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International Maritime Review



**Wanted:
Sustainable Seas**

**Floating LNG terminal
in Inkoo will provide gas
to Finland and Estonia**

**New technology hub
in Vaasa will develop
sustainable fuels**

Big Party

**As Carnival Cruise Line hits 50,
Turku shipyard has come up with
the perfect present – delivering
the Carnival Celebration right on time**



BUSINESS RESIDENTIAL SERVICES

**BUSINESS LEVEL APARTMENT HOTEL IN CENTRE HELSINKI
FROM 51 EUROS/NIGHT**



BLUE OCEAN STRATEGY REQUIRES GREEN CORE

Marine industry is turning more low-carbon and future-proof by the minute – at least in Finland. The Finnish marine industry is well-known for its green solutions to reduce the emissions of all things marine, but lately, the sustainability angle has become, well, a lot more than just an angle. Sustainability is in the core of the entire industry.

The sustainability push is spearheaded, at least in part, by the Finnish Marine Industries' ResponSea initiative which focuses on reducing the environmental impact of shipping and shipbuilding, continuous development of the industry's companies as fair employers, monitoring the sustainability of the delivery chain and enhancing circular economy and lifecycle efficiency in all actions.

ResponSea encourages the companies of a rather heterogeneous industry to define their own commitments for accomplishing the goals of sustainable development – and, at the same time, to develop the companies' green operations. In addition, the program monitors the industry's sustainability progress.

Major industry players are certainly doing their share in the green transition. In June, Wärtsilä Corporation opened its new technology centre, the Sustainable Technology Hub, (STH) in Vaasa, Finland. The new €250 million centre contributes to efforts to advance the global decarbonisation of marine and energy by fostering innovation, collaboration, and the development of green technologies using sustainable fuels and digital technologies.

Håkan Agnevall, President and CEO of Wärtsilä, remarks that by taking advantage of innovative technologies that already exist today, we can speed up the development of future-proof engines capable of running on sustainable fuels. Wärtsilä is eager to demonstrate that a carbon neutral future is achievable.

In fact, Wärtsilä already has engines operating on carbon neutral fuels. This year the company released its Wärtsilä 32 Methanol engine to the market, and in 2023 an ammonia concept will be ready. A hydrogen concept is expected to be available in 2025.

Another recent, green example comes courtesy of Steerprop who announced a major order in August. Steerprop will supply the complete propulsion package for a state-of-the-art Wind Installation Vessel (WIV) for Sembcorp Marine Ltd. Singapore-based Sembcorp is building the vessel for Maersk Supply Service of Denmark.

The order builds upon Steerprop's extensive track record in delivering fit-for-purpose solutions to the offshore renewables sector.

The company's scope includes six of Steerprop's ducted L-drive azimuth propulsors with an output power of 4,500 kW and two 900 kW Steerprop Tunnel Thrusters for dynamic positioning, manoeuvring, and transit operations.

Sustainable innovations are no longer niche nor marginal – let the green winds blow!

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Wärtsilä Corporation has opened its new technology centre in Vaasa, on the west coast of Finland. Named the Sustainable Technology Hub (STH), the new centre will concentrate its efforts to advance the global decarbonisation in the fields of marine and energy technologies.

30 Floating LNG terminal in Inkoo will provide gas to Finland and Estonia

In December 2022, a floating LNG terminal is expected to arrive at Inkoo Port on the southern coast of Finland. With a storage capacity of 150,900 cubic metres, the LNG terminal vessel 'Exemplar' will deliver liquefied natural gas (LNG) for the needs of Finnish and Estonian industries throughout the next ten years.

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Carnival Celebration is ready for the Big Party

AS CARNIVAL CRUISE LINE HITS 50,
TURKU SHIPYARD HAS COME UP
WITH THE PERFECT PRESENT
– DELIVERED RIGHT ON TIME

by: SAMI J. ANTEROINEN

photos: MEYER TURKU







Despite both geopolitical and pandemic turmoil, Carnival Celebration is steadily moving towards completion in Turku. The second of Carnival Cruise Line's new Liquefied Natural Gas (LNG)-powered ships, Carnival Celebration will begin service in early November with a 14-day transatlantic voyage from London (Southampton) to its homeport of Port Miami. Her arrival highlights the celebration of Carnival Cruise Line's 50th birthday quite well, indeed.

Carnival Celebration is the sister ship to Mardi Gras, which entered service last year as the first ship in North America to run on an LNG propulsion system. Carnival has pioneered the introduction of LNG fuel in the passenger cruise sector as part of the company's ongoing commitment to sustainability and emissions reduction.

For the Turku shipyard, however, Celebration is already the sixth LNG-powered vessel. Viking Grace and Megastar got the ball running, and Costa Smeralda, Costa



Toscana, Mardi Gras and Celebration represent the new generation of LNG cruise ships.

"Right now, LNG is the most sustainable, practical choice we have for fuel in these large cruise ships," says Project Director **Jaakko Leinonen**, who is charged with taking Celebration across the finish line as he did with Mardi Gras.

Carnival Cruise Line is expecting as many as 11 LNG-powered cruise ships to join the fleet by 2025, representing 20% of the company's capacity.

// Celebration is already the sixth LNG-powered vessel for the Turku shipyard.

NO SHORTAGE OF CHALLENGES

Leinonen says that some of the challenges faced by the construction can probably be described as "biblical," as a global pandemic rages on and the winds of war keep

blowing. Nevertheless, Celebration has been able to clear all the hurdles.

"Over five years ago, when the contract for Celebration was made, we wrote down the timeline for production and we have been able to stick with it, even though the headwinds have been considerable at times." Celebration is slated for delivery in early November 2022, with a sea voyage to Southampton to kick off four days later.

"Already in mid-October, we're getting around 300 members of the ship's



crew onboard as they start learning the ropes.” The total number of the crew is around 2,000.

ACING THE SEA TRIALS

Interviewed in late September, Leinonen is relieved that inspections are already taking

“It’s the final stretch of a long, long journey.”

Looking back, Leinonen is especially proud of the sea trials which commenced on the morning of 5th September, exactly as planned years before. To say that the vessel proved sea-worthy would be a vast understatement:

“We concluded the sea trials in just eight days, which is a new record for us. That made us feel really good that all our hard work is paying off,” says Leinonen, a 20-year industry veteran.

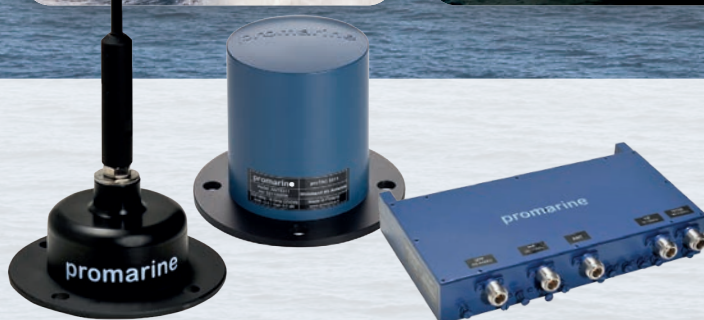
**// We concluded
the sea trials
in just eight days.**

MAKE THE PROCESS MORE STRATEGIC

A big part of that hard work had to do with thinking ahead. Facing potential availability issues, the shipyard got in front of

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the problem and set up a special forum in early 2021 to make sure there are no bottlenecks in production. Logistics was the key here:

“The forum found out, for example, what components and materials were missing and discussed ways to replace them. We worked as a team to find solutions that carried the project forward, without delays.”

EXCEL-CLASS GETS GOING

Carnival Celebration, Mardi Gras and Carnival Jubilee, which is also under construction and set to enter service next year, are part of the cruise line's new Excel-class. Each Excel ship includes a three-deck atrium and newly designed suites and

staterooms – and the award-winning BOLT roller coaster. BOLT is an industry-first in-ship rollercoaster that debuted on Mardi Gras, letting the cruise patron do the driving and control the speed of the ride with a top speed of 64km/h.

 **We worked as a team
to find solutions that
carried the project forward,
without delays.**

According to Leinonen, “the rollercoaster on the waves” features design and build that was certainly demanding enough – BOLT has to be able to withstand fierce storms, and to be, in essence, hurricane-proof.

Having led the construction of both Celebration and Mardi Gras, Leinonen knows that the two vessels are pretty similar, with few notable differences – such as the restaurant concepts.

“Celebration is also slightly bigger, with more cabins, but the technology in use is the same.”

RETAIL REACH

Celebration will be home to nine retail collections, the most expansive selection across the fleet. With something for every type of cruiser – and shopper – the retail offerings will include new designs such as the special Miami-inspired line, 305 Deco Celebration. The line pays homage to the city where Carnival was founded 50 years ago – so get ready for all the pastels, tropical colors and vibes of Miami with beach totes, drink coasters, bucket hats, towels...

Celebration's retail offerings will be spread throughout the ship's six zones: The Gateway, 820 Biscayne, Celebration Central, The Ultimate Playground, Summer Landing and Lido.

While Celebration heads out to, well, celebrate, the crew at Turku shipyard will put their champagne glasses down and get back to work. After Carnival Celebration sails away, the attention turns Royal Caribbean International's Icon of The Seas (2023 delivery) and the TUI Cruises' Mein Schiff 7 (2024 delivery). ■

Weather the Storm

Meyer Turku has been able to cope in the midst of a protracted pandemic, also financially. The company's turnover for 2021 was EUR 1.08 billion – somewhat higher than in the previous year, but still showing a loss of EUR 17.0 million.

CEO Tim Meyer comments that exceptional times have lasted longer than the shipyard expected.

“The global effects of the Covid-19 pandemic, such as labor and material mobility, affected our operations as well. However, despite significant challenges, we were able to keep our production and processes running.”

In the spring of 2021, the company also launched a major transformation program in Turku and Papenburg to increase its cost efficiency and to ensure a sustainable profitability level.

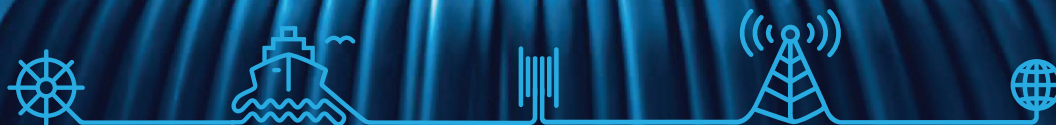
Meyer Turku is confident that its customers see growth in the market after the pandemic. Furthermore, the shipyard's order books extend to 2026 which offers great continuity.

The direction of the shipyard is decidedly green: Tim Meyer notes that today, the surrounding society, customers and ship passengers require proper action to enhance responsibility.

“Our focus will increasingly shift to sustainable shipbuilding,” he says. ■

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Wanted: Sustainable Seas

**BUREAU VERITAS IS SUPPORTING
MARINE INDUSTRY PLAYERS TO FULLY
EMBRACE THE GREEN TRANSITION**

by: SAMI J. ANTEROINEN

photo: PEXELS

**// In a sense,
sustainability
is a part of
everything we do.**

The biggest challenge facing the marine industry right now is the quest for sustainability. Many operators are already taking important steps towards achieving net carbon neutrality by 2050, implementing for example supply chain sustainability programs and waste-to-energy initiatives and pursuing alternative fuels.

Andreas Ullrich, Global Market Leader, Passenger Ships & Ferries, for Bureau Veritas says that classification societies are very keen on supporting the green transition.

"In a sense, sustainability is a part of everything we do," he says, adding that sustainability concerns must be considered

over the entire lifecycle of every asset, from concept to decommissioning, recycling, and beyond. A more holistic approach is needed to shape a better, more sustainable, maritime world.

As a classification society, Bureau Veritas Marine & Offshore works with industry players across the maritime indus-

try, from offshore operators to ship owners and port authorities. According to Andreas Ullrich, the company is committed to reducing marine industry's environmental impact, while supporting stakeholders through their sustainability journey.

"We help clients comply with environmental regulations, implement green

solutions onboard, measure decarbonization progress, and more,” he lists.

REINVENTING FUELS

A key part of the new “green push” is the emergence of more sustainable fuels. Bureau Veritas has developed industry-first rules for ammonia as fuel, and new rules for methanol and wind propulsion systems, with rules for hydrogen to follow.

“Our rules for methanol came out in July 2022, and we’re presently working on hydrogen rules,” confirms Ullrich.

Janne Paananen, Marine Chief Executive, Finland and Baltic States, for Bureau Veritas, points out that composing rules for various up-and-coming fuels is a major priority for the company.

“We want to support the development of sustainable fuels and there’s certainly a lot of exciting innovation in the field. We are committed to contributing, in a big way, to the ongoing green transition in the marine industries,” says Paananen.

BEYOND LNG

Bureau Veritas is already playing a key role in the development of LNG as fuel for large cruise ships, with classification of vessels under construction. The company is also providing regulatory expertise and design assessment for the installation of Solid Oxide Fuel Cell technology as a demonstrator onboard the MSC World Europa, a low-emission cruise ship to be delivered in October 2022.

“MSC World Europe is an exciting opportunity to test new technology. We are also working to support several upcoming new builds with modified designs,” says Andreas Ullrich.

Looking even further forward, Bureau Veritas is supporting the development of wind propulsion technologies, for example an R&D initiative by Chantiers de l’Atlantique named Ecorizon.

“That involves a new sail ship design with fixed sails and we’re proud to be a partner in such an ambitious venture,”

says Ullrich, who believes that a “renaissance for sails ships” may well be in the cards in the coming years and decades.

EYE ON SHORE POWER

In addition to boosting sustainability upon the waves, there’s work to be done on dry land, too. The European Commission’s Fit for 55 program – intended to reduce the EU’s total greenhouse gas emissions by 55% – stipulates that by 2030 all container and passenger ships must connect to shore power for port calls of over two hours.

“In order to support this transition, we are providing certification services for the conversion of vessels to electric shore power,” says Ullrich, while noting that it’s important to secure green energy at ports, and make sure that availability does not become an issue.

“This can become difficult if you have to service, say, three cruise ships at the same time.”

WELL-TO-WAKE EMISSIONS

“Well-to-wake” refers to the entire process from fuel production, and delivery to use onboard ships, and all emissions produced therein.

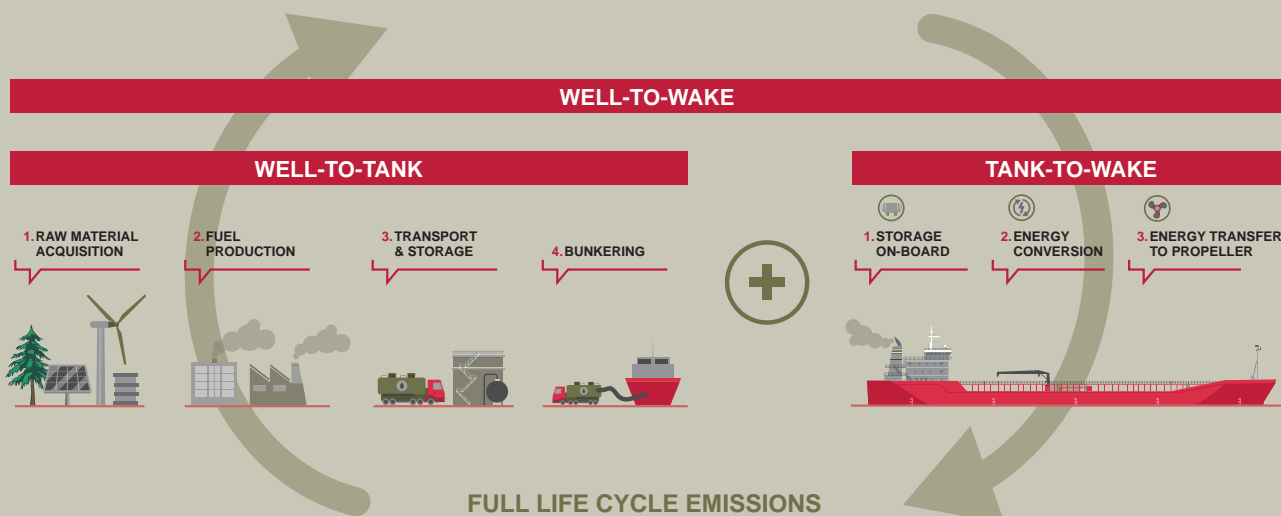


photo: BUREAU VERITAS

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photo: BUREAU VERITAS



Andreas Ullrich, Global Market Leader, Passenger Ships & Ferries, for Bureau Veritas says that they help clients comply with environmental regulations, implement green solutions onboard, measure decarbonization progress, and more.

HELP THE INDUSTRY BOUNCE BACK

While the sustainability focus is clearly here to stay, the marine industry has been also dealing with ramifications of the COVID-19 pandemic. Bureau Veritas came up with a specific 'Restart your business' program for the cruise sector in response to the global pandemic, with an aim to facilitate operators' return to cruising while protecting passengers and crew with strict safety protocols.

"The service can be used in conjunction with Bureau Veritas' Safeguard label to provide reassurance to passengers," explains Ullrich.

Carnival, the world's largest leisure travel company, is one of many operators that have already taken advantage of this service, entrusting Bureau Veritas with health and safety services.

SAFETY COMES FIRST – STILL

According to Ullrich, safety of passengers and crew is paramount in all marine-related activity, in any case.

"We always have safety in mind, no matter what" he says.

Also cyber security is a rising concern – for example, how to make sure that ships don't get hit by modern-day data pirates. With the emergence of autonomous shipping, there's also the risk of ships being hijacked remotely.

"We have composed rules also for autonomous shipping and are heavily engaged to making sure it's effective and secure."

KEEP ON LEARNING

From hi-tech fuels to robot ships – a lot of the things that classification societies are dealing with sound a bit like science fiction. But how does one keep up to date with all these developments? – Ullrich says that the experts at Bureau Veritas can't know "everything from everything," but the company prides itself in its knowledge of the latest solutions and technologies – and is always eager to see what's lurking around the corner.

"We are improving and modifying our in-house training to better fit the changing times, and our people want to keep learning more and more," Ullrich says.

RECRUIT THE BEST TALENT

The same ideology is reflected in the company's recruiting: Bureau Veritas is on the look-out for curious minds that have a good handle on technology and who are keen on expanding their expertise with the organization.

Janne Paananen says that newcomers receive tailor-made training program that will help them to hit the ground running.

"After the initial training program, our surveyors go through continuous training all through their careers," he says.

Ullrich and Paananen are convinced that when it comes to solving the marine challenges of the future, you need future-proof workforce, too.

"Listening to the younger generations is one key to success in this regard," says Ullrich. ■

photo: BUREAU VERITAS



Janne Paananen, Marine Chief Executive, Finland and Baltic States, for Bureau Veritas says that they want to support the development of sustainable fuels and there's certainly a lot of exciting innovation in the field.

BUREAU VERITAS SERVICES FOR THE MARINE AND OFFSHORE INDUSTRY:

- Development and implementation of rules for new fuels
- Sustainable origins of alternative fuels
- LNG expertise and project support
- Electrification of sea-going vessels
- Development of infrastructure for new fuels
- Onshore & offshore wind lifecycle solutions
- Engineering services for sustainability performance
- Green construction at shipyards
- Maritime pollution prevention
- Responsible fishing practices
- Safety of crew and passengers
- Onboard health, safety, and hygiene protocols

Adiabatix's New Product Increases Occupational Safety in Industrial Environments

Adiabatix, based in Vaasa, Finland, has created a product that drastically increases occupational safety in industrial environments. Used especially in the insulation of pipes in shipbuilding and in power plants, the brand-new Adi-SMART® reduces the surface temperature of the ADIBOX® insulation module it is integrated into. The product allows companies to meet regulations regarding safety in high-temperature operations.

Adiabatix is among the first companies in the world to develop easily-installable insulation that keeps surfaces safe-to-touch. The idea for the revolutionary design was sparked by employers' concerns about the well-being of staff working close to pipes that carry hot gases. Adi-SMART® lowers the surface temperature down to around + 60 degrees Celsius, making the insulation modules safe to touch without the sustenance of irreversible burn damage. Low surface temperatures also reduce the risk of fire in the work environment.

Adi-SMART® is a fully independent system that is not dependent on exter-

nal power sources. The system can be connected to a wireless network, allowing the temperature data it generates to be examined remotely. Adi-SMART® can also be integrated into existing insulation modules.

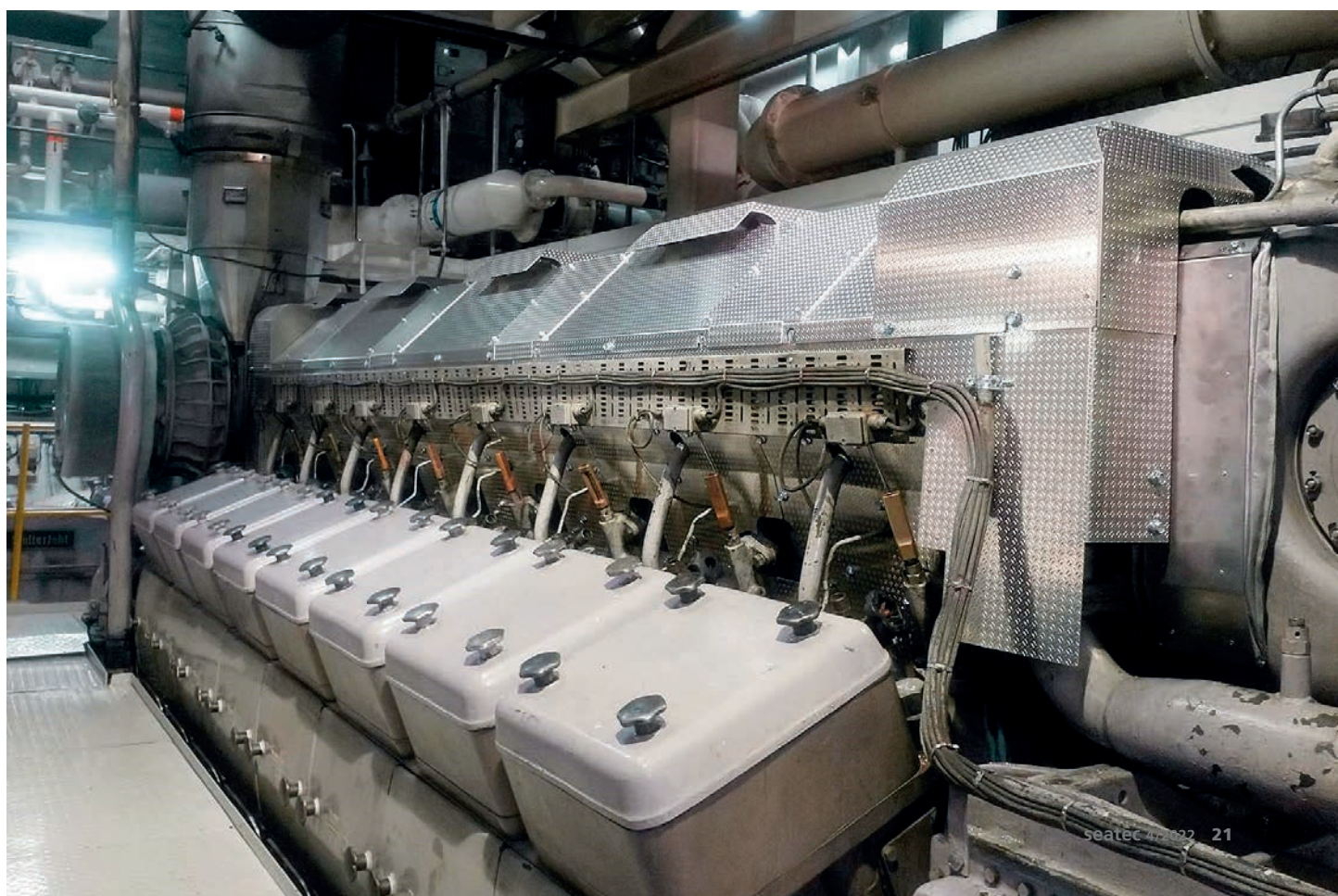
POSITIVE FEEDBACK FROM M/S ECKERÖ

Adiabatix has already received positive feedback on the product. M/S Eckerö operates in the Baltic Sea between Eckerö, Åland and Grisslehamn, Sweden. M/S Eckerö was the first to receive Adi-SMART® for testing. The testing has continued for six months so far. M/S Eckerö

has been pleased with the product and is eager to continue testing it.

Adiabatix is excited to be able to introduce an innovative new product to a traditional market. Adi-SMART® has been carefully designed to alleviate customers' concerns regarding occupational safety and meeting different requirements, all the while using the latest technology. Adi-SMART® is the appropriate next chapter to Adiabatix's advanced insulation solutions for demanding applications. A patent for the product is pending in several countries. ■

More information: www.adiabatix.fi



New technology hub in Vaasa will develop sustainable fuels

by: ARI MONONEN

photos: WÄRTSILÄ OYJ







Wärtsilä Corporation has opened its new technology centre in Vaasa, on the west coast of Finland. Named the Sustainable Technology Hub (STH), the new centre will concentrate its efforts to advance the global decarbonisation in the fields of marine and energy technologies.

Known as a world leader in innovative technologies for marine and energy solutions, Wärtsilä Corporation aims at researching and producing innovations in sustainable technology and services. Current emphasis is on the development of green technologies, particularly with regard to sustainable fuels and digital technologies.

The new STH technology centre – a world-leading centre for research, innovation, engineering and manufacturing – marks the start of a new era for Wärtsilä. The construction of the new centre was announced in 2018, with a total investment of around 250 M€.

The hub was officially inaugurated in the summer of 2022.

“All of Wärtsilä’s facilities in Vaasa are now concentrated on one site close to the Port of Vaasa in Vaskiluoto, right next to the power plant,” notes Mr. **Juha Kytölä**, Wärtsilä Corporation’s Director for R&D and Engineering.

“The STH hub consists of two parts. The office building has been in preliminary use since October 2021. This sum-

mer, the large-sized production and R&D facility was also opened.”

The hub comes complete with a modern fuel laboratory, multi-purpose engine-testing facilities, and largely automated production lines. The building has advanced energy recovery systems that enable self-sufficiency for heating.

ENVIRONMENTALLY-FRIENDLY ENGINE TECHNOLOGIES

According to Mr. Kytölä, the new technology centre equals the former Wärtsilä facilities in Vaasa in size. However, by concentrating the operations onto a single site, the new facility is more practical from the

logistical standpoint, while also speeding up everyday work and providing operational efficiency.

The centre will employ 1,500 people under one roof.

“In particular, the new STH hub will research and produce new kinds of engines and engine technologies. Approxi-

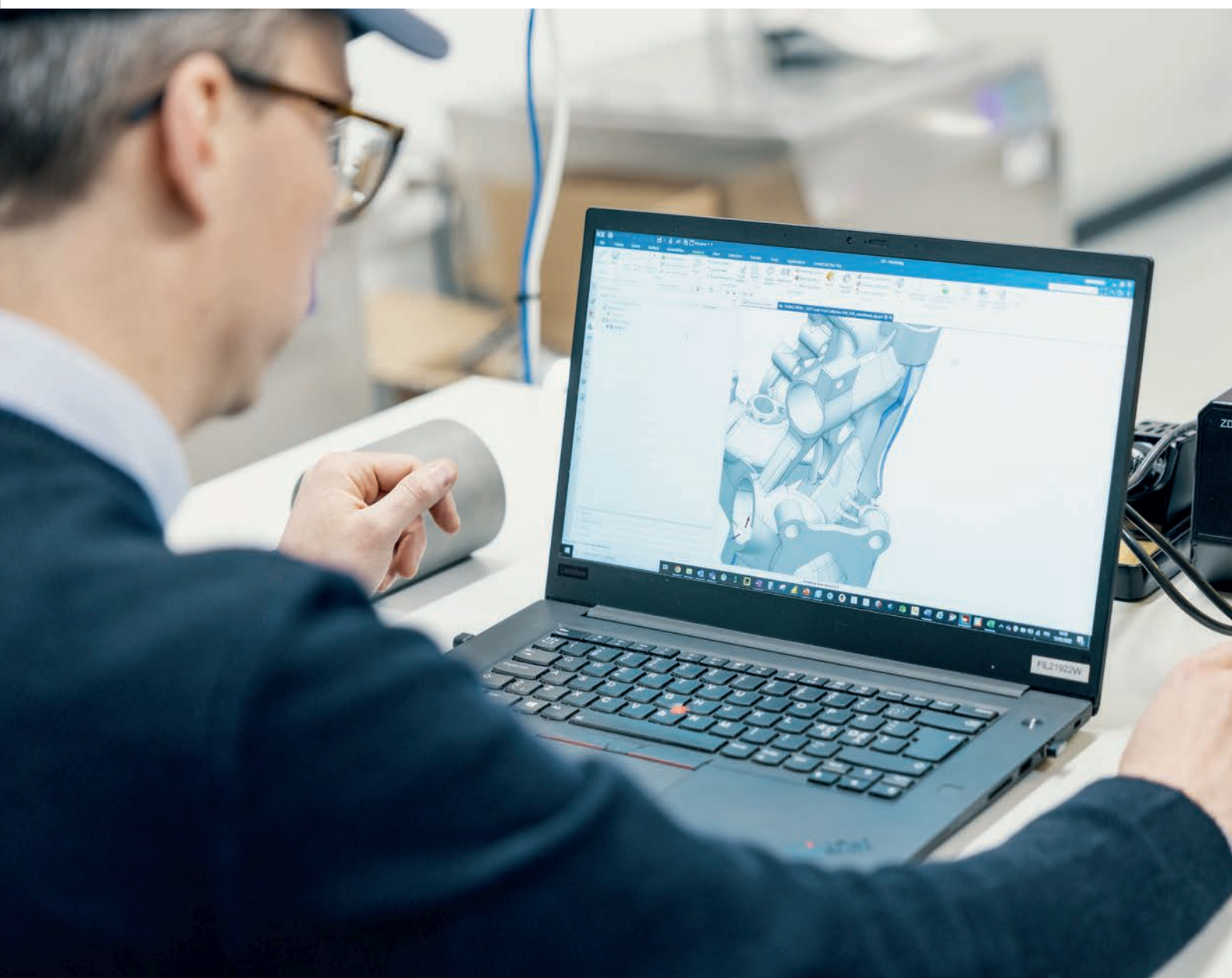
// The STH hub consists of two parts.

mately 50 percent of Wärtsilä’s engines will be utilised in power plants and another 50 percent onboard ships.”

“True to its name, the Sustainable Technology Hub will bring the focus of Wärtsilä’s operations to the domain of even more sustainable marine and power technologies,” Mr. Kytölä accentuates.

In recent times, Wärtsilä has already launched three new engine types. Two of them have become available in the course of 2022.

“These engines are able to utilise different types of fuels. Even in the future, we will strive to produce low-carbon or zero-emission engine products.”



"Engines as such are not problematic for the environment, whereas fossil engine fuels can be. The STH hub will specifically focus its R&D work on zero-carbon fuel types," Mr. Kytölä points out.

LOW-CARBON FUELS

Such new types of sustainable engine fuels will definitely be needed in the maritime industries.

"The way we see things is that while biogas and hydrogen fuels may soon be utilised in engines on a larger scale, the ship engines will require methanol and ethanol fuels. Already, there is a global demand for these kinds of alcohol-based engine fuels," Mr. Kytölä expects.

// The STH hub will specifically focus its R&D work on zero-carbon fuel types.

"Already, Wärtsilä has launched the W32 engine that operates on methanol fuel. These types of engines have already been sold to customers."

Furthermore, ammonium fuels will soon see use in marine engines.

"Since ammonium is totally carbon-free, ammonium fuels will not cause any

CO₂ emissions. We are the global leader in the production of these kinds of fuels," affirms Kytölä.

Within the year 2023, an ammonia concept from Wärtsilä will be ready, while a hydrogen concept is expected to be available in 2025.

NEW BATTERIES AND NAVIGATION SYSTEMS

For Wärtsilä Corporation, battery technology is also an important area of research. Wärtsilä is a supplier of battery-based energy storage systems.

"We purchase battery cells from various manufacturers and provide them with e.g. intelligent control systems and other



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innovations, so that the complete package will meet the customer's needs."

"We are producing, among other things, hybrid solutions for powering maritime vessels. Of course, batteries also have their uses in land-based power stations," Mr. Kytölä mentions.

The largest batteries can have the storage capacity of 500 MWh. In the case of battery business, Wärtsilä is particularly active in the United States.

"However, we will test our new maritime batteries at the new STH hub in Vaasa. What's more, the Wasaline ferry 'Aurora Botnia' operating between Vaasa and Umeå – one of the world's most energy efficient and environmentally sustainable passenger ferries – is being utilised as a floating testbed for Wärtsilä's future innovations, in cooperation with the ship-owners. The ship is equipped with Wärtsilä's most technologically advanced solutions and services," assures Kytölä.

"With the aid of new intelligent control and navigation systems, it will be possible to select shipping routes more accurately to take weather conditions into account, so that the ship may save fuel and sailing time. At the same time, environmental emissions at sea can be minimised."

Innovation and the development of service solutions will be an important part



// We are producing, among other things, hybrid solutions for powering maritime vessels.



of the STH hub's output. A new, modern Wärtsilä Land & Sea Academy training centre, Customer Expertise Centres for remote operational support, predictive maintenance solutions, and the development of new digital innovations will have a central role in supporting customers to optimise their operations and to accelerate decarbonisation.

In Mr. Kytölä's assessment, approximately one ship in three sailing the seas right now have been equipped with Wärtsilä technology.

// The idea is to go onwards together in the fields of research and projects.

GOING FOR COOPERATION

The centre acts also as a global ecosystem of collaboration by inviting customers, partner companies and academia to incubate, test and validate ideas.

"The idea is to go onwards together in the fields of research and projects. The


STH hub also has a Partner Campus in which universities or other cooperative partners can test possible new technology innovations for the future," says Kytölä.

"The University of Vaasa is one of our main partners, having a campus near here."




Furthermore, Vaasa Electricity Co. often works in cooperation with Wärtsilä STH hub. New energy technologies and fuels can sometimes be tested at the Vaskiluoto power station situated next to the STH site.

"One of our research ideas is that electricity might be used to produce hydrogen for storage. Afterwards, at a time when electricity has become higher-priced, the stored hydrogen could be utilised for producing electricity," Mr. Kytölä gives an example of synergy benefits. ■



**In the frontline of
developing sustainable shipping**



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Floating LNG terminal in Inkoo will provide gas to Finland and Estonia

by: ARI MONONEN

photos: EXCELERATE ENERGY, INC.

In December 2022, a floating LNG terminal is expected to arrive at Inkoo Port on the southern coast of Finland. With a storage capacity of 150,900 cubic metres, the LNG terminal vessel 'Exemplar' will deliver liquefied natural gas (LNG) for the needs of Finnish and Estonian industries throughout the next ten years.

In May of this year, the Finnish energy company Gasgrid Finland signed a lease with ExceleRate Energy, Inc. The lease is for the terminal ship 'Exemplar' for the dura-

tion of a decade, with the aim of having the terminal available already next winter.

This development will provide independence from Russian pipeline gas.

Formerly, Russian natural gas supplies were routed through a pipeline via Imatra but they were stopped in the spring of 2022.



photo: ALEKSI MAINEN / TYÖ- JA ELINKEINMINISTERIÖ

Mr. Riku Huttunen, Director General of the Energy Department of the Ministry of Economic Affairs and Employment says that the crucial thing is to have the floating LNG terminal ready for use for the oncoming winter. This is a critical precautionary measure for the energy security both in Finland and in Estonia.

Located to the west of Helsinki on the southern Finnish coastline, Inkoo – the terminal ship's destination – already has an optimal deep-water port at close proximity to the pipelines distributing natural gas mainly to industrial end-users in the Baltic region.

The floating storage and re-gasification unit (FSRU) 'Exemplar' has a length of 291 meters and a width of 43 meters. The ship's volume corresponds to approximately 68,000 tonnes of LNG when fully loaded. This will provide approximately

1,050 GWh of energy content, or – with refills – more than 40 TWh annually.

The 'Exemplar' was built in South Korea and completed in 2010. She is equipped with Kawasaki's 26,500 kW gas turbine engine. The Texas-based Excelerate Energy acquired the ship in 2017. Before setting course to Inkoo, the ship was stationed in Argentina.

Once the floating terminal is in position, smaller LNG tankers are expected to visit and refill it two to three times every month.

URGENT NEED FOR NEW GAS SOURCES

The Government of Finland started to prepare for the termination of pipeline gas supplies in April 2022. The tasks of leasing a suitable LNG terminal and taking care of all related practicalities were delegated to the state-owned gas grid company Gasgrid Finland.

As Russia has proved to be an unreliable energy supplier, new sources for natural gas are required absolutely and urgently.



Of the total annual energy usage in Finland, the share of natural gas is approximately five percent. In particular, natural gas is needed for industrial processes, CHP energy production, and heavy traffic. However, the floating terminal will also secure gas supplies for households that use natural gas.

The terminal ship will essentially be utilised as an anchored LNG terminal where the liquefied natural gas is re-vaporised into gasified state and then supplied into Gasgrid's transmission grid. While the 'Exemplar' remains technically a ship, she becomes a movable part of the gas-supply infrastructure, operating as sort of a transformer unit.

Part of the re-gasified natural gas will be routed to Estonia, through the existing pipeline connection. The total costs of the floating terminal for the 10-year usage period are estimated to

be approximately 460 million euros, with some additional costs depending on the usage volumes.

A CRUCIAL MEASURE FOR AVOIDING GAS SHORTAGES

Mr. **Riku Huttunen**, Director General of the Energy Department of the Ministry of Economic Affairs and Employment in Finland, confirms that the floating LNG terminal is expected to be in use in Inkoo in December 2022.

"The terminal ship will fulfil the needs of the industrial natural gas users in Finland. Since May 2022, our country has received natural gas solely through the Balticconnector pipeline."

"Thus far, those supplies have been sufficient. However, if we had no floating LNG terminal ready for use this winter, we would run the risk of industrial gas shortages," Mr. Huttunen notes.

// The terminal ship will fulfil the needs of the industrial natural gas users in Finland.

He adds that the increased gas supplies also have an effect on the gas prices and electricity production.

"For the LNG terminal ship, Finland and Estonia have signed a memorandum of understanding. According to this document, the expenses of the terminal will be shared between the countries, divided in accordance with a ratio determined by the gas usage – that is, 80 percent for Finland and 20 percent for Estonia."

"The floating terminal will provide natural gas for the shared market.



So far, Estonia has not yet provided the terminal company with equity, and consequently Finland has for the time being financed the project as a whole via Gasgrid Finland Oy," explains Huttunen.

As a precaution and in order to secure future gas supplies, Finland and Estonia had previously agreed that both

countries should be prepared for the arrival of a gas terminal ship supplying natural gas for the shared fuel market. In Estonia, Paldiski Port is an optional site for the terminal ship.

In the larger Baltic region, a similar type of floating LNG terminal has already been stationed in Klaipeda in Lithuania

where it has been operational for a number of years.

"The crucial thing is to have the floating LNG terminal ready for use for the oncoming winter. This is a critical precautionary measure for the energy security both in Finland and in Estonia," Mr. Huttunen emphasises. ■



Finnish Marine Industries



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Cafitesse filter coffee brewing system – the cost efficient and sustainable way to serve good coffee at sea



m/s Aurora Botnia is full of new sustainable innovations.

JDE Peets equipped AURORA BOTNIA with the Cafitesse coffee system, uniquely sustainable and bio-safe, as a newbuilding.

Jacobs Douwe Egberts Peets (JDE Peets), the largest pure play coffee company in the world, congratulates Wasaline on the first operational year of AURORA BOTNIA. This vessel represents true forward thinking in the whole offshore industry. Consumers worldwide, but particularly in the Nordic area, are increasingly concerned about the human impact on Earth's environment. Coming generations will in everyday life prefer consumption habits, including travel, that they know to be more sustainable.

"Navigare necesse est" was known thousands of years ago, even before coffee was discovered by humanity. Today, enjoying the aroma and taste of good coffee is part of seafaring. Regardless of if it is on the bridge in the middle of the night, or in a cruise liner gourmet restaurant, a cup of coffee feels like a part of good life.

One kilo of ground coffee produces about three kilos of wet grounds after brewing. Chief engineers know everything about coffee-fat clogged plumbing, not to mention disposing off large amounts of wet coffee grounds or stale coffee.



Cafitesse makes real milk coffees for quick service in the busy bar.



In the buffet Cafitesse makes a cup of black coffee in 2 seconds. Nobody needs to wait.

With the Cafitesse filter coffee system the wet grounds remain in the coffee factory, where they will convert into energy in the local power plant. The system produces a coffee cup in seconds, in unlimited number, but only on demand. Thus, precious coffee will not be wasted into sewers.

Additionally, Cafitesse produces coffee without contact with humans before it dispenses into cup. This makes the system uniquely biohazard-safe in crowded passenger environments.

Passengers and crew of AURORA BOTNIA enjoy good coffee aboard, always fresh and hot 24/7, brewed by Cafitesse offshore capable coffee dispensers. Our system is saving energy aboard, resources ashore and leaves nothing to waste, as the packaging is fully recyclable.



In the Business Lounge, Cafitesse makes coffee, black or white and cocoa.



The crew enjoys fresh hot coffee 24/7.

A VESSEL MID-LIFE UPGRADE, OR EVEN ANNUAL YARD OVERHAUL, IS A GOLDEN OPPORTUNITY TO PUT ON-BOARD COFFEE SERVICES AND ECONOMICS ON TRACK

Many vessels world-wide have expensive and resource wasting piston coffee brewers installed. These require cumbersome and expensive daily maintenance and produce massive volumes of coffee waste.

When a vessel changes owner or trading route it often goes through refurbishment and classification at a shipyard. This is an



m/s Alfågeln is a robust short-sea ferry.

excellent opportunity to completely overhaul the coffee services into profitability and cost-efficiency, not to mention sustainability.

Old coffee brewing equipment are often energy wasting and work intensive on already stretched crews.

On ALFÅGELN, a hardworking short-sea ferry trading in the Åland archipelago for many years, her coffee moment came in 2022. The cafeteria staff wanted to concentrate on servicing passengers with good food and coffee around the clock. The solution was a Cafitesse brewer with a swipe payment system for bank cards. The new system was installed during a yard visit and tested to capacity before ALFÅGELN returned on route.

The new coffee service immediately changed passenger perception of good coffee on board and increased service level in the cafeteria. Passengers now can buy hot and good coffee anytime during crossings between harbor stops. Customer satisfaction is further increased as sustainability, biohazard safety and recycling is visibly communicated. ■



m/s Alfågeln cafeteria with Cafitesse coffee brewer, serving coffee 24/7.

More information: www.novacafi.fi

WIND POWERS MARINE RESEARCH

Oy Windside Production Ltd has equipped Marine research centers, lighthouses, and international groups of scientists and other professionals since 1982. Originally designed and developed for harsh conditions, Windside wind turbines produce clean, grid-free energy even in the most demanding environments. They are corrosion-free and ice resistant, the features of which are a priority for professionals looking for reliable and low-maintenance equipment.

For light houses, the first Windside unit was delivered for Trinity House light house in 1996 and is still operating loyally. Mc Murdo was the first site in Antarctica, where turbines started to operate in 2003. Those turbines are still in operation today.

Since then, the demand for autonomous power sources has increased together with the need to understand the changing climate and to tolerate extreme weather conditions. Windside wind turbines enable the important work of researchers and other professionals all over the world: Polar institutes, geological and natural Institutes, Antarctic institutes and universities.

Turbines are loyal workers also in platforms, light houses, buoys, vessels and ports, from decade till decade. ■

More information: www.windside.com, general@windside.com



Photos above:
Le Four in northern Finistère Windside
WS-0,15B installed 2021.
Photo by: Direction Interrégionale de la
Mer Nord Atlantique Manche Ouest



Two Windside WS-0,15Bplus turbines operating since 2002.
Photo right: Mc Murdo station in Antarctica (USA)

Key Facts:

Windside is used by e.g.

Harbours, light houses, vessels, research centres, telecom, radars

Operates 2m/s up to 60m/s

Specifically designed for low cut-in wind speeds and no cut-out at extreme wind speeds. Production also in storms.

25+ year offshore lifespan

Built of heavy-duty reinforced fiberglass, marine-grade aluminium, hardened steel, fully galvanized frames, high-quality bearings, and sealed electronics.

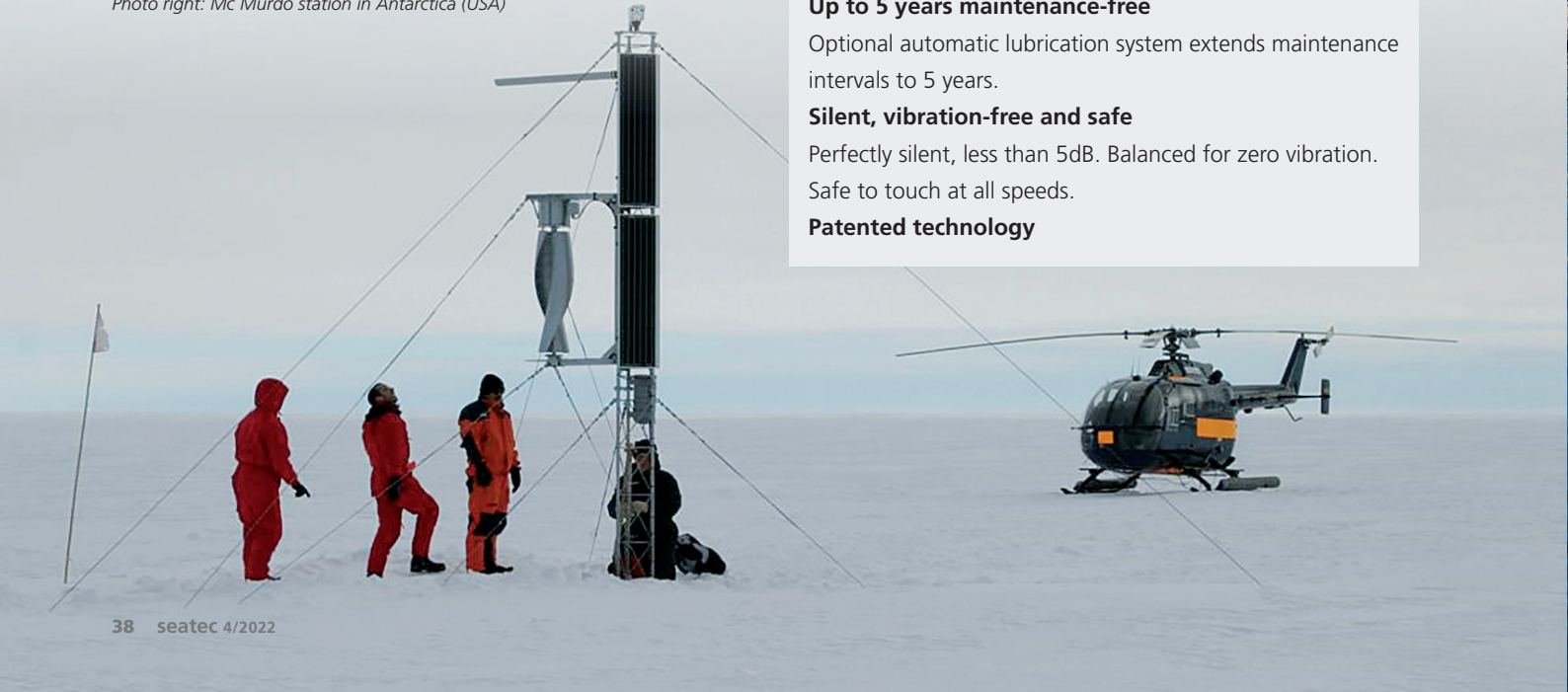
Up to 5 years maintenance-free

Optional automatic lubrication system extends maintenance intervals to 5 years.

Silent, vibration-free and safe

Perfectly silent, less than 5dB. Balanced for zero vibration. Safe to touch at all speeds.

Patented technology



company directory



photo: PIXABAY

ABLEMANS OY

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www.ablemans.fi

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Facts & Figures

Turnover: EUR 9 million
Personnel: 8
Established: 1987

Specialty Areas

Steel and Aluminium structures.
Shipbuilding – Shiprepairing – Conversions – Outfitting.

AT-MARINE OY, AUTROSAFE

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Jussi Kujanpää, jussi.kujanpaa@atmarine.fi

Specialty Areas**Services:**

- Sales, maintenance, manufacturing, commissioning and planning.

Equipment:

- Navigation and communication systems.
- Machine and fire alarm systems.
- Engine room equipment, sound and light alarms, alarm panels and centers.
- Temperature and pressure sensors.
- Machine automation.
- Escape and emergency lighting including special signs for exterior and interior decks.
- LED lamps, searchlights and window wipers.
- Liquid Handling Equipment.
- Special Electronic Devices.

KOJA MARINE

P.O. Box 351 (Lentokentäntäkatu 7)
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Pia Palmroos, Sales Director
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Facts & Figures

Turnover: EUR 100 million
Personnel: 350
Established: 1935
Parent Company: Koja Group

Specialty Areas

Air conditioning systems, air conditioning units. System design and material deliveries. Cargo ventilation systems. Air Conditioning turn-key deliveries, HVAC electrical / automation systems.

OY LAUTEX AB

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Facts & Figures

Personnel: 53
Established: 1951
Parent Company: Teknoma Oy

Specialty Areas

Ceilings for ship accommodation and public spaces, such as metal panels, profiles, tiles and gratings in aluminium or steel. The product range includes also B-0 and B-15 fire classified ceilings, domes, beams and special ceilings. All ceiling materials are possible to coat on different materials.

MEYER TURKU OY

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www.meyerturku.fi

**Contact Person**

Anna Hakala, Head of Communications, anna.hakala@meyerturku.fi

Facts & Figures

Net sales: 1 079,2 million €
Personnel: 2 086

Subsidiaries & Representatives

Piikkio Works Oy, Shipbuilding Completion Oy, ENG'nd Oy

Specialty Areas

The Meyer Turku Oy shipyard is specialized in the construction of very demanding, innovative, and environmentally efficient cruise ships, car ferries, and special vessels. Our share of the global cruise construction market is approximately 15%, and our shipyard's order books extend to 2026. Our largest customers are Royal Caribbean International, Carnival Cruise Lines and TUI Cruises.

Meyer Turku operates the Turku shipyard where vessels are built since 1373. Meyer Turku's subsidiaries are Piikkio Works Oy, a cabin factory located in Piikkio, Shipbuilding Completion Oy, which offers complete deliveries to public spaces, and ENG'nd Oy, a shipbuilding and offshore design company based in Rauma. Together with the German shipyards, Meyer Werft in Papenburg, and Neptun Werft in Rostock, Meyer Turku forms the Meyer Group, one of world's leading cruise ship builders.

PAROC OY AB

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www.paroc.com

Contact Person

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Subsidiaries & Representatives

In 2018 Paroc joined Owens Corning.

Specialty Areas

Stone wool insulation products for fire, heat and sound insulation to shipbuilding and offshore industries.

PORT OF NAANTALI

Satamatie 13
FI-21100 Naantali, Finland
www.portofnaantali.fi



Contact Person

Yrjö Vainiala, Port Director COO, Phone +358 50 464 9915
yrjo.vainiala@portofnaantali.fi

Facts & Figures

Personnel: 19
Vessel calls: ca. 1500

Specialty Areas

Naantali is one of the crucial TEN-T core Ports in Finland, which serves the trade in a wide range of the hinterland as well as the industry close to the port. Port has an excellent logistical location along European Route 18 and well-known Nordic Triangle & ScanMed traffic corridor. Port of Naantali is one of busiest ports in Finland, with annual cargo volume of 5-6 million tons and ca. 1 500 Vessel calls. Port is one of the most important and busiest RoRo/Ropax ports for trucks and trailers in Finland & significant centre for liquid and dry bulk operations.

SBA INTERIOR LTD



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Johan Fagerlund, Technical Director, johan.fagerlund@sba.fi
Aki Virta, Business Development Director, aki.virta@sba.fi

Facts & Figures

Turnover: EUR 18,4 million
Personnel: 119
Established: 1985

Specialty Areas

SBA Interior is specialised in accommodation panelling and different types of beds for marine applications. Latest development is an only 16mm B-0 class panel and a 50 mm A-60 class light weight box; wall and ceiling as well as a B-15 class Extension Screen. Digital printed panels available. Another branch of SBA is subcontracting for metal industry.

SEASIDE INDUSTRY PARK RAUMA

Suojantie 5
FI-26100 Rauma
Finland
www.seasideindustry.com



Contact Person

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Specialty Areas

Seaside Industry Park is the hub of the maritime cluster in Rauma. Successful principal companies in shipbuilding and marine production with wide and efficient supplier network operate in the park. The region is utilizing versatile infrastructure and comprehensive common services. Seaside offers an efficient manufacturing environment and cooperation network that also enables smaller companies to participate in major projects and achieve competitive advantages and added value. Additional information: www.seasideindustry.com

SPT-PAINTING OY



Rälssitie 6
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www.spt-painting.fi

Contact Person

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Facts & Figures

Personnel: 30
Established: 1990

Specialty Areas

Decking systems for the cruise industry
Indoor- and outdoor-floorings to shipdecks
Balcony floorings
Epoxy- and acryl-floorings

TELESILTA OY



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www.telesilta.fi

Contact Persons

Joonas Puustelli, CEO
Jarkko Myllyniemi, Rauma Site Manager

Facts & Figures

Personnel: 35
Established: 1978
Parent Company: Harju Elekter (listed)

Specialty Areas

Marine industry electrification works. Challenging turn-key projects for the electrical, navigation and automation systems including design, system deliveries, project management, installation, commissioning and maintenance. Expertise working in every major shipyards in Finland.

WINDSIDE PRODUCTION OY LTD



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Phone: +358 40 731 5037
sales@windside.com
www.windside.com

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Specialty Areas

Windside wind turbines, made over 40 years in Finland, are used in battery charging but also grid connected. They are safe, soundless and the most ecological solutions for energy production wherever energy is needed. Examples of users: Light houses, vessels, buoys, platforms etc. Windside turbines meet the requirements of demanding professional use in the harshest environments. Their unique features ensure reliability, high efficiency, long life span, durability and an absolute minimum of maintenance. All the advantages of the turbine together with the beautiful design, enables almost limitless use of Windside.

NOTES

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photo: STX Europe





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The fair is held 3-4 November at Aboa Mare in Turku, Finland. During the fair, there will be many opportunities for networking and obtaining the latest information from the maritime industry.

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-  Excellent recruitment opportunities
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