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BLUE SEAS, GREEN GROWTH

Competitiveness comes in many shapes and sizes. Certainly in the marine industry, "going green" has been a very shrewd move to make as customers are becoming more and more environmentally conscious. Sustainability issues impact all fields of marine industry and the requirements set for marine technology are becoming increasingly strict.

Recent report 'Smart maritime technology solutions' by Finnish Maritime Industries and Ministry of Economic Affairs and Employment argues that further research is needed within the industry on issues such as new energy sources, power-generation flexibility, recovery of energy from on-board systems, energy storage and emissions and their reduction and energy economics.

In addition, performance, maintenance and emissions management need to be improved by operational profiles and areas such as reliability prognosis, identification of parasitic losses and fault diagnostics, retrofits and turbo-compounding should be boosted, as well.

In the brightest of crystal balls, the future of maritime is free from fossil fuels. One of the latest news on this front came over summer as Peace Boat, Japan-based international non-profit organisation, signed a letter of intent with the Arctech Helsinki Shipyard to construct EcoShip, the world's greenest cruise ship. Arctech is set to build "the most innovative and ecologically friendly cruise vessel ever", a flagship for the fight against climate change.

The 2 000-passenger and 750-cabin, 60 000 GT vessel is scheduled for delivery in spring 2020. EcoShip, with its nature-inspired architectural design by Spanish company Oliver Design, will be the platform for Peace Boat's round-the-world cruise carrying 6 000 people per year, hosting exhibitions on green technology in up to 100 ports per year and serving as a "floating sustainability laboratory" contributing to research on ocean, climate and green marine technology.

Similarly, green winds blow also in Turku and Rauma shipyards. Turku, for instance, is an industry leader in the making of LNG powered cruise vessels.

Rauma shipyard has successfully rebooted its operations and is now operating as a new entity, Rauma Marine Constructions (RMC). The keel of the very first vessel – a ferry for Danish Molslinjen – was lowered into its place in August 2017. The Danes will get their ferry in the spring.

In addition, one of the key players in Rauma, Roll-Royce Marine is currently making major investments in its azimuth thruster production facility. The 57-million-euro investment – due for completion by 2020 – includes e.g. a major rebuild of existing facilities and installation of a crane capable of lifting 200 tonnes.

PETRI CHARPENTIER

PUBLISHER

PubliCo Oy
Pätkäneentie 19 A
FI-00510 Helsinki
Finland
Phone +358 20 162 2200
info@publico.com
www.publico.com

EDITOR-IN-CHIEF

Petri Charpentier

PROJECT MANAGER

Jaakko Lätti

EDITORIAL COORDINATOR

Vappu Virtanen

GRAPHIC DESIGN

Riitta Yli-Öyrä

CONTRIBUTORS

Sami J. Anteroine
Merja Kihl
Ari Mononen
Jarkko Böhm

COVER PHOTO

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At the former shipyard site of the city of Rauma on the west coast of Finland, the Seaside Industry Park still keeps developing. This maritime industrial park for the heavy industries now employs more workforce than in bygone days. New development projects for the park area are inspired by the idea of building for a brighter future.

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THE BIG PICTURE

SUSTAINABILITY REQUIRES A NEW TYPE OF HOLISTIC APPROACH FROM SHIPYARDS

by: SAMI J. ANTEROINEN

photos: MEYER TURKU OY





// Sustainability
is much more
than just energy-
efficiency.

Meyer Turku shipyard in Turku, Finland.

Environmental friendliness and energy efficiency have been on the agenda of successful shipyards for quite some time now. For example, Meyer Turku has built passenger ships featuring the latest technologies, such as LNG operated vessels with very low emissions, and vessels with scrubbers and catalytic converters for reducing emissions of sulphur oxides and nitrogen oxides. The Turku shipyard also has expertise in building very energy-efficient vessels with outstanding hydrodynamic performance and numerous other energy-saving innovations.

However, when it comes to sustainability, these measures are only a part of the big picture. Jaana Hänninen, Sustainability Manager of Meyer Turku, says that sustainability in today's business is much more than just energy-efficiency: one has to consider also such aspects as social and economic sustainability.

"Also, there are many levels and perspectives to sustainability: for example, are you talking about the product, the process or the business as a whole?" she asks.

MANAGE THE LIFECYCLE

With Meyer Turku's thick orderbook, the shipyard is putting out ships well in to the 2020's – and has to consider the lifecycle of those vessels very carefully. Materials have to be sourced in a responsible way, labour has to be treated fairly – and the materials themselves are, preferably, recyclable.

"With regards to hull materials, it's also worthwhile to explore light, durable options, since lighter ships consume less fuel," Hänninen adds. "The sustainability process is a big, complicated puzzle, but there are many ways to make improvements, especially via collaboration with other parties."

For cruise operators, it is vital to understand all aspects of sustainability and get reliable data for their investment decisions. With appropriate measures, the lifecycle of a modern cruise ship can be extended to 40 years or even more. Hänninen notes that while sustainability has had a role in the shipbuilding business for



Jaana Hänninen, Sustainability Manager of Meyer Turku.

years, the industry players have not discovered all the connections and opportunities yet.

"However, sustainability is a powerful trend that is only getting stronger. In order to fully adapt, we need accurate data and a transparent process, and we need to implement cradle-to-cradle thinking for this industry."

COME TOGETHER

With this evolution in mind, Meyer Turku has joined an ambitious research project

with the aim of adding value and substance to sustainable business. Coordinated by the University of Turku, the project is called Sustainability and Transparency in Shipbuilding Networks (SUSTIS). The research partners include as many as three units in University of Turku (Future Technologies, Centre for Collaborative Research, Finland Futures Research Centre) and also VTT Technical Research Centre of Finland. Furthermore, several industry partners have their own parallel projects linked to the research project.

Under SUSTIS, shipping companies are learning to embrace a wider concept of sustainability to communicate a change in the way they are thinking. In order to achieve this, the shipyard as a system integrator (and its subcontracting network) have to cover larger part of the value chain with sustainability and transparency.

360° APPROACH

The project looks into the possibilities of enlarging the scope of sustainability from ships operations to the whole lifecycle and how this wider approach can be communicated efficiently to the customer.

"We feel that sustainable, responsible actions have to be apparent in every facet of the business, from the way a vessel is operated to the customer interface," says Hänninen.

Phase I of the project was concluded in February 2017. Focused on identifying relevant sustainability indicators, their

transfer and utilisation, the main result of the Phase I was validation of sustainability's business value in the shipbuilding network and, ultimately, for the cruising business.

"In Phase I, we set the parameters for the development of more sustainable maritime industry and considered, in depth, how can we take the Finnish maritime cluster forward as a whole," explains Hänninen.

DATA MUST FLOW

In the on-going Phase II, the research scope has widened, exploring more methods and solutions for data transferring. Utilisation of the transferred sustainability data is cov-

ered by creating and testing various pilot applications. Phase II also promotes dialogue around the utilisation of sustainability arguments and data for increased economic resilience of the shipbuilding network.


"Phase II involves taking the sustainability guidelines to the companies themselves, and making sustainability a more integrated part of the everyday operations," adds Hänninen.

For the Turku shipyard, this process has also meant seeking greener sources of energy: since the summer 2017, the yard has been powered by electricity from hydropower. ■

**The lifecycle of a modern
cruise ship can be extended
to 40 years or even more.**



Meyer Turku shipyard is powered by electricity from hydropower.



The 120 meters high Goliath Crane.

// Meyer Turku
has joined
an ambitious research
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COSTA GOES LNG

by: SAMI J. ANTEROINEN

Sustainability is apparent in new cruise vessels powered by liquefied natural gas (LNG). The latest two LNG cruise ships “in the pipeline” at Turku are the Costa Cruises twins, of which the first one – named Costa Smeralda – went into production in the autumn. The steel cutting ceremony was held on 13th September 2017 at the Meyer Turku shipyard. The ship will take to the seas in October 2019 with her sister ship following in 2021.

Costa Cruises ships will be built, in part, utilising new machinery and building

processes at Meyer Turku. With an investment plan of 185 million euros, Meyer Turku is aiming to be the world’s most modern cruise ship yard.

Meyer Turku CEO Jan Meyer has noted that for the shipyard, the 183 900 GT Costa Smeralda is also a step up in ship size. New facilities are needed to answer the demands of the customers and to increase the competitiveness of the yard for the future.

Of the new investments, the most visible one is the 120-metre-high Goliath

Crane, installed in November. The new hi-tech crane is an essential part in the ramp up of production at the shipyard, but the old crane is still hard at work, too.

“We upgraded the old crane to make sure that it can cope with the workload,” says Jaana Hänninen, Sustainability manager for Meyer Turku. “When we modernise the existing machinery instead of demolition, we are contributing to Circular Economy.” ■

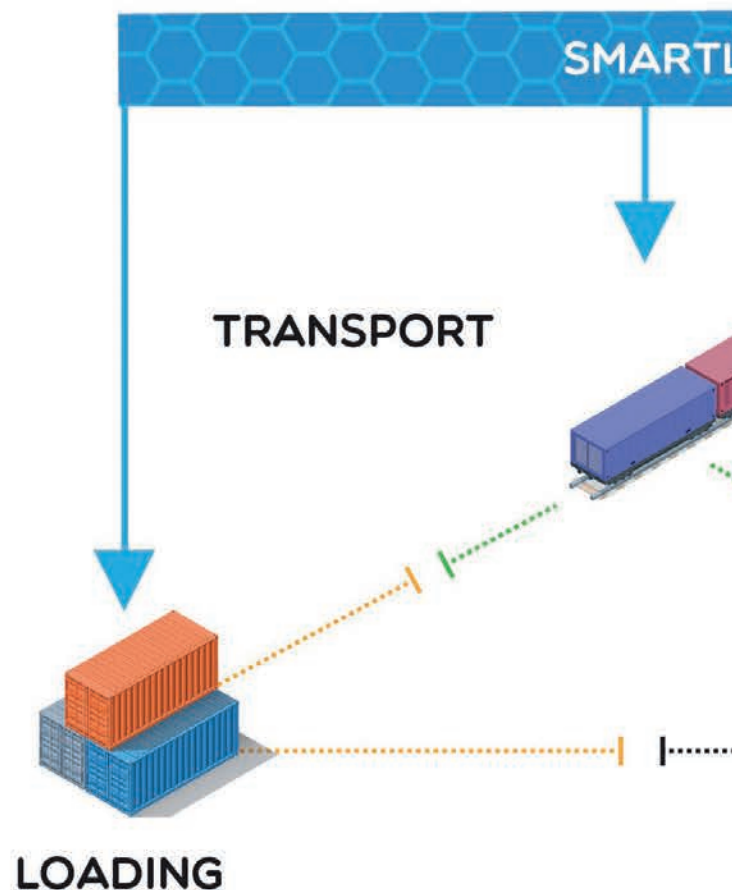
MARITIME GOES BLOCKCHAIN

by: SAMI J. ANTEROINEN

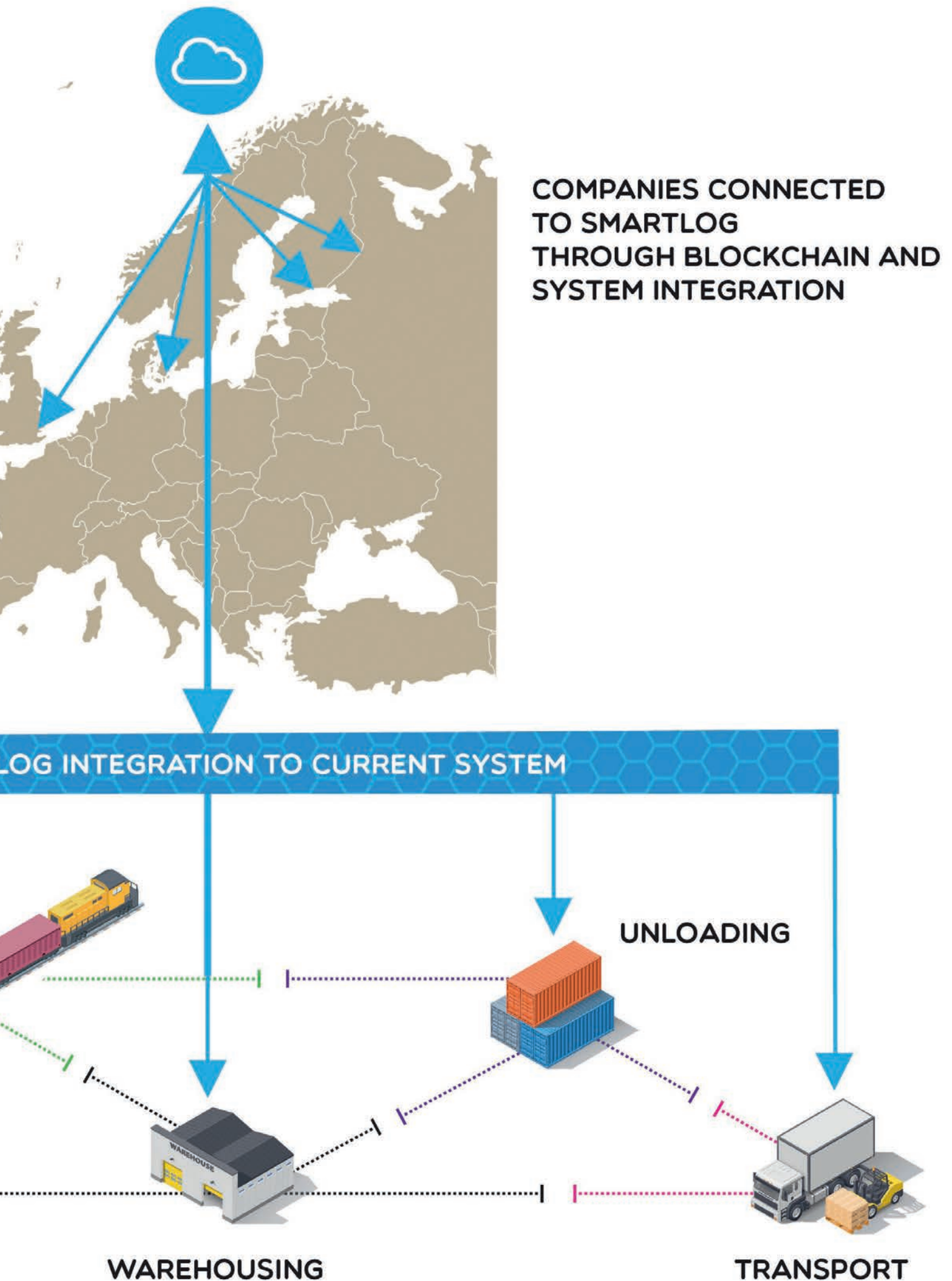
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Digitalisation is already deeply embedded into maritime industry. Mika Lammi, the head of IoT business development at Kouvola Innovation, argues that the maritime sector has jumped wholeheartedly into the deep end and is pursuing all things digital via, for example, improved sensors and analytics tools.

// The maritime sector has jumped wholeheartedly into the deep end.



SMARTLOG BLOCKCHAIN





Mika Lammi, the head of IoT business development at Kouvola Innovation.

"Optimising the various functions of the ship, starting with fuel consumption, can be improved a great deal via digitalisation," says Lammi.

According to Gartner, IoT and blockchain are emerging new technologies in the logistics context that will become mainstream within the next 5 to 10 years.

**// These
technologies can
do wonders.**



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These technologies can do wonders for your supply chain – which means that the maritime sector is interested to hear more.

Lammi gave a presentation at EUROPORT 2017 – held in Rotterdam in November – concentrating on blockchain technology and what that technology can do to reinvent maritime logistics.

IN BLOCK WE TRUST

According to Lammi, blockchain technology makes it possible to accumulate generated data in a decentralised database and create a distributed ledger that keeps records of digital transactions. Data in the blockchain is unchangeable and digitally recorded in packages – the so-called blocks.

Blockchains are formed by blocks that are chained to other blocks, using a cryptographic signature. They are visible to anyone within a network with the appropriate permissions. This technology will have a major impact on supply chains,

potentially reducing delays and making the need for intermediaries obsolete.

“In the blockchain logistics system, you only need to trust the system, not the individual player,” says Lammi. The emerging new transport system is shared, rep-

// Data in the blockchain is unchangeable.

licated and permissioned – and fraud becomes a thing of the past.

“It is also noteworthy that blockchain applies to all types of transport, from trains and trucks to cargo ships.”

DATA FLOWS, CARGO FLOWS

The total annual value of global trade is estimated to be around 1.8 trillion USD – and, according to estimates, blockchain could help save about 10% of that amount. It is no wonder then that maritime players are keen on this innovation.


According to Lammi, so far the problem of the logistics industry problem is that while goods are moving, the information is not – it is too often locked away in silos, with no way to retrieve it effectively. When a logistics chain can involve, say, 50 companies, it soon becomes a real issue that data is handicapped in such manner.

Lammi envisions a global system where the owners and the operators of the transportation chain first set up a blockchain system, and then every action is recorded into the system using concise format and content. As there's more information – detailed, specific, useful information – the amount of manual routines decreases dramatically and the entire process is sped up considerably.

 **There's
a risk
that blockchain
turns into one
big spaghetti.**

CONTAINER CALL HOME

The 'Holy Grail' in all of this is the emergence of smart containers that will automatically figure out the best route to the destination, Lammi says. “For now, however, the system suggests route options to the human user.”

 **You only
need to
trust the system,
not the individual
player.**

“In the future, blockchain can become a sort of a neural network which gets the necessary information for the containers, figuring out where to go and how.”

Still, blockchain requires collaboration and common ground rules. According to Lammi, within 5–10 years there will be so many rival blockchain systems that standardisation will turn into a major question.

“If everyone works doggedly with their own solution, there's a risk that blockchain turns into one big spaghetti that's beyond anyone's control to manage. Interoperability is probably the biggest challenge out there.”

GET ON THE SAME PAGE

Lammi, for his part, is involved in Blockchain Ecosystem Network (BECON), which provides a platform for blockchain methodologies and solutions, looking to avoid at least the most obvious pitfalls of the future. Lammi is also a member of the blockchain working group set up by Finnish Standards Association SFS.

The standardisation of blockchain is, in fact, under way as ISO/TC 307 seminar was held in April 2017 in Sydney, Australia. At the seminar, five study groups were set

up to focus on various aspects of blockchain such as e.g. agreeing on common terminology.

“Standardisation may not sound very exciting, but is very necessary in the long run,” Lammi says.

ROBOSHIPS, AHOY!

Talking about autonomous shipping, Lammi sees that technology is developing pretty much side by side with smart cargo. “They're not in competition as such, but are, instead, both manifestations of the same future.”

And how “smart” is the Finnish maritime cluster, in Lammi's view? – Lammi comments that Finland has many global forerunners in the digital maritime, even if they may be niche players, for the most part.

“In fact, I'd rather see a development where there's a network of 3 000 innovative small companies than one huge one,” he says, applauding the networking model of Meyer Turku where the shipyard serves as a ‘master coordinator,’ managing a network of hundreds of suppliers.

“Cruise industry is very much about project management excellence and Finns have proven themselves quite capable in this field.” ■



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MAJOR PROJECTS IN SHIPBUILDING TO FINNISH MARITIME SPECIALISTS

by: MERJA KIHILÄ AND ARI MONONEN

photo: LAUTEX OY / KARI PALSILA



// The regulations
for fire safety and
classification are particularly
stringent.



*Many Finnish shipyard subcontractors
and other members of the maritime
corporate cluster are involved in large-
scale shipbuilding projects worldwide.
Photo from a restaurant in Mein Schiff 6.*



Mr. Antti Holappa, Sales Manager for Lautex Oy. Lautex specialises in suspended metal ceilings for ships.

Many Finnish shipyard subcontractors and other members of the maritime corporate cluster are involved in large-scale shipbuilding projects worldwide. Experienced professionals are needed wherever huge cruise ships are being built.

One of the Finnish maritime cluster companies, Lautex, specialises in suspended metal ceilings for ships, both for newbuild projects and renovations.

"All ceiling products are tested and MED-certified for use onboard ships," says Mr. Antti Holappa, Sales Manager for Lautex Oy.

"Our main customers are turn-key suppliers of the shipbuilding industry, responsible for specific areas of ship where suspended ceilings are needed for

**The
competition for
shipyard deliveries can
be fierce.**

Gazprom Neft Novy Port LLC builds two icebreakers at Vyborg Shipyard JSC based on Aker ARC 130 A design.



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comfortable and finished atmosphere. Ceilings can also hide technical fittings installed above them."

SAFETY FIRST

Several of Lautex's projects take place at shipyards abroad. At STX France's St. Nazaire shipyard, the company has now started deliveries for the cruise ships 'Symphony of the Seas' and 'Celebrity Edge,' continuing throughout the first half of 2018.

"At Meyer Werft shipyard in Germany, a new ship 'Norwegian Bliss' is being built for Norwegian Cruise Lines, with delivery expected in spring 2018," notes Holappa. For this ship, Lautex delivered part of the ceiling materials in June 2017, with the last deliveries expected in January 2018.

"Also, several Quantum series cruise ships will be built by Meyer Werft shipyard for Royal Caribbean Cruises. The next in line is 'Quantum 4' that has been sched-

uled for delivery in the spring of 2019. Lautex will start deliveries for that ship in January 2018, first supplying the suspension rails and other support structures for the ceilings. Later on, the ceiling surface materials will follow."

"The installation work will be carried out by the customer but Lautex always offers engineering and other technical support in delivery projects."

In the case of cruise liners and other passenger ships, the regulations for fire



Koja Oy Marine signing the contract for delivering HVAC air-conditioning systems for four Global-Class cruise ships.

// Special attention has been paid to the environmental dimension.

safety and classification are particularly stringent.

"For onboard public spaces for passengers, surfaces must be in fire class C. For cabin ceiling or bulkhead surfaces, fire class B is required, so that all materials need to be fire-resistant for a duration of 30 minutes as verified by laboratory testing," Holappa explains.

Another requirement is that materials should be noise-resistant, for passenger privacy and convenience.

NEW GERMAN SHIPYARD

"These days, we are also delivering ceiling materials for MV Werften shipyard in Wismar, Germany. From this shipyard, river cruise ships were ordered for Crystal River Cruises."

These cruise ships are not very large-sized but they have high-quality interiors.

The first series will consist of four ships that are nearly identical in design. The first two ships are 'Crystal Bach' and 'Crystal Mahler' that were completed in 2017.

The next two in the series – 'Crystal Debussy' and 'Crystal Ravel' – are now under construction as the shipbuilding work for them was started in autumn 2017. The delivery for these two ships is scheduled for spring of 2018.

The ships are expected to cruise on the Rhine, the Main, the Danube, and the Moselle rivers. For 'Crystal Debussy' the maiden voyage has been scheduled for April 2018.

According to Mr. Holappa, the competition for shipyard deliveries in Europe can sometimes be fierce.

"Our main assets in the game are the reliability of deliveries, product quality, and our readiness for design work. We also develop our own products continuously," affirms Holappa.

EXTRA-LARGE SHIPS FOR THE CHINESE MARKET

Mr. Esko Nousiainen, Director of Air Conditioning Systems for Ships at Koja Oy Marine, confirms that Koja – in cooperation with ENGIE/Axima – will deliver HVAC air-conditioning systems for four Global-Class cruise ships, including two options. The ships are intended for the Chinese market, for the ship owner Star Cruises.

The cruise ships will be built at MV Werften shipyard in northern Germany. They are to be equipped with approximately 2 500 cabins which means a very large passenger capacity.

ENGIE/Axima and Koja Marine have

established a consortium called AXIKO that was awarded the HVAC turnkey contract, expected to employ more than 300 people in France, Germany and Finland.

The design phase for the ship systems was started in 2017. The delivery of the first cruise ship has been scheduled for 2021 while the second one will be ready for delivery in 2022. The contract value has not been made public.

Koja Marine's part of the delivery includes the HVAC system, equipment and design. ENGIE/Axima is responsible for the HVAC installations, and for the accommodation, machinery room, chillers, and chilled and heated water production.

"Special attention has been paid to the environmental dimension of the project through some very challenging performance commitments and the selection of highly energy-efficient equipment," Mr. Nousiainen notes. ■



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SIMPLY THE BEST

by: MERJA KIHLE AND ARI MONONEN

photo: AKER ARCTIC TECHNOLOGY INC.

*Finnish know-how for building and designing icebreakers
is in high demand – and for a good reason, too.*



*This Double Acting arctic LNG transport vessel
was developed by Aker Arctic. The vessel
started year-round traffic from Sabetta.*

// Logistically,
Finland was
an island.





Esko Mustamäki, CEO for Arctech Helsinki Shipyard notes that approximately 60 percent of the icebreakers currently in operation worldwide have been built at Helsinki shipyard.

Situated on both sides of the Arctic Circle, Finland has had plenty of use for icebreakers over the years. The country's seaways are liable to get blocked by heavy ice every winter.

"Logistically, Finland was an island in the 19th century when engineer Robert Runeberg started designing steam-powered icebreakers. This helped to establish

year-round maritime export transportation to the continent," recounts Mr. Esko Mustamäki, CEO for Arctech Helsinki Shipyard.

NEW VARIANTS

Since those days, Finnish companies have gained lots of more experience in building icebreakers.

"Many of the icebreakers have been

exported. In addition to Finland, the main market areas have been Sweden and Russia."

Continuous R&D in icebreaker design has contributed to achieving success.

"Furthermore, Finland has built numerous types of icebreakers: small-scale variants, shallow-water icebreakers for river environments, AC/AC icebreakers

for the Baltic Sea, polar icebreakers, even two nuclear-powered icebreaker ships – and the latest example ‘Polaris’ that is powered by liquefied natural gas (LNG),” Mustamäki points out.

“We are also in the process of building a series of multi-purpose icebreakers for the offshore industry. Six of them are ready and the seventh one under construction.”

These multi-purpose vessels will be operated in the Sahalin area. In that region, the thickness of ice is largely the same as in the Baltic Sea area but the unpredictability of currents might be a challenge for icebreaker operations.

FURTHER DEMAND FOR LNG-POWERED SHIPS

After more traditional icebreaker techniques, the Azipod propulsion was introduced in the 2000s.

“These days, nearly all new icebreakers carry some sort of propulsion device capable of 360-degree rotation. This will improve the steerability and icebreaking capacity of icebreakers,” says Mustamäki.

“Currently, we are building an arctic tanker capable of icebreaking. The ship

was ordered by a Greek shipping company for use in the North-East Passage. Icebreaking tankers have been around for some time already, but this is the first one of them being built in Finland.”

“The tanker will be able to break ice with a thickness of 1.8 metres, as it should be able to in the region of the North-East Passage. According to schedule, the tanker will be ready for delivery in the late summer of 2018.”

Mr. Mustamäki notes that approximately 60 percent of the icebreakers currently in operation worldwide have been built at Helsinki shipyard.

“In the future, the number of LNG-powered icebreakers is definitely going to increase. There will be more demand for environmentally-friendly icebreakers,” Mustamäki expects.

MORE POWER AND NEW CAPABILITIES

Design for new icebreakers is largely being carried out in Finland by Aker Arctic Technology.

“In the field of icebreaker construction and design, Finland has plenty of experience and special know-how,” says

Mr. Reko-Antti Suojanen, CEO for Aker Arctic Technology Inc.

“One of our strengths is that we have always been able to produce purpose-built icebreakers, designed specifically for certain operating environments. We keep in touch with the ship operators and understand their needs.”

“Furthermore, Finland has a good network of maritime industry operators and subcontractors who constantly carry out R&D work for their products.”

Mr. Suojanen emphasises that the development of new propulsion techniques has made modern new-generation icebreakers possible.

“Azimuthing propulsion technology makes new icebreakers much more efficient and capable than their predecessors. Modern icebreakers can be utilised for breaking packed ice and other types of very thick ice.”

Icebreaking capabilities can also be designed into the cargo vessels.

“Dozens of ships today used in the Northern Sea Route on year-around operation are all developed by Aker Arctic over the past decades. Today, new ones are being built at several shipyards.”

“These big and powerful ships can provide reliable and effective transport of goods in the arctic region. The new first icebreaking-type LNG carriers which start operation in December 2017 – allowing the massive LNG deliveries from the arctic – are a good example,” Suojanen says.

GOING FOR NEW MARKET AREAS

Also, modern icebreakers tend to be multi-purpose vessels. They can be utilised for transporting passengers, towing and offshore operations, or oilspill response activities.

“Even in the 1990s, oil and gas industries operated multi-purpose icebreakers, but newer vessels have a wider variety of functions. Many of them can be operated as environmental research vessels,” Suojanen mentions.

One of the possible future projects for Aker Arctic is the design for new icebreakers for the U.S. Coast Guard. Six new



**The USCG
project
is proceeding
gradually.**

Arctech Helsinki Shipyard.





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Icebreaking capabilities can also be designed into the cargo vessels.

vessels of varying types will be needed in the near future to replace older ships that were built in the 1970s. New icebreakers need to be larger, more modern and more efficient.

"The USCG project is proceeding gradually. We are now waiting for the budget decision of the U.S. Congress, scheduled to be made in early 2018."

"Currently, Aker Arctic is engaged in preliminary design for the new ships, preparing for the bidding competition that is expected later in the same year," explains Suojanen.

Other current and forthcoming pro-

jects include the design for arctic research vessels for China, Germany, India and possibly South Korea.

"We also continuously develop new designs and technology in order to stay in the forefront of the icebreaking technology, and our special ice model test basin can be used to support these developments."

"In many cases, we carry out R&D work in cooperation with Aalto University, as well as with shipbuilding companies. This has contributed to new innovations in the design of icebreaker concepts," Mr. Suojanen asserts. ■



LOOKING GOOD

RAUMA'S SEASIDE INDUSTRY PARK IS BEING BUILT FOR THE NEEDS OF REGIONAL 'LOCOMOTIVE' COMPANIES

by: JARKKO BÖHM

photos: RAUMA MARITIME INDUSTRY ESTATES INC.



At the former shipyard site of the city of Rauma on the west coast of Finland, the Seaside Industry Park still keeps developing. This maritime industrial park for the heavy industries now employs more workforce than in bygone days. New development projects for the park area are inspired by the idea of building for a brighter future.

The shipbuilding company RMC – or Rauma Marine Construction Oy – has a busy schedule. The first keel-laying of this relatively new company took place in August. The vessel, a 158-metre passenger and car ferry, was ordered by the Danish shipping company Molslinjen, for the purpose of starting commercial maritime traffic in the autumn of 2018 between ports in the Danish archipelago.

Another vessel currently at the shipyard dock is the research vessel Aranda owned by the Finnish Environment Institute, undergoing basic repairs. The ship has been cut in half as it is to be lengthened by seven metres.

RMC is situated within the Seaside Industry Park, an industrial park that has

been designed for the heavy industries. The shipbuilding company has a 30-year lease for the shipyard dock, along with the surrounding refurbishing piers, the cranes, and the office building.

“All of the steel production machinery and equipment is owned by us. We have a policy of leasing production facilities as needed, but we equip the buildings with our own machinery,” notes Mr. Heikki Pöntynen, CEO for Rauma Marine Construction Oy.

Along with the propeller-equipment manufacturer Rolls-Royce Oy Ab, RMC is an example of the trailblazer companies of the industrial park for whom the Seaside Industry Park has largely been designed and built.

“Those two are by far the largest companies that we have as tenants at the moment. The network of companies within the industrial park is for the most part being composed around those two companies,” recounts Mr. Timo Luukkonen, CEO for Rauma Maritime Industry Estates Inc., an estate company owned by the City of Rauma.

Rauma Maritime Industry Estates Inc. is tasked with the administration and development of the Seaside Industry Park. The companies operating within the industrial park form a corporate network that primarily serves the trailblazer companies but also other companies in the area.

For instance, the local painting company will provide surface-coating services

**// In spite of the
tumultuous times,
the shipyard activities
were continued.**

"We have a good team spirit between companies within the industrial park, but also with the City of Rauma," says Mr. Heikki Pöntynen, CEO for Rauma Marine Construction Oy.

photo: SAMMELI KORHONEN



**// The permit is
the first of its
kind in Finland.**



"The whole concept for the industrial park was originally created in cooperation with the major-scale companies in this area," notes Mr. Timo Luukkonen, CEO for Rauma Maritime Industry Estates Inc.

for both RMC and Rolls-Royce – but also for other clients as needed.

"After all, the whole concept for the industrial park was originally created in cooperation with the major-scale companies in this area," Mr. Luukkonen points out.

GETTING FASHIONABLE

RMC and Seaside Industry Park were practically established together in 2014. When the shipbuilding company STX decided to close the Rauma shipyard, the process for selling the shipyard site to the city of Rauma was set in motion.

In spite of the tumultuous times, the shipyard activities were continued without interruption.

"The last STX employee left the area on the last day of June. The same guy came back on the 1st of July, wearing an RMC worker's jacket," Luukkonen reminisces.

The number of companies operating within the industrial park has stabilised to approximately 30. However, the Seaside Industry Park employs more people than before. The number of employees in the industrial park was 450 in 2016, but now the number of employees has already risen above 700.

"In fact, we now employ more people than STX did in the last stages of the old shipyard," adds Mr. Luukkonen.

In the course of the closing year, the infrastructure for the industrial park has been repaired and modernised. The networks for district heating, electricity and sewage have been – and will be – subjected to renewals. Cranes and other production equipment have undergone basic repairs.

"In order to be on a par with current demands, the park's equipment and facilities have been repaired, renovated and partially even replaced."

CEO Heikki Pöntynen from RMC abundantly praises the concept of the Seaside Industry Park.

"We have a good team spirit between companies within the industrial park, but also with the City of Rauma. The City has a good understanding of the needs of this type of business and is also able to contribute to the establishment of good operating environments."

Even though the industrial park has officially been in operation for three years only, ships have been built in this area for decades.

"This is definitely one of our strengths. Furthermore, we have been able to recruit employees who have plenty of know-how. They are shipbuilding professionals who are now continuing their work by using the same machines and other equipment

that have even previously been utilised for this purpose," describes Pöntynen.

KEEPING BUSY

The industrial park has been issued one environmental permit, common to and covering all the companies operating within the area. The permit is the first of its kind in Finland. According to Mr. Pöntynen, this type of permit facilitates a company's operations considerably.

"There is no need for each company to go through the application process separately: everybody can operate within the limits of a joint permit. This is quite a unique arrangement in Finland," he notes.

Mr. Luukkonen explains the practice of the joint permit: "Our estate company is responsible for overseeing that the companies keep operating within the limits of the permit. We report to the authorities jointly, on behalf of all the companies within the industrial park."

In his view, the joint-issue environmental permit has worked very well.

"There have been no problems or malpractices. The companies are totally committed to fulfilling the obligations defined by the permit."

According to Luukkonen, the same practice should be used also elsewhere in Finland.

"Even from the point of view of the authorities, it would be easier to keep an eye on larger regional entities, rather than separate chimneys one by one."

While the Seaside Industry Park has been designed for the needs of major-scale companies, Timo Luukkonen expects the industrial park to offer plenty of possibilities even for small and medium-sized companies.

"The main benefit is found in infrastructure. Our production facilities have all the time housed companies that are engaged in subcontracting projects but retain their headquarters and main facilities elsewhere."

"In general, a small or medium-sized company first runs out of space. It would like to set out on a big project that it cannot carry through inside its own produc-

The industrial park offers a chance for even small-scale operators to export their products.

tion facilities. Then the company contacts us and leases more space within the industrial park."

This kind of arrangement yields more flexibility to the company: it can lease as much space and for as long a time as is needed for the new project.

Furthermore, the industrial park offers a chance for even small-scale operators to export their products. The Seaside Industry Park piers can be utilised for loading cargo and exporting goods manufactured by various small companies, by cargo ships.

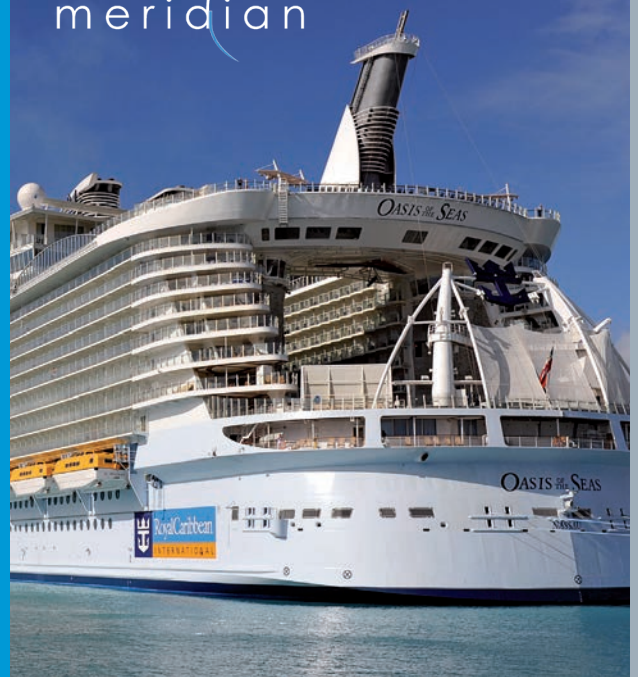
"We make such operations possible. We keep the facilities and equipment in good shape, as well as offer electricity, heating, gas pipelines, and other basic services, so that the company is able to concentrate on its own business activities," Luukkonen depicts.

He says he has lots of confidence in the future of the industrial park. The estate company intends to improve the functionality of the area and to keep on creating new services.

Additionally, the estate company wishes to build an even better operational environment for the companies within the Seaside Industry Park. Demand is on the increase since shipbuilding will keep the companies in this area quite busy, at least well into the future. In the spring of 2017, Rauma Marine Constructions and Finnish Defence Forces agreed upon a design contract for 'Squadron 2010' project which includes four new multi-purpose corvette vessels.

Once the project materialises, it will yield a lot of new jobs for the region for a long time to come. ■

meridian



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Jukova Corporation
Jukovantie 20 FI-21430 Yliskulma FINLAND
tel. +358 10 474 444 fax +358 10 474 4290
jukova@jukova.com www.jukova.com



**// Megatrends have a
crucial influence on
marine businesses.**



COMPETITIVE CORE

FINNISH MARITIME CLUSTER IS BUILDING NETWORKS WITH DEPTH AND REACH

by: SAMI J. ANTEROINEN

photo: CITY OF HELSINKI / LAURI ROTKO

According to the vision of Finnish Maritime Cluster, by 2025 Finland will have “the most creative, agile and adaptive maritime network” known for innovation of customised solutions, services and forms of operation delivered under flexible schedule and with competitive price. These solutions and services steer the entire life cycle towards a sustainable and digitalised setting, making the Finnish Maritime Cluster a global role model.

The competitiveness and productivity of the network will be supported by long-term, multidisciplinary research and development work integrated strongly with education of future game-changers in a network of internationally recognised universities, research organisations and companies. According to this game plan, the competitiveness will be based on high-level competence on integrating latest technology to specialised marine technology solutions and offshore applications including energy, environmental and sus-

tainability technologies; smart ships and systems; and competence services in the Finnish Maritime Cluster.

The above ideas are from the recent report ‘Smart maritime technology solutions’ which provides an update to the strategic research agenda for the Finnish maritime cluster for 2017–2025. The report was co-authored by Finnish Maritime Industries and Ministry of Economic Affairs and Employment.

MASTERING THE MEGATRENDS

Looking into the future is highly relevant in any line of business, and marine sector is not exempt from disruption. Global megatrends have a crucial influence on marine businesses, and factors such as growth of the world economy, population growth and unexpected changes in economy, political situation and nature, all come into play here. In addition, climate change, availability of raw materials, food and water create demand for new solutions.

A portrait of Professor Pentti Kujala, a middle-aged man with thinning brown hair and glasses, wearing a dark blue suit, white shirt, and a blue tie with a penguin pattern. He is looking directly at the camera with a neutral expression. The background is a blurred outdoor setting with a building.

**// There's
no time
for naps.**

*Professor Pentti Kujala from
Aalto University.*

The Chinese are now entering the cruiser-building business.

Moreover, values of people have a stronger direct impact on their behaviour. Social responsibility and awareness of sustainability have increased as a customer value.

According to the report, environmental technologies, digitalisation of shipping and intelligent ships and products as well as utilisation of oceans' natural resources are necessities for growth. Automation and robotics will change the production of marine solutions and Circular Economy is one of the watchwords of new-and-improved marine industry under the "reduce, reuse and recycle" (3R) principle.

The future of the maritime cluster is directed by several trends. For instance, application of new energy sources, sustainable business models, usage of marine resources, international regulation changes, digitalisation and automation will be forces to be reckoned with in one way or another. Some new opportunities might be found from usage of ocean resources, industrial symbiosis and new innovative ways to shaping the production and service chains.

DIGITAL EDGE

Professor Pentti Kujala from Aalto University was one of the experts contributing to the composing of the report. Kujala believes that "digital marine" is here to stay:

"For example, digital tools in the design and production of cruise ships can bring about many new opportunities and improved efficiency."

According to Kujala, Finland is one of the pioneers in this digital approach, but there is no room to grow complacent. "If you want to stay at the top in this current situation, there's no time for naps."

The report finds that the strength of the Finnish Maritime Cluster lies in its versatile markets in which the different sectors balance each other. One of the main

tasks for the industry in the following years is making a controlled introduction of a new generation of experts to the sector. Investing in RDI and competence development is simply key in a fast-changing world.

DRAGON MARKET

According to the report, the current competence level of the Finnish Maritime Cluster is high. However, it needs to be further developed in order to outperform its global competition – since the competitors are constantly improving their game as well. For example, the Chinese are now entering the cruiser-building business, with China State Shipbuilding Company (CSSC) starting off with a vessel for Carnival Cruises, to be delivered by 2023.

Pentti Kujala is not overly concerned – not yet, anyway.

"Europe will be able to maintain its position for a long time to come, since it will take a while for China to reach the same level of expertise in cruisers," he believes. According to Kujala, the Chinese have a strong forte in cargo ships, but cruise ships are not exactly bulk: they're finely-tuned high-quality products, powered by innovative networks.

"The Finnish subcontractor network for cruise ships has been developed onwards since late 1960's and there are 800–1 000 companies in that network. This provides the Finns with a clear competitive advantage that is hard to match, by anyone."

Not for the lack of trying, though. Kujala points out that Japan tried to make a big splash in cruiser business, but could not make it work – and this is the country that gave the world the entire lean ideology.

"Despite everything that Japan had going for her, it is apparent that maritime-specific network expertise and project management was lacking." ■



THE PROBLEM WE WERE TRYING TO SOLVE

- Long term, complex projects taking too long
- Run by Vertical BIs rather than cross-BI projects
- Different understanding of strategy, roadmaps and value propositions
- Fragmented technology vision



NEW BOOST FOR WÄRTSILÄ'S INNOVATIONS FROM DIGITAL ACCELERATION CENTRES

by: MERJA KIHIL AND ARI MONONEN

photos: WÄRTSILÄ



Wärtsilä launched its first Digital Acceleration Centre in Finland in October 2017.

The technology group Wärtsilä has launched its first Digital Acceleration Centres in Helsinki in Finland and in Singapore. Two more Centres will be established by the end of 2018.

Digital Acceleration Centres are to help Wärtsilä in conforming to new types of business models and to enhance the utilisation of innovative digital technology.

Wärtsilä's first Digital Acceleration Centre started out officially in Lauttasaari in Helsinki, Finland, in October 2017.

"The Centre is utilised for processing and selecting new ideas, in cases for which speed is of the essence," says Vice President Riku-Pekka Hägg from Wärtsilä Marine Solutions.

The Centre will prepare feasibility studies for this purpose.

"The first cases for the Digital Acceleration Centre in Helsinki are already being processed. The very first one concerned artificial intelligence for ships – but all new ideas processed by the Centre will not necessarily have to relate to digital technology, they just need to be new and innovative."

In the first project, all of Wärtsilä's projects related to intelligent ship design were collected together within a period of six weeks, to form a comprehensive up-to-date overall view of the current R&D situation. This has helped the company to proceed onwards with the main projects.

*"The business world is on the move,"
says Vice President Riku-Pekka Hägg
from Wärtsilä Marine Solutions.*





One major change is already happening.

BIG DATA BRINGS HUGE CHALLENGES

Largely, Digital Acceleration Centres are intended to keep Wärtsilä's activities in line with the constantly changing business environment.

"The business world is on the move. With the onset of the Internet of Things (IoT), there will be new possibilities and new ways to make use of the latest technologies. Additionally, any emerging problems need to be reacted to without delay," Hägg points out.

"Wärtsilä has already expanded its activities from ship engines to propulsion and electrical automation devices, ship design, cargo handling, fuel injection, and navigation equipment."

One major change that is already happening in the maritime business world is the emergence of Big Data.

"Making use of huge amounts of collected data is what will bring forth new business models, plus various data-related or software products. These are among the innovations we intend to process in Wärtsilä's Digital Acceleration Centres," Hägg notes.

MORE CENTRES COMING UP

It is quite conceivable that Wärtsilä will open further Digital Acceleration Centres in the near future. Two more are to be expected.

Digital Acceleration Centres are being managed by Ms. Alid Dettke, Vice President, Digital Innovation from Wärtsilä Corporation. The next two Centres will probably be set up in North America and Central Europe in the year 2018.

"A lot of new ideas and innovations need processing. We want to collect them and select the best of them quickly for further development into new kinds of business models. This will speed up our operations and product development, as well as enhance the utilisation of our own resources," Vice President Hägg explains.


After initial selection, the results will be presented to a group of judges – part of Wärtsilä's Shark Tank team. It is then up

to the 'sharks' to decide whether or not they will invest in developing it.

In other words, the centres will act as an incubator and accelerator for new digital ideas. First, the innovators pitch their new ideas for 10 to 15 minutes. If taken up by the Digital Acceleration Centre, the ideas will be incubated there for a maximum period of six weeks.

In the event that potential for new business is found, the idea will then be further developed for 12 months.

Basically, Digital Acceleration Centres are intended for the development of new business ideas only. Wärtsilä's traditional research and development is still being carried out separately. ■



The results will be presented to a group of judges – part of Wärtsilä's Shark Tank team.

INNOVATIONS FOR SHIPBUILDING AND SPECIAL FASTENING SOLUTIONS

by: MERJA KIHLE AND ARI MONONEN

Alvars Ltd. is a Raisio-based Finnish engineering company providing innovative design project services and product development. Founded in 2007, the company's roots are firmly in the shipbuilding industry.

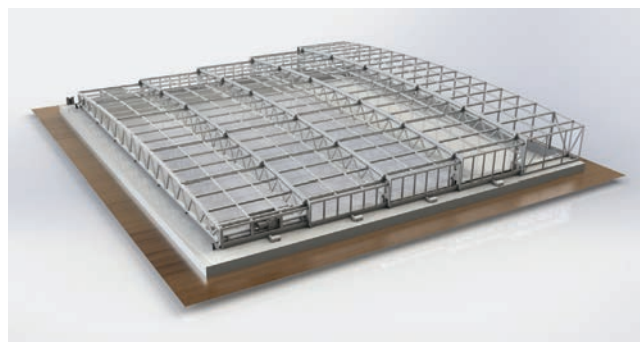
"Throughout its first decade, Alvars has been involved in a variety of demanding projects. Our recent projects include the design of glass structures – such as glass canopies – for cruise ships," says Mr. Mika Laiho, CEO for Alvars Ltd.

The glass canopies aboard ships can be either unfolding or fixed structures. In the case of the largest cruise ships, the glass canopies may even be two-storied and cover the width of the entire ship. Therefore, they require highly accurate strength calculations, as well as the utmost care in the preparation of the blueprints for manufacturing and installation.

"Just recently we designed a large-sized glass structure for the stern of a cruise ship. These kinds of specialised structures to be integrated into the ship's hull are part of our core expertise," Laiho mentions.

In addition to designing glass and steel structures, Alvars Ltd. is experienced in various types of marine engineering solutions, such as the design of fastening solutions and supporting cradles for maritime shipments.

"Ship transport is often utilised for moving the kinds of objects that would otherwise be quite impossible to move from



one place to another. Such objects include huge pole structures, prefabricated blocks of ship hulls or offshore platforms, and other specialised parts. To ensure the safety for the seafastening and transports for such objects, carefully prepared calculations are needed, also for the approval of the maritime authorities," explains Laiho.

"Quite often, the fastenings of these types of special cargo are directly welded to the ship's deck. It will also be necessary to inspect the deck structures of the ship to be utilised for the transport, in order to ascertain that the structures have the necessary durability to stand the transportation. We take safety issues seriously." ■

More information: www.alvars.fi/en

ROLLS-ROYCE AND THE EUROPEAN SPACE AGENCY TO COLLABORATE ON SHIPPING'S DIGITAL FUTURE

Rolls-Royce and the European Space Agency (ESA) have signed a ground-breaking cooperation agreement aimed at pursuing space activities in support of autonomous, remote controlled shipping and promoting innovation in European digital logistics.

The Memorandum of Intent (MOI) forms part of ESA's wider strategy. Jan Wörner, ESA's Director General stated that, "ESA has a long history of working internationally with our partners across Europe. This agreement is another demonstration of the positive application of Space 4.0 and the desire for a United Space in Europe; maximising the integration of space into our economy and society."

Karno Tenovuo, Rolls-Royce, SVP Ship Intelligence, said: "The space industry has been operating assets remotely for many decades. The information, software and satellite-based technologies the sector has developed are wholly relevant to the work Rolls-Royce is doing to make the remote and autonomous ship a reality."

The collaboration with the Rolls-Royce aims to develop and validate new solutions for communication between vessel systems and shore based systems in addition to ship-to-ship communication. This will enable the operation of commercial remote and autonomous shipping, innovative cargo logistics, smart ports and future commercial marine vessels. The next generation of 5G communications will rely on seamless integration of telecom networks and services, and ESA's Satellite for 5G Initiative (artes.esa.int/satellite-5g) exists to support the technical and supply chain progress required, and follow through to support development of the commercial services that this enables.

"The current wireless carriers like satellite and associated infrastructure need to be developed to facilitate the development of remote & autonomous ships, as existing configurations were not designed for this purpose," said Tenovuo. Furthermore, "Rolls-Royce and the ESA will look at developing satellite-based

positioning for 'smart' ships which will be based on its 'earth observation platform'. This could create greater spatial and situational awareness for those operating the vessel remotely. It will also allow satellites to capture and share the data from a number of vessels simultaneously."

ESA already serves the maritime community with many satellite capabilities. SAT-AIS (Satellite Automatic Identification System) permits identification and global tracking of ships using cutting-edge space and ground technology, using low Earth orbiting satellites to act as information relays to serve the whole globe. This results in more efficient use of existing infrastructures, a tangible reduction in cost and a decrease in the environmental impact. The ESA developed Sentinel-1 satellite, part of the European Union's Copernicus programme, is establishing a pivotal role in the sector. Last August, Sentinel-1 Earth observation data helped the US Coast Guard vessel Maple navigate through the legendary Northwest Passage, showcasing the enormous potential that satellite earth observation can have across the industry, particularly in ship-to-ship data transmission.

Rolls-Royce and ESA also plan to cooperate in harnessing the power of big data. Data analytics, Machine Learning and Artificial Intelligence (AI) can improve operational efficiency, reliability and safety. Sensor data will inform augmented and virtual realities,

or "digital twins". A digital twin is an AI copy of a ship, including its systems, that synthesises the information available about the ship in a hologram. "It allows any aspect of an asset to be explored through a digital interface," said Tenovuo, "creating a virtual test bench to assess the safety and performance of a vessel and its systems, both before its construction and through its lifecycle. By creating ships and ship technology in a virtual environment, new ideas and technology can be realised and tested in a shorter time frame."

Wörner summarised: "Space technologies provide tangible benefits for the citizens of Europe or of the member states of ESA. Partnerships, such as this one with Rolls-Royce, take solutions originally developed for the unique challenges of the space environment and bring them down to Earth. Space 4.0 and ESA's Satellite for 5G Initiative enable, support and foster developments, validations and trials of products and applications in diverse areas of the maritime industry, and this partnership between the European Space Agency and Rolls-Royce will enable satellites to serve ship intelligence, marine operations, navigation, cargo logistics, maritime safety, healthcare, passenger and crew communications." ■

More information: www.rolls-royce.com



THE FOUNDATION DET NORSKE VERITAS ASSUMES FULL OWNERSHIP OF DNV GL AND REMAINS COMMITTED TO MARITIME HEADQUARTERS IN HAMBURG

by: ULRIKE HAUGEN

Stiftelsen Det Norske Veritas (The Foundation) and Mayfair announce the sale of Mayfair's 36.5% shares in DNV GL Group AS to DNV Holding AS. The agreement regarding the leading quality assurance and risk management company DNV GL was signed on 8 December 2017.

In 2012, Stiftelsen Det Norske Veritas and Mayfair agreed to build a global quality assurance and risk management leader well positioned to succeed in a rapidly transforming market: Germanischer Lloyd was merged with Det Norske Veritas to create DNV GL. Since the merger, the joint company has successfully adapted its organization and realized significant synergies. It also strengthened its position in research and innovation and moved forward with its digital transformation.

"We are proud to have been part of building a leading quality assurance and risk management company over the past eleven years. Since we invested in Germanischer Lloyd in 2006, the company has expanded its position, and through the merger with Det Norske Veritas became a world market leader in its industries. The integration is now complete. We thank the Foundation for the collaboration, and we wish DNV GL and its employees continued success," says Günter Herz of Mayfair.

The Foundation sees assuming full ownership of DNV GL as the best investment to fulfil its purpose of safeguarding life, property and the environment and to realize its strategy. The agreement between the two parties enables the Foundation to

make this investment now and to provide continued support to DNV GL going forward.

"The merger between DNV and GL has created significant value, and we are thrilled about the opportunity to invest in DNV GL's long term success. 100% of the cash generated will remain within the Group to support further development and positioning of DNV GL globally. We thank Mayfair for its contributions to DNV GL over the past years," says Leif-Arne Langøy, Chairman of the Board of Directors of Stiftelsen Det Norske Veritas. Leif-Arne Langøy is also Chairman of the Board of Directors of DNV GL.

Group President and CEO of DNV GL Remi Eriksen says that this is a new chapter in DNV GL's history. "Moving forward with one strong owner with a long-term view and a fully aligned purpose will be good for DNV GL's customers and employees."

The DNV GL strategy, 'Leading towards a digital, agile and efficient future' remains unchanged. There will also be no changes to the management, organization, name or branding. DNV GL's headquarters for the Maritime business area will remain in Hamburg. ■

company directory



photo: AS Tallink Grupp

ABLEMANS OY

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

**Contact Person**

Hannu Petäjäsuunto
Managing Director
hannu.petajasuunto@ablemans.fi

Facts & Figures

Turnover: EUR 8,6 million
Personnel: 15
Established: 1987

Specialty Areas

Steel and Aluminium structures
Shipbuilding – Shiprepairing – Conversions – Outfitting
LifeCycle Services
Large capacity

ACM-TRADING LTD

Ketunleivänkuja 4
FI-21110 Naantali, Finland
Phone +358 20 799 1400
Fax +358 20 799 1409
firstname.lastname@acm-trading.fi
www.acm-trading.fi

**Contact Person**

Kari U. Laiho, +358 40 900 4060

Specialty Areas

Complete PUSHPIN®-ATB-Coupler System for Pusher Tug and Barge combinations. Available models 2 or 3 pin executions, with electro-pneumatic or electro-hydraulic controls with modern PLC controls. New Model! PUSHPIN®-SliderRig – Coupler enabling to be engaged during loading and discharging. Pin forces from 150 Tons up to 3 000 Tons, from River ATBs to Large Offshore ATBs, 15 systems in service. Concept design, Feasibility Studies and total installation engineering and supervision including class approvals with FEM-analysis. Electro-Hydraulic EHS Actuators for valve control and remote sounding systems with total BUSLoop systems for all kind of vessels. Cooling control systems for HT-, LT-, LO-, SW- etc. cooling circuits. Marine Pumps, Marine Butterfly valves in house already over 40 years experience.

AKER ARCTIC TECHNOLOGY INC

Merenkulkijankatu 6
FI-00980 Helsinki, Finland
Phone +358 10 323 6300
Fax +358 10 323 6400
info@akerarctic.fi
www.akerarctic.fi

Aker Arctic

Contact Person

Reko-Antti Suojanen, Managing Director
reko-antti.suojanen@akerarctic.fi

Facts & Figures

Turnover: EUR 10 million
Established: 2005

Specialty Areas

Aker Arctic Technology Inc (Aker Arctic) is an independent company specialising in the development, design, engineering and testing services for the ice going vessels, icebreakers and offshore marine structures and ports. Our head office is located in Helsinki, Vuosaari Maritime Business park area. The past references include 60 per cent of all the world's icebreakers, many Arctic or Antarctic research vessels and quite a number of different types of cargo vessels and concepts of offshore structures.

ALVARS OY

Purokatu 9 C
FI-21200 Raisio
Finland
Phone +358 50 442 7272
office@alvars.fi
www.alvars.fi/en

**Contact Person**

Mika Laiho
Managing Director
mika.laiho@alvars.fi

Specialty Areas

Alvars Ltd. is a Finnish engineering company specializing in services for the marine sector. We have been the reliable partner for suppliers in shipbuilding since 2007. Unique Designs for Cruise Ships
Innovative Product Development
Expert Knowledge in Seafastening Design

ANTTI-TEOLLISUUS OY, ANTTI MARINE

Koskentie 89
FI-25340 Kanunki
Finland
Phone +358 2 774 4700
Fax +358 2 774 4777
www.antti-teollisuus.fi

**Contact Person**

Markko Takkinen
Commercial Director
markko.takkinen@antti-teollisuus.fi

Specialty Areas

Antti Marine accommodation & interior doors for ships & offshore
B ja C-class fire doors
Sound reduction doors up to Rw=48dB
Designed features e.g. patterns and digital printing

CAVERION, INDUSTRIAL SOLUTIONS

P.O. Box 27 (Lemminkäisenkatu 59)
FI-20521 Turku
Finland
Phone +358 10 4071
firstname.lastname@caverion.com
www.caverion.fi

Caverion

Contact Person

Marine business unit
Markku Salonen
markku.salonen@caverion.com

Facts & Figures

Turnover: EUR 330 million approx.
Personnel: approx. 3 000
Established: 2013
Parent Company: Caverion Oyj

Specialty Areas

Marine Industry unit:
Electrical and mechanical outfitting projects
Turnkey deliveries for technical areas
Prefabricated pipes, pipe-packages and process modules

ENSTO ITALIA*Saves Your Energy*

Via F. De Filippi 3
IT-20129 Milano
Italy
Phone +39 02 2940 3084
Fax +39 02 2952 4554
enstoitalia@ensto.com
www.ensto.com

Contact Person

Guglielmo Rutigliano
Sales Director
guglielmo.rutigliano@ensto.com

Facts & Figures

Turnover: EUR 260 million
Personnel: 1 600
Established: 1958
Parent Company: Ensto Group

Specialty Areas

Ensto's marine lighting products are designed for ship installations and can be customised to Customer's needs.

FORESHIP LTD

Suolakivenkatu 1
FI-00810 Helsinki
Finland
Phone +358 20 730 9090
Fax +358 20 730 9091
office@foreship.com
www.foreship.com

Contact Persons

Markus Aarnio
SVP Ship Technology
markus.aarnio@foreship.com
Lauri Haavisto
Managing Director
lauri.haavisto@foreship.com

Specialty Areas

Foreship's Naval Architects and Marine Engineers are specialised in challenging conversion and newbuilding concept designs. Foreship has also extensive CFD capabilities and state-of-the art hull form references.

HOLMET OY

Keskikankaantie 27
FI-15860 Hollola
Finland
Phone +358 40 168 3339
info@holmet.fi
www.holmet.fi

Contact Person

Eerik Seppänen

Facts & Figures

Turnover: EUR 4-6 million
Personnel: 50
Established: 2004

Specialty Areas

Steel doors and hatches for ships, also stainless steel and aluminium
Hydraulically operated hatches
Bolts, clamp devices and other ship accessories
Prefabricated steel- and metal structures
Design-, acquisition-, laser cutting-, edging-, machining-, welding-,
surface-finishing- and installation work

JTK POWER OY

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

Contact Person

Timo Viitala, Managing Director
timo.viitala@jtk-power.fi

Facts & Figures

Turnover: EUR 26 million
Personnel: 93 in Finland, 22 in China
Established: 1998

Specialty Areas

Large Diesel and Gas engines exhaust and intake silencers. Offshore-, paper- & pulp and other process industries large silencers. Also Valve seat inserts are manufactured for exhaust and intake valves, of both large and small diesel engines.

See page 37

JUKOVA CORPORATION OY

Jukovantie 20
FI-21430 Yliskulma
Finland
Phone +358 10 474 444
Fax +358 10 474 4290
jukova@jukova.com
www.jukova.com

Contact Person

Timo Nurminen
timo.nurminen@jukova.com

Specialty Areas

Modular balconies
Sliding doors
Balcony divider walls
Glass railings

KOJA MARINE

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

Contact Person

Esko Nousiainen, Director
esko.nousiainen@koja.fi

Facts & Figures

Turnover: EUR 60 million
Personnel: 232
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

OY LAUTEX AB

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


Contact Persons

Sami Leinonen, Sales Director
sami.leinonen@lautex.com, Phone +358 40 842 4020
Antti Holappa, Sales Manager
antti.holappa@lautex.com, Phone +358 50 386 1213

Facts & Figures

Turnover: EUR 8 million
Personnel: 60
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.

OY LINDAB AB

Juvan teollisuuskatu 3
FI-02920 Espoo, Finland
Kankitie 3, FI-40320 Jyväskylä, Finland
Phone +358 20 785 1010
www.lindabmarine.com


Contact Person

Piia Kyrönlahti, +358 20 785 1010

Facts & Figures

Turnover: SEK 7 589 million (2015, Lindab Group)
Personnel: 5 100 (Lindab Group)
Established: 1959

Specialty Areas

Insulated and non-insulated ducts and fittings
Acoustic solutions
Bulkhead penetrations
Dampers and measuring units
Air terminals
Fans

Lindab develops the most innovative and simplified solutions on the market. Our energy effective solutions will change the way of designing ships and brings the best indoor climate onboard.

MARINE DIESEL FINLAND OY

Eteläkaari 10
FI-22420 Lieto
Finland
Phone +358 20 510 6900
Fax +358 2 253 9121
marine.diesel@wihuri.fi


Contact Persons

Markus Hjerpe
Mika Aaltonen

Facts & Figures

Turnover: EUR 5 million
Personnel: 40
Established: 1992

Specialty Areas

Main- and auxiliary engine repair and service
Total overhaul of all type of engines
Turbocharger service and repair
On-site machining
Conservation works after engine room fire or flooding
Well-equipped workshop in Lieto
CAT authorized service and repair, Kemel seals and bearings

ONNINEN OY

P.O. Box 109
FI-01301 Vantaa
Finland
Phone +358 20 485 5111
Fax +358 20 485 5500
www.onninen.fi
www.onninen.com


Contact Person

Martti Lehti
Area Sales Director
martti.lehti@onninen.com

Facts & Figures

Personnel: 3 000
Established: 1913

Specialty Areas

Onninen provides comprehensive materials services to contractors, industry, public organisations and technical product retailers. Onninen is member of Kesko Group. We have 3 000 employees in our Finnish, Swedish, Norwegian, Polish, Russian and Baltic operations.

PARKER HANNIFIN MANUFACTURING FINLAND OY

Salmentie 260
FI-31700 Urjala As.
Finland
Phone +358 20 753 2500
Fax +358 20 753 2501
filtration.finland@parker.com
www.parker.com


Contact Person

Tarmo Mäkelä
tarmo.makela@parker.com

Facts & Figures

Personnel: 65
Established: 1964
Parent Company: Parker Hannifin

Specialty Areas

Filtration: Lubrication oil filtration, fuel oil filtration, hydraulic filtration, gas filtration
Condition Monitoring

PATRIA AVIATION ENGINE BUSINESS UNIT

Linnavuorentie 2
FI-37240 Linnavuori, Finland
Phone +358 40 869 2800
Fax +358 20 469 2801
www.patria.fi


Contact Person

Seppo Tamminen, General Manager, Diesel Engine Business
seppo.tamminen@patricia.fi

Facts & Figures

Turnover: EUR 30 million
Personnel: 190
Established: 1947
Parent Company: Patria Oyj

Specialty Areas

Maintenance and overhaul of high speed diesel engines and related equipment up to 6 000 kW
Authorised MTU Service dealer
Maintenance and overhaul of industrial and marine gas turbines
Special repairs of parts for diesel engines and gas turbines

PEDRO OY

Tehdastie 4-6
FI-15560 Nastola
Finland
Phone +358 3 873 900
Fax +358 3 873 9010
www.pedro.fi

**Contact Person**

Juha Lehtonen
Managing Director
juha.lehtonen@pedro.fi

Facts & Figures

Established: 1988

Specialty Areas

PEDRO has expertise of almost 30 years of furniture to luxury cruisers, hotels and homes.

PMC HYDRAULICS

www.pmchydraulics.com

**Specialty Areas**

PMC Hydraulics is the Nordic leader in innovative hydraulic solutions and services for marine applications. By providing everything from customized systems to components, special products and a full range of maintenance and lifecycle services we have the ability to offer our customers the best complete solutions.

POCADEL OY

Korpelantie 229
FI-21570 Sauvo
Finland
Phone +358 2 477 2950
pocadel@pocadel.fi
www.pocadel.fi

**Contact Person**

Mikka Ahlfors
mikka.ahlfors@pocadel.fi

Facts & Figures

Personnel: 15
Established: 1997

Specialty Areas

B15-A60 light weighted glass doors and partitions for marine and offshore use:
Product category includes hinged doors, sliding doors, extra wide tandem door applications and glass walls/partitions.

PORKKA FINLAND OY

P.O. Box 127
FI-33101 Tampere
Finland
Phone +358 20 555 512
Fax +358 20 555 360
contact@porkka.com
www.porkka.com

Contact Person

Petri Hiilloste, porkkapanel@huurre.com

Facts & Figures

Turnover: EUR 26 million
Personnel: 170
Established: 1962
Parent Company: Huurre Group 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

RAUMA INTERIOR OY

Hallitie 8
FI-26510 Rauma
Finland
Phone +358 2 8387 8200
info@raumainterior.fi
www.raumainterior.fi
www.messin.fi

**Contact Person**

Kari Wendelin
Managing Director
kari.wendelin@raumainterior.fi

Specialty Areas

Designed fixed and free-standing furniture in various materials especially for passenger & crew cabins, but also for restaurants, nightclubs, coffee shops, conference rooms (wardrobes & racks, dressing tables, cabinets, coffee tables, desks, TV-stands, beds in wood and metal, nightstands, sofas, resin coated dining tables, bardecks, decorative columns etc.)

RENOTECH OY

Sampsaankatu 4 B
FI-20520 Turku, Finland
Phone +358 10 830 1600
rt@renotech.fi
www.renotech.fi

**Contact Person**

Bob Talling, +358 50 558 1806
bt@renotech.fi

Facts & Figures

Turnover: EUR 1 million
Personnel: 5
Established: 1994

Specialty Areas

MED Certified products, B + D. GRG decorative wall and ceiling elements, mouldings and sculpture work. DGG light-weight gypsum board. Renopur decorative surface finishes, paint effects, marbling, wood graining, gilding, paintings and art work. Stonemix textured mouldings and finishes. Renofix non-combustible glues. Fireshield acoustic and fire proofing. Renolmage silk printing and 3-D release films. Acoustic flooring and floor screeds.

ROLLS-ROYCE OY AB
Rolls-Royce

P.O. Box 220
FI-26101 Rauma
Finland
Phone +358 2 837 91
rolls-royce.finland@rolls-royce.com
www.rolls-royce.com/marine

Contact Person

Liisa Snellman, Communications
liisa.snellman@rolls-royce.com

Facts & Figures

Turnover: EUR 468 million
Established: 1988
Parent Company: Rolls-Royce plc

Subsidiaries & Representatives

Rolls-Royce worldwide sales and service network

Specialty Areas

Thrusters, propulsion systems, winch systems, stabilizers, steering gears, bearings

S.A. SVENDSEN OY
S.A.Svendsen Oy

Särkiniementie 3 B
FI-00210 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 15,7 million
Personnel: 5
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

SBA INTERIOR LTD

Hällsnäsintie 99
FI-10360 Mustio, Finland
Phone +358 19 327 71
sales@sba.fi
www.sba.fi

Contact Persons

Thomas Pökelmann, Sales Manager, thomas.pokelmann@sba.fi
Johan Fagerlund, Technical Director, johan.fagerlund@sba.fi

Facts & Figures

Turnover: EUR 14 million
Personnel: 100
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 and a 50 mm A-60 class light weight box; wall and ceiling as well as a B-15 class Extension Screen.
Another branch of SBA is subcontracting for metal industry.

SEAKING LTD

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

Contact Person

Pasi Suvanto, VP Sales, pasi.suvanto@seaking.net

Facts & Figures

Personnel: approx. 350
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.

SEASIDE INDUSTRY PARK RAUMA

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

Contact Person

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

Specialty Areas

Seaside is resource-efficient industrial park of heavy metal industry with supreme logistics including a deep-water route, port, railway and road. Successful principal companies with efficient and wide delivery network operate in the Park. The area utilises versatile infrastructure and comprehensive common services. Seaside offers an efficient manufacturing and cooperation environment enabling smaller companies to participate in large projects and achieve competitive advantages and additional value. Additional information: www.seasideindustry.com

OY SIKKA FINLAND AB
BUILDING TRUST

P.O. Box 49
FI-02921 Espoo
Finland
Phone +358 9 511 431
Fax +358 9 5114 3300
sika.finland@fi.sika.com
www.sika.com

Contact Person

Kai Winqvist
Industry Manager
winqvist.kai@fi.sika.com

Facts & Figures

Turnover: EUR 33,6 million (2016)
Personnel: 47
Established: 1985
Parent Company: Sika AG

Specialty Areas

Sealing – Bonding – Acoustic Damping – Reinforcing – Protecting

3

STEERPROP LTD

P.O. Box 217
FI-26101 Rauma
Finland
Phone +358 2 8387 7900
Fax +358 2 8387 7910
steerprop@steerprop.com
www.steerprop.com

**Specialty Areas**

Azimuth Propulsors for demanding applications. Steerprop Ltd. combines the reliability of proven technologies with the efficiency of modern design to produce azimuth propulsors of exceptional quality and excellent reliability. Steerprop Azimuth Propulsors can be made up to 20 MW in power or even in the most stringent ice-classes.

2

TEBUL OY

Luumäentie 2
FI-21420 Lieto
Finland
Phone +358 50 540 6031
sales@tebul.fi
www.tebul.fi

**Contact Person**

Jussi Uusitalo, Managing Director
sales@tebul.fi

Specialty Areas

TEBUL OY has been designing and manufacturing watertight bulkhead sliding doors since 1961. Our self-tightening 24VDC fully electric watertight bulkhead sliding door is a fourth-generation product. The primary self-tightening is based on metal to metal contact with rubber seals for initial tightening. The higher the pressure, the larger the force exerted on the door. Tebul doors are approved to be installed into A-60 bulkheads.

Tebul doors are available also in the Eex-version, for Explosion Hazardous areas.

1

TEKNIKUM OY

FI-38310 Sastamala
Finland
Phone +358 51 911
www.teknikum.com

**Contact Person**

Mikko Esko
mikko.esko@teknikum.com

Facts & Figures

Turnover: EUR 40 million
Personnel: 250
Established: 1989
Parent Company: Teknikum Group Ltd.

Specialty Areas

Rubber lining for steel pipes against seawater corrosion. Rubber hoses, bellows and connection hoses for shipbuilding and offshore industry. Moreover we offer customized rubber and plastic products for different industry sectors.

2

3

9

TEVO LOKOMO OY

Lokomonkatu 3
FI-33101 Tampere
Finland
Phone +358 8 265 8800
Fax +358 8 265 8805
tevo@tevo.fi
www.tevo.fi



**100
YEARS**

www.tevo.fi

Contact Persons

Timo Norvasto, Steel Foundry
timo.norvasto@tevolokomo.fi
Tuomas Turunen, Bronze Foundry
tuomas.turunen@tevo.fi
Pekka Launonen, Engineering Works
pekka.launonen@tevo.fi

Specialty Areas

Manufacturing and Service of Marine Propellers in steel and bronze
Offshore steel constructions and special welding

4

OY VALLILA CONTRACT AB

Nilsjankatu 15
FI-00510 Helsinki
Finland
Phone +358 20 776 7700
Fax +358 20 776 7701
projekti@vallilainterior.fi
www.vallilainterior.fi



Vallila Interior

Contact Person

Miku Berner
miku.berner@vallilainterior.fi

Facts & Figures

Turnover: EUR 37 million
Personnel: 135
Established: 1935

Specialty Areas

Textile design
Textile full turnkey solutions, measuring, sewing, installation
All system solutions, electrical and manual
Large collections on Imo certified fabrics

NOTES

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3. Machinery

4. Materials
5. Safety
6. Systems

7. Turnkey Deliveries
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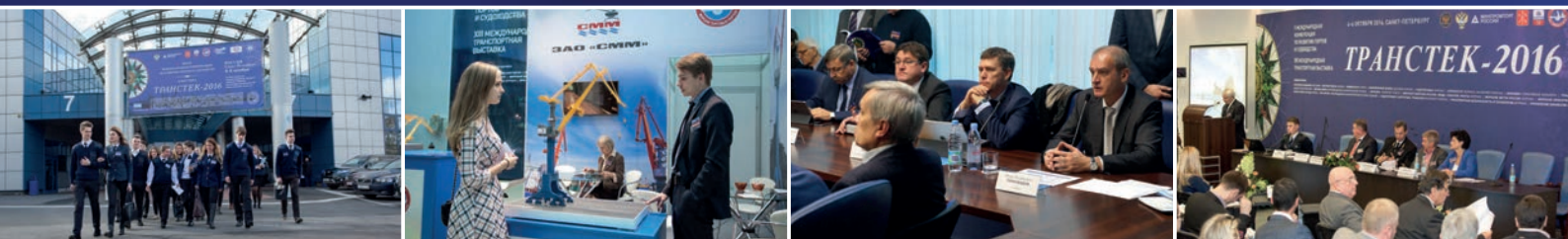


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