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SHIPYARDS SHOW RANGE

Finnish shipyards are currently in fine form. Encouraged by the success of robust and innovative Meyer Turku, also the shipyards in Helsinki and Rauma are solid and versatile performers. It was reported in May 2018 that Meyer Turku made a third profitable year in a row in 2017. With a net profit of EUR 32,2 million, the shipyard symbolises the current rebirth of the Finnish maritime. The revenue of the Meyer Turku Oy was EUR 807,7 million in 2017 compared to 2016's EUR 787,5 million.

According to the company, the profit is used to finance the ongoing € 200 million investment programme of Turku shipyard. The investments include, for example, a new 1 200-ton goliath crane, a steel pre-treatment and storage facility and several large-scale IT system investments. Meyer Turku believes that the investments are "urgently needed" to replace the aging machines, providing also opportunities to realise higher levels of capacity and productivity.

In addition, the shipyard has been actively recruiting new personnel, head count growing from 1 614 (end of 2016) to 1 854 by the end of the year 2017. Meyer Turku made 296 recruitments during 2017.

Furthermore, Meyer Turku delivered two ships in 2017 – marking the first "double delivery" in decades. First, in January the shipyard delivered the LNG-powered fast ferry Megastar to Tallink, and later, in May, the fourth vessel of a series, Mein Schiff 6, for German TUI Cruises.

CEO Jan Meyer has commented that the strong performance gives the shipyard a real chance to prepare for the coming years and face the growing international competition head-on. Profits are used to rebuild the Turku shipyard into a "modern ship assembly factory" and to further train and expand the company's team of ship builders in Turku, Meyer outlined the agenda in May.

Another Finnish shipbuilding company, Rauma Marine Constructions (RMC), is currently busy putting the finishing touches to its first newbuilding order: a car and passenger ferry for Danish shipping company, Molslinjen. The 158-meter ferry will be delivered to Molslinjen by the end of June.

The third major shipyard, the Arctech Helsinki Shipyard, has made a name for itself by building high-performance icebreakers. During 2014–2018, the shipyard has built four multifunctional icebreakers for the SCF-Group. Building these highly innovative ships engaged approximately 3 500 man-years for the shipyard and its subsidiaries.

The fourth of these vessels, Evgeny Primakov, was delivered to the client at the end of January, 2018.

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Contents



08

04 Editorial

08 Creativity pushes Turku shipyard

In making the world's greatest cruise ships, R&D is a crucial component throughout the entire process. Kari Sillanpää, Head of R&D at Meyer Turku, says that the Turku shipyard has a leading role as the designer and builder of the most energy efficient and environmentally friendly cruise ships – and constant R&D effort is poured into each and every vessel.

14 Ride the digital wave

16 Arctic audacity

22 Robot ships on the fast track

Rolls-Royce opened a state-of-the-art research facility in Turku, Finland, on 25 January 2018. The goal of the R&D Centre is to develop the technologies Rolls-Royce and its partners require to shape the future of an increasingly more autonomous global shipping industry. Iiro Lindborg, General Manager, Remote & Autonomous, reports that the new R&D Centre is running very well, and is, in fact, the only research centre in the world dedicated to remote and autonomous ship operations.



22



28

28 Molslinjen's new RoPax vessel nearly ready at Rauma shipyard

The new passenger and car vessel ordered by the Danish shipping company Molslinjen A/S will soon be ready for delivery at Rauma Marine Constructions Oy's shipyard in southwestern Finland. After more than 1 000 man-years of shipbuilding work, the 158-metre vessel is to start commercial operations between Køge on Danish mainland and Rønne (Bornholm Island) in the autumn of 2018.

34 Blue Industry Park will serve the marine industries

In southwestern Finland, the city of Turku is making new investments to ensure the competitiveness of the marine industries. A brand new Blue Industry Park – a large-scale industrial park designed primarily for the maritime cluster – is already under construction.

40 Technological innovations call for new rules for ship classification

44 New on Board

51 Company Directory

34



The new flagship of German
TUI Cruises – New Mein Schiff 1
– was delivered in May 2018.



// The ship is
based on
a new design.

CREATIVITY PUSHES TURKU SHIPYARD

MEYER TURKU COUNTS ON R&D EXCELLENCE TO STAY AHEAD OF COMPETITION

by: SAMI J. ANTEROINEN

photos: MEYER TURKU





The 50-metre-wide steel and glass window structure that makes up the new Diamond at the aft of the ship is a good example of how architectural design is combined with engineering skills.

In making the world's greatest cruise ships, R&D is a crucial component throughout the entire process. Kari Sillanpää, Head of R&D at Meyer Turku, says that the Turku shipyard has a leading role as the designer and builder of the most energy efficient and environmentally friendly cruise ships – and constant R&D effort is poured into each and every vessel.

For example, the latest offering from the shipyard, the new flagship of German TUI Cruises – New Mein Schiff 1 – was delivered in May 2018. The 315-metre cruise ship is based on a new design, which is an evolution from the very successful Mein Schiff series.

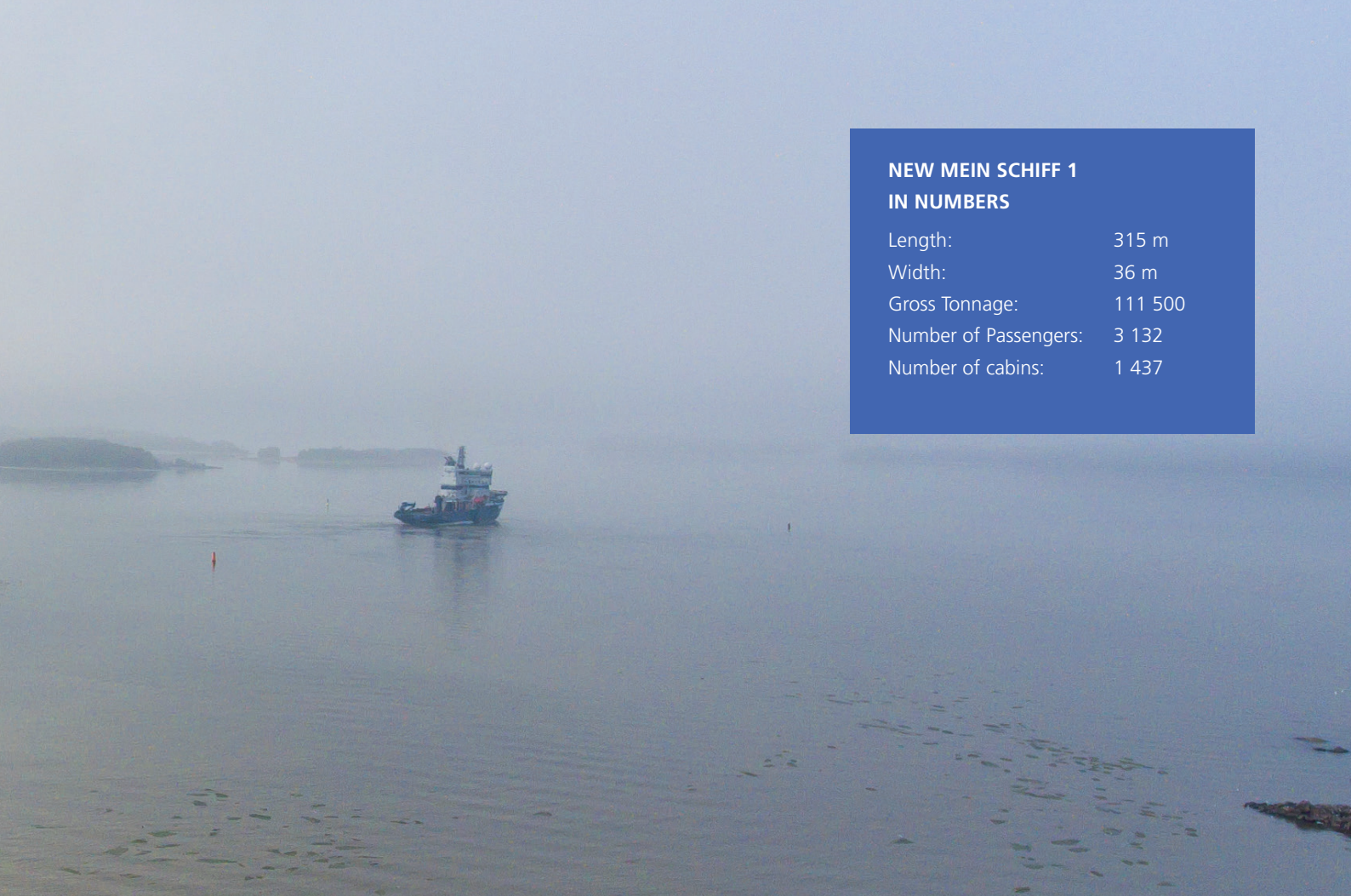
Actually, New Mein Schiff 1 is already the fifth Mein Schiff ship built by Meyer

Turku to TUI Cruises. All of these ships feature design improvements based on careful observation of the passengers' preferences. Therefore, the cruising experience of predecessors Mein Schiff 3 and Mein Schiff 4 were a critical starting point in 2015, as Meyer Turku's architecture and engineering team – together with TUI Cruises and their architects – started to

work on the improved New Mein Schiff 1 design.

DELIVERING THE GOODS

The outcome: a cruise ship lengthened by a total of 20 metres that combines substantial redesign of the passenger spaces with a number of new iconic features. These innovations include the new dia-



NEW MEIN SCHIFF 1 IN NUMBERS

Length:	315 m
Width:	36 m
Gross Tonnage:	111 500
Number of Passengers:	3 132
Number of cabins:	1 437

// The team went through about 200 different solutions.

mond, the new 'Lagune' sun deck area, the new covered sports 'Arena,' and the new elevated jogging track with a spectacular view.

A good example of how architectural design is combined with engineering skills – and supported by sophisticated computer models from start to finish – is the impressive new 50-metre-wide steel

and glass window structure that makes up the new Diamond at the aft of the ship.

USER EXPERIENCE IS KING

From design to building to operating, everything is geared towards the eventual UX of the cruise patron. If all the elements come together well, the cruise-goer enjoys his/her time on the ship – and wants to

come back. Most of the work done to accomplish this is invisible.

"In building New Mein Schiff 1, we went through about 200 different solutions and technologies in order to see, what are the best matches for this specific ship. Dozens of those solutions are now in use on the ship," says Sillanpää.

When doing a series of ships, it is



The cruise ship combines substantial redesign of the passenger spaces with a number of new iconic features.

obvious that the full weight and power of the “design and innovation machine” must be brought to bear in the very beginning – the improvements and upgrades that follow after the pilot vessel are mostly minor.

GREENER SHIPS, PLEASE!

With cruise ships, environmental friendliness is a big focus area and this was key also in the design of New Mein Schiff 1.

According to Sillanpää, each Mein Schiff vessel marks another step in energy efficiency improvement, and, with New Mein Schiff 1, Meyer Turku is making another innovation leap by engineering it for a 10% energy efficiency improvement (in comparison to last year’s Mein Schiff 6). New Mein Schiff 1 is also one of few cruise ships equipped with catalytic converters for all engines, reducing nitrogen oxide emissions.

Still, New Mein Schiff 1 is a “traditional” diesel vessel. Sillanpää says that in the initial considerations, the designers looked into making the ship operate on LNG. After crunching numbers on various alternatives, they found that they could produce a cruise ship with “LNG-level” environmental friendliness by focusing on such areas as emissions, propulsion, waste heat utilisation, air conditioning and lighting aboard the vessel.



// The energy-efficiency is really remarkable, even if the ship itself uses diesel.

“When taken all together, the energy-efficiency and environmental friendliness is really remarkable, even if the ship itself uses diesel.”

BRAIN POWER

At Meyer Turku, Sillanpää heads an R&D team of “only” ten people, but if all development teams in design & production are taken into account, there are far more people pushing innovation onwards at the shipyard.

“Over 200 people are participating in our R&D efforts daily,” he says.

With considerable development muscle to back them up, Sillanpää and his cohorts can cover a range of issues, such as boosting building efficiency, ship safety and performance and the management of the supplier network.

“In all our work today, digitalisation is a powerful force, offering plenty of business opportunities.” ■



RIDE THE DIGITAL WAVE

by: SAMI J. ANTEROINEN

Finnish research-industry collaborative consortium INTENS has committed over €13 million for the next three years, with €5.6 million funding from Business Finland, to proactively advance, promote and digitalise Finnish marine industries. The special focus area of INTENS is energy efficiency improvement and emissions reduction of ship energy systems.

The INTENS (Integrated Energy Solutions to Smart and Green Shipping) consortium consists of 14 Finnish marine companies (with e.g. Wärtsilä, Meyer Turku, Deltamarin and Parker Hannifin in the ranks) and five research organisations (including Aalto University and VTT Technical Research Centre of Finland).

Vice President of Digital Engineering Johannes Hyrynen from VTT credits the great support from Business Finland Arctic Seas program and the consortium partners for the creation of the “industry-wide, ambitious and committed consortium”. Working together, it is possible to boost the digitalisation and digital transformation of the Finnish marine sector and promote top-level marine expertise globally, he believes.

FUTURE-PROOF MARITIME

Finland has been one of the leading countries in the digitalisation and automation

of the marine industries. The INTENS project aims to deepen that digital transformation into the whole chain of the marine cluster, from R&D to innovation, design, manufacturing and operation. The generated novel solutions and innovations can largely improve energy efficiency and reduce emissions of ship energy systems, and potentially bring dynamic disruption into the marine industries.

Chief Advisor Matti Säynätjoki from Business Finland admits that expectations for this co-operation are high. “By combining two well-known Finnish strong capabilities, maritime technology and digitalisation, Finnish companies create new competitive edge for themselves in the international markets.”

According to Säynätjoki, the companies participating in INTENS will be able to develop new components, systems, software products and knowledge-based services with higher added value.

MASTERING COMPLEXITY

Kari Sillanpää, Head of R&D at Meyer Turku, says that INTENS is a useful collaboration platform in developing efficient and reliable ways to utilise digital virtual ship models throughout ship’s life-cycle.

“This way, we’re better equipped to meet the challenges originating from the

ever-increasing complexity of large cruise ships.”

Sillanpää admits that consortiums of this kind sometimes tend to lean on the theoretical and therefore he was, at first, a little sceptical about the business benefits of INTENS. As the activities have kicked off, he has been pleasantly surprised:

“There are concrete actions, with research institutes giving great support to business pursuits.”

HYBRID MODELS EMERGING

According to Sillanpää, virtual ship models continue to offer a lot of promise: there are models with visual or technical orientation or some combination of these, and they are used for design as well as operation of ships.

“When we have models that can go back and forth – take something from designing to operating and vice versa – the production reaps the benefits. Through the use of combo models, whole new opportunities are opening up.”

More and more, we are seeing a trend in maritime where Big Data and Artificial Intelligence are used creatively to power up a new generation of virtual models.

“The next big thing is finding smarter ways to combine different pieces of information.” ■

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ARCTIC AUDACITY

FINNISH MARITIME IS BIG ON
DIGITAL EDGE – WITH EXTREMELY
VERSATILE KNOW-HOW

by: SAMI J. ANTEROINEN

photo: PIXABAY





**// Some of
the areas
involve numerous
innovations.**

Arctic Seas programme (2014–2017) dived deep into the arctic expertise of the Finnish maritime industries. Funded by Business Finland (formerly known as Tekes), the programme featured some 150 projects. The total volume of the projects came to approximately €75–100 million, of which Business Finland funded an average of 45 %.

Programme Manager Piia Moilanen from Business Finland comments that the most promising new business areas in the programme involve autonomous marine traffic, energy efficiency, rotor sail technology, vessel recycling and solutions for

combating arctic oil spills. Some of these areas involve numerous innovations:

“For example, autonomous marine traffic solutions include e.g. data traffic solutions, route optimisation, remote control in ports, digital logistics and remote tracking,” says Moilanen.

ROBOT SHIPS, AHOY!

In fact, the development of solutions related to autonomous maritime navigation turned out to be the most important theme in the entire programme. Moilanen notes that autonomous shipping is also something that companies want to keep

on developing and investing in, even now as the programme itself is over and done with.

“This is why Business Finland’s forthcoming traffic sector programme, currently under preparation, also includes smart solutions for waterborne traffic and logistics. The programme is intended to start in the summer of 2018,” she says.

Furthermore, data platforms for traffic, and the solutions derived from them, can also be developed in the recently begun Augmented Intelligence programme. Business Finland’s tools for the production of efficient data communi-

Solutions relating to advanced materials were bolstered during the three-year period of the Arctic Seas programme, including preventing the freezing of machinery and adopting steel grades which perform well in the Arctic.

photo: SINI PENNANEN





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cation solutions and situational pictures include the 5G programme, set to conclude at the end of 2019, and the recently initiated New Space Economy programme.

LEADING THE WAY

According to Moilanen, the hefty roster of the Arctic Seas programme offers clear proof that Finland is – indeed – a major global power in Arctic maritime. “We do have diverse expertise and a strong future-orientation in this field.”

At the beginning of the programme, one of the main ideas was zeroing in on solutions that reduce emissions. Therefore, one of the programme’s targets was to use cleantech in order to create competitive advantage for the Finnish maritime cluster.

According to Moilanen, the Cleantech theme’s portfolio came to include roughly 50 projects, the total volume of

which is nearly €40 million. A significant proportion of these projects are producing various solutions that increase energy efficiency – and the need to develop energy-efficient solutions is still growing.

“The new Smart Energy programme, kicked off in 2017, invites developers of the maritime cluster’s energy solutions to join the programme. The programme allows operators to take advantage of onshore energy networks,” says Moilanen.

**// The period
was marked
by rapid changes.**

DIGITAL FOOTPRINT

In addition to energy efficiency, another over-all theme was digitalisation. The objective here was to accelerate the development of data platforms, for example, as well as remotely operated and automated solutions that support proactivity. Digitalisation is also useful in bringing relief in challenging circumstances where the cost of labour is high.

“All in all, digital aspects played a



photo: SINI PENNANEN

One of the additional targets set by the programme's steering group was the development of Finland into a centre of Arctic information, but the development of solutions related to autonomous maritime navigation turned out to be the most important theme in the entire programme.

central role in more than 60 % of the programme's projects," says Moilanen.

One of the additional targets set by the programme's steering group was the development of Finland into a centre of Arctic information, remote operation, testing and training. Unfortunately, when limited strictly to the Arctic concept, the centre's operation failed to attract sufficient interest among business enterprises, says Moilanen.

TESTBED APPROACH: ALIVE & WELL

The testbed philosophy is, nevertheless, doing well, Moilanen believes. "Companies are interested in linking the diverse testbeds of smart traffic into a network and in the international marketing of services." In addition, the new Business Finland organisation is keen on developing the testbed network onwards.

"Finland has a great know-how platform in especially energy efficiency and digitalisation and these areas keep creating exciting global markets for businesses. Testbed operations, on the other

hand, fully apply the principles of flexible R&D and are able to benefit from the local environment and solid collaboration with authorities."

In addition to these three areas, Moilanen points out that sustainability issues were bolstered during the three-year period as well as solutions relating to advanced materials.

"The latter includes preventing the freezing of machinery and adopting steel grades which perform well in the Arctic."

FULL SPEED AHEAD

Looking back at 2014–2017, Moilanen points out that the period was marked by

// The centre's operation failed to attract sufficient interest.

rapid changes: for example, the Finnish shipyards made a great comeback and the price of oil fell. The biggest surprise for Moilanen herself was the sheer speed of digitalisation in the maritime industry as players, big and small, started investing in new technologies and solutions.

"Still, the big changes and opportunities of new enabling technologies lie ahead of us," she says, expecting "blue growth" from such new areas as floating offshore structures and renewable maritime energy production.

"There is a lot of potential in the new innovations, but collaboration between various fields and stakeholders is needed in order to reach new markets." ■

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



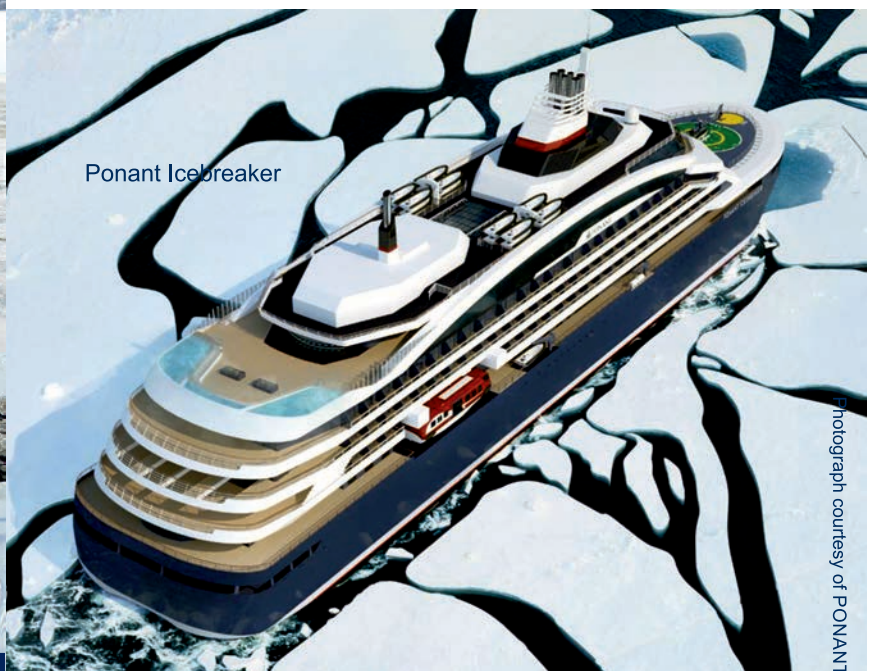
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ROBOT SHIPS ON THE FAST TRACK

KICKING OFF R&D OPERATIONS IN TURKU,
ROLLS-ROYCE IS SURPRISED BY THE SPEED OF
DEVELOPMENT IN AUTONOMOUS SHIPPING

by: SAMI J. ANTEROINEN

photos: ROLLS-ROYCE PLC.



Rolls-Royce opened a state-of-the-art research facility in Turku, Finland, on 25 January 2018. The goal of the R&D Centre is to develop the technologies Rolls-Royce and its partners require to shape the future of an increasingly more autonomous global shipping industry.

Iiro Lindborg, General Manager, Remote & Autonomous, reports that the new R&D Centre is running very well, and is, in fact, the only research centre in the world dedicated to remote and autonomous ship operations.

"Part of the R&D Centre is the 'experience space', a showroom of cutting edge ship intelligence technologies, including a remote operations centre for controlling ships, and demonstrations of the new Rolls-Royce Intelligent Awareness system, which uses multiple sensors to give much improved visibility for ships' crews," Lindborg explains.

TARGETING 2020

The R&D centre has a mix of marine engineers, ship designers and software developers. Talking about the expectations for the R&D Centre, Lindborg says that the Centre is really pushing the development of new technologies for remote and autonomous operations.

"We are targeting the first commercial application of an autonomous vessel by the end of the decade. At first, those are likely to be coastal ships, such as tugs or ferries."

According to Lindborg, Rolls-Royce originally had a slower route in mind for autonomous ships. "When you consider ocean-going ships, we initially projected autonomy by 2035, but we now believe that will happen much sooner, sometime in the 2020s," he says, adding that the rapid pace of development means that the company has been able to bring that date forward every year. Rolls-Royce launched its first autonomous ship development project UXUS (User Experience for Complex Systems) in 2012.

The new R&D Centre enables Rolls-Royce and its partners to carry out projects focused on autonomous navigation, the

 Part of the
R&D Centre
is the 'experience
space'.



Karno Tenovuo, Rolls-Royce Senior Vice President, Ship Intelligence.

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development of land-based control centres, and the use of artificial intelligence in future remote and autonomous ship-ping operations.

NATIONAL PRIORITY

Also, the expectations of the Finnish State run rather high. In her speech at the official opening of the Centre, Finnish Minister of Transport and Communications Anne Berner commented that the Rolls-Royce R&D Centre “further strengthens Finland’s commitment to developing autonomous transport”.

In her view, there is great global interest in autonomous vehicles and vessels as a future means of transport. The Minister went on to add that Turku is a solid base of operations for Rolls-Royce since Turku

is a true maritime city with a long history of technological innovation.

Also among the speakers at the grand opening, Rolls-Royce Marine President Mikael Makinen said that – with the launch of the Centre – all stakeholders, partners and customers will be able see what a remote controlled and auton-

**The expectations
of the Finnish
State run rather high.**

omous maritime future could look like, and work with Rolls-Royce to shape the future. According to Makinen, it is also noteworthy that Centre features Experience Space, since it is vital in demonstrating to the customers “the very tangible benefits of what is often considered an intangible technology.”

**// The centre
allows
the company to
more accurately
communicate its
capabilities.**

EXPERIENCE EDGE

The R&A (Remote & Autonomous) Experience Space includes several interactive tables on which Rolls-Royce can showcase existing and future technologies while aiding the development and introduction of new rules and standards for autonomous shipping. The Experience Space is the second one opened. Rolls-Royce opened the Intelligent Asset Management (IAM) Experience Space in Ålesund Norway late last year.

Speaking at the opening, Karno Tenovuo, Rolls-Royce Senior Vice President, Ship Intelligence, assessed that the centre allows the company to more accurately communicate its capabilities – showcasing what is available today and what will be available tomorrow.

Tenovuo believes that the R&D Centre will be able to develop solutions capable of “smoothing the maritime industry’s transition to the digital age,” as an autonomous maritime ecosystem will open up unprecedented opportunities. ■





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MOLSLINJEN'S NEW ROPAX VESSEL NEARLY READY AT RAUMA SHIPYARD

by: MERJA KIHLE AND ARI MONONEN

photos: RAUMA MARINE CONSTRUCTIONS



The new passenger and car vessel ordered by the Danish shipping company Molslinjen A/S will soon be ready for delivery at Rauma Marine Constructions Oy's shipyard in southwestern Finland. After more than 1 000 man-years of shipbuilding work, the 158-metre vessel is to start commercial operations between Køge on Danish mainland and Rønne (Bornholm Island) in the autumn of 2018.

Keel laying of the 158-metre RoPax vessel.



Rauma Marine Constructions Oy (RMC) re-opened Rauma shipyard in the summer of 2014. The company started work by repair and maintenance projects of numerous ships, as well as assembling specialised steel structures and constructing 'floating real estates' for coastal resorts.

Since the summer of 2016, however, Rauma shipyard has been back in the ship-building business. RMC received an order for building a passenger and car vessel from Molslinjen A/S in Denmark.

Building of the new vessel has also given a boost to RMC's subcontractors in the Finnish maritime cluster, as well as to business life in general on the west coast region.

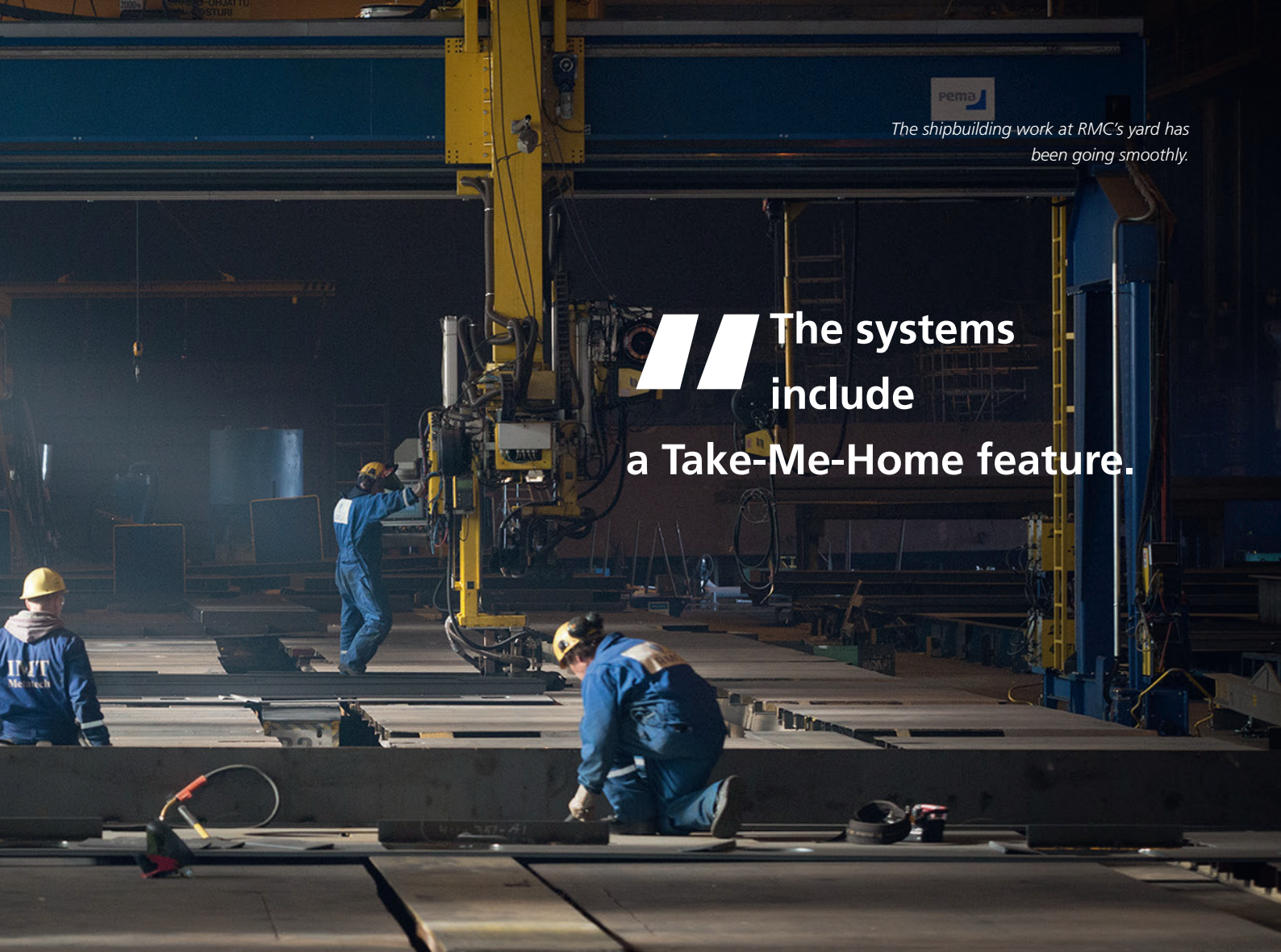
The actual shipbuilding work for the vessel was started at Rauma shipyard in March 2017.

SHIP TESTS ONGOING

The new ship has a length of 158 metres and a maximum width of 24.5 metres. The average cruising speed will be 17.7 knots.

"At the present time, wharf tests for this new RoPax vessel have been started.





The shipbuilding work at RMC's yard has been going smoothly.

// The systems include a Take-Me-Home feature.



The vessel will be delivered to the customer in the middle of summer," notes Mr. Jyrki Heinimaa, the new CEO for Rauma Marine Constructions Oy (RMC).

In his previous assignments, Mr. Heinimaa has gained plenty of experience of the management of large-scale shipyards. He took the post of RMC's Chief Executive Officer in December 2017.

"In the course of the traditional wharf tests, the ship's main systems will be started up and tested at the dockside. In the next phase, scheduled to take place in late May, seaborne tests will follow."

The launching of the new ship was celebrated at Rauma shipyard on 5th January 2018.

An illustration of the new passenger and car vessel.

NEW-GENERATION AUTOMATION SYSTEMS

According to Mr. Heinimaa, the ship's electrical and automation systems have all been finalised. The installation of these systems started in autumn 2017.

The systems include a Take-Me-Home feature, designed to help the ship to reach the shore in the event of an unexpected engine failure. For this, auxiliary electrical engines will be utilised for powering the ship's propellers during the emergency.

"So far, all of the electrical cables – some 230 kilometres of them – have been installed on board. The installation of the last pieces of supplementary equipment is currently ongoing," Heinimaa recounts.

The ship has integrated hi-tech radar and navigation systems, complemented by a doubled automation system for maximum safety of operation.

"Also, final touches are being made on the interiors of the vessel. As Mols-



Mr. Jyrki Heinimaa, the new CEO for Rauma Marine Constructions Oy.

linjen A/S expects to utilise the ship mainly for short-distance daytime operations, the number of cabins is lower than it would be in long-range cruise ships of similar size.”

The vessel is equipped with 18 cabins for passengers. Additionally, 12 cabins have been added to be utilised by the crew.

“The interiors of the ship will be finished by the time the seaborne tests are expected to start,” says Heinimaa.

SHIPBUILDING WILL CONTINUE

The main engines installed on the ship are two 4 880 kW diesel engines manufactured by Wärtsilä. The ship’s rudders, axle rods and transmission gear were delivered by Rolls-Royce. Ship design was carried out by Deltamarin Oy and Bluetech.

The shipbuilding work at RMC’s yard has been going smoothly.

“The most challenging thing about this ship has been that this was the first newbuild project of RMC’s re-opened shipyard. Taking this into account, it was a fine achievement for our crews to carry



Rauma shipyard has been back in the shipbuilding business since the summer of 2016.

through the entire project so fluently,” Heinimaa compliments the shipbuilders.

In the near future, RMC is expected to close the deal for building four new corvettes for the Finnish Navy, in connection with the Squadron 2020 project. The

total investment for these ships is 1.2 billion euros, including the weapons systems.

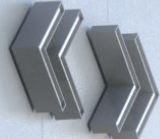
The new corvettes have been scheduled to be taken into operational service in the late 2020s.

“Building of car and passenger fer-



ries will remain RMC's main area of expertise. It is a business area that faces lots of competition, but our shipbuilders have the right specialised know-how required for building such vessels," Mr. Heinimaa asserts. ■

**// This was the first
newbuild project of
RMC's re-opened shipyard.**



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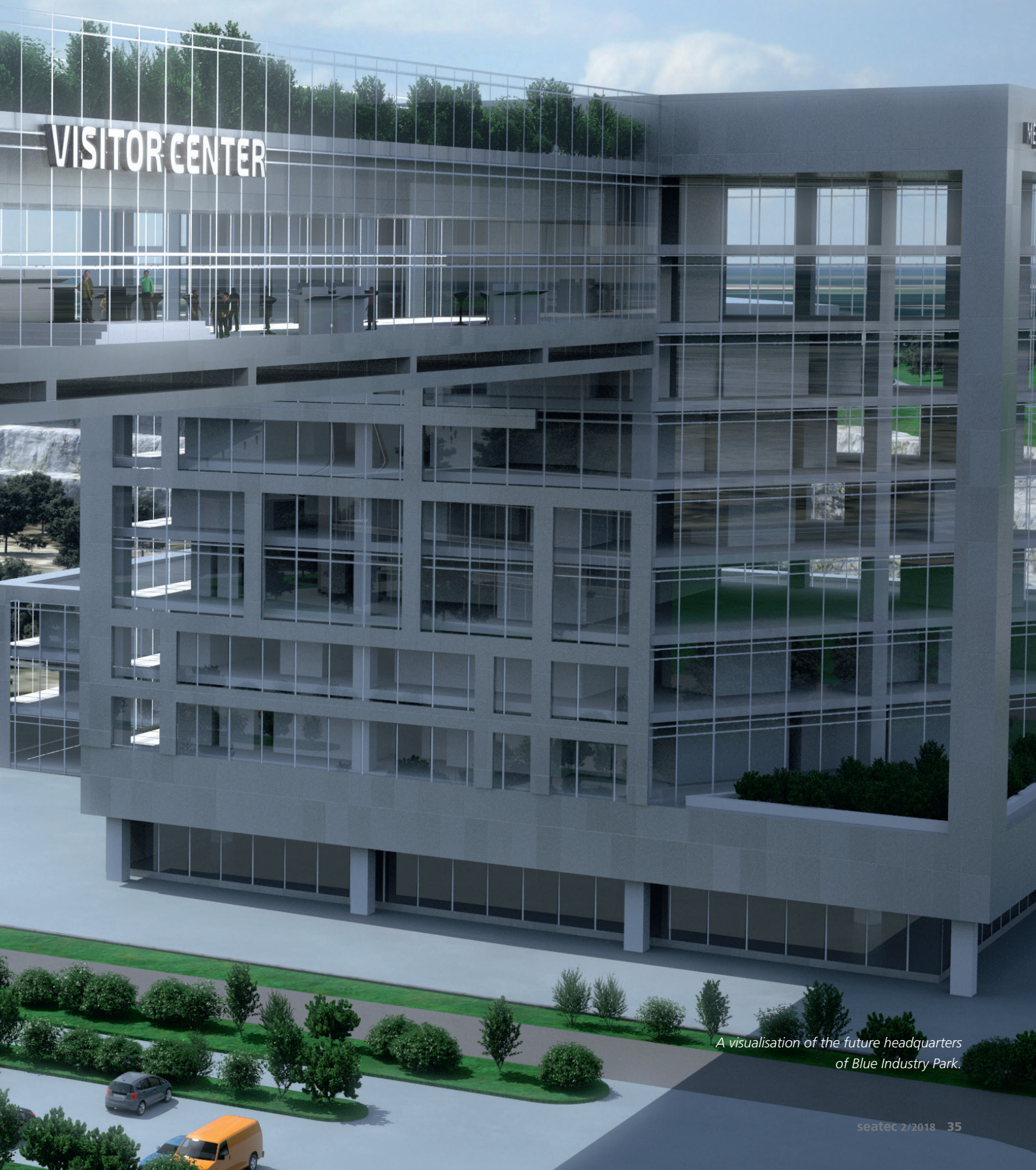


BLUE INDUSTRY PARK

WILL SERVE THE MARINE INDUSTRIES

by: MERJA KIHIL AND ARI MONONEN

photos: CITY OF TURKU



*A visualisation of the future headquarters
of Blue Industry Park.*

In southwestern Finland, the city of Turku is making new investments to ensure the competitiveness of the marine industries. A brand new Blue Industry Park – a large-scale industrial park designed primarily for the maritime cluster – is already under construction.

The initial concept design for Blue Industry Park in Turku was carried out by Elomatic Oy. The concept was completed in early December of 2017.

“Elomatic started the design work in August last year. We worked in close cooperation with Turku city planning and municipal development offices, as well as with planning officers from Turku Science

Park,” explains Mr. Kimmo Matikka, Project Manager from Elomatic Oy.

Six of Elomatic’s design engineers – mostly from the company’s Jyväskylä office – were engaged full time in the design and visualisation work.

“The idea is that workshop hotels will be needed for subcontractors who are working on the projects of Turku shipyard,

on either short-term or long-term basis. The premises will be designed in such a way that they can be flexibly modified as needed.”

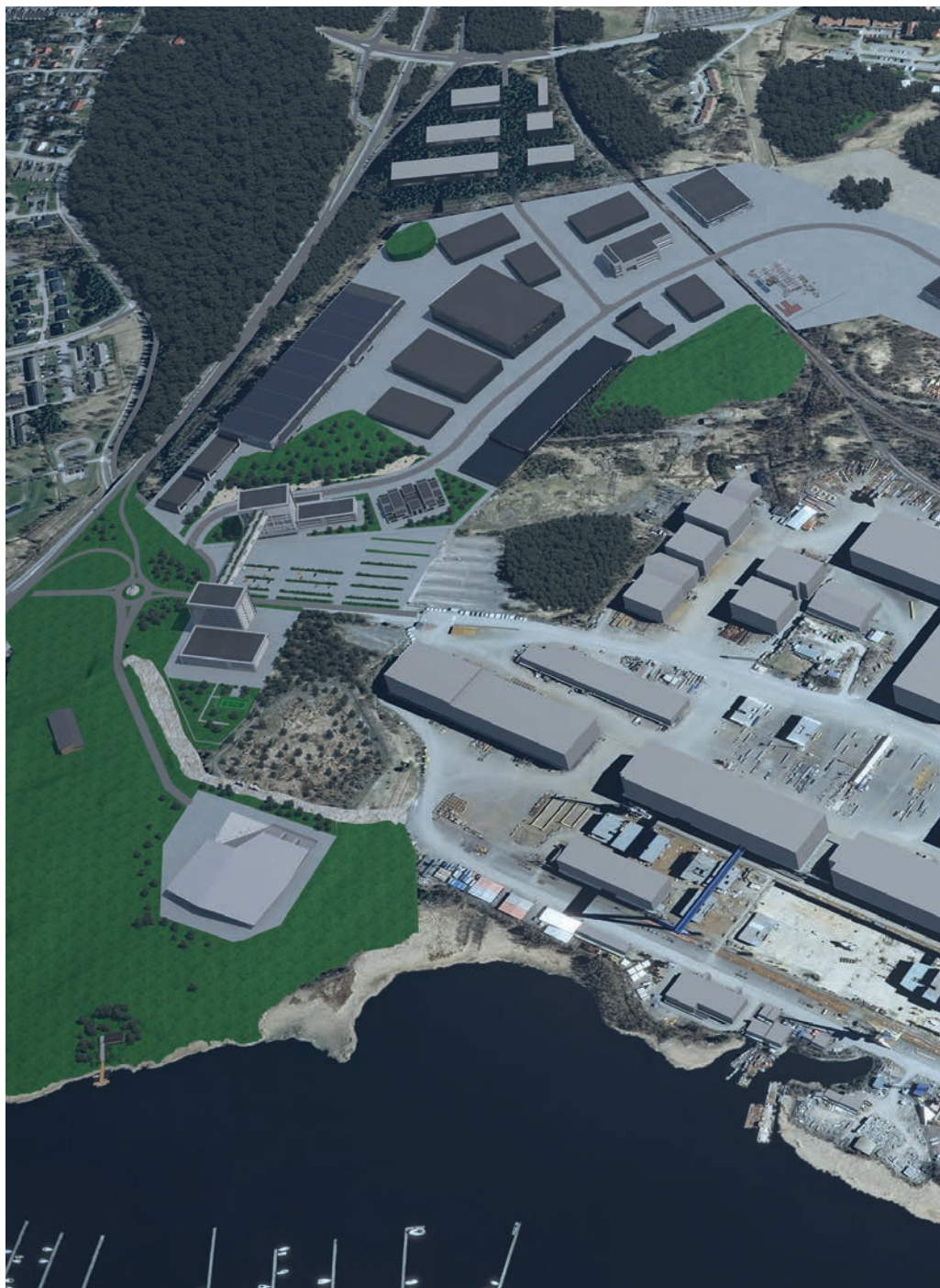
“Our design and visualisation work focused on the creation of an efficient, smoothly-working concept for an industrial park entity that would serve the needs of companies of different types and sizes”, Matikka states.

NEW ROADS AND WORKSHOPS

In the initial design, workshops with heavy machinery will be designated to northern side of the park area. In that region, rocky soil will allow for solid foundations for such machinery.

**The Blue
Industry
Park initiative is
a highly
strategic one.**

The new industrial park will be accessible by train tracks, as well as by new roadways. A new wharf will probably only be realised if there is a real demand for it.



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The new industrial park will be accessible by train tracks, as well as by new roadways.

"To the north of the park area, the existing road junction will be rebuilt. A whole new road leading to the area will be built on the north-east side," Mr. Matikka recounts.

"On the southern and northern sides, storage terminal areas for both incoming and outgoing shipments have been designated."

Mr. Matikka estimates that the Blue Industry Park may eventually house well over 100 companies and provide employment for 10 000 people. It will also bring versatile services and corporate synergy to this part of the city.

"Turku shipyard will need workspace and accommodation for the subcontractor companies. Temporary workshops, restaurants and logistics services will also be required."

Already, first stages of road-building and excavation work has been started in the Blue Industry Park area. Construction of new buildings is also starting.

According to the preliminary timetable, the first workshop buildings might be built on the northern side of the park area around 2020, once the excavation work is completed. Later on, construction of a new wharf is anticipated, perhaps by 2030.

Another city in south-west Finland, Rauma, also has a marine industrial park that is already in operation.

"In Turku, the situation is different as we are starting from scratch. The city of Rauma had existing workshop buildings

that could be converted to an industrial park," explains Matikka.

STRATEGIC INFRASTRUCTURE

According to Mr. Petri Liski, Manager of Real Estate Development Services for City of Turku, the Blue Industry Park initiative is a highly strategic one.

"The Meyer Turku shipyard is now fully booked for work until the end of 2024. This will mean a positive structural change for the entire region: more housing and infrastructure will be needed," he notes.

"In addition to the shipbuilding industry, there are clusters of automotive and medical industries in the vicinity – but perhaps the subcontractors for the marine and also mining industries will need the new industrial park more urgently."



It is difficult to say
when the park
will be quite finished.

The first residents are expected to move in to Blue Industry Park in late 2018.

Preparations for the Blue Industry Park were started when Meyer acquired the Turku shipyard.

"It was apparent that new tangible logistics solutions were required to ensure the operations of the shipyard. Consequently, the municipality of Turku started to consider a larger concept for an industrial park that would not only serve the needs of the shipyard but would also fit in with the bigger picture of business life in Turku."

FINE-TUNING FOR ROADMAPS

Since Meyer Turku did not need the entire land area that had been designated for shipbuilding purposes, City of Turku had a surplus land area of some 65 hectares next to the actual shipyard that can now be converted to an industrial park.

"The initial Blue Industry Park concept designed by Elomatic Oy is a good starting point for development, but some fine-tuning may be needed yet. For instance, the final phase that includes building a new wharf would be quite an expensive investment. It will probably only be realised if there is a real demand for it," Mr. Liski says.

What is certain is that new roads leading to the Blue Industry Park area will be built – and some of them are already under construction.

"The existing road infrastructure has proved to be insufficient. A new roadway connecting the gates of the shipyard is now being built, in addition to the new roads leading to the industrial park. This means an investment of two to three million euros for the city of Turku," Liski expects.

Further development and marketing of the industrial park concept will next be carried out by Turku Science Park, a city-owned development company. For one thing, a model for providing such basic services as energy supplies, security, and waste-collection will be required.

"The first residents are expected to move in to Blue Industry Park in late 2018. That will be the start. At this point, it is difficult to say when the park will be quite finished," Liski points out. ■



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TECHNOLOGICAL INNOVATIONS CALL FOR NEW RULES FOR SHIP CLASSIFICATION

by: MERJA KIHL AND ARI MONONEN

photo: PIXABAY



Fuel cells and other new technologies are being introduced to maritime vessels. Consequently, new standards for ship classification will be needed. Even in the absence of up-to-date regulations, ship classification societies have to decide whether new fuel systems and other previously unseen technologies are safe enough to be utilised.

**// Risk
assessment
is also about
psychology.**



Mr. Niklas Rönnerberg, Sales Manager at Lloyd's Register, acknowledges that new technology can present a challenge for ship classification.

"Of course, the launching of new marine technologies is generally a very positive thing – but it also means that new regulations and classification standards will be needed", Rönnerberg points out.

"When there are no rules, we have to develop them. In the meantime, perhaps, classification can be based on risk assessment after consultations with the customer."

According to Mr. Rönnerberg, the head office of Lloyd's usually draws up international rules and regulations in a centralised manner.

"With the rapid development of new technologies, however, there is no time to produce comprehensive regulations by the time they would have to be applied in classification. Temporary classification practices based on possible risks were utilised for the early cases where LNG fuel – liquefied natural gas – was being used in maritime fuel systems."

"Understandably, flag states of vessels need specific regulations as soon as possible, but these things take time since international committees only meet on pre-determined schedules. It usually takes at least a year before all detailed classification standards related to new technologies are ready," Rönnerberg explains.

In due course, fuel cells and other newly introduced technologies will receive detailed classification standards. In the meantime, less detailed Guidance Notes for classification inspections may be published by the classification societies.

RISK ASSESSMENT AND CLASSIFICATION

In the absence of official regulations, ship classification can be based on risk management.

"For this purpose, classification societies carry out a Hazard & Operability Study (HAZOP)," Rönnerberg says.

HAZOP studies systematically examine each element in a process, with the

photo: ARI MONONEN



Mr. Olli Kaljala, Country Chief Executive for Finland at Bureau Veritas.

purpose of finding any situations that would cause a hazard or limit operability.

"For instance, in the case of new fuels, the vessel's process for taking in fuel is examined and evaluated, in order to be able to minimise the risks to an acceptable level. This can sometimes be challenging work."

"Risk assessment is not only about determining risk levels and evaluating actual risks, but also about psychology. Passengers may be afraid of flammable fuels or other new technologies. Fuels with apparent risks may be transported close to densely populated city areas", notes Rönnerberg.

"If the rules for technology are tightened to the limit, some technologies may no longer be feasible. Of course, if there is real danger inherent in a certain technology, it cannot be utilised anyway."

New technology will be utilised by the ship classification inspectors.

On occasion, similar types of risks may apply to different forms of transport. In such cases, cooperation between e.g. maritime classification societies and road authorities for risk assessment might bring synergy benefits.

"There may well be grounds for increased cooperation," says Rönnerberg.

"Technologies for both autonomous ships, autonomous vehicles, and drones

need to be examined soon enough to determine such issues as who is actually in control and who is responsible in case of accidents. New kinds of insurance-related problems will also emerge.”

NEW TECHNOLOGY FOR SHIPS AND INSPECTORS

Mr. Olli Kaljala, Country Chief Executive for Finland at Bureau Veritas, confirms that drawing up new regulations often takes a lot of time.

Before new international rules are in force, some shipping companies go forward with new technologies. To support this development BV creates also Rule Notes which can be adopted.

“If a ship utilising new technology has to be classified before new classification regulations are ready, voluntary sets of rules may be taken into use. Shipowners may decide to adhere to such rules even if they are non-binding.”

“These days, such temporary sets of rules are often utilised in relation to issues of safety, or protection of the environment.”

“For one, fuel cell technology is gradually becoming an option for powering maritime vessels. Some small-scale applications already exist,” Mr. Kaljala says.

New regulations may also be needed in the fields of energy efficiency, energy storage, autonomous vessels, reduction of particle emissions, and so forth.

“Before autonomous ships become commonplace, a lot of testing in limited areas will be needed. In the meantime, there probably will be many ‘intelligent ships’ that are partly autonomous but still have at least small operating crews onboard. Remote operation systems will also become more advanced and more secure.”

According to Mr. Kaljala, new technology will not be utilised only by ships but also by the ship classification inspectors.

“Already, we have tested eg. using drones for examining the inside surfaces of large oil tanks on tanker ships. Such innovations are opening up new possibilities for ship classification work, too.” ■



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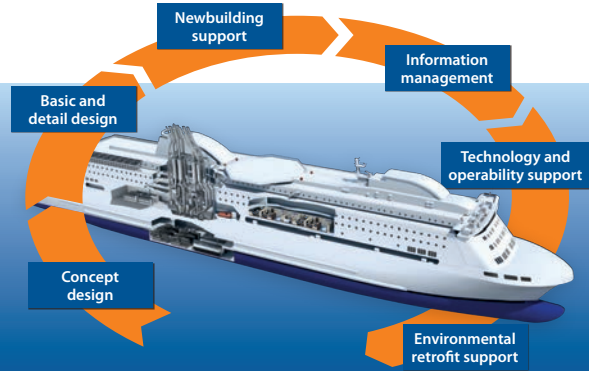
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SPECIALISED DESIGN EXPERTISE FOR COMPLEX GLASS STRUCTURES

by: MERJA KIHIL AND ARI MONONEN

Founded in 2007, the Finnish engineering company Alvars Ltd. provides innovative design and R&D services for ship-building and other marine projects. In particular, Alvars specializes in demanding large-scale glass and steel structures, as well as reliable customer-specific solutions for lifting and securing in marine transport.

Recently Alvars Ltd. designed the so-called Diamond structure for TUI Cruises' 'Mein Schiff 1'. The cruise ship was delivered from Meyer Turku shipyard in April 2018.

The Diamond is a steel and glass structure at the aft of the cruise ship, just above the propellers. The structure has a width of 50 meters and the height of two decks – the 4th and 5th aft



decks of the ship. It is an example of how architecture and specialised engineering skills can be combined to create visually impressive designs.

"We have previously designed onboard glass structures for a variety of cruise vessels. The Diamond is a good example of our expertise in designs combining glass and steel," says Mr. Henri Hyvönen, Project Engineer for Alvars Ltd.

Due to the large size and complex shape of the Diamond, the structure was a challenge for the designers.

"Steel profile positioning needed some careful planning. The glasses need a flat surface to install on, and the inside joints are visible to the passengers," Hyvönen recounts.

"Basic design for the structure was done by Meyer. Alvars carried out the detail design and provided the mechanical engineering blueprints for the various structural details. The structure was divided into three separate modules and lifting plans were made for each module."

The joints between the Diamond and other onboard structures were also carefully designed. To facilitate the design work, a parametric 3D model of the Diamond was created.

"This 3D model was instrumental in making the design more flexible, so that alterations and adjustments could be easily made throughout the design phases. The design work for the Diamond took approximately six months," Hyvönen notes.

Alvars Ltd. also took part in coordinating the work between the shipyard, the workshop and the glass-structure supplier. Cooperation between Alvars and other shipbuilders worked out very smoothly.

"As a result of the successful co-operation, a unique end result was created. The Diamond will surely attract attention as it is a real eye-catcher in the ship's appearance. We were honored to be part of this project!" Hyvönen concludes. ■

More information: www.alvars.fi



FOCUS ON SAFE AND RELIABLE APPLICATION-SPECIFIC BEVEL GEARS

ATA Gears has a long history of designing bevel gears for various different kinds of marine and industrial applications. During recent times the growing requirements have led to a need for more optimized gears. ATA has devoted a lot of effort to delivering gears that meet customers' strictest demands.

Based on close co-operation with many of the customers, ATA has attained a deep, application-specific understanding of the most important aspects of spiral bevel gears; tooth contact, heat treatment, material science, manufacturing technology and endurance testing.

At ATA, a proven simulation-based design concept is applied, in which the tooth geometry can be optimized as a part of a system-level analysis, taking into account the effects of the entire driveline environment. Heat treatment and material science have been among the core areas of research. During the last decade, ATA has, as the forerunner, intently increased its production capacity and knowledge in 5-axis technology. The test bench helps provide systematic evidence of the long life of ATA's gears, designed and manufactured using the latest technologies.



As the gears are expected to function reliably for years or even decades under extreme loads, ATA's customers can gain many benefits through these improvements in their demanding applications. ■

More information: www.atagears.fi

CHAMPION DOOR HAS INSTALLED ONE OF THE WORLD'S LARGEST DOORS IN GERMANY

Champion Door has delivered and installed one of the world's largest shipyard doors to Neptun Werft (a part of Meyer Werft Papenburg) in Rostock, Germany.

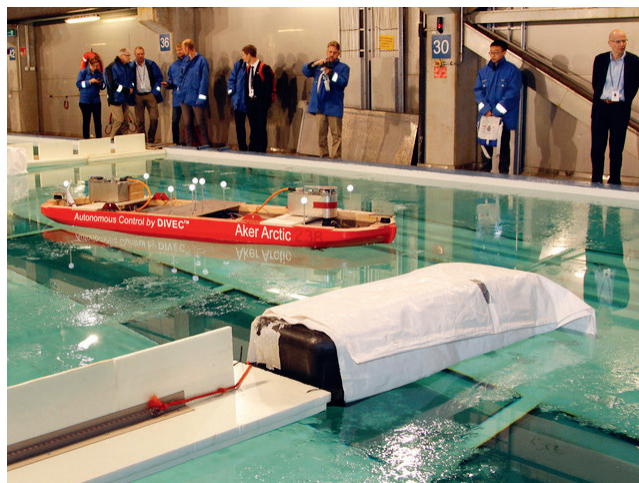
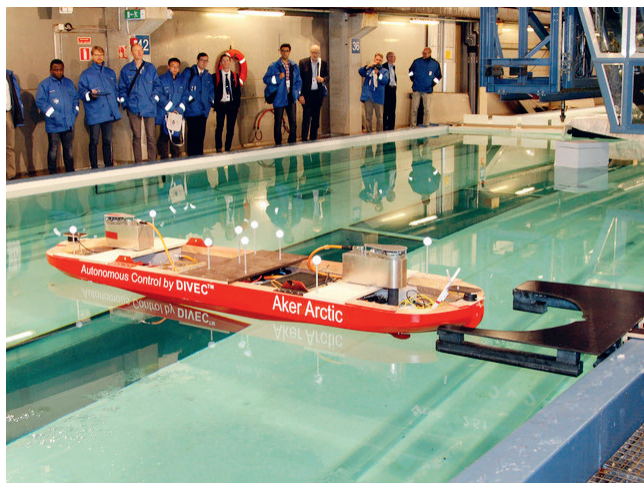
The door is 60 m wide and nearly 50 m high, and that is about the size of half a football field! The door was designed and

manufactured at the Champion Door factory in Nivala Finland. Every Champion Door door is designed to meet the specifications and wishes of the customer.

The functional reliability, large size and applicability of the Champion Door fold-up fabric doors for different types of buildings makes them very competitive for use in shipyards and harbours. Thanks to the innovative lifting mechanism, the Champion Door doors do not require rails on the ground or large oversized frame structures, thus creating savings in construction costs. They are also extremely durable and virtually maintenance-free. The advantages of the large shipyard doors developed by Champion Door are reasonable weight and excellent wind load resistance. Thanks to the mullion, the door can be manufactured in several sections. In addition to the big shipyard doors, the company's door range offers several options for many different types of buildings, aircraft halls, industry and crane openings. Champion Door also offers the market's only door with special thermal insulation (NK4 Warm). ■

More information: www.championdoor.com





AKER ARCTIC DEMONSTRATES AUTONOMOUS VESSEL IN MODEL TEST

An autonomous ship model has been successfully tested in Aker Arctic's ice model test laboratory in Helsinki, Finland. In the demonstration test the ship model was able to detect obstacles in the ice tank utilizing onboard sensors, maneuver around them without operator input and moor itself automatically to a target pier. The test was carried out in ice free waters.

The wireless model used in the test is equipped with battery powered propulsion units, data transfer to the "shore facility", and an autonomous navigation system that routes the vessel around obstacles detected by the onboard sensors. The various components are connected using Distributed Intelligent Vessel Components (DIVEC™), a specially developed network framework that provides a modern protocol for connecting devices and transferring necessary data between them.

While Aker Arctic's ice laboratory is normally used to test icebreaking vessels, it is also an excellent facility to develop and test the technology, sensors, algorithms and propulsion control systems being developed for autonomous vessels under harsh environmental conditions. DIVEC™ provides an extensible and adaptable infrastructure that allows interfacing with third party

systems and components. The technology used in the autonomous ship model tests in the laboratory is also adaptable to semi and full-scale prototypes.

With this technology Aker Arctic is ready for the next step in the development of autonomous ships. ■

Aker Arctic Technology Inc is an independent arctic R&D, engineering and consulting company. The company holds the world's largest portfolio of icebreaking ship designs and has a long track record of involvement in projects wherever freezing waters are found. The most advanced and innovative ship designs, such as the double-acting and oblique ship concepts, originate from Aker Arctic.

More information:

Reko-Antti Suojanen, Managing Director, info@akerarctic.fi

www.akerarctic.fi



NEW APPROACHES TO SOUND AND WEIGHT CONTROL

The requirements for the weight and sound control are under the loop. Ship-owners have higher expectations for comfort class and energy efficiency. This creates new challenges in to all project phases. With correct solutions it is possible to gain benefits in these challenges, both weight and sound. Saint-Gobain companies ISOVER and Weber solutions are both functional and certified for marine segment.

In new projects, every saved kilo is valuable. With ISOVER and Weber solutions the weight can be saved over 50% compared to conventional materials. With good design and execution, the project can save hundreds of tons in material weight. This saving can be utilized in the other project areas. Saint-Gobain's global approach drives the development of the new innovative solutions.

Weber has over one million square meter reference list on marine and offshore projects. This experience is combined to a strong research and development focus. Joint development projects with clients, have lead into a launch of the third generation light weight self-levelling screeds. With light weight screeds it is possible to gain weight savings in very cost effective approach.

Weber flooring solutions also bring alternative approaches to a sound control. Self-levelling screeds are highly valued in both new buildings as in repairs. The flooring solutions are tested by a third party institute for a confirmed performance. Solutions are tested for impact, airborne and structural sound properties.

ISOVER solutions for insulation and sound reduction are widely used in ship building. U SeaProtect Slab and Roll are used



for the sound reduction in the bulkheads and decks. They can also be used as an absorption material in flue gas dampers. SeaComfort CRoll and SeaComfort Roll are the right products for the sound and thermal insulation in HVAC. Climliner Slab is used for the internal and external sound dampening in the air conditioners. All products and solutions are tested and approved for the fire and sound properties in certified laboratories.

ISOVER has just launched a new SeaProtect db-Flex Alu product group, which is targeted for the extreme sound reduction needs. This solution can reach over 50 dB RW-value. ■

For international contacts, please visit:

www.isover-technical-insulation.com

www.weber-marine.com

For contacts in Finland, please contact:

ISOVER Marine sales, Herkko Miettinen

herkko.miettinen@saint-gobain.com

Weber Marine sales, Pekka Rajaniemi

pekka.rajanemi@saint-gobain.com



NEW MEIN SCHIFF 2 BY NUMBERS:

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Cabins:	1 437
Crew:	1 092
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Contract signed:	1.7.2015

New Mein Schiff 2 floats to the sea at Meyer Turku shipyard

The float out signals a new pace of construction at the Turku shipyard.

A month after the successful delivery of New Mein Schiff 1, the next ship in line, New Mein Schiff 2, has been today floated out at Meyer Turku shipyard. New Mein Schiff 2 will be delivered to the customer, German TUI Cruises, early next year. The timetable for the construction of the ship shows how Turku shipyard has already been ramping up the production volume to meet the increasing demands from the order book.

"Our block production capacity is already up on the level with previous high from 2010, when the shipyard was building Allure of the Seas. Ramping up the production at the same time as we are implementing an investment program of 200 million euros has not been a simple task. Still, as the saying at the shipyard says, if it was simple, anybody could do it and that would not be good either", CEO of Meyer Turku Jan Meyer comments.

The float out of New Mein Schiff 2 marks the beginning of the final stage of the ship's construction. After the weekend she will float at the outfitting pier of the shipyard, where she will be finalized for delivery.

"Our new Mein Schiff 1 has successfully completed her first cruises and has been very well received by our guests. Our new generation of ships meets our expectations completely. We are looking very much forward to taking with new Mein Schiff 2 a sister ship into service very soon", says Wybcke Meier, CEO of TUI Cruises.

New Mein Schiff 2 will be a sister ship to already delivered New Mein Schiff 1, with added length of 20 meters from the previous ships in the series. After the delivery of New Mein Schiff 2, TUI Cruise's whole fleet will be built at Turku shipyard. ■

More information: www.meyerturku.fi/en

ABB ABILITY™ FOR INNOVATIVE ELECTRIC WATER TAXI

A futuristic, zero-emission new design of water taxi, called SeaBubbles, was demonstrated today on Lake Geneva in Switzerland. The vehicle represents a milestone in the development of new forms of transportation that do not impact the environment or place any burden on urban infrastructure. The water taxi will soon be equipped with the ABB Ability™ Marine Advisory System – OCTOPUS, a software solution that helps vessel operators gather and analyze all relevant data to optimize water travel.

The development of the demonstration craft was supported by the Geneva cantonal authorities and the Department of Energy, Transport and Agriculture (DETA), represented by State Councilors Luc Barthasat and Pierre Maudet, drawing on technology from ABB. Further trials will continue in the months ahead.

The ABB Ability™ Marine Advisory System – OCTOPUS will be deployed by the pilot project beginning in early May. The OCTOPUS system will enable ABB to provide real-time data to the SeaBubbles control center, covering virtually every aspect of the vessels' operating status. ■

More information: www.abb.com



A FIFTH SHIP IN THE MERAVIGLIA CLASS FOR STX FRANCE

One year after the delivery of the first ship in the MERAVIGLIA series, the second unit, MSC Bellissima, was launched yesterday. It was during this ceremony – held in the presence of the official representatives of the MSC Cruises line and French Minister of the Economy, Bruno Le Maire – that this new order was announced. As well as this announcement, there was confirmation of the start of production of the first two units in the MSC Series World Class series – the next generation of ships deliverable from 2022.

MERAVIGLIA V, A TECHNOLOGICAL BREAKTHROUGH THANKS TO A CHANGE TO GAS PROPULSION

With a design identical to MSC Grandiosa and MSC Virtuosa, (length = 331 metres, width = 43 metres, passenger cabins = 2 400), this new unit sets itself apart from other ships in that it is propelled by natural gas stored in liquefied form. This technology was developed by the shipyard that was one of the pioneers at the start of this century, implementing it on LNG tankers. Other technological innovations are also planned, particularly regarding water processing, in order to meet the highest standards in terms of respect for the environment.

“We are proud to be the preferred industrial partner of the MSC Cruises group, whose growth we have been supporting over the past 15 years: 13 ships have been delivered to MSC since 2003 and three are currently under construction. There is also the fifth ship in the Meraviglia series and the first two in the World Class series. These figures clearly demonstrate our client's intensified growth plan and our commitment to supporting its ambitions,” stated Laurent Castaing, Director General of STX France. ■

More information: www.stxfrance.fr/en

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photo: STX Europe

company directory



photo: PIXABAY

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**Contact Person**

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Facts & Figures

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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.

ANTTI-TEOLLISUUS OY, ANTTI MARINE

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

ASLEMETALS OY

P.O. Box 17
FI-26101 Rauma
Finland
Phone +358 2 838 011
Fax +358 2 838 0290
firstname.lastname@aslemetals.fi
www.aslemetals.fi

**Contact Person**

Saku Tuominen
Business Director
+358 44 7301027
saku.tuominen@aslemetals.fi

Specialty Areas

Core competence
Production of pipe modules and different type of steel structures. We have built pipe modules for LNG, oil and gas more than 6 000 units since 1981. We can offer reliable co-operation partnership for international companies.

DANFOSS DRIVES (VACON LTD)

Runsorintie 7
FI-65380 Vaasa
Finland
Phone +358 753 251 100
asiakaspalvelu.fi@danfoss.com
www.danfoss.com/drives

**Contact Person**

Harri Haikonen
Key Account Manager, Marine
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. Better tomorrow is driven by drives.

ENSTO ITALIA

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



Saves Your Energy

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.

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 15

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

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 30 million
Personnel: 75
Established: 1977
Parent Company: KAEFER GmbH

Subsidiaries & Representatives

KAEFER GmbH

Specialty Areas

Interior outfitting in passenger vessels
All type of insulation solutions in marine industry

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

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

4

OY LAUTEX AB**Lautex**

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

Contact Persons

Kari Välimaa, Sales Director
kari.valimaa@lautex.com, Phone +358 50 369 8946
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.

1 2 9

OY LINDAB AB**Lindab®**

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.

1

LLOYD'S REGISTER EMEA**Lloyd's Register**

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

2 3 6 7

MARINE DIESEL FINLAND OY**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 Hjerppe
Mika Aaltonen

Facts & Figures

Turnover: EUR 6 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

3

OILON OY**oilon®**

P.O. Box 5
FI-15801 Lahti
Finland
Phone +358 3 857 61
Fax +358 3 857 6239
www.oilon.com

Contact Person

Jani Kurikka
jani.kurikka@oilon.com

Facts & Figures

Turnover: EUR 70 million
Personnel: 360
Established: 1961

Specialty Areas

Oil & gas burners for marine applications

4

ONNINEN OY**onninen**

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.

1. Consulting
2. Equipment
3. Machinery

4. Materials
5. Safety
6. Systems

7. Turnkey Deliveries
8. Yards
9. Other

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

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: 1945
Established: 1952
Parent Company: Paroc Group Oy Ab

Subsidiaries & Representatives

Paroc operates in 14 European countries.
Please visit our website 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 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.

PKP-MACHINING

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

**Contact Persons**

Antti Satila, 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

Personnel: 15
Established: 1998

Specialty Areas

Turnkey deliveries of components including welding, machining and surface treatments
CNC boring of large pieces, 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 50 435 2638
pocadel@pocadel.fi
www.pocadel.fi

Contact Person

Maria Perrakoski
maria.perrakoski@pocadel.fi

Facts & Figures

Established: 1997

Specialty Areas

Light weight B15 – A60 fire rated glass doors and partitions for marine and offshore use.
Product range includes hinged doors, sliding doors, extra wide tandem doors, glass walls and partitions.

2 7

PORKKA FINLAND OY**PORKKA**

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

1 4 5 7

RENOTECH OY

Renotech Oy
Advanced Material Technology

Sampsankatu 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 1,5 million
Personnel: 10
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.

7

S.A. SVENDSEN OY

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 5,7 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

2 4 9

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 16,5 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 panel 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.

1 2 7

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.

9

OY SIKA 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 34,6 million (2017)
Personnel: 47
Established: 1985
Parent Company: Sika AG

Specialty Areas

Sealing – Bonding – Acoustic Damping – Reinforcing – Protecting

1. Consulting
2. Equipment
3. Machinery

4. Materials
5. Safety
6. Systems

7. Turnkey Deliveries
8. Yards
9. Other

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.

8

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

4

OY VALLILA CONTRACT AB

Nilsjängkatu 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

1. Consulting
2. Equipment
3. Machinery

4. Materials
5. Safety
6. Systems

7. Turnkey Deliveries
8. Yards
9. Other



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with Bureau Veritas*

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