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EDITORIAL

THE GREEN GRAIL OF THE SEVEN SEAS

How sustainable is marine? Well, at least for cruise ships the picture is not all that grim. According to the World Travel and Tourism Council, cruise ships represent 0.6 percent of total travel carbon emissions – the least of any sector of the travel industry and far less than aviation (17% of total travel carbon emissions).

Nevertheless, most cruise companies still rely on heavy fuel oil to power their ships' engines. Hence, finding an energy source that will reduce pollution and greenhouse gases is the "Green Grail" for the industry. Cruise Lines International Association (CLIA) announced in 2021 that its goal is to reach net zero carbon emissions by 2050 and, as an intermediate step, reduce emissions 40 percent by 2030.

What's more, in October 2022 CLIA released the results of its 2022 Global Cruise Industry Environmental Technologies and Practices Report, showing progress in the industry's low-carbon pursuits.

In the coming years, there is an increasing number of vessels that will be able to incorporate zero-emissions propulsion as well as growing investment to equip ships to plug in to shoreside electricity where available. In fact, more than 15% of the vessels to be launched in the next five years will be equipped to incorporate fuel cells or batteries. As many as 85% of CLIA-member ships coming online between now and 2028 will be able to plug in to shoreside electricity, allowing engines to switch off at berth for significant emissions reduction.

According to the report, transition to sustainable marine fuels remains essential to achieving the maritime industry's decarbonization goals, underscoring the urgent need for governments to support research efforts to accelerate the development of these fuels. Sustainable marine fuels need to be safe, viable and available for use at scale.

For now, Liquefied Natural Gas (LNG) holds a key position in the market. According to the report, 61% of new-build capacity will rely on LNG fuel for primary propulsion. LNG is in high demand since its use results in 95% to 100% fewer particulate matter (PM) emissions, virtually zero sulphur emissions, and an 85% reduction in nitrogen emissions. As a transitional fuel, LNG provides real benefits now, but it also allows LNG-ready ships to adapt to a future generation of sustainable marine fuels.

Also, such things as Exhaust Gas Cleaning Systems (EGCS) and Advanced Wastewater Treatment Systems are contributing to the more sustainable maritime. As it stands, the cruise industry is investing billions to incorporate new technologies, targeting a full-scale decarbonization of global shipping.

PETRI CHARPENTIER

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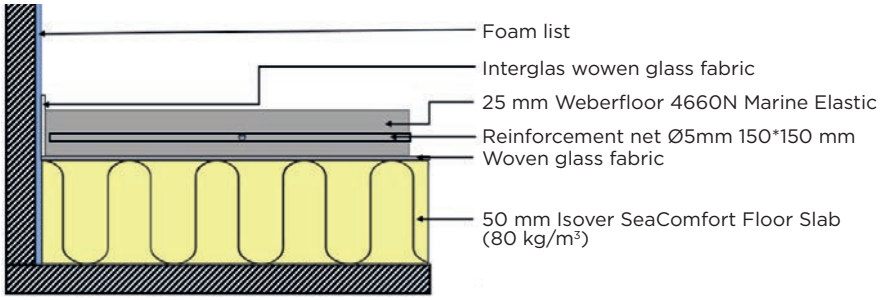

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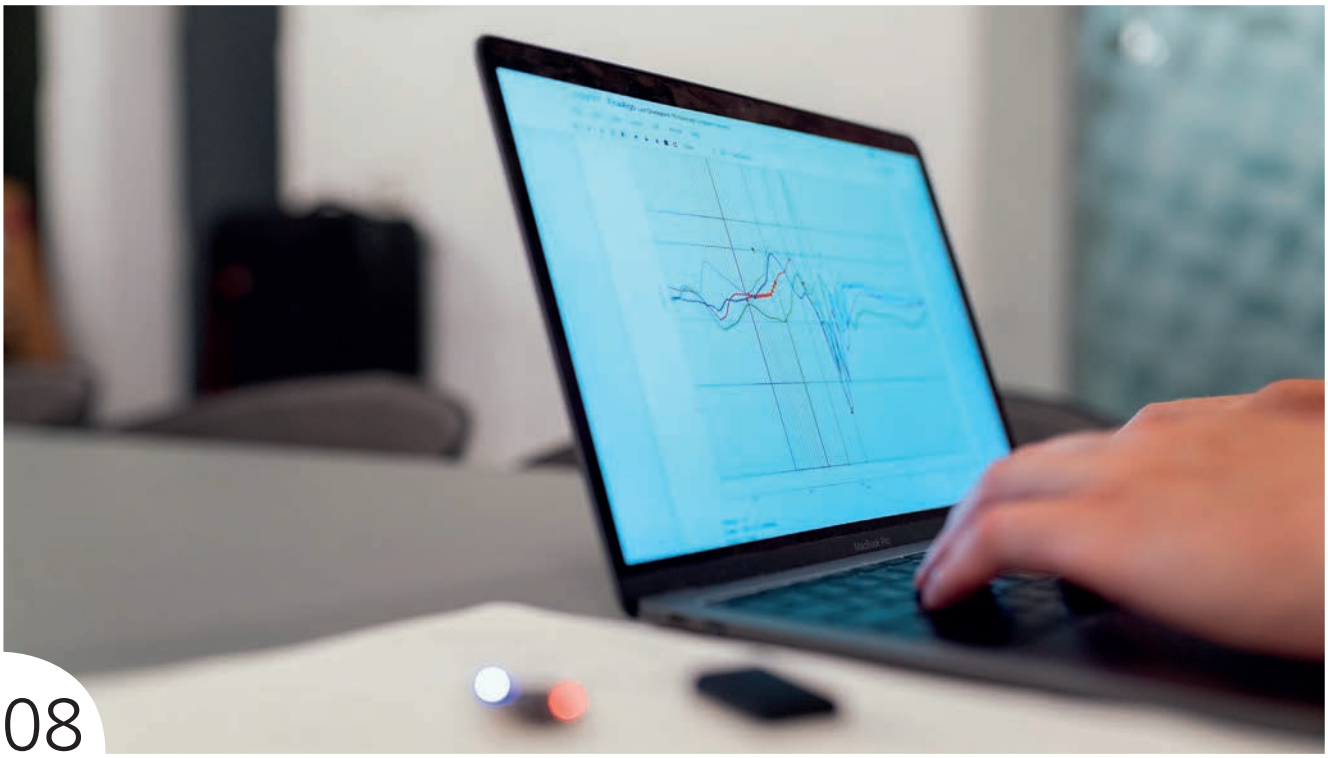

08

14

20

30

When data hits the waves

ONBOARD DATA CAN PROVIDE ENERGY EFFICIENCY EDGE FOR SHIPS – STARTING WITH REDUCING FUEL EMISSIONS

by: SAMI J. ANTEROINEN
photo: PIXABAY

The research project Data Analytics for Zero Emission Marine (DAZE) will explore the use of data to significantly reduce emissions from shipping. The three-year project will start in September 2023.

"Data can be the 'new oil' in the sense that it makes operations smoother.

Photo: ÅBO AKADEMI UNIVERSITY

Jerker Björkqvist, PhD, Associate Professor, Department of Information Technologies from Åbo Akademi University says that data can, for sure, be the 'new oil' in the sense that it makes operations smoother – for example, optimizing operations and reducing unnecessary operation delays due to unplanned maintenance.

Globally, there is great potential for significant reduction of energy used in shipping. This is achieved by utilizing actions such as speed reduction, improved port operations, propulsion, and ship internal energy optimization.

The project is run by Åbo Akademi University, located in Turku, Finland. **Jerker Björkqvist**, PhD, Associate Professor, Department of Information Technologies from Åbo Akademi University, serves as the coordinator for the DAZE project. He says that data analytics can be a big game-changer for energy savings upon the seas.

"Research data says that data analytics has the potential of achieving fuel savings of 10–50%. However, the high end savings can only be reached if speed reduction is utilized, which is not always an option," says Björkqvist.

GET MORE OUT OF YOUR DATA

The often-repeated phrase "data is the new oil" suggests that we live in a new data economy where deft controlling and processing of data can be the difference between success and failure. But just like crude oil, data is only valuable if it is properly refined: data must broken down and analyzed for it to have significant value. Björkqvist is onboard with the comparison:

"Data can, for sure, be the 'new oil' in the sense that it makes operations smoother – for example, optimizing operations and reducing unnecessary operation delays due to unplanned maintenance," he says.

In the DAZE project, on-ship data will be used to analyze the energy efficiency of operational vessels by utilizing energy models of ship components and providing the tools to perform real-time energy optimization. Data will also be utilized for model-based component monitoring, ena-

"The data modelling is expected to predict the most economical path to reduce emissions.

photo: PEXELS

bling performance optimization and diagnostics features. The project will develop the computing architecture for performing novel integrated on-ship computing, supported by cloud computing services.

THE HYBRID WAY

The energy analysis will be used for analyzing and retrofitting new propulsion upgrades and to give insights into how the hybridization of vessels can improve performance. Electrification and the introduction of fossil-free synthetic fuels like ammonia and methanol require next-level vessel energy efficiency to provide competitive vessels for shipping companies.

"We're expecting DAZE to deliver concepts for gathering and analyzing data from a vessel, with the help of which decisions can be automatically taken to optimize energy consumption and reduce emissions," says **Kenneth Widell**, Senior Project Manager at Wärtsilä leading the Zero Emission Marine Program.

"The data modelling is expected to predict the most economical path to

BLUE CARBON SHOWED THE WAY

by: SAMI J. ANTEROINEN

Leveraging data to bring marine emissions down has been a hot topic for a while now. For example, in 2020, Wärtsilä's Blue Carbon Project won first place in United Nations' AIS Big Data Hackathon. The winning idea revolved around providing a comprehensive picture of the true state of maritime emissions.

In the Hackathon, the Wärtsilä team created a global map to upgrade the reporting accuracy for ship emissions by breaking them down geographically. The map can aid regulatory development for shipping, and also help research institutions to attain greater accuracy in their measurements by using this data to eliminate emissions generated by ships.

The team recognized that reduced fuel consumption equals reduced emissions – which is a win-win solution for both businesses and the planet. This is not exactly news: also IMO's Ship Energy Efficiency Management Plan (SEEMP) guidelines list a variety of options to improve fuel efficiency – from speed optimization and optimized weather routing to timely hull maintenance and engine load efficiency.

However, Wärtsilä has a Fleet Operations Solution (FOS) that is targeting these very areas very diligently. In practice, this means real-time weather forecasts, auto-optimized speed and routes that give the best fuel efficiency while ensuring voyage safety. The solution also supports predictive maintenance for propeller, hull and engine condition to ensure that vessel performance is optimal at all times. ■

reduce emissions according to the desired reduction targets," adds Widell.

BUILDING ON TRADITION

Jerker Björkqvist comments that it is very rewarding for Åbo Akademi University to contribute to the next generation of shipping, where energy efficiency and zero emissions are a high priority.

"Our long experience of cooperation with the shipping cluster along the Finnish west coast is further strengthened through this project. At the same time, we get to cooperate with technical universities, both in Finland and the Nordic countries, with regards to technology that aims for zero emissions," Björkqvist says.

According to Björkqvist, the most challenging part of the research project is to achieve a high-precision virtual thrust sensor.

"This is where data would provide information on what actual, momentary thrust is provided by the propulsion system. Generally speaking, the combination of data-driven and model-driven methods for energy optimization and diagnostics is a broad way of achieving improved value from data," he says.

SECURE COMPETITIVE EDGE

"The big expectation for the project is to provide research that can "significantly improve" the competitiveness for the maritime sector," says Björkqvist.

"We can accomplish this by providing the necessary background knowledge to produce new products and services, utilizing data at a new level."

Björkqvist believes that Finnish marine is in a great position to make a big leap in data analytics. "Finland has a strong legacy in building wireless networks, as well as connected services for those networks, including Edge computing. This gives an advantage for implementing and operating data collection, management and analytics systems in remote locations like ships," he says.

"For the marine sector, the strong competence in computer-aided engineering makes it possible to use that knowledge to get a much better understanding of what the data means and how to use it."

> **"Finnish marine is in a great position to make a big leap in data analytics.**

BROAD SHOULDERS

The research project DAZE is funded by Business Finland and the project partners are, in addition to Åbo Akademi University, Tampere University, University of Vaasa, University of Oulu, Aalto University, Wärtsilä, Wasaline, Wapice, SiloAI., Nextfour and Meriaura.

The DAZE project is directly linked to the Business Finland Veturi ecosystem 'Zero Emission Marine' (ZEM) program lead by Wärtsilä (2022–2025).

photo: PEXELS

The work is deemed important since estimates show that about 90% of data generated onboard the ship never leaves the deck. This means operators are losing out on valuable insight and analytics that can improve performance. However, if one manages to get all that data into the right hands, it becomes viable to not only boost efficiency and cut down CO_2 emissions – it will take the industry a lot closer to creating a cohesive, connected marine ecosystem that is smart, sustainable and safe. ■

ZERO EMISSION MARINE 2030

- four-year ecosystem project led by Wärtsilä
- the goal is to reach 60% greenhouse gas (GHG) reduction in maritime by 2030
- also, all the Wärtsilä Veturi ecosystem products will be carbon-neutral or carbon-negative by 2050
- brings together e.g. fuel manufacturers, energy producers, shipping companies, logistics providers, research organizations

When data economy hits maritime: shared dataspace boosts port performance

by: SAMI J. ANTEROINEN

photos: FINTRAFFIC

How could cargo vessels schedule their arrival at a port's newly freed up berth in a timely manner? How could more accurate timetables for unloading a ship be provided to different port operators? And finally: How could the entire logistics chain be made more efficient, becoming fully optimised with a more comprehensive situational picture? The new Maritime DataSpace project, spearheaded by national traffic management agency Fintraffic, is currently searching for answers to these questions. The Maritime DataSpace project is expected to lay a foundation for a groundbreaking shared port stay data communication service.

This means that, for the first time in Finland, Fintraffic's Vessel Traffic Services is taking a long, hard look at the utilisation of dataspace architecture in the communication of information between different maritime logistics actors. The goal: information related to port stays is communicated between different actors in a transparent, reliable manner and based on common rules.

DATA MUST FLOW

Project Manager **Olli Soininen** from Fintraffic's Vessel Traffic Services says that Finland is well positioned to further develop data exchange between different actors in maritime logistics. Soininen notes that national maritime and port logistics can already show "strong evidence" of many data-driven services in which the real-time sharing of time data and opening of interfaces has made the interplay of ports and arriving ships more efficient.

"The objective of our Maritime DataSpace project is to expand the communication of information related to port stays for use by several operators using a shared data communication service," says Soininen.

In 2023, Maritime DataSpace project will implement specifications for data communication service solutions that will ensure the secure, transparent and common rules-based communication of data. This year the project also intends to test the solution model with a pilot implementation of the scheduling of two different port stays. Fintraffic serves as the dataspace operator in the project which will run until the end of 2023.

TWO MODELS OPTIMIZE OPERATIONS

Naturally, there are many factors behind a well-functioning logistics chain. One key factor is timetable data that is as accurate as possible, linking maritime and land cargo into efficient transport chains. In fact, the Maritime DataSpace research project utilises the 'Just in Time Port Arrival' and 'Virtual Port Arrival' operating models to enhance and optimize vessels' arrival/departure at ports, while reducing fuel costs and CO_2 emissions from vessels.

Of the two models, Just in Time Port Arrival is more self-explanatory, simply meaning that a vessel arrives at the port at the right time, as planned, just before loading or unloading begins. The operating model is based on real-time information exchange between the vessel, port and other stakeholders, which enables efficient scheduling and smooth traffic.

The main idea of the Virtual Port Arrival, on the other hand, is the creation of an operating model that provides information to vessels if there is no berth available at the port at the planned time. In this case, the vessel can slow down its speed and aim its arrival to the time when a berth will be available.

> **"The operating model is based on real-time information exchange.**

A vessel acknowledges its berth reservation to the port virtually, in which case it is recognized that the vessel is arriving at the port after the berth is made available and the vessel is normally in the service queue. This model generates clear savings in fuel costs and CO_2 emissions for

vessels, allowing them to optimize their speed based on the actual availability of the berth.

NUMBER OF BENEFITS

Olli Soininen explains that the benefits brought about by both operating models largely depend on the type of sea freight transport, being the greatest for tramping.

"Faster turnaround times, shorter waiting times and lower fuel costs and CO_2 emissions result in computationally significant savings for terminal operators, ports, cargo and vessel owners," Soininen says.

The Maritime DataSpace project is funded by Sitra, and it is a part of the development of NEMO, the national Port Call Time Stamp and Estimation Service. Fintraffic's partners in the project include Siili Solutions and Awake.ai, who are responsible for technological development. The project pilot will be carried out at the Port of Oxelösund, Sweden. ■

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- maintains and develops one of the world's most extensive maritime traffic control and management systems
- promotes the new service models needed for automated maritime traffic, including information and situational awareness services as well as remote vessel control and support for remote pilotage
- seeks to utilize digitalization extensively, ensuring the competitiveness of Finnish shipping and the emergence of intelligent maritime traffic
- actively promotes the development of transport ecosystems both nationally and internationally
- Fintraffic's Time Stamp and Estimation Service and Port Activity app were used as model examples for reducing marine climate emissions at UN's COP27 Climate Change Conference in Egypt

"This model generates clear savings in fuel costs and CO_2 emissions for vessels.

photo: PIXABAY

PORT ACTIVITY APP KEEPS YOU CURRENT

by: SAMI J. ANTEROINEN

A buzz of activity surrounds a ship approaching port. If the ship's schedule changes, this can pose challenges for cooperation between port and logistics operators. The solution: the Port Activity app, which enables efficient and economical port calls by improving information flow.

The Port Activity App helps maritime logistics operators and ports to become more efficient through real-time vessel and port information. The app also features an emissions calculation function, which helps ports and maritime operators to achieve their sustainable development goals.

The vessel emissions calculation function, developed in cooperation with Finnish companies Unikie and Envare Solutions, includes piloting in the fairway, port transfers and the berth time. The calculation starts when the ship enters the port's waters and ends when the ship leaves the port. The emissions calculation function covers nine different emission categories and complies with international standards.

This function is part of the app's expanding sustainability resources, which also include a waste receipt system for waste left at ports, berth planning and Just-in-Time planning systems for incoming ships.

The Port Activity App is part of Fintraffic's maritime traffic management ecosystem work. In this effort, the target is to enable smoother data flows between various maritime players. The Port Activity App collects information relevant to all port operators, under one application, from many different systems. Port Activity is an open source app, which means that ports can customize it to meet their own needs.

The use of Port Activity App skyrocketed in 2022: the app is already being used at 21 ports in Finland and is now being introduced abroad as well, starting with Sweden. Development work has been carried out together with the users, taking the entire port operating environment into account in the devs effort. ■

ICON OF THE SEAS – the largest cruise ship so far

by: ARI MONONEN

photos: ROYAL CARIBBEAN INTERNATIONAL

The first in the series of Royal Caribbean International's new cruise ships – 'Icon of the Seas' – is under final stages of construction at Meyer Turku shipyard in southeastern Finland. Delivery is scheduled for October 26, 2023. When ready, the new ship will be the largest cruise ship in the world by gross tonnage.

"Finishing touches will be underway presently.

photo: MEYER TURKU OY

photo: MEYER TURKU OY

Royal Caribbean International's Icon of the Seas reached its next major construction milestone at the Meyer Turku shipyard, when it was floated out of the dry dock and into its outfitting dock in December 2022. Tim Meyer, CEO, Meyer Turku and Harri Kulovaara, executive vice president, Newbuilding, Royal Caribbean Group, marked the occasion in Turku with the team of innovators working on the revolutionary, new ship.

In the city of Turku, Meyer's shipyard has lots of experience for building ultra large luxury cruise ships. Many of them rank among the largest ones ever built anywhere.

In the case of Icon of the Seas currently undergoing the last bouts of installation work, Meyer Turku shipyard's Project Manager **Olli Jantunen** notes that the ship's interior assemblies, as well as the installations of electrical and automation systems, are now proceeding rapidly.

"Finishing touches will be underway presently. In recent times, we have been preparing the ship for the first open-sea tests that have been scheduled for mid-June."

The ship will be powered by liquefied natural gas (LNG) or alternatively diesel oil, having six Wärtsilä's Dual Fuel engines installed. Additionally, fuel cell technology will be utilised to produce electricity and fresh water.

photo: MEYER TURKU OY

INTRODUCING THE AQUADOME

The prominent Aquadome structure on top of the ship's top deck has been designed for arranging water acrobatics shows while the area also includes a bar with a 220 degree ocean view, shops and dining venues. The dome was manufactured as a prefabricated modules at Meyer Turku shipyard and lifted in one piece onboard the vessel where it landed on 4th November 2022.

"Installation work of the Aquadome interior and systems is progressing on schedule. The Aquadome is the most demanding area of the vessel from a shipbuilder's point of view. It is a very technical space with lots of moving parts, incorporating 44 different systems to be commissioned – sort of a project within the project," Mr. Jantunen points out.

"The Aquadome's glass sphere is 55 metres in diameter, but it has no intermediate support pillars. The base of the dome is welded onto the ship, but the upper levels are connected with flexible joints. The world class steel-designing team of our shipyard has strongly contributed to the finalisation of the dome's structures."

"The energy consumption of the vessels systems is dynamically optimised.

MODULAR EFFICIENCY

In addition to the Aquadome sphere, the ship's hull in way of the LNG fuel tanks – including the LNG tanks themselves – was prefabricated in Germany as a floating ship piece.

"Furthermore, the engine casings including all equipment ventilation and sprinkler tubes, catalyzers, noise mufflers etc., are also prefabricated modular structures. The ship has an exceptional number of prefabricated technical modules: 1 710 in total, of which 1 650 have already been installed. Ready-made units help to make the shipbuilding work more efficient," Jantunen explains.

Even the 15 of the 19 on-board service elevators are of plug-in type. The first three of them were ready for production use onboard in April 2023. In May, a total of ten service elevators are already operational, helping out in the transport logistics of construction work.

HUGE DIMENSIONS

The main dimensions of the ship had already been determined when the ship was ordered, i.e. before the shipbuilding commenced. However, the Covid-19 pandemic brought about a delay of 18 months

for the project. This gave the ship designers an opportunity to fine-tune certain design features and architectural concepts.

Also, the ship became somewhat larger than originally planned. Now she will have a gross tonnage of 250 000, which makes the Icon of the Seas the largest cruise ship in the world.

The ship will have more than 20 decks, a length of 365 metres and a speed of over 22 knots. The 2 813 cabins on board will have the capacity to house a maximum of 7 600 passengers.

Once completed and delivered from the shipyard in the later part of October, the ship will be offering cruises in the Caribbean Sea from Miami, Florida, from early 2024 onwards.

OPTIMAL PERFORMANCE

According to Mr. Jantunen, shipbuilding work for the largest cruise ship in the world has been a technically demanding project.

"The ship will incorporate huge amounts of state-of-the-art technology.

"Aquadome is the most demanding area of the vessel from a shipbuilder's point of view.


OVERLOOK
Lounge

Furthermore, what we have here is also the world's most energy-efficient cruise ship," he recounts.

"Environmental emissions of the ship have been minimised. A lot of work has been done to optimise the hull shape of the vessel, in order to make the sailing-resistance factors as minuscule as possible. Additionally, the ship has an air lubrication system to lower friction as the ship sails.

The energy consumption of the vessels systems is dynamically optimised. For this purpose, Meyer Turku's own dynamic simulation model was used.

"The dynamic simulation model contains all the ship's equipment and consumers, and it enables us to phase-optimize, already in the design, the energy-efficiency performance on the actual routes where the ship will be operating – in this case, particularly in Caribbean conditions."

> **"Efficiency and automation of the air-conditioning has also been improved to save energy.**

To further improve the energy-efficiency of the ship, the surplus energy of the LNG-fuelled engines will be utilised to produce steam for use in the steam turbine that produces six percent of the electrical power needed aboard the ship.

"Also, the ship is equipped with absorption coolers, to produce air-conditioning systems with cooling energy," Jantunen mentions.

Efficiency and automation of the air-conditioning has also been improved to save energy.

MORE SHIPS TO FOLLOW

Royal Caribbean International's series of Icon-class cruise ships will be completed by two further vessels to be built by Meyer Turku shipyard and to be ready for use in 2025 and 2026, respectively. Shipbuilding work for the second ship was already started a few months ago, both at Turku shipyard and – to produce the floating LNG fuel tank part for the ship – at the Neptune shipyard in Germany.

"The following two ships in the series will be built largely in the same way as the first platform, but some new developmental features may be added along the way," Jantunen expects.

For Icon of the Seas, a workforce of several thousand people took part in the shipbuilding project, some of them representing any of the almost 1 000 subcontractor companies involved.

The next step for finalising the Icon of the Seas will be to prepare for the imminent open-sea tests to be carried out in early summer of 2023. Commissioning tests are already being conducted upon various technical equipment and devices. As an example, the propulsion systems

have already gone through a preliminary start.

"The main engines will undergo loading tests. Further tests will focus on automation systems, safety systems, and propeller functionality," says Jantunen.

The first open-sea tests will be relatively short in duration, lasting perhaps a few days.

"It is always challenging and exciting to run open-sea tests on a vessel that is the first one in a new series. In a way, she is still kind of a prototype. Things appear to be going smoothly, but it is always prudent to prepare for unexpected events, just in case." ■

Master class for building kitchens: galley floors on cruise ships

by: SAMI J. ANTEROINEN

Maritime environment demands a lot from various materials. Nowhere is this more apparent than aboard ships' galleys where there is often a flurry of taxing activity.

Key Account Manager **Herkko Miettinen** from Saint-Gobain remarks that big ships upon high seas are a combination that requires special expertise with regards to durable kitchen floors.

"There needs to be a degree of flexibility in the galley floors, so that seams won't crack, for example. At the same time, you need materials that are durable and light-weight."

One of the hit products from Saint-Gobain in this area is Weber Marine VEM PU1, a two-component polyurethane levelling compound for producing viscoelastic sandwich structures.

"Modern ships place special requirements on the fire behavior and noise levels, and this product is really capable in both areas," says Miettinen.

GALLEY FLOORS THAT LAST

Provision Master Oy is one of the top makers of world-class marine floors. On Carnival Celebration, the company build a 309 square metre galley floor, and for the new Icon of the Seas vessel the total galley floor area was a whopping 1,759 sqm.

Managing Director **Kimmo Häkkänen** has 15 years of experience from making marine kitchen floors and he knows the challenge well:

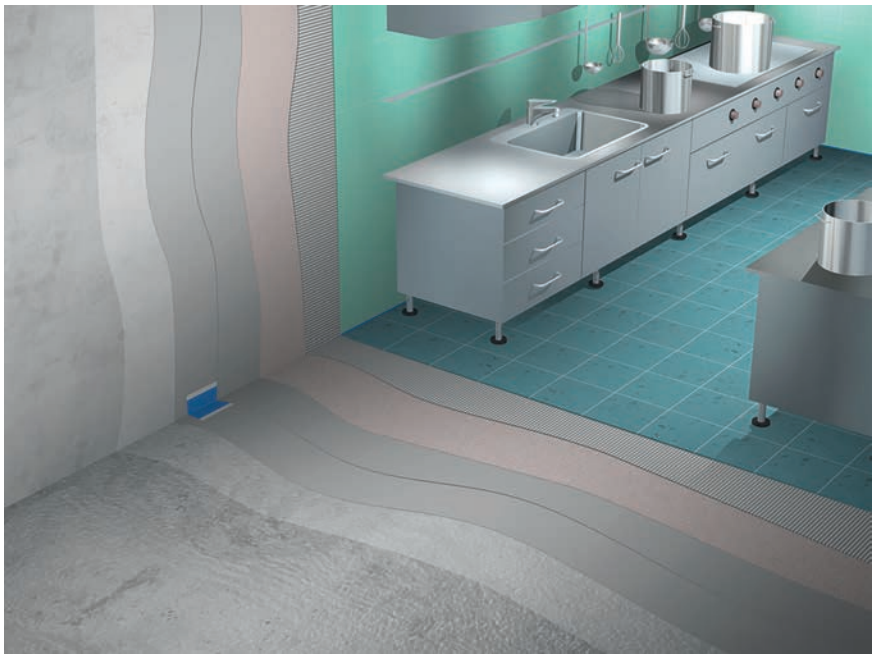
"The sea requires the highest level of performance from kitchens. There are vibrations from the ship hull, trolleys with food or dishes travelling across the floors – it's really a demanding setup. You need products that have been designed for marine use in order to make the cut," Häkkänen says.

KEEP LEARNING!

Provision Master has been using Saint-Gobain products – such as Weber Epox Easy, Weber Marine Elastic 4660 and Weber Visco products – for years and also holds a Saint-Gobain Weber WVLU Certificate. This contractor certificate is a guarantee of high-quality work that meets the standards of demanding customers.

"We use Saint-Gobain Weber IMO-certified products that ensure a high-quality outcome for the customer each time," confirms Häkkänen. "Weber Epox Easy, for instance, is a great product which remains flexible even after it hardens."

Provision Master has also been pleased with Saint-Gobain Academy, located in Parainen, Finland, where training is given to contractors. "The training is on-going, which means that we are always up to date with new products and techniques," Häkkänen says.



EXPERTISE EDGE

Herkko Miettinen adds that shipyards are very mindful of certificates and standards these days – and glad to work with proven professionals.

"Turku shipyard, for example, uses only top level subcontractors in their ship projects," he says. ■

More information: weber-marine.com

Port terminal will be renovated into bright and modern premises

by: TARJA SIEKKINEN

Complete renovation of the Naantali port terminal, originally built in 1974, has started. The goal of the renovation project is to bring the building up to the standard of a new building in terms of e.g. functionality and energy-efficiency. Furthermore, the geothermal energy project, now close to completion, will allow for the heating and cooling of the premises using geothermal energy.

"Complete renovation of the Naantali port terminal has started.

Naantali port terminal is currently heated with geothermal energy. The renovated terminal also has room for new tenants.

photo: LPR ARCHITECTS

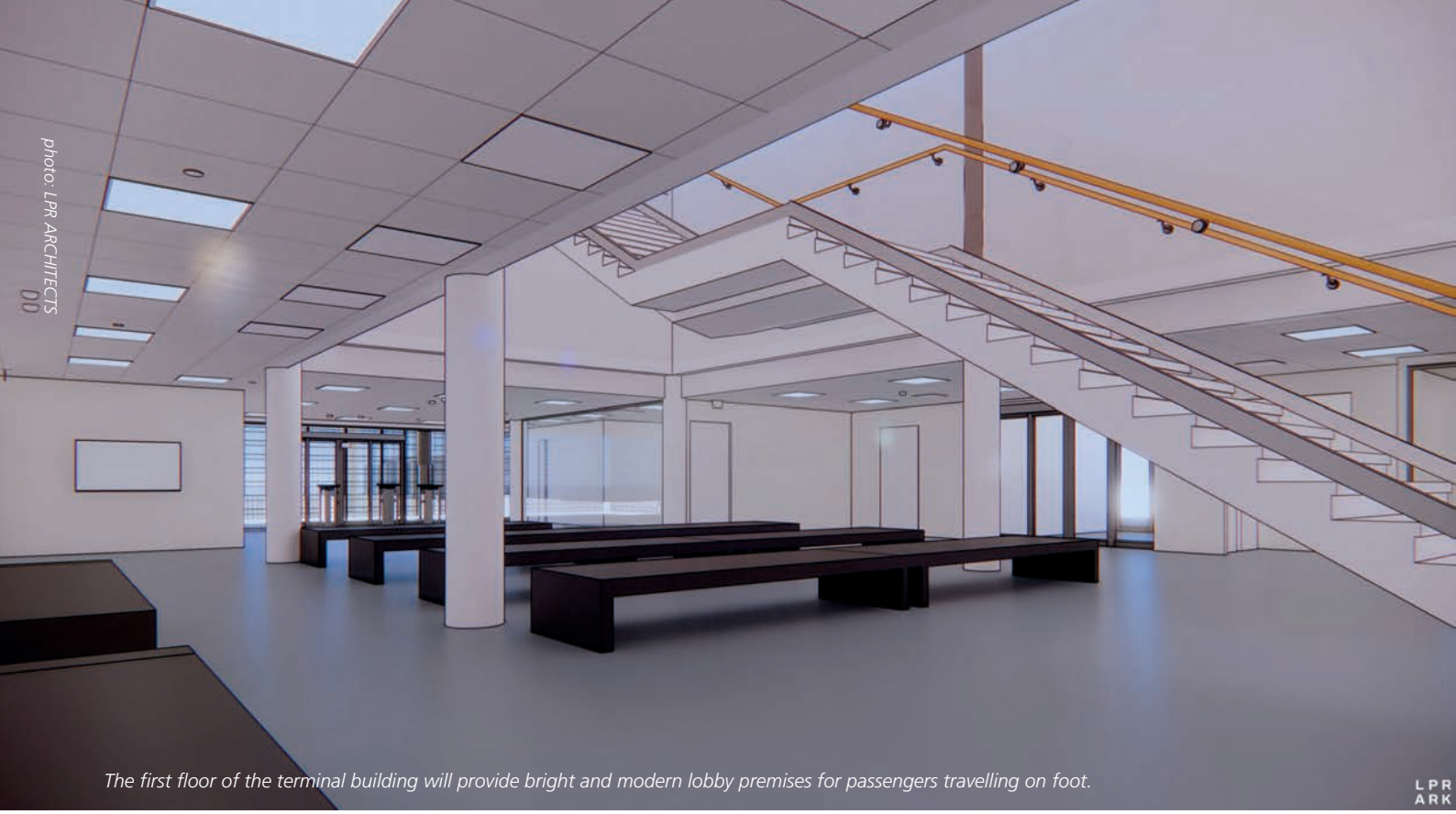


photo: LPR ARCHITECTS

The first floor of the terminal building will provide bright and modern lobby premises for passengers travelling on foot.

The renovation will be completed in stages. The first floor of the terminal building will be completed in August 2023 and will serve as the departure and arrival hall for passengers travelling on foot. The other premises are due for completion in spring 2024.

The planning of the renovation aims at taking better into account the current purpose of the terminal building, which will allow for offering office premises for rent, and new office premises will later be available to new customers as well.

NEW SUPERSTAR CLASS VESSELS IN NAANTALI–LÅNGNÄS–KAPELLSKÄR LINER SERVICE IN 2023

Finnlines' ropax new building programme is proceeding well. The second Superstar class vessel, Finncanopus, was launched at China Merchants Jinling's shipyard in Weihai on 30 December 2022. The first one, Finnsirius, was launched already in August last year. Finnlines' Superstar class passenger-cargo vessels, or ropax vessels, will start operating in 2023 between Finland and Sweden on the Naantali–Långnäs–Kapellskär route.

Finnlines presented its new Superstar vessels at the Matka Nordic Travel Fair in

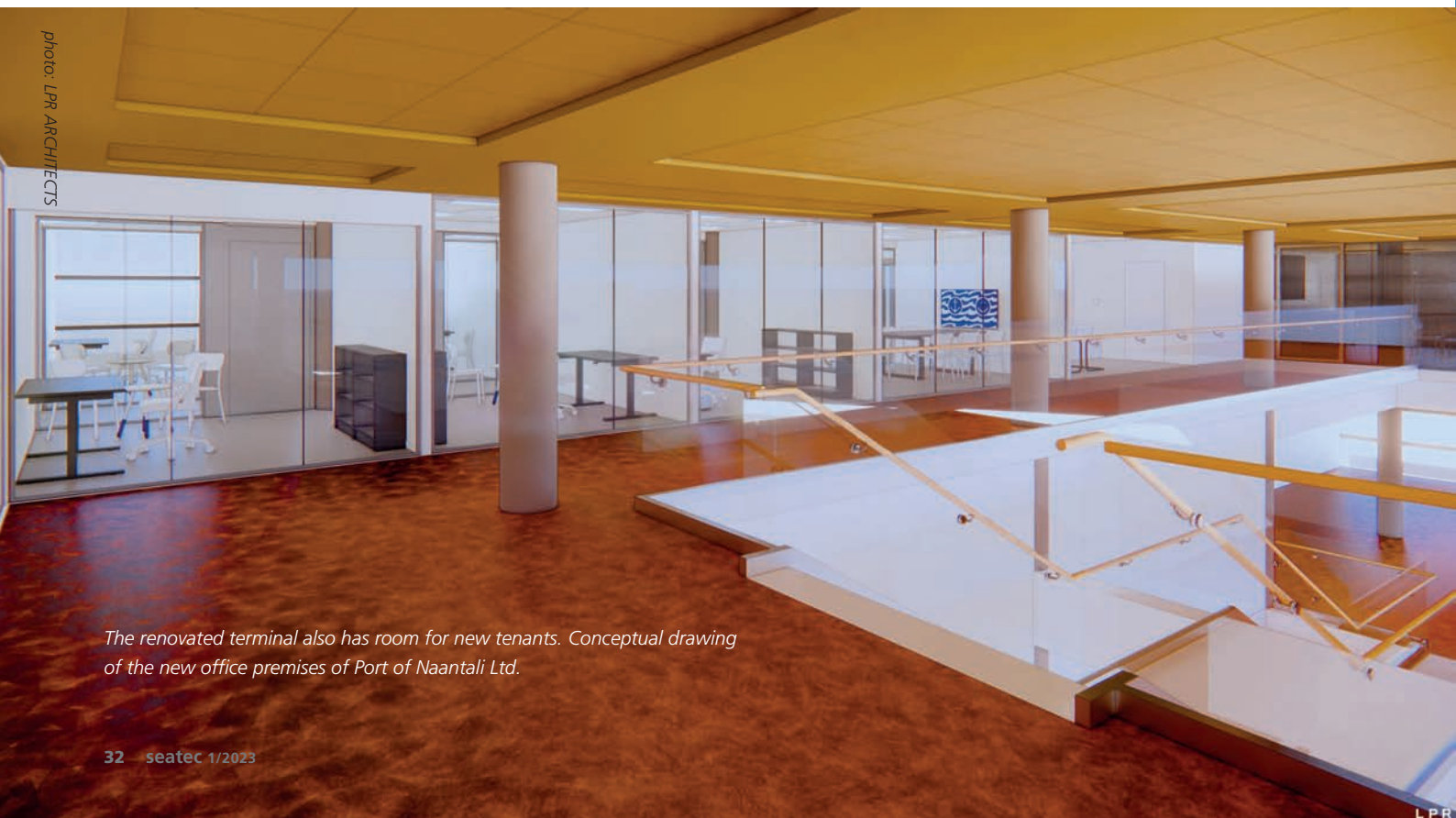


photo: LPR ARCHITECTS

The renovated terminal also has room for new tenants. Conceptual drawing of the new office premises of Port of Naantali Ltd.

Helsinki on 21–22 January 2023 where the company also announced that as a new feature in this summer also for vessels Finnswan and Europalink the Naantali–Kapellskär route will have 97 roundtrip departures with programme aimed especially at children.

Both new vessels have a passenger capacity of around 1 100 people which is approximately twice the capacity of the current Star class vessels used on the route. Cargo capacity on board the new vessels will also increase from the current circa 4 000 lane metres to 5 200 lane metres. Due to the new vessels, we have initiated several construction and renovation projects for improving the infrastructure and the customer experience in particular in the Port of Naantali. With the introduction of the new vessels, the Port is also implementing new traffic arrangements about which we will provide more information at a later date.

"Both new vessels have a passenger capacity of around 1 100.

An automooring system for automated mooring and unmooring of vessels is being completed for Superstar class vessels in the Port in spring, and it will also be introduced for Star class vessels later in the spring. The new system will speed up mooring and unmooring, improve the cost-efficiency of port operations, and increase safety.

The new vessels will also start using the shore-side electricity supply currently under construction. While berthed in Naantali, ships can use direct shore-side electricity which will decrease emissions and reduce noise in the port area, as the vessels need not keep auxiliary engines running while at quay.

photo: FINNLINES

The first Superstar class vessel, Finnsirius, was launched already in August last year.

The second Superstar class vessel, Finncanopus, was launched on 30 December 2022.

> We have increased the use of renewable forms of energy in our buildings.

photo: FINNLINES

USE OF RENEWABLE FORMS OF ENERGY HAS INCREASED IN THE PORT

We have increased the use of renewable forms of energy in our buildings. We have improved energy-efficiency in conjunction with the renovation of the terminal building, and last year we introduced geothermal energy in the heating of the terminal, which enhances energy-efficiency.

Other energy savings, and projects for reducing maintenance costs and emissions have been implemented in the Port of Naantali as follows:

- In 2016, LED lights with new technology were introduced in the lighting of outdoor areas
- In 2020, outdoor field area arrangements were implemented that decreased unnecessary driving and transfers of heavy vehicles in the port area by around 60,000 km per year
- In 2021, the Port started purchasing and using wind-generated energy

DIRECT CONNECTIONS BY LOCAL PUBLIC TRANSPORT SERVICE FROM TURKU TO THE NAANTALI TERMINAL – SHIP PASSENGERS TRANSFER FROM TERMINAL BY BUS DIRECTLY TO THE SHIP

So far Finnlines has taken on board in Naantali commercial travellers who sail the Långnäs–Kapelskär route with a vehicle, but from the next autumn on the new vessels will offer a completely updated system for passengers on foot as well.

There will be a new direct connection from Turku to the Naantali port terminal provided by the local public transport system Föli, which will facilitate the departure and arrival of ship passengers. The passengers will be picked up from the renovated port terminal by a bus that carries the passengers directly into the ship.

The range of services on board the ship will also increase regarding conferences and events, as the new vessels offer new meeting and conference rooms for arranging various training and other events. ■

Finnish Marine Industries

ABB Oy
Adwatec Oy
Aker Arctic Technology Oy
Aker Solutions Finland Oy
Alfa Laval Aalborg Oy
Allstars Engineering Oy
ALMACO Group Oy
Antti-Teollisuus Oy
Apex-Marine Oy
AQ Trafotek Oy
Auramarine Oy
Beacon Finland Ltd Oy
Bertel O. Steen Power Solutions Finland Oy
Bluetech Finland Oy
Cadmatic Oy
Comatec Industrial and Marine Oy
Deltamarin Oy
EIE Maskin Oy
Elcoline Group Oy
Elomatic Consulting & Engineering Oy
Emmanoa Oy
Enersense Offshore Oy
Etteplan Oyj
E.U. -Adhoc Project Oy
Evac Oy
Foreship Oy
FSP For Surface Protection Oy
Furuno Finland Oy
Groke Technologies Oy
GTF Finland Oy
Halton Marine Oy
Helkama Bica Oy
Helsinki Shipyard Oy
I.S. Mäkinen Oy
Jalmare Oy
Jukova Corporation Oy
Kaefer Oy
Kavika Oy
Kemppi Oy
Koja Oy
KONE Hissit Oy
Koneteknologiakeskus Turku Oy
Kongsberg Maritime Finland Oy
Laivasähkötyö Oy
Lamor Corporation Oyj
Lautex Oy
LED Tailor Oy
MAN Energy Solutions Sverige AB, Finland Branch

photo: PIXABAY

Marioff Corporation Oy
Material Maintenance MaMa Oy
Merima Oy
Mesekon Oy
Metalliasennus Huuhka Oy
Metos Oy Ab
Meyer Turku Oy
Millog Marine & Power Oy
Mobimar Oy
Napa Oy
Nora flooring systems Oy
Norsepower
Oy NIT Naval Interior Team Ltd
Oilon Oy
Onninen Oy
ORSAP Oy
Parmarine Oy
Paroc Oy Ab
Pemamek Oy
Piikkio Works Oy
Pocadel Oy
Promeco Group Oy
Rauma Marine Constructions Oy
Rauman Meriteollisuuskiinteistöt Oy
Reddal Helsinki Oy
R&M Ship Technologies Finland Oy
RR Site Service Oy
Saajos Oy
Saint-Gobain Finland Oy
S.A. Svendsen Oy
SBA Interior Oy
SeaKing Oy
Shipbuilding Completion Oy
SSAB Europe Oy
Steerprop Oy
Oy Stellio Ab
Suomenlahden Telakka Oy
TEVO Lokomo Oy
Turun Korjaustelakka Oy
Uudenkaupungin Työvene Oy
Vallila Marine Oy
Valmet Oyj
Wiima Logistics Oy
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company directory

photo: PEXELS

8

ABLEMANS OY

Härjänkurkuntie 46
FI-21250 Masku
Finland
Phone +358 2 439 6500
ablemans@ablemans.fi
www.ablemans.fi

Facts & Figures

Turnover: EUR 9 million
Personnel: 8
Established: 1987

Specialty Areas

Steel and Aluminium structures
Shipbuilding – Shiprepairing – Conversions – Outfitting

1 4 6 7

AB-MARINEL OY

Konsantie 30
FI-21260 Raisio
Finland
Phone +358 2 444 11
info@ab-marinel.fi
www.ab-marinel.fi

Contact Persons

Tommi Niemi
Henry Lindström

Facts & Figures

Turnover: EUR 5 million
Personnel: 50
Established: 1986

Specialty Areas

- AB-Marinel Oy supplies comprehensive delivery of the electrical materials, - equipment and spare parts for all kind of ships and represents several manufacturers of the electrical control-, alarm and communication systems.
- Specialised in turn-key-deliveries for newbuilding ships,including design, installations, material and equipment.

2 6 7

AT-MARINE OY, AUTROSAFE

Uranuksenkuja 10
FI-01480 Vantaa
Finland
Phone +358 9 5494 2600
sales@atmarine.fi
www.atmarine.fi

Contact Persons

Antti Pihlajamäki, antti.pihlajamaki@atmarine.fi
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

2

See page 19

JOUKA OY

Somerotie 4
FI-33470 Ylöjärvi
Finland
Phone +358 3 359 7500
info@jouka.fi
www.jouka.fi

Contact Person

Peter Lillqvist
Peter.Lillqvist@jouka.fi

Facts & Figures

Net sales: EUR 6,5 million
Personnel: 34
Established: 1957
Parent Company: Indutrade AB

Specialty Areas

Jouka manufactures ball valves for demanding solutions with years of experience. We thrive from customer success, and we are specialised in finding best valve solutions for our customers.

1 3 8

JTK POWER OY

Teollisuustie 6
FI-66600 Vöyri, Finland
Phone +358 20 781 2300
Fax +358 6 361 0383
info.fi@jtk-power.com
www.jtk-power-group.com
www.jtk-power-vss.com

Contact Person

Robert Ollus, Managing Director, robert.ollus@jtk-power.com

Facts & Figures

Turnover: EUR 35 million
Personnel: 97 in Finland, 35 in China
Established: 1998

Specialty Areas

Large Internal Combustion Engines' and Gas Turbines' exhaust and charge air silencers.
Offshore-, paper- & pulp and other process industries large silencers.
Small parts machining of e.g. valve seat inserts for medium speed engines and other high quality machined cylindrical parts.
Shelter Solutions Equipment (Väestönsuoja tuotteet) for the building industry and complete Shelter Solutions together with Karanttia Perusturva Oy.
Subcontracting of complex welded structures. 3-way and 2-way exhaust flow valves/ dampers. Design, simulation & measurement services, specialty on attenuation.

7

KAEFER OY

Lehtimäentie 17
FI-21290 Rusko
Finland
Phone +358 2 437 9400
kaefer@kaefer.fi
www.kaefer.fi

Contact Person

Sampsa Järveläinen, Managing director
sampsa.jarvelainen@kaefer.fi

Facts & Figures

Turnover: EUR 30 million
Personnel: 70
Established: 1977
Parent Company: KAEFER SE & Co. KG

Specialty Areas

- Turnkey solutions for Interior outfitting in passenger vessels (newbuild and refurbishment)
- Complete insulation solutions and installation for all industries

1. Consulting
2. Equipment
3. Machinery
4. Materials
5. Safety
6. Systems
7. Turnkey Deliveries
8. Yards
9. Other

3 4

KESKIPAKOVALU OY

Lastikankatu 21
FI-33730 Tampere, Finland
Phone +358 3 357 9000
Fax +358 3 364 5964
info@keskipakovalu.fi
www.keskipakovalu.fi

Contact Persons
Keijo Koivisto
Risto Rönkkä
Marko Haapala

Facts & Figures
Turnover: EUR 7,5 million
Personnel: 33
Established: 1956

Specialty Areas
Bronze foundry and machine workshop. We supply fully mechanised sliding bearings, plates and bushings, as well as pre-mechanised preforms and component tubes & rods, for the use of maritime and offshore industries. Our service range includes customer-specific storage of products, plus express shipping of mechanised parts to the repair locations, in accordance with the customer's blueprints.

2 6 7

KOJA MARINE

P.O. Box 351 (Lentokentänkatu 7)
FI-33101 Tampere, Finland
Phone +358 3 282 5111
kojamarine@koja.fi, www.koja.fi

Contact Persons
Sales, Air Conditioning Systems
Teemu Tanninen, Business Director, teemu.tanninen@koja.fi
Life Cycle Services and Spare Parts, EU
Jussi Koskinen, Project Engineer, marine.spareparts@koja.fi
Koja USA Inc.
Pasi Lähteinen, CEO / President, pasi.lahteinen@koja.fi
Life Cycle Services and Spare Parts, USA
Jake Avery, Sales Director, jake.avery@koja.fi

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 delivers. Cargo ventilation systems. Air Conditioning turn-key deliveries, HVAC electrical / automation systems. Energy efficiency. Indoor air quality.

4

LAUTEX OY

Ojakkalantie 13
FI-03100 Nummela
Finland
Phone +358 9 224 8810
sales@lautex.com
www.lautex.com

Contact Persons
Jukka-Pekka Tuominen, Sales Manager
jukka-pekka.tuominen@lautex.com, +358 44 704 6353
Antti Holappa, Sales Manager
antti.holappa@lautex.com, +358 50 386 1213

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 also includes B-0 and B-15 fire classified ceilings, domes, beams and special ceilings. All ceiling materials are possible to coat on different materials.

4

ONNINEN OY

Työpajankatu 12
FI-00580 Helsinki
Finland
Phone +358 20 485 5111
www.onninen.fi
www.onninen.com

Contact Person
Sampsa Tuomi
Sales Director
sampsa.tuomi@onninen.com

Facts & Figures
Personnel: 1 200 (in Finland)
Established: 1913

Specialty Areas
Onninen provides a comprehensive selection of products and service packages to contractors, industry, infrastructure building and retail dealers. In Finland, Onninen is part of K Group's international building and technical trade division.

2 7

PORKKA FINLAND OY

P.O. Box 127
FI-33101 Tampere, Finland
Phone +358 2 055 5512
contact@porkka.com
www.porkka.com

Contact Person
Petri Hiilloste
petri.hiilloste@porkka.com

Facts & Figures
Turnover: EUR 30 million
Personnel: 170
Established: 1962
Parent Company: Festivo Finland Oy

Specialty Areas:
- Provision stores
- Walk-in rooms in galleys/pantries
- Insulated doors
- Insulated fire doors A60, for cold stores
- Marine cold cabinets and counters

2

See Front Insert

SAAJOS OY

Puistokatu 21
FI- 08150 Lohja
Finland
www.saajos.fi

Contact Person
Tomi Lehtinen
Sales Director
+358 400 811 591

Facts & Figures
Turnover: EUR 7 million
Personnel: 45
Established: 1949

Specialty Areas
- A-class fire doors
- A60 and B15 sliding doors
- B- and C-class fire doors

1. Consulting
2. Equipment
3. Machinery
4. Materials
5. Safety
6. Systems
7. Turnkey Deliveries
8. Yards
9. Other

7

S.A. SVENDSEN OY

Valkjärventie 7 B
FI-00230 Helsinki
Finland
Phone +358 9 681 1170
Fax +358 9 6811 1768
www.sasvendsen.com

Contact Person
Kimmo Räisänen
Managing Director
kimmo.raisanen@sasvendsen.com

Facts & Figures
Turnover: EUR 3 million
Personnel: 3
Established: 1981

Specialty Areas
- Complete turnkey deliveries for cruise ships and ferries
- Interior materials and custom made interior modules
- Refurbishments and refits for cruise ships and ferries

2 4 9

SBA INTERIOR LTD

Hangontie 940
FI-10300 Karjaa, Finland
Phone +358 19 327 71
info@sba.fi
www.sba.fi

Contact Persons
Thomas Pökelmann, Sales Manager, thomas.pokelmann@sba.fi
Johan Fagerlund, Technical Director, johan.fagerlund@sba.fi
Aki Virta, Executive Vice President, aki.virta@sba.fi

Facts & Figures
Turnover: EUR 22,7 million
Personnel: 122
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.

9

SEAKING LTD

Valimotie 13b B, FI-00380 Helsinki, Finland
Phone +358 9 350 8840
Fax +358 9 3508 8422
sales@seaking.net

Contact Person
Jan Montonen, VP Sales, jan.montonen@seaking.net

Facts & Figures
Personnel: 400
Established: 1985
Parent Company: SeaKing International AG

Subsidiaries & Representatives
SeaKing France, SeaKing GmbH, SeaKing Italy, SeaKing Poland, SeaKing Inc.

Specialty Areas
Established in 1985, SeaKing is the industry's leading provider of functional catering systems to cruise liners and other high-class passenger vessels. SeaKing supports its customers throughout the ship's life cycle with basic design, consulting, equipment deliveries, training, maintenance and upgrading of the catering systems. SeaKing has a large production facility in Poland specialised in stainless steel (including refrigerators, service counters, ventilation hoods and pre-fabricated pantries) and a second production facility in Ft. Lauderdale, aimed at responding to the industry's growing renovation and repair activities.

9

SEASIDE INDUSTRY PARK RAUMA

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

Contact Person
Timo Luukkonen
+358 40 550 1942
timo.luukkonen@seasideindustry.com

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

4 7

SPT-PAINTING OY

Rälssitie 6
FI-01510 Vantaa
Finland
www.spt-painting.fi

Contact Person
Tomi Hulmi
+358 40 548 3898
tomi.hulmi@spt-painting.fi

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

4

VALLILA MARINE OY

Nilsiänkatu 15
FI-00510 Helsinki
Finland
Phone +358 20 776 7700
info@vallilamarine.com
www.vallilamarine.com

Contact Person
Miikka Ketola
+358 50 550 7866
miikka.ketola@vallilamarine.com

Specialty Areas
- Full turn-key interior solutions for newbuild cruise ships
- Full turn-key refurbishment solutions for cruise ships
- Light soft goods refurbishment solutions for cruise ships
- Tailor-made soft good products

1. Consulting
2. Equipment
3. Machinery
4. Materials
5. Safety
6. Systems
7. Turnkey Deliveries
8. Yards
9. Other

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Bureau Veritas supports industry players in meeting the safety, technical and regulatory challenges of low carbon or zero carbon fuels, and alternative propulsion. We help clients achieve emissions compliance, meeting EEDI, EEXI and CII requirements. Our other green services support owners to prepare for an evolving regulatory landscape, such as the reduction of underwater and airborne noise.

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MSC WORLD EUROPA, MSC CRUISES

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