SYSTEMS

The highly successful Wärtsilä NACOS Platinum solution represents a complete series of next-generation navigation, automation and control systems, including dynamic positioning. It is used by more than 70 % of the world's cruise ships. The introduction of GMDSS necessitates rapid and efficient aid to ships in distress, for which our range of communication products are ideally suited.

### POWER ELECTRIC SYSTEMS

Wärtsilä's well proven and reliable diesel-electric propulsion systems with converter technology increase efficiency for lower operational costs. Systems and consumers need reliable power distribution. We provide low and medium voltage systems and UPS systems for uninterrupted power supply, and we provide a configuration distribution system adapted to the needs of the customer.

## SAFETY, SECURITY & ENTERTAINMENT

Our competences include state-of-the-art systems to

enhance passenger comfort. We provide multi-purpose studio-based broadcast centres, local high-end entertainment systems, architectural and entertainment lighting systems.

Safety and security has become a major concern for every ship operator. We understand precisely the requirements concerning crew, passenger and goods, to ease compliance with all regulations.

## SYSTEM INTEGRATION

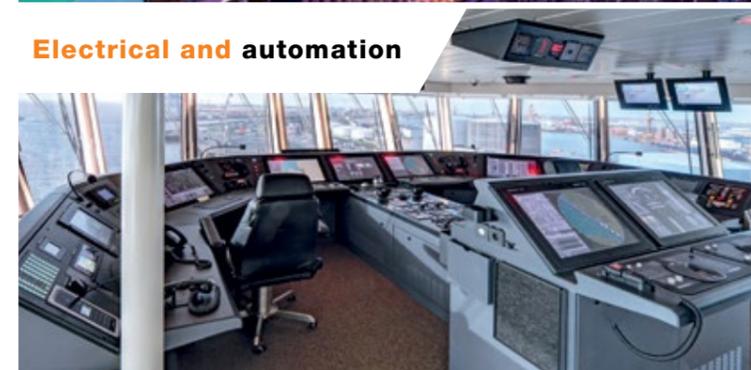
Under the motto "from bridge to propeller" we provide full integration of all various electric and electronic systems, typically in close partnership with the shipyard. The level of system integration varies from a package delivery of products, including product related engineering, to complete system integration (the turnkey solution).

## Solution examples

### Entertainment systems



### Electrical and automation



## CUSTOMER BENEFITS

### As a single-source supplier, we offer the following benefits:

- Single responsibility means just one point of contact – Wärtsilä
- Reduced risk of incompatibilities
- Time savings in design and engineering
- Simpler procurement procedures with lower supply and timing risks
- Fewer project participants means faster decision making and less coordination difficulties
- Allows shipyards to focus on their core competences
- Classification handling for complete onboard systems
- Production scheduling is streamlined

# Assured environmental compliance

Cruise operations frequently involve visiting harbours close to heavily populated areas, and sailing in pristine or endangered waters that are protected by stringent environmental regulations. In order to comply, the abatement of exhaust emissions and visible smoke is essential.



## Environmental demands

Wärtsilä has always been ahead of the game in meeting these demands. Our dual-fuel engines can achieve IMO Tier III compliance in gas fuel mode without the need for secondary exhaust cleaning measures, and Tier II compliance is standard for our diesel engines. We offer a choice of SOx scrubber systems, and catalyst systems for removing NOx emissions to allow diesel engines to achieve Tier III compliance. Wärtsilä also now offers a series of modular high voltage shore connection systems (HVSC) to provide in-harbour electrical power without the use of auxiliary engines.

Wärtsilä's fresh water generator systems convert seawater to high quality drinking water. We also provide IMO certified wastewater management

systems to clean and safely discharge effluent into the sea.

Ballast water management systems (BWMS) will soon be obligatory in order to comply with the IMO's ballast water treaty. Wärtsilä offers state-of-the-art systems to suit all operational profiles.

Even our broad assortment of advanced seal and bearing solutions promote environmental sustainability. For example, our water lubrication and double barrier oil sealing systems adhere to the US EPA's 2013 VGP (Vessel General Permit).

These are just a sampling of our extensive environmental offering. By understanding the regulatory requirements, and through eliminating or reducing polluting discharges

and emissions from our customers' processes, we ensure that they can operate without restrictions in sensitive areas around the world.

## THE LEADER IN GAS AGE TECHNOLOGIES

Wärtsilä has led the way in developing and fine tuning technologies that make LNG a viable, safe, and cost-effective marine fuel. Our first dual-fuel engines capable of operating on either gas or conventional diesel fuels were introduced already in the 1990s, and our first conversion project changing an existing large vessel from diesel to LNG fuel, successfully took place in 2011.

However, the widespread acceptance of the use of LNG fuel for ships has come about because the technology development didn't end with the dual fuel engine. To be truly viable, efficient onboard storage and supply systems are essential and here again Wärtsilä has taken a leading role. The company's patented LNGPac system, a complete system for LNG fuel handling, including the bunkering station, the storage tank and all essential control and monitoring systems, was introduced in 2010. This unique innovation has proven to be a valuable enabler for the switch to gas in marine applications.

Global shipping, including the cruise industry, is entering the gas age. The benefits are both economic and environmental. With LNG as fuel, SOx emissions are eliminated entirely, NOx emissions are 85 % lower than with diesel, and CO<sub>2</sub> emissions are reduced by 30 %. Wärtsilä is involved at all stages of the gas value chain, and we can help and advise you in deciding whether or not LNG should be part of your fleet's future.

"Queen Mary II" meets strict environmental regulations with Wärtsilä Waste Water Treatment System (MBR).



Exhaust gas cleaning meets the highest standard of compliance, and Wärtsilä offers the technology choice to suite ship type and operational profile.



LNGPac on the Viking Grace.



# Attention to detail

Successful cruise operations depend on everything being right, both above and below decks. Wärtsilä's close attention to detail leads to greater operational reliability, safety and efficiency, and of course, peace of mind for the operator.

Here are a few examples of what we mean:



Biggest cruise ship in the world is powered with six Wärtsilä engines



Oasis of the seas engine room

## OPERATIONAL SAFETY

By ensuring that the condition of your machinery is known, unexpected failures can be prevented. Optimised Maintenance Planning based on equipment data, operational reports, and periodical inspections make it possible to address emerging issues before they escalate and compromise operations.

## ENSURED EFFICIENCY

Wärtsilä's Engine Efficiency Monitoring service helps minimise fuel consumption and optimise operational practices. This ensures ideal running conditions and supports decisions relating to overhauls.

## MAXIMISED UPTIME

Dynamic Maintenance Planning is a Wärtsilä system for continuous monitoring, measuring, and analysis of the equipment condition. This allows for maintenance to be accurately planned according to actual need, rather than on a traditional hour-based schedule. This extends and coordinates maintenance intervals, while keeping the installation running at optimum performance.

## DEDICATED SUPPORT

Our lifecycle solutions include a dedicated contact person who coordinates the maintenance work. Spare parts logistics and the global coordination of competent service experts and crews is part of the service. Through our service and workshop network, we can provide access to 4,500 field service professionals in 160 locations in 70 countries. Our support also includes analyses and audits, obsolescence management, latest design and upgrades information, improvement suggestions, as well as reports for compliance with classification society requirements.



## CUSTOMER BENEFITS

### The Wärtsilä advantage in brief

- The industry's most comprehensive portfolio of products, systems and solutions – we are a true single-source provider
- Lifecycle support – from initial design to project management to daily operational needs
- Leading technologies in engines and all power and propulsion equipment, electrical & automation, navigational controls, environmental solutions and new gas-age fuel systems
- A continual focus on fuel and operational efficiency to lower operating costs and ensure compliance with environmental legislation
- Dedicated maintenance planning and coordination
- Unmatched experience from a company with a history dating back more than 180 years
- Global service support from the most complete service and workshop network in the industry

At Wärtsilä we strive constantly to do what is best for you. This includes optimising the lifecycle value of your installations by offering precisely what you need; a promise we can deliver on since we provide the marine industry's most complete portfolio of products, integrated solutions and global services.

By prioritising operational efficiency, environmental excellence, fuel flexibility and 24/7 support, we work with you to find your shorter route to robust growth, greater profitability and regulatory compliance. This is why today, every third vessel in the world has a Wärtsilä solution onboard.

**[www.wartsila.com](http://www.wartsila.com)**