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International Maritime Review

1,200 ton  
supercrane kicks  
off a new era of  
investments  
in Turku

Making kitchens  
for the marine  
industry is no easy  
challenge

New innovation for large ships  
will reduce fuel consumption





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## CERTIFIED FOR SUCCESS?

*Subcontractors of the marine industry need to stay on their toes – as the bar is set quite high. According to a recent University of Turku study (composed by Brahea, the Centre for Maritime Studies) top qualities in a subcontractor are perceived to be the ability to stick to the schedules, reliability, quality and know-how. These same issues kept surfacing in the report, time and again, as the researchers sought to find out – in addition to most important qualities – also areas for development and those reasons that led to the termination of subcontracting.*

*But what is the significance of being certified? How important is this in the eyes of the maritime players? Perhaps it comes as a surprise to some that in the ranking of the desired attributes, 'Necessary certification (e.g. CE markings)' comes in at 11th. However, with a grade of 3.73/5, the certification issue is assessed to be a good deal closer to 'important' than 'somewhat important'.*

*Talking about quality, the report states flat out that most customers do not require the use of a quality system as such. Proof of know-how must be provided, of course, but this can be achieved via references, recommendations and audits. The report also shows that 'Necessary certification' is one area where the study participants do not see eye-to-eye (as is the case with most issues), and that there are those who value it quite high, while others downplay its significance.*

*For example, the interviewed shipyards do not require their subcontractors to use audited quality systems if the company's own project management and quality control are deemed to be of sufficiently high standard.*

*Still, the offshore industry runs a tighter ship in this regard. For instance, Technip's Pori operations insist on subcontractors having quality systems and standards in place: normally there won't even be a deal without a ISO9001 certificate.*

*A quality system and audits were assessed to be 'especially important' also by Rolls Royce and Steerprop. Both of these companies have their own audit teams which verify and document – together with the suppliers – the quality of the deliveries.*

*The 'Open comments' section of the study provided further food for thought. Subcontractors had very specific ideas about how to improve their operations, ranging from quality systems and recruiting to visibility and marketing. Still, first and foremost on subcontractors' mind – as they peer into the future – is controlling production and the ever-important costs.*

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# Contents



06

## 02 Editorial

## 06 Matter of Record

Certificates remain attractive in the eyes of the marine cluster subcontractors – and ongoing streamlining of the certification practices should cut down on the red tape, as well. The Finnish maritime cluster, at surface, is a hefty ecosystem with about 3,000 companies in the mix. However, many of them are very small enterprises and a single order can make or break companies.

## 14 Finnish research vessels take part in Barents sea hydrographic surveying

## 20 New innovation for large ships will reduce fuel consumption

## 26 Goliath Cometh – 1,200 ton supercrane kicks off a new era of investments in Turku

As the German Meyer family purchased Turku shipyard a couple of years ago, there were fervent hopes that the new owner would also invest in shipyard infrastructure. The machinery at the shipyard was still in working condition, but getting old – there was no getting around that simple fact.



26





32

### 32 Bring the Performance – Making kitchens for the marine industry is no easy challenge

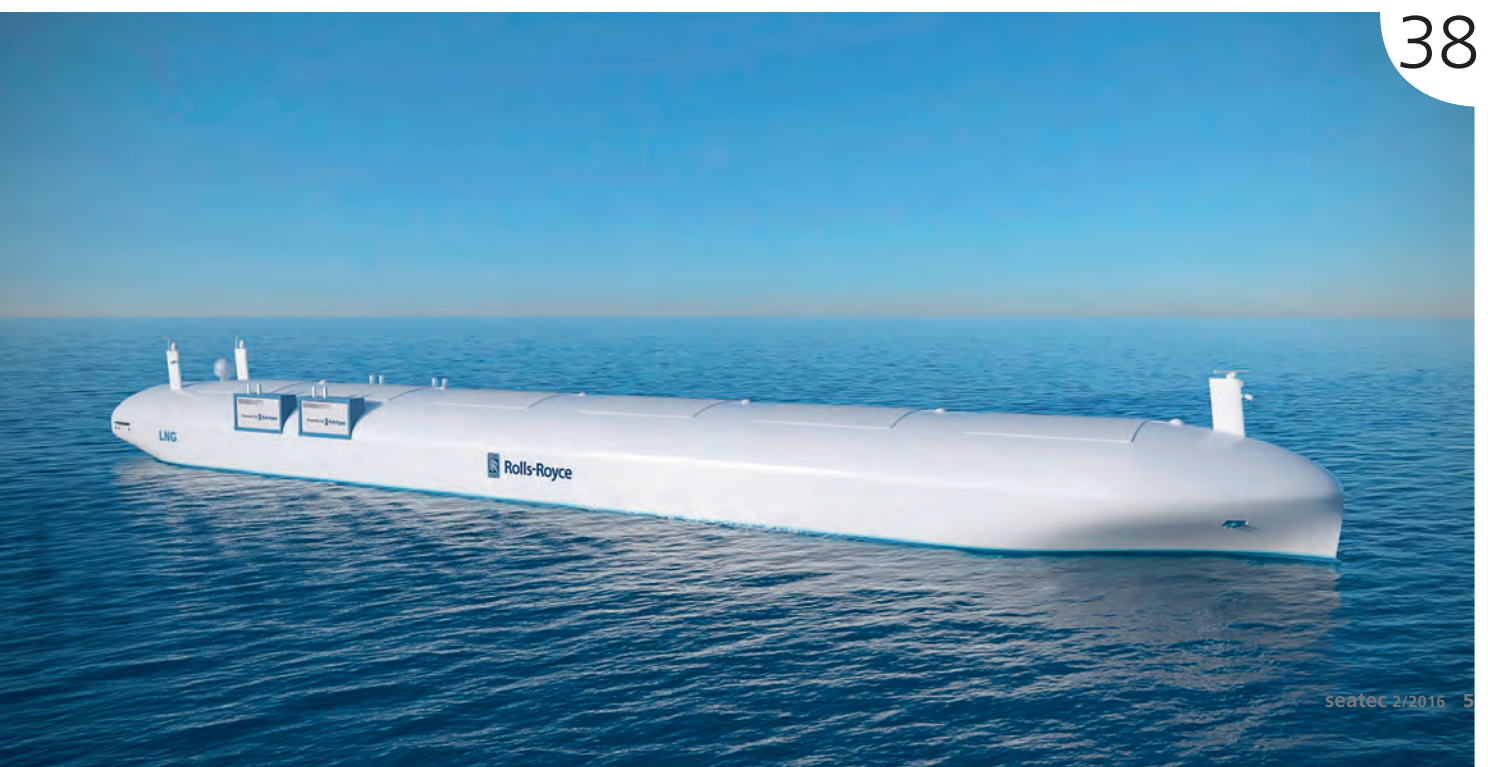
Luxury cruise ships – with, say, 5,000 passengers – deal with plenty of challenges in the day-to-day. As these “floating cities” move massive volumes of food and beverage daily, it is a no-brainer that the ships’ galleys have to be primed for top performance. Durability and dependability are key issues when you’re operating a kitchen upon the waves, since the nearest service technician can be really far away on dry land.

### 38 New research projects for autonomous ship technologies

The idea of unmanned cargo ships could become a reality on the world’s oceans within ten years – or at least many serious Finnish researchers and international manufacturers of marine technology strongly believe so. In current research projects, the aim is to draw up concepts for remote-controlled and fully automatic vessels.

### 44 New on Board

### 47 Company Directory



38



# Matter of Record

CERTIFICATES REMAIN ATTRACTIVE IN THE EYES OF THE MARINE CLUSTER SUBCONTRACTORS – AND ONGOING STREAMLINING OF THE CERTIFICATION PRACTICES SHOULD CUT DOWN ON THE RED TAPE, AS WELL

by: SAMI J. ANTEROINEN

photos: STOCKSNAP.IO





*The Finnish maritime cluster, at surface, is a hefty ecosystem with about 3,000 companies in the mix. However, many of them are very small enterprises and a single order can make or break companies. Therefore, the subcontractors of the marine industry power players – such as shipyards – have learned to think quick on their feet to meet the demands of the customers.*



// Being certified,  
however, is not a top  
priority as such.



**A**ccording to a recent University of Turku study (composed by Brahea, the Centre for Maritime Studies) top qualities in a subcontractor are perceived to be the ability to stick to the schedules, reliability, quality and know-how. These issues keep surfacing in the report time and again. In addition, when looking into the development efforts – and the reasons that led to the termination of subcontracting – this very same criteria was cited.

Being certified, however, is not a

top priority as such. On the list of desired features, 'Necessary certification (e.g. CE markings)' is ranked 11th. With a grade of 3.73/5, the certification issue is assessed to be between 'important' and 'somewhat important' (and a lot closer to the aforementioned, one may add).

#### **NICE TO HAVE: QUALITY SYSTEM?**

The failure of certification to make it to TOP10 is explained, in part, by the report's finding that most customers do not require

the use of a quality system as such. Adequate proof of expertise must be provided, of course, but this can be achieved via e.g. references, recommendations and audits.

The report also shows that 'Necessary certification' is one rare area where the study participants do not see eye-to-eye, as is the case with most other issues. The views on certification are, in fact, quite mixed: some value it quite high, while others downplay its significance. For example, the interviewed shipyards do not require





**// The certificates  
have a role  
in establishing the  
minimum requirements  
in the industry.**



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*Certificates will continue to be highly attractive, since many big players' acquisition departments are not likely to commit at all, if the supplier can't provide the black-on-white.*



*Large organisations face the challenge of making sure that the subcontractors are being responsible in addition to being capable.*

their subcontractors to use audited quality systems if the company's own project management and quality control are deemed to be of sufficiently high standard.

Offshore industry marches to a different drum. For instance, Technip's Pori operations insist on subcontractors having quality systems and standards in place: normally there won't even be a deal without a ISO9001 certificate. In the report, a quality system and audits were assessed to be 'especially important' also by Rolls Royce and Steerprop. Both of these companies have their own audit teams which verify and document (together with the suppliers) the quality of the deliveries.

#### **SILO MENTALITY WOES**

Merja Salmi-Lindgren, Managing Director of the Finnish Marine Industries, points out that the certificates for devices/materials

## **// The dynamics of maritime innovation have changed a lot in recent times.**

have a role in establishing the minimum requirements in the industry. However, she feels that the classification societies should be able to streamline their demands and be able to accept also certificates awarded by competitors:

"Renewal is needed also in this field in order to make sure that we have a competitive, safe marine sector without excessive bureaucracy," Salmi-Lindgren says.

In addition, subcontractors would

clearly benefit from a "cross-over" certification system: a small supplier could, say, place a bid for various projects and deliveries that are certified by different agencies, without the fear of being pushed aside.

"Unfortunately, the mutual acceptability of certification is something that has not yielded any benefits or competitive edge. Constructive collaboration is needed by all parties involved, also with regards to certifications and regulation."





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### MONEY MATTERS

Salmi-Lindgren observes that some suppliers may be hesitant to pursue certificates for various equipment and materials in fear of mounting costs – and the lack of streamlining in the industry may only add to this uncertainty.

“It makes sense for new companies coming to maritime to find out the classification criteria right in the beginning,” she says.

It is also noteworthy that the dynamics of maritime innovation have changed a lot in recent times. First, the shipyards made everything by themselves; then they transformed into incubators, of sorts. Presently, the success and innovative edge in the maritime companies relies on visionary individuals and operating cultures which are open to changes in organisations and networks. More and more, we’re witnessing the trend where new innovations in the cluster are made by start-up companies.

### TARGETING 2020

The Finnish marine industry is still a strong growth industry with environment-saving and energy-efficient solutions, notes a new Brahea/Turku School of Economics report ‘Finnish Maritime Cluster 2020’. As maritime branches into new territories, one needs marine technology experts who often find employment in design offices and software providers now. According to the report, there is also a lack of project management experts and a knowledge gap concerning mechanical engineering, ICT, design, programming and logistics.

The subcontractors themselves are quite aware of the changing tides. In the ‘Open comments’ section of the Brahea subcontractor study, the suppliers voiced their thoughts about how to improve their operations, whether it’s quality systems or recruiting or visibility and marketing. Still, the number one thing on subcontractors’ mind – as they look into the uncertain hori-

zon – is finding ways to control production and costs better.

### TRUST – BUT VERIFY

Osmo Flink from classification society DNV GL Business Assurance observes that certification gives the customer confidence with regards to quality issues. The customer’s demands and expectations have to do with product quality and delivery, he says.

“In an outsider edit, the processes of the organisation as well as customer needs and expectations are reviewed in relation to the promises made to the customer. If the results of edit are utilised, the outsider edit serves also to boost operational development.”

According to Flink, the number of issued certificates in recent years has been steadily climbing as many organisations have seen the added value of proper certification. “Some organisations have given up on certification, but quite often this



*Certification gives the customer confidence with regards to quality issues. The customer's demands and expectations have to do with product quality and delivery.*



## **// Certificates will continue to be highly attractive.**

has coincided with dwindling operations," he notes.

### **SHOULDERING RESPONSIBILITY**

Certificates will continue to be highly attractive, since many big players' acquisition departments are not likely to commit at all, if the supplier can't provide the black-on-white. Furthermore, Flink observes that large organisations face the challenge of making sure that the subcontractors are being responsible in addition to being capable;

"One way to demonstrate this is the certification of environmental, occupational and health and security systems."

Flink acknowledges that subcontractors sometimes perceive the certification work to be quite demanding and rigid. Still, he argues that the documentation requirements of the new-and-improved ISO standards have become more flexible.

"Assessed as a whole, the new standards are more business-minded and can really help organisations to boost their operations."

### **THE NETWORK ECONOMY**

Olli Kaljala from Bureau Veritas is thinking along the same lines with his colleague: quality systems are gradually catching on in the shipyards' supplier network. He notes that as basically all industrial sectors are subscribing to this trend, it makes sense that marine is following suit.

"In addition to quality and environmental standards, also in some cases standards such as the information security standard ISO27000 may be applicable," Kaljala says, adding that standards (and





the related quality systems) lay the foundation for systematic improvement in the companies.

#### GET ORGANISED

According to Kaljala, the shipyards are becoming even more and more networked which means increasing business for the subcontractors.

"From the perspective of quality control alone, this trend introduces new challenges. In the network model, a quality system is a properly organised way of making sure that quality issues are not compromised at any point." ■

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# FINNISH RESEARCH VESSELS TAKE PART IN BARENTS SEA HYDROGRAPHIC SURVEYING

by: MERJA KIHLE AND ARI MONONEN

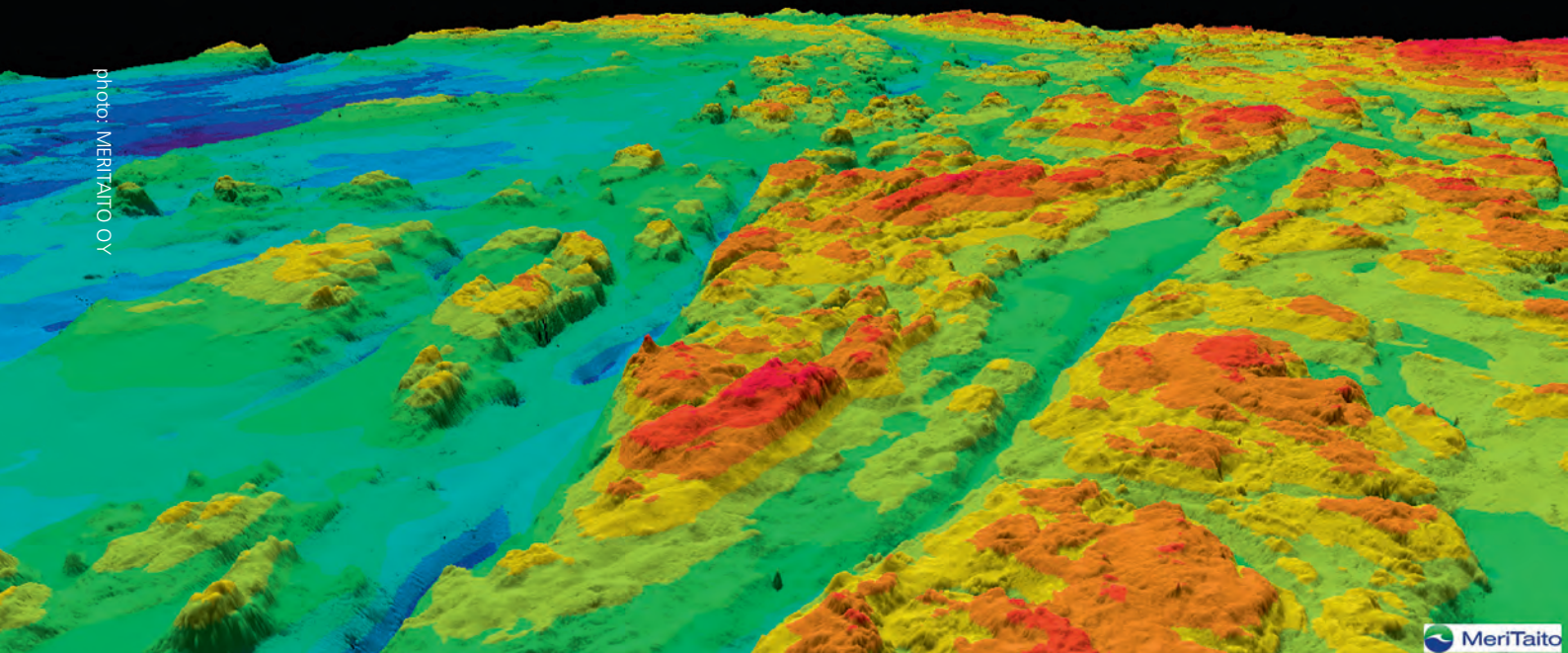
photos: STOCKSNAP.IO



*Meritaito Ltd, a Finnish company experienced in hydrographic work, has won the bidding competition for the Mareano bathymetry surveying contract in areas located in the Barents Sea near the Spitsbergen. This project is part of the large-scale seafloor mapping programme undertaken by the Norwegian Hydrographic Service, a division of the Norwegian Mapping Authority.*

**// The project is said to  
be one of the most  
challenging hydrographic  
survey projects in the world.**





*In the year 2015, Meritaito Ltd surveyed a total of 10,000 square kilometres of seafloor. For 2016 the estimated total surveying area will be 12,000 square kilometres.*

**T**he Mareano programme was originally launched in 2005. As knowledge of the seafloor and its biodiversity is limited in many areas, a more detailed mapping of the seafloor in Norwegian offshore waters was called for.

The project is said to be one of the most challenging and demanding hydro-

**Among other rare seafloor findings, the Barents Sea region incorporates the largest cold-water coral reefs in the world.**





graphic survey projects in the world. Meritaito Ltd signed the contract for the surveying work on 16th March, 2016.

"Our part in the Mareano project is just on the starting line," Mr. Jukka Suonvieri noted in April. He is the Vice President of Meritaito Ltd.

The first phase of the operation will consist of general surveying of the ocean bottom, with the aim of mapping the depth, gathering hydrographic and topographic data, plus recording details on underwater vegetation.

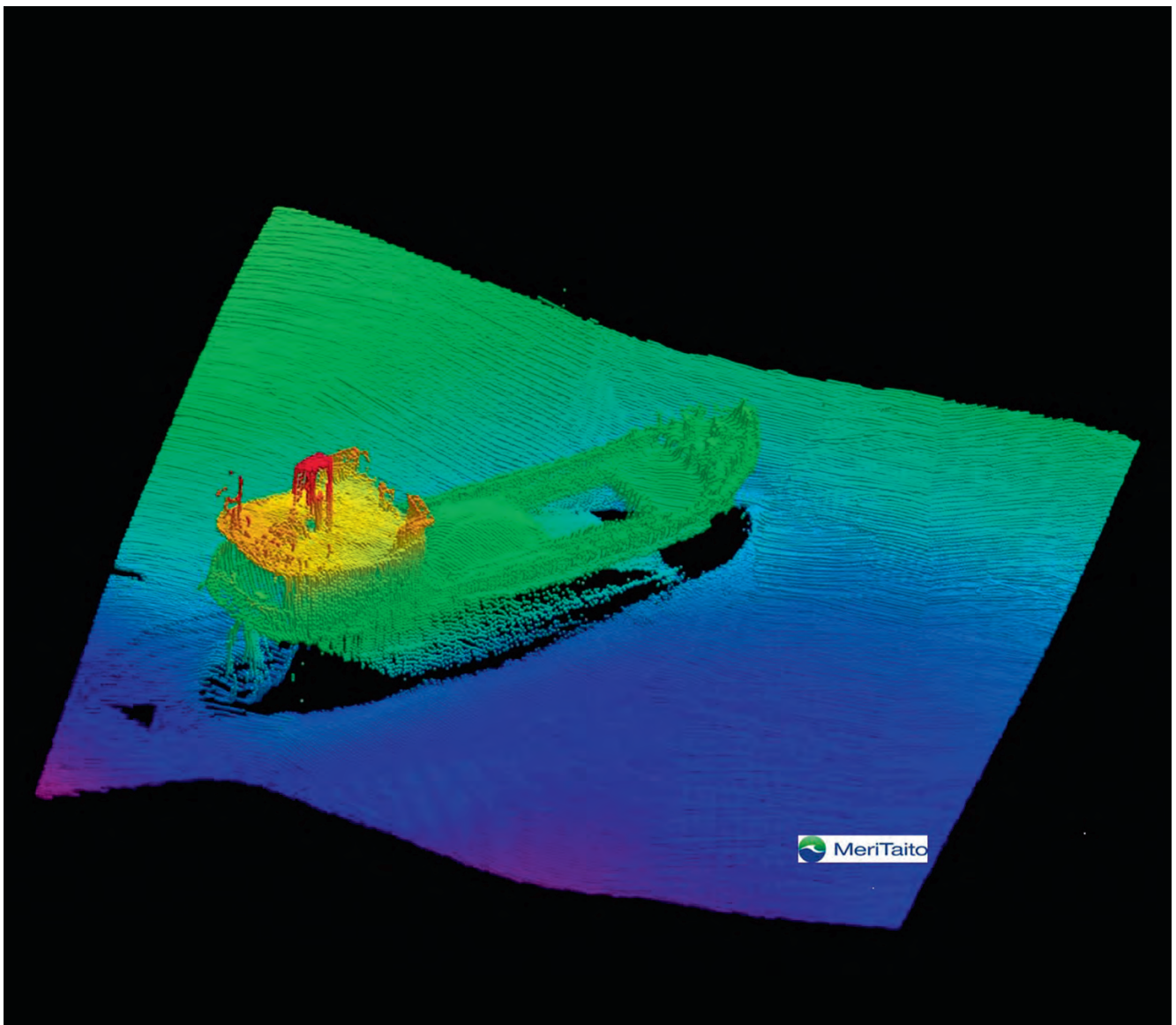
"Based on this data, geologists and environment authorities will focus their own surveys and sample-taking on specific areas of

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photo: MERITAITO OY



*A shipwreck underwater. "There are a lot of uncharted waters, both in Arctic regions and in Finland. We still have a lot of work to do," says the Vice President of Meritaito Ltd, Mr. Jukka Suonvieri.*



interest in the following year, i.e. 2017," Mr. Suonvieri explains.

Among other rare and unusual sea-floor findings, the Barents Sea region incorporates the largest cold-water coral reefs in the world.

#### INVESTMENTS IN HI-TECH GEAR

Meritaito's work around the Spitsbergen area is expected to be completed by the end of 2016.

For operating in the Barents Sea waters, Meritaito Ltd has made new invest-

ments in the company's vessel fleet and equipment.

"For one thing, our buoy tender vessel M/V 'Letto' has been modified for work as a hydrographic surveying vessel in Barents Sea conditions. The instrumentation on the vessel now includes new multibeam echo sounder, computers, GPS receivers, motion sensors, and other kinds of top-notch hydrographic surveying equipment," Suonvieri states.

Another ship to be utilised for the project is the former Finnish Navy ship

'Pohjanmaa' that was recently decommissioned and then purchased by Meritaito Ltd for use in hydrographic work. Refurbishing of this ship is currently ongoing.

"This ship, too, will be equipped with the state-of-art surveying equipment," Suonvieri mentions.

M/V 'Letto' will be the first Meritaito's vessel making hydrographic surveys in the Barents Sea area. The 'Pohjanmaa' will join in shortly, once the conversion work aboard the ship has been completed.

photo: MERITAITO OY



*Meritaito's buoy tender vessel M/V 'Letto' has been modified for work in Barents Sea conditions and will be the first Meritaito's vessel making hydrographic surveys in the area.*





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### TAKING BEARINGS FOR INTERNATIONAL SURVEYS

For Meritaito Ltd, winning the Mareano contract is a significant opening to international hydrographic surveying projects.

Meritaito's strategy for the future includes expanding hydrographic surveying services to international markets. Therefore, success in the bidding competition for the Mareano project was an important first step, and a good reference for the future.

"In the year 2015, Meritaito Ltd surveyed a total of 10,000 square kilometres of seafloor. For 2016, our estimated total surveying area will be 12,000 square kilometres. Of this, approximately 10,000 sq.kms will be in the Barents Sea region

and the rest in Finnish waters," Suonvieri affirms.

The two Meritaito ships in this project will have all-Finnish crews, with three members of Meritaito's own personnel on each working shift. The rest of the crew

will be Finnish sailors contracted from VG Shipping.

"There are a lot of uncharted waters, both in Arctic regions and in Finland. We still have a lot of work to do," says Suonvieri. ■



We still  
have a lot  
of work to do.



# New innovation for large ships will reduce fuel consumption

by: MERJA KIHLE AND ARI MONONEN

photo: TALLINK SILJA



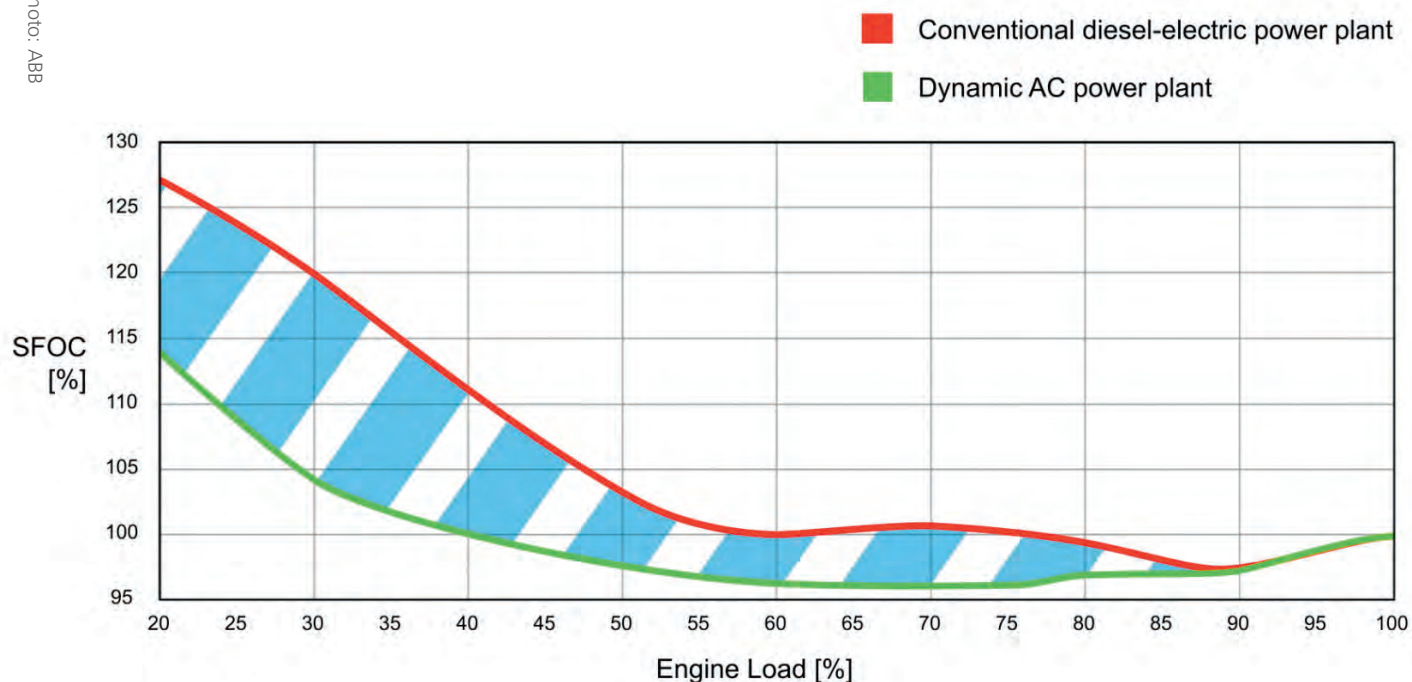


*ABB's Marine and Ports unit has developed a new concept designed to save fuel consumption in maritime traffic.*

*Launched in March 2016, the Dynamic AC concept is to maximise energy efficiency by optimising engine speed. The new electric power system has been described as being ideal for cruise ships in particular.*

**// The concept is new  
to the commercial  
maritime industry.**





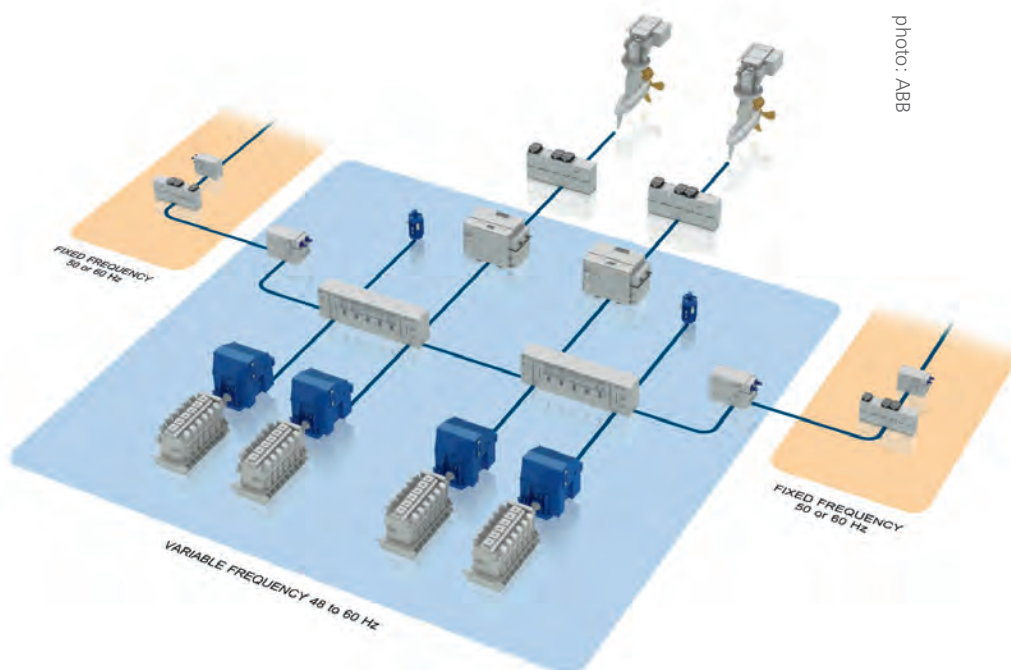
*In the case of a large cruise ship, as much as 6 percent – or up to 2 000 tons of fuel – can be saved annually by engine speed optimisation.*

The new ABB's concept has been accomplished with a simple configuration of electrical system, utilising existing ABB components. The concept is new to the commercial maritime industry.

In the case of a large cruise ship, as much as 6 percent – or up to 2 000 tons of fuel – can be saved annually by engine speed optimisation.

Dynamic AC adjusts the rotational speed of the diesel generating sets, allowing the system frequency to vary within the specified range. Currently, many ships still run with their generators at a set speed, regardless of the power requirement. This creates a surplus of wasted energy.

Variable speed power generation can provide significant fuel savings with diesel electric propulsion, when the operational profile of the vessel has a lot of variation in speed and power demand.



*Dynamic AC adjusts the rotational speed of the diesel generating sets, allowing the system frequency to vary within the specified range.*



## MATCHING SPEEDS AND FUEL EFFICIENCY

Design of a new cruise ship is based on the routing between the ship's home berth and the intended destination ports. The itineraries may, for instance, include longer transits to warmer waters and visiting some islands in these waters. Therefore, the speed and power demand of the ship's engines are liable to vary considerably along the route.

In conventional designs, diesel electric power plants run at a constant speed. To match the power production with the actual demand, generators can be called online or disengaged.

**Up to 2 000  
tons of fuel  
can be saved annually  
by engine speed  
optimisation.**

A modern cruise ship is typically equipped with four to six main engines. On the grounds of fuel economy, it is preferable to run the ship at certain speeds. In turn, some speed ranges should be avoided as they require the power plant to run at poor efficiency.

Routing and power plant design can be matched so that the speed profile leads to optimised fuel consumption.

However, the problem here is that a cruise ship is rarely utilised on the same route over the ship's entire life-cycle. Moving to another route might require completely different speeds which would perhaps again lead to poor fuel economy.

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 A cruise ship is rarely utilised on the same route over the ship's entire life-cycle.

### OPTIMISING ECONOMY AND REDUCING EMISSIONS

According to ABB researchers, fuel economy can be significantly improved by adjusting the engine speed with the Dynamic AC concept.

It is possible to improve the power generation efficiency by adjusting the rotational speed of the engines. In the case of a diesel engine, fuel consumption is typically

minimised at around 85 percent load when the engine is operated at a constant speed. However, adjusting the speed allows for finding the optimal fuel consumption at all operating conditions. A more efficient combustion process can reduce the fuel consumption, as well as emissions.

"ABB has had great success providing power and propulsion solutions to the

cruise industry. Dynamic AC is another tool for cruise companies to build fleets which are more efficient and more environmentally friendly," says Mr. Juha Koskela, Managing Director of ABB's Marine and Ports business, based in Finland.

Dynamic AC is particularly aimed at larger ships with a power of 20 MW (megawatts) or higher. ■





# Goliath Cometh

## 1,200 TON SUPERCRANE KICKS OFF A NEW ERA OF INVESTMENTS IN TURKU

by: SAMI J. ANTEROINEN

photo: MEYER TURKU OY





*In a couple of years, the Goliaths will form a real “dynamic duo” for Turku. The new 1,200 ton gantry crane – together with the old 600 ton crane – will triple the shipyard’s lifting capacity per day and will allow building and lifting bigger blocks with more outfitting.*

## **// The gantry crane of the shipyard dated back to the 70’s.**

**S**till, the crane in question – a 600 ton Goliath by Finnish crane-maker Konecranes – had proven to be a valuable work-horse for the shipyard over the decades. With this in mind, Turku shipyard started talks with Konecranes about making a new delivery: a brand new Goliath, with even more size and fully equipped to handle the modern-day challenges.

Finally, in April 2016 it was announced that Konecranes will deliver a new 1,200 ton Goliath gantry crane to Meyer Turku. The design, precision drive components, electrical installation and automation system and structural components will be supplied by Konecranes, while Meyer Turku will manufacture the main girder in its own hull production.

### **STEP ONE**

The first major step of the company’s big investment program for the Turku shipyard is now becoming concrete, says Turku shipyard’s CEO Jan Meyer, obviously satisfied with the deal.

*As the German Meyer family purchased Turku shipyard a couple of years ago, there were fervent hopes that the new owner would also invest in shipyard infrastructure. The machinery at the shipyard was still in working condition, but getting old – there was no getting around that simple fact. For example, the gantry crane of the shipyard dated back to the 70’s.*



"Building a part of the crane with our own workforce will also help us smoothen our workload," he points out.

According to the plan, the new crane will be taken into use in May 2018. What's more, the order also includes the modernisation of the shipyard's current 600 ton crane – meaning that the 40-year-old veteran will get a new lease on life.

Jan Meyer sees the investment – which comes with a price tag of more than EUR 35 million – as a good example of smart Finnish collaboration and adds that the new crane will "allow for more industrialisation and increase output capacity".

photo: KONECRANES

## The new deal will double the tonnage of the 1970's version.

### MIGHTIEST IN THE NORTH

Panu Routila, CEO of Konecranes, comments that an order of this magnitude is significant for the entire Finnish industry. First of all, Routila is pleased to see that the lifetime of the existing Goliath will be prolonged. And then there is the new deal which will double the tonnage of the 1970's version:

"We look forward to delivering a totally new, high-tech and actually the largest gantry crane in the Nordic countries to the site. Together, the two cranes will help Meyer Turku reach higher production levels," Routila believes.

In a couple of years, the Goliaths will form a real "dynamic duo" for Turku. The new 1,200 ton gantry crane – together with the old 600 ton crane – will triple the shipyard's lifting capacity per day and will allow building and lifting bigger blocks with more outfitting.



*"We look forward to delivering a totally new, high-tech and actually the largest gantry crane in the Nordic countries to the site," says Panu Routila, CEO of Konecranes.*

In addition, the new Goliath crane will be leaning heavily into the 'Internet of Things' era. The newcomer will be equipped with Konecranes TRU-CONNECT Remote monitoring, allowing Konecranes to offer expertise and help to reduce unplanned downtime – even in the harshest of conditions.

### FOCUS ON THE CABINS

The Turku shipyard investment programme also includes investing 17 million euros to its fully owned subsidiary Piikkiö Works. There will be a new assembly factory (with a fully automated conveyor belt line) and the old panel production hall will be renovated and enlarged to be used as a warehouse for the ready-made cabin modules.



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First Arctic module carrier for Yamal LNG plant developed in close cooperation with ZPMC- Red Box Energy Services.



The Ice Technology Partner

The new Goliath crane will be equipped with Konecranes TRUCONNECT Remote monitoring, allowing Konecranes to offer expertise and help to reduce unplanned downtime – even in the harshest of conditions.



photo: KONECRANES

Furthermore, the offices of Piikkiö Works will be moved to a newly renovated office.

Ari Kumpulainen, CEO of Piikkiö Works, comments that this is, in fact, the biggest investment in the history of Piikkiö cabin factory.

"We will almost double our output by 2018, and these investments are a major step towards more industrialised LEAN production."

#### BUILDING ON TRADITION

Piikkiö Works has a great legacy: The world's first prefabricated cabins were produced right here 30 years ago. About 140,000 successfully delivered prefabri-

cated cabins later, Meyer Turku wants to build on this winning tradition and make "the next leap forward towards higher productivity and industrial quality," says Jan Meyer.

"The facilities here in Piikkiö need renovations or even replacement very urgently. This is a burden, but also a great opportunity to design and create our future," Meyer comments.

And as for the day-to-day operations of the shipyard, things are looking quite good. The keel of the Tallink's new LNG-powered fast ferry Megastar was laid at the Meyer Turku shipyard in February and the shipyard crews got busy assembling

the pre-produced parts immediately afterwards. Looking more like a ship with each passing day, Megastar will be ready in the beginning of 2017.

#### GREEN DELIVERY

The new ferry will be 212 meters long, accommodating up to 2,800 passengers. Operating on Tallinn-Helsinki route, Megastar will use LNG as fuel, but will also be able to run on marine diesel (MGO). The vessel's size will be 49,000 GT and she will have a service speed of 27 knots. Megastar will comply with the new and stricter emission regulations for the ECA areas including the Baltic Sea. ■

**The new Goliath crane  
will be leaning heavily  
into the 'Internet of Things' era.**

photo: KONECRANES

photo: KONECRANES







## Expert for Refrigeration systems

### Refrigeration & Maintenance

Kari Hakula +358 400 946 718,  
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### Humidifiers & De-Humidifiers

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A photograph of a commercial kitchen counter. The counter is made of a light-colored material, possibly stone or laminate, and has a glass display case on the right side. Above the counter, there is a menu board with various food items listed, including "SANDWICHES", "LATTE", "ESPRESSO", and "CAPPUCCINO". The background wall is decorated with a large mural of flowers. The floor is made of dark tiles.

**// Durability and dependability are key issues when you're operating a kitchen upon the waves.**

*The high quality and construction of the products is an issue since kitchens have to deal with 24/7 operations where you have to serve a great number of customers very quickly. The daily grind is never-ending.*





# Bring the Performance

**MAKING KITCHENS FOR THE MARINE  
INDUSTRY IS NO EASY CHALLENGE**

by: SAMI J. ANTEROINEN

photo: SEAKING LTD



*Luxury cruise ships – with, say, 5,000 passengers – deal with plenty of challenges in the day-to-day. As these “floating cities” move massive volumes of food and beverage daily, it is a no-brainer that the ships’ galleys have to be primed for top performance. Durability and dependability are key issues when you’re operating a kitchen upon the waves, since the nearest service technician can be really far away on dry land.*

**P**etri Hiilloste from Huurre – one of the global leaders in marine cold stores – knows that marine operations leave little room for error:

“Reliability and easy maintenance are something that we have been placing a lot of emphasis on,” says Hiilloste, while adding that the number one thing on the sea is still hygiene.

“Complying with the hygiene demands is the top priority,” he says.

#### **COLD ROOMS FOR NCL**

Huurre has been a key player in the marine cold rooms market since 1993. The latest deal materialized in April, as Huurre signed a contract to supply cold room materials to ALMACO Group for two luxury cruise ships for Norwegian Cruise Line. Based on ALMACO lay-out design, Huurre’s material supply include prefabricated and insulated panels for walls and ceiling, doors, and accessories, that ALMACO will install and commission for the complete cold rooms delivery. These yet unnamed Breakaway Plus class cruise ships carry over 4 000 passengers.

“This contract is quite significant from our perspective, as it strengthens our position as one of the world’s biggest manufacturers of marine cold room materials,” says Petri Hiilloste from Huurre. “Thanks to our strong relationship with ALMACO Group, we have delivered reliable and effective cold stores components to some of the largest cruise owners, such as Nor-

photo: SEAKING LTD



*“Our designs are based on the optimal utilisation of space and geared towards finding the best functional solution at all times,” says Pasi Suvanto from SeaKing.*

wegian Cruise Lines.” The cruise ships will be built in Meyer Werft’s shipyard in Papenburg, Germany, and delivered during 2018 and 2019.

In addition to Marine, Huurre Compact Refrigeration Business Division sells Porkka brand commercial refrigerators and freezers to Scientific and Hotel, Restaurant and Catering sectors. Hiilloste character-

ises Marine as a very important area for the company.

“We deliver cold rooms classified by U.S. Public Health Service (USPHS), ranging from big warehouses of hundreds of square metres to smaller cold rooms of just a couple of square metres. We can also offer cold room fire doors with the A60 certification.”





## ROYAL TREATMENT

One of the pioneers of marine food & beverage is SeaKing which supplies complete catering systems to cruise ships, having delivered catering systems to 130 cruise ships to all the major shipyards in Europe. SeaKing's latest references from the field are Ovation of the Seas, Carnival Vista and soon-to-be-delivered Harmony of the Seas, says Pasi Suvanto from SeaKing.

"In all these ships, the scope of deliv-

ery included the designing of ship galleys, bars and pantries as well as delivery of galley equipment and furniture as well as installation."

According to Suvanto, the high quality and construction of the products is an issue since kitchens have to deal with 24/7 operations where you have to serve a great number of customers very quickly. The daily grind is never-ending.

"We design and manufacture all

custom-made products – such as refrigerators, tables, bar and buffet counters – at our own factory where the products are tested before they're shipped to the client." The products are held to a high hygiene standard as they must meet the criteria set by USPHS.

## LIGHT MAINTENANCE REQUIRED

How about service and maintenance onboard, then? – Suvanto replies that the





## // There's need for kitchens all around the marine industry.

photo: METOS OY

*In addition to cruise ships, there's need for kitchens all around the marine industry. For example, Metos, the maker of smart kitchens, delivers galley equipment to cargo ships, ferries and offshore.*

i.e. refrigerated units have been designed with simplicity and user-friendliness in mind to such a degree that the ship crew can perform the required maintenance operations themselves.

"Upon request, we can deliver spare parts packages before the ship sails and provide usage and maintenance training for the crew," Suvanto says, adding that with the delivery of each equipment both the cruise line and the shipyard receive detailed technical materials (complete with spare part recommendations and instructions).

With production facilities in Poland and the US – and headquarters in Switzerland – SeaKing is decidedly an international player. The company has been a pioneer in designing ship kitchens for over 30 years, Suvanto points out.

"Our designs are based on the optimal utilisation of space and geared towards finding the best functional solution at all times," Suvanto says. In the field of energy efficiency, the company seeks ways to develop its own production and,

also, works in close collaboration with various galley equipment manufacturers.

"Furthermore, we can also provide various solutions to monitor energy consumption," he adds.

### BEYOND CRUISE SHIPS

In addition to cruise ships, there's need for kitchens all around the marine industry. For example, Metos, the maker of smart kitchens, delivers galley equipment to cargo ships, ferries and offshore.

"Marine is an important part of our business," says Taina Salonen from Metos. In fact, marine has been part of the company's operations since the 1960's.

The company's "Kitchen Intelligence" ideology is all about raising the performance of professional kitchens. The concept is based on Metos' commitment to contribute to its customers' success through a deep understanding of their operations. When you're talking about marine business, this means – more often than not – that all equipment must

photo: METOS OY





be rugged enough to handle everything that goes on upon the seas.

"All marine-bound equipment is first tested thoroughly on land," she says, adding that not all "dry land" devices are a good fit for marine.

When it comes to maintenance, Salonen says that, usually, the service technicians onboard are quite skilled at servicing the galley hardware.

"Normally we also provide a spare parts kit along with the equipment, so there is 'first aid' available right there. This also gives us more time to get the warranty part to replace the broken down one." In addition, there is a rising trend that clients – especially those thinking ahead – are interested about acquiring a more comprehensive spare parts package.

#### SEABORNE CHEF

But what is it like for a top chef to switch from land to sea? Matti Jämsen, the newly appointed Head of tRestaurant Services for Tallink Silja Oy, admits that working with big boats is a little different from land operations.

"Many things are quite new to me and I'm still learning the ropes, so to speak. It's also great to consider all the things I can bring to the ships from my 'previous life' on land," Jämsen says, adding that the job is quite exciting due to this potential. Also, with Tallink Silja's 18 restaurants and four cafés, Jämsen should have his hands full for quite some time.

"In the ships' kitchens, there is a centralised cooling system which keeps the temperature sufficiently low – and all the machinery that's coming in must be 'marine grade'," confirms Jämsen.

Having durable machines goes a long way to running smooth kitchen operations and Jämsen credits also the maintenance crew for their expertise: "We have electricians onboard that can handle the daily maintenance when the need arises."

Talking about the optimisation of space, Jämsen admits that especially with older ships, the situation is not always perfect. However, as the incoming new machines can be smaller and more efficient, there is at least some relief to be found. ■



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*"All marine-bound equipment is first tested thoroughly on land,"  
says Taina Salonen from Metos.*





# New research projects for autonomous ship technologies


by: MERJA KIHLE AND ARI MONONEN

photos: ROLLS-ROYCE PLC.



*The idea of unmanned cargo ships could become a reality on the world's oceans within ten years – or at least many serious Finnish researchers and international manufacturers of marine technology strongly believe so. In current research projects, the aim is to draw up concepts for remote-controlled and fully automatic vessels.*





*Oceangoing ships perhaps could be remotely steered from a control centre located somewhere far away on dry land. This idea would certainly change the working practices of ship controllers and captains.*

// There should be no real reason why the same concept would not work aboard ships as well.

**T**he renowned international engine and equipment manufacturing company Rolls-Royce has participated in several projects that could pave the way for autonomous ships. In some of these projects,

the combined expertise of Rolls-Royce and some of Finland's top academic researchers from Tampere University of Technology and VTT Technical Research Centre of Finland has been utilised to develop new

concepts and technology for unmanned ships.

#### **A BELIEVABLE CONCEPT**

Principal Scientist Eija Kaasinen from VTT





*The Rolls-Royce Blue Ocean team has developed a range of autonomous ship concepts as well as innovative designs for various ship types.*

Technical Research Centre of Finland notes that one of these recent research projects was FIMECC UXUS that was concluded at the end of 2015.

"In this project, concepts for new types of ship bridges were outlined," she explains.

"At first, the idea was to figure out how the daily work of ship steering and other operations might change in the future."

It was obvious that ships of the future would be fitted with increasingly sophisticated automation technology.

"According to the feedback we received from the first results, our concepts appeared quite radical but still believable," says Kaasinen.

"The next step from largely automated vessels would be unmanned ships. As robot cars and drone airplanes are already being utilised, there should be no

real reason why the same concept would not work aboard ships as well."

#### **MORE RESEARCH NEEDED**

The research team considered that oceangoing ships perhaps could be remotely steered from a control centre located somewhere far away on dry land. This idea would certainly change the working practices of ship controllers and captains.





"Remotely controlled ships would need new hi-tech navigation, radar, and camera technology on board. Also, communication systems between the ship and the control centre would have to be very reliable," Kaasinen emphasises.

"If ships could be entirely unmanned, it would mean a lot of savings for the ship-owners – not just from personnel reductions, but the ships themselves could be constructed in new ways that would enable them to carry larger amounts of cargo. For instance, no cabins or mess halls would be required aboard for the ship's personnel."

"Furthermore, unmanned ships could not easily be captured by pirates."

Apart from this, maritime safety – avoidance of collisions at sea for one thing – may yet become a key issue for unmanned vessels.

"Numerous points related to safety and international maritime regulations still need to be refined."

One problem is that insurance companies would probably regard unmanned ships as unsafe and, as such, ineligible for insurance.

Further projects for autonomous ships are already underway. One of them

**// Ships could be constructed in new ways that would enable them to carry larger amounts of cargo.**

*The first unmanned test vessels could be operated in limited areas, perhaps close to the coastline.*







*"Shipowners have already shown keen interest in remote controlled and autonomous ship technologies. They want to become forerunners," says Mr. Oskar Levander, Vice President of Innovation from Rolls-Royce.*

## **// Unmanned ships could not easily be captured by pirates.**

is AAWA, the Advanced Autonomous Waterborne Applications Initiative.

"The AAWA project that was started in late 2015 also incorporates scientists from VTT and Rolls-Royce, with additional researchers focusing e.g. on technical, legal and safety challenges, recruited from the Tampere University of Technology, Åbo Akademi University, Aalto University and the University of Turku," Kaasinen recounts.





## Automation technology could be installed on various types of vessels.

Mr. Oskar Levander, Vice President of Innovation from Rolls-Royce, notes that the company also takes part in many cooperative R & D projects with specific ship-owners in this field.

"In the currently ongoing second phase of the AAWA project, automation technologies for remote controlled and autonomous ships are being considered," he says.

"Eventually the 3rd phase of AAWA will include proof-of-concept studies. However, we are still looking for more financing before we can take the project to that final stage."

Mr. Levander expects that automation technology could be installed on various types of vessels.

"There is no real reason why there could not be remote-controlled or completely unmanned cargo ships, tugs, coastal ships, or car ferries," he explains.

"Shipowners have already shown keen interest in remote controlled and autonomous ship technologies. They want to become forerunners."

### **SAFETY IMPROVEMENTS**

Possibly the first unmanned test vessels could be small in size. They might also be operated in limited areas, perhaps close to the coastline.

"In any case, limited operations will be necessary until international IMO regulations related to unmanned ships can be agreed upon," Levander ponders.

"In the long term, unmanned operation of ships may improve maritime safety. Even automated ships could perhaps have a limited crew aboard for emergencies, particularly when ships are carrying hazardous cargo such as oil or flammable gas."

Also, approach to ports would probably need to be pilot-guided, even for drone ships. The pilot would not necessarily have to physically be on board.

"In the event of a serious technical fault in remote-control systems, unmanned vessels will need to be programmed to proceed to a specific location if no control signal is being received," suggests Levander. ■

More tangible concepts and perhaps actual hardware for automated ships are now on the agenda.

### **PROOF-OF-CONCEPT STUDIES**

The Rolls-Royce Blue Ocean team, responsible for research and development of future maritime technologies, has developed a range of autonomous ship concepts as well as innovative designs for various ship types.



## PROTACON MARINE NEWS

*Protacon, a leading company in providing modernisations for ice breaker propulsion systems, will place a stronger focus on the marine business.*



*"We can guarantee high reliability thanks to true partnerships with leading product manufacturers. We use the latest product knowhow in our own applications," says Marko Loisa from Protacon.*

**D**uring the second half of last year, Protacon successfully commissioned electric propulsion drives for two Swedish icebreakers, Atle and Frej. The project schedule for Frej was particularly tight because of its use in arctic operations during the summer. Nevertheless, the new systems were started up ahead of the schedule and the modernised systems operated faultlessly throughout the winter without any off hire periods. Examples of smaller projects include engineering and component deliveries for the modernisation of the rudder indication system of Stena Spirit, as well as services for the old propulsion drives and data logging system of Frej for the purposes of arctic operations.

Marko Loisa from Protacon says: "We can already offer automation systems and large drives products including generators and motors for all marine requirements using off-the-shelf components. Here, we can guarantee high reliability thanks to true partnerships with leading product manufacturers. We use the latest product knowhow in our own applications."

This year's projects include an upgrade of the icebreaker Ymer to include similar reserve drive and operating systems as were provided for Frej and Atle, implementation of a variable diesel speed application, and specification of a hybrid icebreaker.

"To serve ship owners and shipyard customers better and on a global scale, our portfolio will encompass the entire powertrain for propulsion systems and power generation ranging from vessel steering to propelling – also including hybrid systems. Our products will include marine navigation, positioning and propeller systems. Here, we can also rely on our trusted partners. We have already proven our strength in large marine projects, and a wider product range will give even more to our customers and for ourselves", Marko Loisa explains. ■

*More information: [www.protacon.com](http://www.protacon.com)*





## Investing in heavy machining

**P**KP-Machining is a contract manufacturer in the metal industry. The company provides turnkey deliveries of components including welding, machining and surface treatments. We specialize in deliveries of medium-weight and heavy components.

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Our modern machine base, composed of sturdy units for demanding applications, enables us to machine pieces of up to 120 tons. The newest machine acquisition is the BOST VTL 68 CY heavy-duty 5-axis vertical lathe with max. turning diameter of 8200mm and max. turning height of 5400mm with 120 ton table, it will be installed in a new extension to the plant by the end of year 2016.

In addition to heavy CNC machined pieces and bespoke small series, PKP-Machining offers the manufacture of prototypes and component repair services, putting solid expertise at your disposal. ■

*More information: [www.pkp-machining.fi](http://www.pkp-machining.fi)*

## ABB harnessing power of connectivity at Integrated Operations Centers

**A**BB's new marine Integrated Operations concept utilizes the Internet of Things Services and People (IoTSP) to connect ships, their owner's technical headquarters and ABB's support departments. In May 2016 new Integrated Operations Center was opened in Helsinki, Finland to focus on the Azipod propulsion and passenger vessel segment. Combining the monitoring capabilities of its centres in Norway, Finland, and the Netherlands, ABB can connect to more than 600 vessels and there are further centers scheduled to open in Asia and the US in 2016.

The new facility is taking the support for ships from the shore side to the next level, bringing significant cost and safety benefits to ship owners, whilst paving the way for more autonomous shipping operations. Sensors and software onboard the ship send equipment and performance data via satellite link which allows ship owners, in collaboration with ABB's experts, to perform remote troubleshooting and make informed judgements about the ship's performance and maintenance plan. With Integrated Operations, ship owners can reduce the need for sending engineers on board by up to 70% and by implement a way of maintenance planning and execution, up to 50% on dry docking costs on ABB equipment can be saved if monitoring, pre-survey, and project execution are managed in close cooperation between ABB and the ship owner.



ABB's Integrated Operations concept enable customers to analyze their data more intelligently, optimize their operations, boost their productivity, and their flexibility. ABB is advancing the IoTSP by helping the customers develop their existing technologies, while keeping sight of enduring commitment to safety, reliability, cyber security and data privacy. ■

*More information: [www.abb.com](http://www.abb.com)*



### Evac Grows with Cruise Industry

**E**vac is the world's leading provider of integrated waste-, wastewater-, and water management systems for the marine, off-shore, and building industries. The company has executed over 20,000 marine and 2,000 building projects. Evac has employees and representatives in more than 40 countries.

In 2015, Evac's turnover grew 40 percent to 98 million euros, thanks especially to large cruise, navy, coast guard, and offshore contracts. In the first quarter of 2016, Evac won two cruise projects including Evac Complete Cleantech Solution covering the integrated waste and wastewater management systems for altogether seven cruise vessels. The total value of these projects was about 40 million euros. The Evac product package for each of the vessels includes an Evac MBBR (Moving Bed Biofilm Reactor) wastewater treatment plant, enabling vessels to operate in many Environmentally Sensitive Sea Areas (ESSAs) and Special Areas (SAs), where special discharge restrictions apply. The contract also includes dry and wet waste treatment systems including an incinerator and recycling equipment, food waste vacuum systems, a bio sludge treatment unit, plus vacuum collecting systems including vacuum units and toilets.



*Mika Karjalainen, Chief Technology Officer at Evac*

"Evac's competitive edge is our ability to offer in-house product development, product testing, constant product development, plus the largest product offering on the market. Unlike our competitors, Evac answers all our customers' waste, wastewater and water management systems needs, significantly simplifying project management and systems integration," says Mika Karjalainen, Chief Technology Officer at Evac. ■

*More information: [www.evac.com](http://www.evac.com)*

### Rolls-Royce to provide innovative propulsion system to yacht builder Benetti

**R**olls-Royce has signed a contract with the Italian yacht builder Benetti to deliver a new generation of high performance, lightweight steerable thruster that makes comprehensive use of carbon fibre material for the first time.

"Efficient and lightweight propulsion is key to reducing the environmental impact of a modern yacht," said Vincenzo Poerio, Benetti, CEO. "We have been working closely with Rolls-Royce on a journey towards an excellent propulsion system for our new line of exclusive megayachts. The successful result of this collaboration has been confirmed by facts, indeed five units have already been sold and more units are already under construction to shorten delivery times and meet the increasing demand for this model."

The new Azipull Carbon 65 (AZP C65) uses carbon fibre material for load carrying parts, resulting in a substantial reduction of the propulsion system's weight. The new thrusters also facilitate a better vessel lay out while maintaining high propulsion efficiency, excellent manoeuvring capabilities and easy maintenance.

Designed initially for fast yachts, with further applications in passenger vessels and workboats, the Azipull Carbon brings to

the market a lightweight, reliable and highly efficient propulsion system with very low noise and vibration levels.

The first thruster in the series, AZP C65, is designed for a power rating of 2 MW and fitted with a fixed pitch, pulling type propeller – meaning the propeller faces forward. The driveline is designed with two spiral bevel gear sets, installed in a supporting structure that ensures optimum load carrying capacity in all operating conditions. The thruster can be steered using a hydraulic system. An Automation and Control system, based on Rolls-Royce's Common Controls building blocks, has also been developed to match the new thrusters, which each weigh only 2,800 kg (dry).

The contract covers a number of thrusters, planned for delivery over the next three years and delivered to RINA Rules for Classification of Yachts. The first yacht, a 125 ft Fast Displacement called IRONMAN has already been delivered. Hulls two and three are under construction with delivery expected in the next few months. ■

*More information: [www.rolls-royce.com](http://www.rolls-royce.com)*



# company directory

photo: STOCKMAP/IO





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**Contact Person**

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Managing Director  
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**Facts & Figures**

Turnover: EUR 7,1 million  
Personnel: 12  
Established: 1987

**Specialty Areas**

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

**ACM-TRADING LTD**

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**Contact Person**

Kari U. Laiho

**Specialty Areas**

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See page 29

**AKER ARCTIC TECHNOLOGY INC**

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# Aker Arctic

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**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.

**ALLSTARS ENGINEERING GROUP**

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**Facts & Figures**

Turnover: EUR 5 million  
Personnel: 45  
Established: 1983

**Subsidiaries & Representatives**

Allstars Engineering Poland, Allstars Engineering Croatia, Jobio Engineering Bulgaria

**Specialty Areas**

Shipbuilding & Offshore. Basic and Detail Design of hull, machinery, HVAC, interior, deck outfitting and electricity. Wide range of project management and design services with over 25 years experience.

See page 13

**ANTTI-TEOLLISUUS OY, ANTTI MARINE**

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Finland  
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www.antti-teollisuus.fi

**Contact Person**

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Sales Manager  
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**Specialty Areas**

Cabin, Accommodation & Interior fire doors for marine and off-shore applications. Antti doors are available in C, B-15 and B-30 class with MED & USCG approvals.

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www.aslemetals.fi

**Contact Person**

Pasi Lehtinen  
Managing Director  
pasi.lehtinen@aslemetals.fi

**Specialty Areas**

Aslemetals can carry out turnkey deliveries from planning to installation. Shipbuilding (length till 84m), pipemodules, machine rooms, steel constructions etc. Careful planning, preparations and our experienced personnel enable efficient deliveries.



**BUREAU VERITAS**

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www.veristar.com

**Contact Person**

Olli Kaljala  
Chief Executive  
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**Facts & Figures**

Personnel: 50  
Established: 1984 (Finland)  
Parent Company: Bureau Veritas SA (est. 1828)

**Specialty Areas**

Survey of ships & ship equipment, classification of newbuildings  
Inspection of industrial products & goods for international trade  
Certification of management systems against international standards

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www.caverion.fi

**Contact Person**

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

**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

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www.championdoor.com

**Contact Person**

Jukka-Pekka Hakkarainen  
Export Manager  
jp.hakkarainen@championdoor.com

**Facts & Figures**

Turnover: EUR 9,5 million  
Personnel: 48  
Established: 1992

**Specialty Areas**

Very large shipyard fold-up doors, size of one door can be as large as 40 x 35 metres. Doors can be also manufactured in special frame widths with no wind or size limitations.

**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.

**EVAC OY**

Sinimäentie 14  
FI-02630 Espoo  
Finland  
Phone +358 20 763 0200  
evac.marine@evac.com  
www.evac.com

**Contact Person**

Markus Peltola  
markus.peltola@evac.com

**Facts & Figures**

Turnover: EUR 100 million  
Personnel: 200  
Established: 1979

**Specialty Areas**

Evac is a global company that designs, manufactures and markets environmentally friendly water, waste and wastewater collection and treatment systems for the shipbuilding, offshore and construction industries. Skilled personnel, professional design and high-quality technical solutions have facilitated continuous growth, both in turnover and market share.

**EXIT-PAINIKE KY**

P.O. Box 78  
FI-61801 Kauhajoki  
Finland  
Phone +358 6 231 4034  
Fax +358 6 231 4112  
exitpainike@exitpainike.fi  
www.exitpainike.fi

**Contact Person**

Timo Hakala

**Specialty Areas**

EXIT 6000 series emergency doors. EXIT panic device



**FORESHIP LTD**

Hitsaajankatu 4 A  
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.

**HALTON MARINE OY**

Pulttikatu 2  
FI-15700 Lahti  
Finland  
Phone +358 20 792 200  
Fax +358 20 792 2060  
haltonmarine@halton.com  
www.haltonmarine.com

**Contact Person**

Tommi Rantanen

**Facts & Figures**

Turnover: EUR 197 million (Halton)  
Personnel: 1 400  
Established: 1969  
Parent Company: Halton

**Specialty Areas**

High-quality ventilation systems specifically designed for demanding marine, navy and oil & gas markets.  
Main product groups: Cabin Ventilation, Galley Ventilation, Fire dampers, Air intake products, Airflow Management and Air Distribution products.

**ILS LTD**

Puutarhaku 45  
FI-20100 Turku  
Finland  
Phone +358 2 417 2200  
Fax +358 2 417 2210  
ils@ils.fi  
www.ils.fi

**Contact Person**

Jyrki Lehtonen  
Managing Director

**Specialty Areas**

Design of icebreakers and ice-going ships

**JOPTEK OY COMPOSITES**

Kerantie 7-9  
FI-81720 Lieksa  
Finland  
Phone +358 20 743 9150  
Fax +358 13 523 710  
info@joptek.fi  
www.joptek.fi

**Contact Person**

Jari Turunen  
CTO  
jari.turunen@joptek.fi

**Facts & Figures**

Turnover: EUR 26 million (2015)  
Personnel: approx. 70  
Established: 1985

**Specialty Areas**

Modular balconies Divider walls and handrails Toilet and bathroom modules Composite floors and walls Sandwich structures

**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 22 million  
Personnel: 82 in Finland, 11 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.

**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**

Stefan Sundblom  
stefan.sundblom@jukova.com

**Specialty Areas**

Modular balconies  
Sliding doors  
Balcony divider walls  
Glass railings



7

**KAEFER OY**

Lehtimäentie 17  
FI-21290 Rusko, Finland  
Phone +358 2 437 9400  
Fax +358 2 438 6692  
kaefer@kaefer.fi  
www.kaefer.fi

**Contact Person**

Janne Sirviö  
janne.sirvio@kaefer.fi

**Facts & Figures**

Turnover: EUR 25 million  
Personnel: 75  
Established: 1977  
Parent Company: KAEFER GmbH

**Subsidiaries & Representatives**

KAEFER GmbH

**Specialty Areas**

Interior outfitting in passenger vessels  
Turnkey solutions in galleys, pantries, catering areas  
All type of insulation solutions in marine industry

2 6 7

**KOJA MARINE**

P.O. Box 351  
(Lentokentäkatu 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: Kojä 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

2 3 7

**KONEPAJA HÄKKINEN OY**

Konekuja 4, FI-21200 Raisio, Finland  
Phone +358 20 781 3400  
Fax +358 20 781 3402  
www.konepajahakkinen.fi

**Contact Persons**

Antti Simula, Managing Director, antti.simula@konepajahakkinen.fi  
Jukka Runola, Sales Director, jukka.runola@konepajahakkinen.fi

**Facts & Figures**

Personnel: over 300 professional workers  
Established: 1980  
Parent Company: Konepaja Häkkinen Oy

**Subsidiaries & Representatives**

Tikkakosken Konepaja Oy and Rautpohjan Konepaja Oy

**Specialty Areas**

Machining Services and Steel Fabrication in bespoke and project based business as well as small and medium batch products. Company is manufacturing specialist with particular expertise in high accuracy quality components from wide range of demanding materials especially for defense, marine-, heavy electrical-, oil and gas-, power plant and marine engine, pulp and paper- and wind generators industries.

3 9

**LAIVAKONE OY**

Uranuksenkuja 1 C  
FI-01480 Vantaa  
Finland  
Posenerstr. 1 a  
D-23554 Lübeck  
Germany  
Phone +358 20 763 1570  
Fax +358 20 763 1571  
laivakone@laivakone.fi

**Contact Person**

Harri Elonen

**Facts & Figures**

Personnel: 20  
Established: 1969

**Specialty Areas**

Ship engine repairs and services  
In-Situ machining

1 2 9

**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 Kyrölähti, +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.

1

**LLOYD'S REGISTER EMEA**

Aleksanterinkatu 48 A  
FI-00100 Helsinki  
Finland  
Phone +358 20 791 8300  
helsinki@lr.org  
www.lr.org

**Contact Persons**

Päivi Björkestam  
Field Operation Manager  
Niklas Rönnberg  
Business Development Manager

**Facts & Figures**

Personnel: 25  
Established: 1957 (Finland)  
Parent Company: Lloyd's Register Group Limited

**Specialty Areas**

Ship and offshore:  
Newbuilding & periodical surveys  
Industrial inspections and certification  
Consultancy

1. Consulting  
2. Equipment  
3. Machinery

4. Materials  
5. Safety  
6. Systems

7. Turnkey Deliveries  
8. Yards  
9. Other



**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 Hjerpppe  
Mika Aaltonen

**Facts & Figures**

Personnel: 40  
Established: 1992

**Specialty Areas**

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

**METOS OY AB**

Ahjonkaarre  
FI-04220 Kerava  
Finland  
Phone +358 20 439 13  
Fax +358 20 439 4432  
metos.marine@metos.com  
www.metos.com

**Contact Person**

Taina Salonen  
Director, Marine Sales  
taina.salonen@metos.com

**Facts & Figures**

Personnel: 700  
Established: 1922  
Parent Company: Ali Group

**Specialty Areas**

Galley equipment  
Laundry equipment

See page 25

**MEYER TURKU OY**

P.O. Box 666 (Telakkakatu 1)  
FI-20101 Turku  
Finland  
Phone +358 10 6700  
info@meyerturku.fi  
www.meyerturku.fi

**Contact Person**

Tapani Mylly  
Communication Manager  
tapani.mylly@meyerturku.fi

**Specialty Areas**

Meyer Turku employs 1 500 persons and specialises in building highly complex, innovative and environmentally friendly cruise ships, car-passenger ferries and special vessels. The design and construction of the ships are supported by the subsidiaries of Meyer Turku: Piikkio Works Oy, which is a Cabin Factory in Piikkiö, Shipbuilding Completion Oy, which provides turnkey solutions to public spaces in ships, and ENG'nd Oy, which is an engineering company offering services for shipbuilding and offshore.

**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. We are a family-owned company and have operated in the industry since 1913. We have 3 000 employees in our Finnish, Swedish, Norwegian, Polish, Russian, Baltic and Kazakhstan operations.

**PAROC OY AB**

P.O. Box 240  
FI-00181 Helsinki  
Finland  
Phone +358 46 876 8000  
technical.insulation@paroc.com  
www.paroc.com

**Contact Person**

Tommi Siitonen  
tommi.siitonen@paroc.com

**Facts & Figures**

Turnover: EUR 410 million  
Personnel: 1 945  
Established: 1952  
Parent Company: Paroc Group Oy Ab

**Subsidiaries & Representatives**

Paroc operates in 14 European countries. Please visit our website [www.paroc.com](http://www.paroc.com) for more information.

**Specialty Areas**

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

**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@patria.fi

**Facts & Figures**

Turnover: EUR 20 million  
Personnel: 165  
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



**PKP-MACHINING**

Koukkarintie 3  
FI-21870 Riihikoski  
Finland  
Phone +358 40 7253 656  
sales@pkp-machining.fi  
www.pkp-machining.fi

**Contact Persons**

Antti Sätälä, Managing director  
antti.satila@pkp-machining.fi, +358 40 7253 656  
Ari Pirinen, Production engineer  
ari.pirinen@pkp-machining.fi +358 44 7253 657

**Facts & Figures**

Turnover: EUR 1,6 million  
Personnel: 10  
Established: 1998

**Specialty Areas**

Turnkey deliveries of components including welding, machining and surface treatments.  
CNC Boring, Vertical Turning, CNC Milling and Deep hole drilling.  
Extensive competence in machining various materials: stainless and acid-proof steel, copper, aluminium and wear-resistant grades of steel.

**POCADEL OY**

Korpelantie 229  
FI-21570 Sauvo  
Finland  
Phone +358 2 477 2950  
Fax +358 2 477 2971  
pocadel@pocadel.fi  
www.pocadel.fi

**Contact Person**

Markku Riekk  
markku.riekki@pocadel.fi

**Facts & Figures**

Established: 1997

**Specialty Areas**

Fire rated B15 – A60 glass doors and partitions for marine and offshore use:  
Hinged Doors – Sliding Doors – Super Wide Tandem Doors – Butt Joint Walls

**PORKKA FINLAND OY**

P.O. Box 127  
FI-33101 Tampere  
Finland  
Phone +358 20 555 512  
Fax +358 20 555 5288  
www.porkka.fi

**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

**PROJEKTIA OY**

Tuulissuontie 21  
FI-21420 Lieto, Finland  
Phone +358 2 477 9200  
Fax +358 2 477 9210  
projektia@projektia.fi  
www.projektia.fi

**Contact Persons**

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Kari Hakula, kari.hakula@projektia.fi, +358 400 946 718  
Patrik Mikkola, Humidifiers, patrik.mikkola@projektia.fi,  
+358 40 824 4874

**Facts & Figures**

Personnel: 7  
Established: 1970

**Specialty Areas**

Turnkey deliveries of provision refrigeration; machinery and coolers  
Pipe installations and automation  
Cooling machinery for technical spaces and air condition  
Water chillers  
Unic service concept developed especially for fast moving transport  
Humidifiers and de-humidifiers

**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**

Sampsankatu 4 B  
FI-20520 Turku  
Finland  
Phone +358 10 830 1600  
Fax +358 2 254 3745  
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. B-15 elements and draught stop.

**REXEL FINLAND OY**

P.O. Box 360  
FI-05801 Hyvinkää  
Finland  
Phone +358 10 509 311  
Fax +358 10 509 3222  
marine.sales(at)rexel.fi  
www.rexel.fi

**Contact Person**

Karri Westermark  
Area Manager, Marine  
Industrial Services  
karri.westermark(at)rexel.fi

**Facts & Figures**

Turnover: EUR 195 million (2014)  
Personnel: 300 (2014)  
Established: 1913  
Parent Company: Rexel Group

**Specialty Areas**

Electrical wholesaling; Electrical items such as electrical installation materials, cables, cable racks, cable penetrations and seals. Also deliveries of all electrical items for marine business.

**ROLLS-ROYCE OY AB**

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**

Särkiniementie 3 B  
FI-00210 Helsinki  
Finland  
Phone +358 9 681 1170  
Fax +358 9 681 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 12 million  
Personnel: 70  
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 non-bearing bulkhead panel as well as a 20mm 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.

**SELKA-LINE OY**

Harjuviidantie 3  
FI-15550 Nastola  
Finland  
Phone +358 3 882 610  
Fax +358 3 882 6110  
www.selka.fi

**Contact Person**

Ritva Heikkinen  
Business Development Manager  
ritva.heikkinen@selka.fi

**Facts & Figures**

Turnover: EUR 6 million  
Personnel: 48  
Established: 1985

**Specialty Areas**

Selka-line Oy manufactures high quality furniture for ships and contract use. We produce custom made furniture in various materials and we can offer wide range of standard products for restaurants, nightclubs, cafeterias, conference rooms and lounges as well for cruise ships as ferries.



**OY SIKA FINLAND AB**

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 31,5 million (2015)  
Personnel: 47  
Established: 1985  
Parent Company: Sika AG

**Specialty Areas**

Sealing – Bonding – Acoustic Damping – Reinforcing - Protecting

**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.

**TEBUL OY**

Luumäentie 2  
FI-21420 Lieto  
Finland  
Phone +358 50 540 6031  
Fax +358 2 489 9299  
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.

**TELATEK SERVICE OY / TELATEK OY**

Öljytie 8  
FI-37150 Nokia  
Finland  
Phone +358 20 734 7040  
info@telatek.fi  
www.telatek.fi

**Contact Person**

Pasi Hakkarainen  
Sales Director

**Facts & Figures**

Personnel: approx. 100 (Telatek Service Oy) approx. 130 (Telatek Oy)  
Established: 1977 (Telatek Service Oy) 2013 (Telatek Oy)  
Parent Company: Atlantia Oy

**Subsidiaries & Representatives**

Agencies in Sweden, Russia, Greek and Spain

**Specialty Areas**

Manufacturing heavy and demanding welded and machined structures, on-site machining and thermal coating technologies, NDT-inspections.

**TEVO OY**

Hiihentie 17  
FI-92160 Raahe  
Finland  
Phone +358 8 265 8800  
Fax +358 8 265 8805  
tevo@tevo.fi  
www.tevo.fi

**Contact Persons**

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Ari Viinikkala, Deputy MD, Bronze foundry, Turenki  
ari.viinikkala@tevo.fi  
Pekka Launonen, Dir. Engineering Works, Raahe  
pekka.launonen@tevo.fi

**Facts & Figures**

Turnover: EUR 21 million, Lokomo 25 million  
Personnel: 120, Lokomo 130  
Established: 1974, Lokomo 1915

**Specialty Areas**

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

**UUDENKAUPUNGIN TYÖVENE OY**

Telakkatie 8  
FI-23500 Uusikaupunki  
Finland  
Phone +358 2 846 4600  
Fax +358 2 841 4347  
tyovene@tyovene.com  
www.tyovene.com

**Contact Person**

Juha Granqvist

**Facts & Figures**

Turnover: EUR 30 million approx.  
Personnel: 80  
Established: 1987

**Specialty Areas**

Building of aluminium workboats, such as Pilot Cutters, Oil Combat Vessels, Service Ships for Channels  
Building of small steel vessels, such as Road Ferries, Offshore Patrol Vessels, Passenger Vessels for commuter traffic"

**VACON LTD / DANFOSS DRIVES**

Runsorintie 7  
FI-65380 Vaasa  
Finland  
Phone +358 20 12121  
drives.myynti@danfoss.com  
www.danfoss.com/drives

**Contact Person**

Harri Haikonen, Key Account Manager, Marine & Chemicals  
harri.haikonen@danfoss.com

**Facts & Figures**

Turnover: EUR 1 500 million (Danfoss Drives)  
Personnel: 5 000 drives experts  
Established: 1933  
Parent Company: Danfoss

**Specialty Areas**

In 2014, Vacon and Danfoss merged, forming one of the largest companies in the industry. Our AC drives can adapt to any motor technology and we supply products in a power range from 0.18 kW to 5.3 MW. Danfoss Drives is a world leader in variable speed control of electric motors. We aim to prove to you that a better tomorrow is driven by drives.

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Vallila Interior

**Contact Person**

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**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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# setting a green course

**6 sept 2016**  
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## Big Data - big choices - big challenges

Environmental compliance throws up a whole host of choices and challenges. Hear from the experts on tackling harmful air emissions, the role of Big Data and alternative energy. What are the best technical and practical options for shipping?



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