

# SEAVIEW



RINA MAGAZINE - MERCHANT SHIPPING EDITION



**TOP SHIPPING**  
players explain the latest trends

**FOCUS ON**  
sustainability and technology

**HOW DIGITALISATION**  
is shaping the future

Welcome to Sea View, RINA's annual magazine for the merchant shipping market. Innovation is a major focus in this issue, from the potential of digital technologies to new ways to build, optimise and operate ships for sustainability and energy efficiency.

Interviews with leading industry figures offer insights into current topics, including new market opportunities, environmental regulations and the development of hybrid power systems. Some approach the changing dynamics of the shipping industry with caution and pragmatism, while others are steaming ahead towards an ambitious vision of the future.

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# Reflections on the market

This time last year, “specialised” sectors of the shipping industry were sending the most promising signals. Today, the dry cargo segments are driving a generalised recovery. The bulk carrier and container markets have picked up significantly, with a year-on-year increase in earnings of 77% and 25% respectively in 2017. However, continued uncertainty in the oil industry means tanker earnings fell by another 35% to a 20-year low. As markets are the engines of innovation (see page 16), these unpredictable market conditions are stimulating major players to adapt (see page 2).

Seaborne trade grew by a solid 3.9% in 2017, reflecting general economic expansion in many countries. US economic growth accelerated in 2017, although the potential for unexpected policy changes and protectionist measures continues to cause concern. Meanwhile, the Chinese economy accelerated in 2017 with a growth rate of 6.9%. Asian shipping companies and shipyards are gearing up to handle increased demand for technologically advanced ships (see pages 10 and 18), with some proposing exciting innovations in vessel design (see page 6).

Market conditions are reflected in recycling activity, which fell overall by 20% in 2017. This was driven by a significant decrease in bulk carrier and boxship scrapping, whereas tanker recycling in Q1 2018 was the highest in almost 20 years. The second-hand market in 2017 saw a record 93.1m dwt bought and sold, with bulkers making up 50% of this.

Newbuilding orders finally rose in 2017 to 80m dwt. We are seeing growing demand for LNG carriers, passenger ferries and cruise ships in particular, with some shipping lines already reacting to this trend (see page 12). The only bright spots in the tanker segment are small product and chemical tankers.

Focus on the impacts of environmental regulations continues to accelerate. RINA has supervised the construction of several LNG-fuelled passenger ships and the installation of scrubbers and other solutions. Lengthening vessels with prefabricated inserts (see page 22) or installing new hydrogen-based technologies (see page 23) are alternative ways to reduce a fleet’s overall emissions. Looking ahead, some of RINA’s new projects around battery-powered ships are interesting developments in the context of tightening emissions regulations. Grimaldi’s order of six hybrid ro-ro ships (see page 4) promises zero emissions in port thanks to mega-lithium batteries that recharge through shaft generators. Many owners, however, are still taking a “wait and see” approach on both timing and technology (see page 14).

Whatever happens in the markets, one thing is certain. Digitalisation in all its aspects - digital twins, big data, energy governance, fleet management software, e-certificates, remote surveys - will continue to transform the marine industry. RINA’s cloud-based digital platform, RINACube, is an example of this new potential for smarter integration of data, applications and analytics capabilities. Those who thrive in the future will be those who can extract value and business insights from data (see page 24).

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# “Early adaptors” in changing times

Interview with Ioanna G. Procopiou,  
Managing Director, Sea Traders



Some say that shipping has lost its magic. The romantic notion of life at sea, where the captain (often the owner) only has to think about sailing from one place to another while keeping the ship and cargo safe, belongs to the past. The reality on board a ship is very different now, with many tasks that are often tedious and uninspiring.

However, while it is true that the industry has become more regulated and bureaucratic, I see the changes in a positive light. If you cannot change the framework in which shipping operates, you need to adjust to the new environment.

I believe that the more adaptable one is, the better the chances of survival. My family has a long tradition in shipping and we have always been “early adaptors”.

We like challenges and we welcome opportunities to find novel ways of doing things. We intend to continue transforming our businesses in order to constantly improve - and thrive - in the shipping industry of the future.

We are committed to providing our clients around the world with safe, reliable and environmentally friendly ship operations. Sea Traders, which specialises in the international carriage and trading of dry bulk cargoes, has been operating since 1974 and is known for its high-quality ship management services. We operate a diverse and modern fleet of 35 bulk carriers and containerships.

I think the challenges we face are more or less the same as the challenges everybody in our industry faces. One is the shortage of good-quality crew.

We place great emphasis on our people, whom we believe to be our most valuable asset. We try to provide our employees both ashore and on board with a safe, healthy and challenging working environment. We therefore rise to the challenge by investing in training for our people, both in the office and in our training centres around the world.

Other challenges - or rather, opportunities - are the subdued market conditions and the increase in



Marelena - Courtesy of Sea Traders



Marco - Courtesy of Sea Traders

regulations, both locally and in the global arena. We use these as motivation to constantly improve and streamline what we do. We try to find more efficient ways of doing things by improving our procedures with the aim of reducing bureaucracy and targeting problems more directly.

Improving efficiency and processes in the company starts with improving these things in one's own working life. My job requires me to multitask efficiently while trying to prioritise between important and more important things. There are always time constraints when you work in an industry where you need to be on call 24/7, 365 days a year.

But it is a remarkable experience, with no two days being the same. Shipping, with its many challenges, stretches your limits and makes you think creatively.

In some cases, external insights and the creativity of experts can help to solve complex internal issues. We work closely with a number of classification societies, whom we consider to be our partners. The scope of our cooperation extends from the plan approval stage to regular surveys, stretching all the way to unforeseen events. We appreciate our cooperation, which is based on trust, reliability and mutual understanding.

We value our relationship with RINA a lot. Many of our bulkers and tankers are classed by RINA and we plan on extending our projects with the company.

## IOANNA G. PROCOPIOU

Ioanna G. Procopiou graduated from Bath University in 2000 with a BEng in Electrical and Electronic Engineering. She then gained an MSc from City University in Shipping Trade and Finance.

In 2003, she joined Dynacom Tankers Management Ltd in Glyfada, Greece. In 2010, after heading Sales, Purchasing and Projects activities in Dynacom for four years, Ioanna formed Prominence Maritime S.A., a company that manages six bulk carriers. In addition, Ioanna supervises all activities of Sea Traders S.A.

Ioanna is also actively involved in real estate development, as well as human resources for Dynacom Tankers Management, Dynagas Ltd and Sea Traders S.A.

Ioanna is on the Board of Directors of the North of England P&I association and is an elected member on the Board of the Union of Greek Shipowners Association.

# Optimising ships for energy efficiency

Interview with Dario Bocchetti,  
Energy Saving Manager, Grimaldi Group



Saving energy has major advantages and no disadvantages. By implementing innovative technologies and smart policies to improve energy efficiency on our ships, we significantly reduce fuel consumption and costs. Saving fuel goes hand in hand with controlling emissions of greenhouse gases and protecting the environment. In turn, stronger environmental protection measures help us comply with international emissions regulations. I'm responsible for energy efficiency and innovation for over 100 ships in the Grimaldi Group, so in our case these advantages are multiplied by 100. It is immensely satisfying to see the real, positive results of our efforts in terms of cost savings, environmental conservation and compliance.

We innovate constantly in order to optimise the energy consumption of our fleet. A good example is our recent order of six hybrid ro-ro vessels from CSC Jinling Shipyard in China, for delivery starting from 2020. Our largest ships currently, which were already the largest in the world when they were built seven years ago, can transport 250 trailers. With 7,800 linear metres, each of the new vessels will be able to carry double that number – 500 trailers – but our target is to keep fuel consumption the same. In other

words, we will halve the average consumption per unit transported.

In order to achieve this fuel efficiency, the ships will be equipped with some cutting-edge technologies. Among these are two-stroke, electronically controlled engines, which offer lower consumption than four-stroke engines. Twin shaft lines and a combined rudder-propeller propulsion system will also improve efficiency. The hull will be optimised with a "reverse bulb" design and a special low-friction silicon coating. An air lubrication system under the keel will create a carpet of bubbles to reduce hydrodynamic resistance.

The new vessels will also be equipped with mega lithium batteries that are, until now, the world's most powerful batteries ever to be installed on a ship. Charged during navigation via shaft alternators and taking advantage of solar panels and a number of energy-saving devices while at sea, they will be able to offer eight hours of zero-emissions power while the ships are in port. The batteries will also provide benefits during navigation through "peak shaving", i.e. maintaining a constant, efficient engine speed and



Grimaldi Hybrid RoRo - Courtesy of Grimaldi Group



using the batteries to make any necessary adjustments.

Implementing all these innovative technologies will certainly be a challenge, but we are confident that with the support of RINA and Jinling Shipyard we will be successful. Jinling's specialist experience in building ro-ro and car carrier vessels is one reason we chose them for the newbuilding project. In addition to the price competitiveness of Chinese shipbuilding, we have had good experiences working with Jinling over the last 10 years and they have always delivered on schedule. Our relationship with RINA is also excellent. Their approach to new technologies is practical and realistic, allowing us to achieve challenging projects by working together.

For existing ships and those scheduled for delivery in 2020, we will combine scrubbers with the use of batteries in port not just in order to comply with the IMO sulphur emissions cap but to go beyond it. It is not viable to retrofit existing ships to run on LNG, and reliable infrastructure to supply gas and electricity is not available in all ports. Perhaps in the future, we will be able to build ships powered purely by hydrogen. However, given the current situation of ships, ports, infrastructure and logistics, and given the type of ships in our fleet and the routes that they operate, scrubbers plus batteries are the winning solution for us. In fact, two of our super-large Grimaldi Lines ferries – Cruise Roma and Cruise Barcelona – will undergo extensive refitting work next January, including extensions and the installation of scrubbers and batteries.

As well as physical measures to improve the efficiency of our operations, we are also adopting new digital technologies to help us with this. In addition to powerful monitoring systems to optimise energy efficiency during navigation and in port, we benefit from digital technologies that help us to manage bookings, organise logistics, communicate and share information, take care of customs formalities, and so on.

Working with experienced partners helps us to innovate and constantly optimise energy efficiency across the fleet. Most of our ships are classed by RINA and we have benefited from their assistance during newbuilding projects and

many other initiatives. By adopting suitable technologies and taking bold steps to reduce fuel consumption and emissions, we will continue to elevate the image of Grimaldi Group as a forward-thinking company strongly committed to innovation and sustainability.

## DARIO BOCCHETTI

Dario Bocchetti is Head of Energy Saving & Innovation at Grimaldi Group. Through research and innovation, this corporate department works towards reducing fuel consumption and emissions across the whole Grimaldi Group fleet.

With a degree in mechanical engineering and years of experience on board ships, Mr Bocchetti joined Grimaldi Group's Technical Department in 2004. After working on two car carrier newbuilding projects and conversion works for ro-pax ships, he then became Team Leader with responsibility for multipurpose vessels deployed in the Euro-Med region.

Mr Bocchetti became Energy Saving Manager at Grimaldi Group in 2010, with responsibility for energy consumption, energy efficiency and the environmental aspects of new regulations and deals. He participates in international discussions in the Air Emissions Working Group of ECSA (European Community Shipowners' Associations), in the ICS (International Chamber of Shipping) working group and in the IMO MEPC (Marine Environment Protection Committee) as a technical expert for the Maltese delegation.

[www.grimaldi.napoli.it](http://www.grimaldi.napoli.it)

# High-tech innovation in shipbuilding

Interview with Dug Ki Min,  
Senior Vice President, Hyundai Mipo Dockyard



Market slowdowns are not all bad. The sluggish shipbuilding market and low prices of ships during the last years have been challenging for all of us in shipbuilding, and the bad weather is not over yet. However, the market difficulties have cleared out some rivals and refreshed healthy competition between the survivors. More importantly, the challenging environment motivates us to boost our innovation. This is the only way to stay competitive and secure stable production volumes.

Many of our recent innovations are driven by environmental regulations such as the Ballast Water Management Convention and the caps on SOx and NOx emissions. These are part of the reason for the increase in ship prices. The key point is, the technology to meet these regulations has not yet been completely proven. Players who can come up with and deploy stable, cost-effective solutions will lead the market.

That is why we recently developed the first ballast-free LNG bunkering vessel for Bernhard Schulte Shipmanagement. We are also working on ballast-free

container ships, and intend to extend this technology to other types of vessels. Ballast-free design has the potential to save shipowners millions of dollars. It includes many innovative aspects, such as an optimised dead-rise hull form and a twin propulsion system with two azimuth thrusters.

We also recently delivered the first LNG-fuelled bulk carrier to Ilshin Shipping. This is our first ship with an LNG fuel system, so we started earlier than scheduled in order to be able to deal with any unexpected issues. However, we were confident that our multidisciplinary teams of engineers and partners could solve any complication that arose.

Although the LNG-fuelled bulk carrier project was interesting, I personally feel that LNG as a fuel is only part of the solution. For small- and medium-sized vessels, the CAPEX for an LNG-fuelled system is huge - around 20-30% of the ship's cost and with a return on investment of 14 years at current LNG rates. So many shipowners are still weighing up the options, which include not just LNG but distilled fuel, blended fuel and







STI Sapphire - Courtesy of Hyundai Mipo Dockyard

SOx scrubbers. I expect that, as usual, future fuel prices will be the deciding factor.

Our next-generation feeder vessel project, Con-Green 2000, is a good example of how digital technology helps us innovate. We developed our own powerful hull form and propeller optimisation software based on multi-objective genetic algorithms (MOGA). This basically facilitates automatic hull form variation and generation, automatic CFD calculation and controlling for multiple variables. The result: the Con-Green 2000 has a greatly optimised hull form and structure that maximises container intake and reduces daily fuel oil consumption by about 18%.

Korean shipyards in general, and Hyundai Mipo Dockyard in particular, are known for being flexible, responsive and agile, as well as staffed with highly qualified engineers. These are essential qualities for any shipyard wishing to remain competitive, but they are not enough. That's why we continuously try to differentiate our products and technologies from those of our global competitors, keeping customer needs in mind.

Our engineering and R&D teams use state-of-the-art digital systems to constantly improve our portfolio of designs with the latest generations of engines, optimised hull forms and energy-saving technologies. We try to find efficiencies and opportunities in every single project for every customer. For example, we have developed a next-generation Type A LPG carrier with a double side hull structure. Since all existing LPG carriers have a single side hull structure, this provides great added value for shipowners wishing to compete against other players in the chartering market.

When you come up with lots of new products and technologies, you need help from third parties to provide specialist expertise and verify your innovations. Ensuring quality is our highest priority and we need classification societies to help us consistently meet all contractual specifications, applicable regulations and customer requirements. They also help to train and certify our welders, for example, and verify our international quality

standards (Total Quality Management system for ISO 14001, OHSAS 18001 and ISO 9001).

Our collaboration with RINA started many years ago. I remember working with RINA experts on vibration and noise analysis for a passenger ship and was impressed with their experience and professional skill. It is collaborating with partners such as RINA, constantly innovating and upgrading our knowledge, that will help us navigate the challenges of the market and drive the industry forward.

## DUG KI MIN

Mr Dug Ki Min is Senior Vice President of Hyundai Mipo Dockyard, one of the world's largest shipbuilding companies based in Ulsan, South Korea. Before taking on the role of Senior Vice President in 2016, he served for many years as general manager of HMD's Initial Hull Design department, contributing to the optimisation of ship hull structure.

Mr Min began his career in ship vibration and noise at DSME and HSHI before joining HMD, where he has built up his depth of knowledge about hull structure.

Mr Min has a PhD in Naval Architecture from Ulsan University. He is currently a member of KTC (Korea Technical Committee) of DNV-GL, LR and KR.

[www.hmd.co.kr](http://www.hmd.co.kr)

# Innovating for sustainability

Interview with Matteo Catani,  
CEO, Grandi Navi Veloci (GNV)



GNV has always been an innovator, with our iconic “white ships” transporting thousands of passengers in style between destinations in Italy, France, Morocco, Tunisia and Albania. A surge in volume and turnover over the last two years has paved the way for a further expansion of the company’s fleet and network of routes.

One important area of innovation is ship design. We look forward to the delivery of two new 2,500-passenger luxury cruise ferries currently under construction at Guangzhou Shipyard International Co. They are highly innovative in many ways. Firstly, the new ships will comply with all European and international environmental legislation. The hull has been designed and tested to minimise consumption while maintaining performance at high speeds. Both ferries will also be equipped with advanced exhaust cleaning systems.

Considering that with 3,500 linear metres they have twice the capacity of the biggest ro-pax ferry vessels currently operating in the Mediterranean, energy consumption per unit carried will be roughly halved. In terms of the passenger experience, they will meet

RINA Comfort class standards while operating at the maximum service speed, guaranteeing our customers a reliable, comfortable and modern journey.

The new ferries can be converted to run on LNG if and when this solution becomes viable. It is clear that LNG can be suitable for use as a low-carbon means of propulsion in compliance with IMO environmental regulations. However, before LNG can be adopted on a wide scale in the Mediterranean, much work still needs to be done to develop the necessary infrastructure and ensure reliable distribution, as well as define appropriate rules and standards.

GNV strongly supports the agreement recently signed by Italian shipowners’ associations (AssArmatori e Confitarma) and representatives of the gas sector (Assogasliquidi/Federchimica and Assocostieri) to address the infrastructure and regulatory issues around the use of LNG in port areas. By working together, we will hopefully be able to overcome the obstacles currently preventing the adoption of LNG as a fuel for ferries.



GNV Fantastic - Courtesy of Grandi Navi Veloci (GNV)



GNV Suprema - Courtesy of Grandi Navi Veloci (GNV)

Even without LNG, however, ferries already provide tangible environmental benefits. Intermodal passenger transport based on ro-pax connections can reduce emissions compared to full road transportation by between 50% and 90%, depending on the load factor. Moreover, shipping trucks by ferry not only leads to a lower environmental impact, it also reduces road congestion.

Innovation is not something we can do alone. From the very beginning, we have always been in contact with classification societies. As well as guaranteeing the application of international standards, they offer access to professionals able to support us in developing our fleet. For example, during the last five years we have successfully replaced our propulsion control system with a new-generation system, updating it with a modern digital control unit. Old cables have been replaced with optical fibre for faster and more reliable communication.

In 2015, we also replaced the propeller blades of our 2,920-passenger ferry La Superba, improving its propulsive efficiency. By comparing performance assessment data we highlighted a fuel saving of around 10% with a speed range between 22 and 24 knots. We have also invested in switching to LED lights on board. Replacing more than 70,000 lights has reduced energy consumption by 70% on average and contributed to a considerable reduction in CO2 emissions. Moreover, the LED lights are guaranteed for 50,000 hours, with low maintenance costs and less waste compared to traditional bulbs.

RINA has been the surveyor for every GNV newbuilding and will also survey our next-generation vessels. RINA's knowledge and competence in the marine industry have made them one of our major partners in the last 25 years. Together with RINA, we constantly investigate new solutions to reduce our environmental footprint. Through our joint efforts, we are proud to have earned the prestigious Green Star award for sustainability standards that surpass mandatory norms - for every newbuilding since 1993. Beside the development of

new vessels, we work with RINA to identify technologies that will help us improve our performance while further reducing consumption.

We also use RINA's InfoSHIP EGO system to measure the propulsion performance of our fleet. Every ferry is constantly monitored, with real-time analysis of the data allowing us to fine-tune navigation settings to reduce fuel consumption and maintain the lowest possible environmental impact. We have recently chosen RINA as a strategic partner and solutions provider to implement an Asset Management System. This will help us to plan technical maintenance interventions to achieve greater performance targets for speed, consumption and comfort during sailing.

With the support of RINA, we are always innovating for sustainability - and of course, for our customers.

## MATTEO CATANI

Matteo Catani has been CEO of Grandi Navi Veloci (GNV) since 2016. Since joining GNV in 2007, Mr Catani has assumed roles of growing responsibility, ranging from financial activities to revenue management and development. His most recent position before becoming CEO was Director of Sales and Marketing. Prior to joining GNV, Mr Catani spent three years working in business-related roles at Danone Group.

Mr. Catani holds a Bachelors degree in Economics from the University of Genoa and a Masters in Business Administration (MBA) from Booth School of Business at Chicago University.

# The future of Chinese shipbuilding

Interview with Zhengjun Tian,  
Chief Technical Officer,  
AVIC International Ship Development (China) Ltd



Last year the Chinese orderbook hit US\$10.2 billion and 290 vessels, easily beating Korea to take first place in terms of the share of global orders. The volume of new orders was up nearly 30 percent year on year despite the challenging market. The picture looks positive at first glance - but this success will not last long unless we take bold steps to modernise our technology and communication. At AVIC Weihai Shipyard, we are already taking those steps and already seeing the benefits.

Chinese shipyards are attractive for many reasons. They are numerous and enjoy the support of the Chinese government and banks. They still have relatively low labour costs and the workers keep to demanding schedules. They are particularly skilled at painting and working with steel. Shipyards are importing more and more cutting-edge equipment in order to achieve high quality with even the biggest vessels. The yards are also flexible in terms of accepting owners' changes during construction.

Yet what Chinese yards have not traditionally been

known for is building technologically advanced ships. Perhaps that is why Korea's 2017 investment figure of US\$11.8 billion was higher than China's, despite the much lower orderbook. And there are many challenges ahead, even in the bulk carrier market. Labour and steel costs are rising and competition is increasing. It will be a tough market for Chinese shipyards who do not invest in next-generation shipbuilding technologies and upgrading industrial competence.

Our strategy at AVIC Weihai Shipyard, which is supported by our main shareholders AVIC Ship and Weihai local government, has several related strands. Firstly, we are transitioning from building traditional bulk carriers to ro-ro and ro-pax vessels. The global ro-ro fleet is ageing and will need replacing to comply with new standards. Regional economic growth is also driving demand. The next generation of vessels will need more efficient and environmentally friendly designs, integrating intelligent systems for cargo handling, safety and navigation.

In order to be successful in the ro-ro market, we have



Visentini 2,500 LM ro-ro vessel - Courtesy of AVIC International Ship Development (China) Ltd



6000dwt sub-sea rock installation vessel - Courtesy of AVIC International Ship Development (China) Ltd

planned strong investment in digital technologies such as an upgraded shipyard management system and 3D software to optimise ship design. We plan to introduce more robots to automate assembly lines, improve production efficiency and perform more thorough quality controls. In addition to introducing more automation, we also have plans to upgrade the skills of our workforce through targeted, specialised training in particular areas. Finally, we are also developing more integrated supply chains.

Better integration goes hand in hand with stronger cooperation and collaboration. I predict that Chinese companies will increasingly specialise and form cooperative networks. This will help us all become more advanced and more globally competitive. Yet an important part of my job is also building and maintaining relationships with third parties and subcontractors worldwide. Complex shipbuilding projects require a lot of communication between ship designers, shipowners, classification societies, engineers, technical experts, managers, suppliers and more. Without broad and open cooperation, it will be difficult to execute these ambitious projects smoothly and on time.

We recognise the value of gathering expertise from all over the world. For example, we acquired Finnish design and engineering firm Deltamarin in 2013 to enhance our ship design capabilities, particularly in terms of sustainability and efficiency.

Our strategy and our open approach to collaboration are already bearing fruit. For example, we recently launched the Rosa dei Venti, a modern, fuel-efficient and environmentally friendly 2,500 lane metre ro-ro carrier for cars and trucks. Classed by RINA, she has the largest stern ramp in the world for efficient loading and discharging, an optimised hull form and a scrubber system to control SOx emissions. We look forward to seeing her operate worldwide for Italian shipping company Visentini Giovanni Trasporti FluvioMarittimi.

Our cooperation with RINA on several different projects, including bulk carriers and ro-ro ships for

European owners, has been a really good experience. We have received a lot of support for plan approvals and site surveys. RINA's training on rules and standards, along with their efficient plan approval in China and their smooth communication with shipyard engineers, are really valuable.

It is with support and collaboration like this that we - and other Chinese shipyards who follow similar strategies - will continue to expand our shipbuilding capabilities and reputation in the future.

## ZHENGJUN TIAN

As Chief Technical Officer for AVIC International Ship Development (China) Ltd, Zhengjun Tian is responsible for the company's overall technical management as well as Stena RoRo passenger ship newbuilding projects at AVIC Weihai Shipyard.

A naval architect by training, Zhengjun Tian graduated from Shanghai JiaoTong University in 1991. His career in the shipbuilding industry includes seven years as a surveyor for China Classification Society, 10 years supporting various European shipowners with newbuilding site project management, and 10 years at AVIC shipyards responsible for technical management, shipyard design and special projects. His specialist expertise in the field of newbuilding includes chemical tankers, gas carriers, ro-ro vessels and passenger ships.

He is a member of the China Technical Committee of ABS, DNV GL, Lloyd's Register and RINA.

# Preserving traditions for the future

Interview with Achille Onorato,  
CEO, Moby Lines



New generations must look ahead and plan for the future - but we must also preserve the traditions and values of the past. In the shipping industry, that means remaining seafarers at heart. Too many of us now sit behind desks typing numbers into spreadsheets. I was lucky enough to grow up in the shipping world and to spend three years at sea, so ships and the sea are in my heart.

When you understand past traditions, you are better able to shape your future. For Moby Lines, our destination is clear: we wish to continue growing in the ferry and cargo sectors. We are investing heavily in both ro-ro ferries and the so-called Motorways of the Sea. In line with this EU initiative, we have launched new routes between the north and south of Italy and are planning more. The Baltic region is another growth area, particularly in the passenger sector. Together with St. Peter Line, we are venturing into Baltic cruises with an itinerary connecting St. Petersburg with Helsinki, Tallinn and Stockholm. Our challenge - and our goal - is to invest smartly in this sector, increasing the number of routes and ships operating in the region.

To help us service our expanding business, two new ro-ro ferries with 4,100 lane metres each will soon be delivered by FSG in Flensburg, Germany. We are also looking forward to the arrival of two new ferries currently under construction by CSSC Offshore & Marine Engineering (Group) Company in Guangzhou, China. They are part of a joint 2+2 order in partnership with MSC Group, and I'm proud to say that they are unique in terms of their size and technology.

Firstly, each vessel will have an incredible load capacity of 3,670 lane metres. It will be able to transport 2,500 passengers, with more than 500 cabins and all the comforts of a modern cruise ferry. In contrast, the largest ferries currently operating in the Mediterranean have 2,000 lane metres and 300-400 cabins, and are limited to 2,000 passengers. Secondly, the ships will be LNG-ready, in other words able to run on LNG with only small modifications. We hope that LNG infrastructure in the Mediterranean, and in Italy in particular, will improve quickly enough that we can soon switch to LNG.



Sharden - Courtesy of Moby Lines



Moby Aki - Courtesy of Moby Lines

One reason LNG infrastructure is slow to develop in Italy is the lack of clarity in current regulations around refuelling. We all recognise the need to reduce emissions drastically, and other countries are moving forward quickly in this area. But in Italy, we are still behind. So we build ships that can run on LNG but we continue running them on diesel. That makes no sense.

Aside from LNG infrastructure, we are doing what we can to improve onshore facilities. Last year we invested in terminals in Livorno and Catania. In collaboration with MSC, we also won a tender for the Livorno passenger port. We want our passengers and our cargo customers to enjoy the most punctual, well-organised service possible.

Service is fundamental, particularly in the passenger sector, where it's essential to innovate every year. For us, that translates into fun. Last year, we had a Batman-themed ship with a Batmobile in the garage and a special "Batcave" bar - the passengers laughed until they cried. On our Sardinia route, we had Looney Tunes characters walking around the ship, taking photos with passengers and having breakfast with the kids. We always have top-class restaurants, self-service buffets and shows on our ships. Passengers love the feeling of starting their holiday as soon as they step aboard.

Behind the scenes, our tech team in Milan is more serious, working hard to make sure everything functions smoothly. Digitalisation is one big difference from seafaring 100 years ago. Now we have the website, reservation system, onboard WiFi, digital newspaper and multimedia portals in passenger areas, onboard terminals for taking photos with friends and posting them on social networks, and much more.

Despite our technological advances and international expansion, Italy and its seafaring traditions remain strong in my heart. We are 100% "Made in Italy" and proud of the country's reputation for professionalism. For many years now, we have also been "100% RINA", constantly involved in projects and discussions. We recently launched a campaign to encourage Italian

seafarers to join us. Some of our seafarers are in their fourth or fifth generations. They are a treasure to be preserved - and they will be the ones helping us sail smoothly into the future.

## ACHILLE ONORATO

Representing the fifth generation of owners in the Onorato family, Achille Onorato has been CEO of Moby Lines since April 2016. He was born in Pisa, Italy in 1986 and has been deeply involved with ships and the sea since childhood. As well as achieving success in competitive sailing, Achille was actively involved in the family fleet throughout his education.

After graduating from Bocconi University in Milan with a Bachelors degree in Business and Economics, he went on to obtain a Masters in Transportation Management, Logistics and Infrastructures. He officially joined Moby Lines in 2008, with responsibility for onboard services.

From 2012 to April 2016 he served as CEO of Toremar, a subsidiary of Moby Lines. Thanks to the innovations and new technologies introduced under his leadership, the ferry company transformed into a "smart fleet" at the forefront of efficiency, punctuality and customer service.

[www.moby.com](http://www.moby.com)

# The path to sustainable growth

Interview with Aristides J. Pittas,  
CEO, Euroseas Ltd



After several years of very low freight rates for our vessels, the time has come to grow once again. We managed to navigate through some difficult years without losing our exposure in the markets. I put this down to our conservative approach, which resulted in us keeping financing low, and our focus on efficiency, safety and quality. We were one of the first shipping companies to obtain ISO 9002 and ISM accreditation in January 1997. Keeping our ships running safely and smoothly for our clients remains the company's priority.

The correct path to strong and sustainable growth is never 100% clear, as we never know how markets will develop. During 2016 and 2017, we have managed to acquire both dry bulk and container vessels almost at the lowest prices seen in decades. We are still looking for opportunities in both sectors, as we believe both markets have good prospects. We feel we are, as an organisation, well positioned to take advantage of the next cycle, whatever it may be.

Although the future is by its nature uncertain, there are some clear trends and factors which we have to

continuously keep sight of as they will shape market conditions.

The first concerns the environment. We need to adapt to cleaner technologies and comply with ever-stricter environmental regulations. The regulations concerning ballast water treatment and NOx and SOx emissions will affect everybody in this industry. So far we have invested in three newbuild dry bulk vessels that cover the ballast water treatment requirements, and for the remainder of our fleet we will install WBTP as they come up for drydockings. Regarding emissions, we believe that eventually the refineries will have to come out with cleaner fuels. Very few owners of larger vessels will have the capacity to install scrubbers, an interim solution at best.

Among the many new environmental laws that affect the shipping industry is the EU MRV (Monitoring, Reporting, Verification) regulation. This requires us to report CO2 emissions for vessels larger than 5,000 GT calling at any EU and EFTA ports. We recently chose RINA to be the verifier for the EU MRV regulation for



Santa Cruz - Courtesy of Euroseas Ltd





Akinada - Courtesy of Euroseas Ltd

all applicable ships in the company's entire fleet. How to deal with the forthcoming IMO fuel oil consumption data collection required by Marpol VI is also a big topic of discussion; we believe that RINA will be of assistance to us in this matter as well.

Consolidation is another trend we are seeing, especially in the container sector. It is affecting both the liner companies and the owners. As far as we are concerned, we are seeing significant interest in the idea of merging our containerships with others. There are some clear benefits, including economies of scale that could help us stay competitive in these fierce markets. We are currently evaluating all options.

Maintaining high-quality service in our business means maintaining high-quality ships and working with the best partners. That is why we work in very close contact with classification societies, not only for regular classification services but also for consulting on a variety of technical and operational matters. Whenever we need to prepare for modifications, test and approve equipment or conduct feasibility studies, for example, we entrust this to top classification societies or technical offices with the right expertise.

We started working with RINA around 10 years ago, and the cooperation has since evolved into multiple areas. They are now a valuable partner, helping us to run and upgrade our vessels to satisfy the ever-stricter requirements worldwide. Strengthening the Piraeus branch has played a significant role in boosting RINA's market profile among the Greek shipping community, as their experts are even more easily accessible than before.

Running a stock-listed shipping company is a very demanding job, with many different responsibilities in different aspects of the business. My priority is to provide safe, high-quality service to our clients, but I also have to raise investment capital, plan resources for projects, negotiate with bankers, make sure our vessels find good employment, and so on. Thankfully, I'm supported not just by RINA and other partners, but by

our top-quality teams of employees on land and at sea. To be able to inspire them and coordinate their efforts is a great pleasure for a CEO. And I believe it is one good way to find the path to sustainable growth.

## ARISTIDES J. PITTAS

Aristides J. Pittas has been the Chairman of the Board and CEO of Euroseas Ltd since its inception in 2005. He is also the founder and President of Eurobulk Ltd, a ship management company, and the founder and President of Eurochart S.A., a shipbroking company, since 1997. In 2016 he became Director of Arimanios (Cyprus) Ltd, a private investment company.

Before becoming CEO of Euroseas in 2005, Mr Pittas served for 10 years as Managing Director of Eurobulk. Prior to that, Mr Pittas held various managerial positions in Oceanbulk Maritime SA, Varnima International SA and Eleusis Shipyards SA.

Mr Pittas holds a Bachelors degree in Marine Engineering from Newcastle University in the UK, as well as Masters degrees in both Ocean Systems Management and Naval Architecture and Marine Engineering from the Massachusetts Institute of Technology in the US.

[www.euroseas.gr](http://www.euroseas.gr)

# The engines of innovation

Interview with Giulio Tirelli,  
Director of Sales and Business Intelligence, Wärtsilä



Strong markets are the engines of innovation. The offshore sector, in need of an ultra-efficient medium-speed engine with great fuel flexibility, was behind our launch of the Wärtsilä 31 in 2015. Awarded a Guinness World Records title for its fuel efficiency, the engine remains in constant demand from sectors other than offshore, from ferries to icebreakers. Its innovative aspects have been adopted for many other technologies. So while one market sector may drive innovation, its benefits ripple out to many areas.

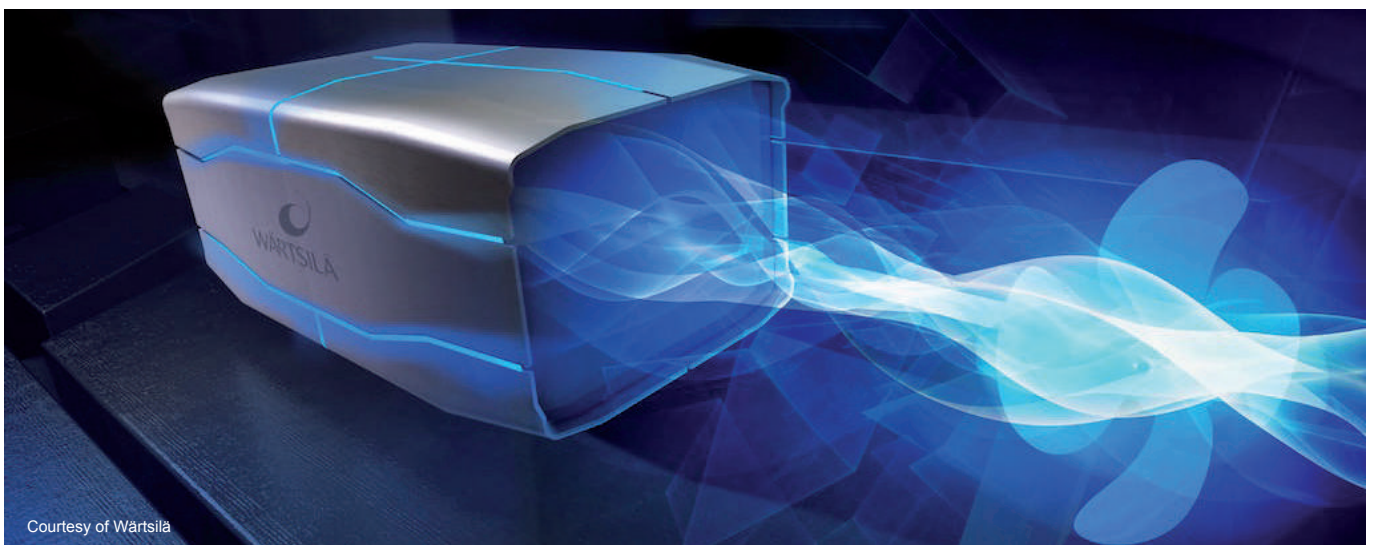
The sinking of the oil price turned attention to the cruise sector, which has remained strong despite the ups and downs of the last ten years. Systems are being developed with cruising in mind: more precise and automated navigation, route prediction and dynamic positioning systems, smarter weather prediction, accurate wave monitoring, more efficient exhaust gas cleaning technologies, easier waste management. Not to mention more impressive onboard entertainment - we have even helped to develop a philharmonic concert hall for a cruise ship. We like to say "we take fun seriously".

Wärtsilä is understandably known for its blockbuster

engines. But the company's real strength lies in our diversity as a total solutions provider spanning the marine, O&G and energy sectors. Diversity brings resilience and synergies, but more importantly, it takes into account not just single technologies but the entire ecosystem in which they function.

The focus of our marine business has therefore shifted from individual technologies on individual ships to a ship's interactions with other vessels, with its surroundings and with its ports of call. In this vision of the "Smart Marine Ecosystem", smart vessels connect seamlessly with each other and with smart ports. The goals: maximum efficiency and use of resources, minimum environmental impact and higher levels of safety and security.

Data in a smart marine ecosystem is better integrated and technologies connect through the cloud. Ships can take weather data from ships ahead of them, for example, instead of only from satellites. One of our pilot projects, Portify, aims to digitalise ship-to-port interactions. Dynamic information on ship arrival and departure times improves the efficiency of berth allocation and opens the door to



Courtesy of Wärtsilä



a digital platform where vessels can pre-order services (bunkering, tugs, maintenance...) before arrival. Of course, it will take time and a few technological leaps to achieve the vision in its entirety. But thanks in part to our acquisitions of marine technology providers Eniram and Transas, we are confident we can overcome any technical challenges. The initial results are certainly encouraging.

True innovation - in other words, game-changing technologies driven by market needs - is made possible by controlling the value chain and considering the entire ecosystem. Our wide scope of business and competences in both engine technology and E&A (electrical and automation) systems are enabling us to develop the innovative hybrid propulsion solutions that we think will set new industry benchmarks.

“Hybrid” in this sense means bringing two or more technologies together to create a new system that can offer higher performance and greater efficiency than any one technology in isolation. Take our Wärtsilä HY hybrid power module, for example. It combines engines, the latest energy storage technologies and advanced power electronics. Its “brain”, an intelligent energy management system (EMS), interacts with the ship’s onboard systems to control energy flows between the different power sources, as well as optimise performance in terms of emissions, trim and route, and long-term operations. The results are a clear response to market demands: significant fuel savings, reduced emissions and lower maintenance costs.

Strong markets may drive innovation, but it’s people who steer its direction. Getting out into the field and listening to customers and market leaders helps us to anticipate future demand and identify how to meet it. Back in our R&D centres, our specialist engineers and developers - internal as well as external partners such as RINA - are the people who turn creative ideas into practical realities.

Some companies embrace digitalisation and automation because machines can work longer and harder than humans and don’t take sick leave or vacation time. But we believe technology should support humans, not replace them. A smart routing or automatic docking system does

not substitute a ship’s captain but instead reduces risk, improves efficiency and eases the captain’s burden. A robot (or “co-bot”) can help a factory worker mount a heavy component or provide them quickly with the right tools.

Innovation that frees up humans to perform more value-added activities, while improving safety, reliability and efficiency in the context of an entire ecosystem, is the destination we are driving towards at full speed. With optimal fuel efficiency, of course.

## GIULIO TIRELLI

Giulio Tirelli is the Director of Sales and Business Intelligence for Wärtsilä in Italy. Based in Trieste, he is responsible for worldwide sales activities involving power generation, propulsion, exhaust gas treatment and power conversion technologies.

After completing an MSc in Naval Architecture at the Italian Università degli Studi di Trieste, Mr Tirelli undertook an internship in Wärtsilä Italia before relocating to Finland in 2006 to become a Project Engineer in the Solutions team. In Finland he contributed to the success of Wärtsilä dual-fuel engines in the LNG Carriers sector. In 2008, he joined Wärtsilä Switzerland with the position of Application Development Manager and was subsequently promoted to Director, Portfolio and Applications.

Mr Tirelli undertook a two-year Executive MBA in Shipping and Logistics at the Copenhagen Business School in Denmark, graduating with full honours in 2013. In early 2014 he moved back to Wärtsilä Italia, where he served as Director of Marine Engineering until being promoted to his current role.

# Spotlight on Indonesian shipping

## Interview with Handara Utomo, COO, Soechi Lines

With the largest economy in Southeast Asia, a young population and a government committed to economic transformation, Indonesia is seeing positive signs of growth ahead. As the economy develops, the country's shipping industry will benefit from fresh demand for energy, chemicals and raw materials. At Soechi Lines, we are well placed to take advantage of any short- or long-term increases in energy demand with our fleet of oil tankers, chemical tankers, gas carriers and FSOs.

The Indonesian government's role in supporting the shipping industry should not be underestimated. For example, one of our biggest challenges is hiring and training sufficient crew for our vessels. Thanks to a well-deserved reputation for being hardworking, competent and compliant, Indonesian seafarers are in huge demand not just in Indonesia but worldwide. In addition, labour costs are still relatively low. Government investments in new training academies for seafarers are therefore creating a win-win situation, by providing more employment opportunities for young Indonesian workers and helping shipping companies such as ours find qualified crew. In another headline example of the

government's commitment to the shipping industry, investments in port infrastructure are aimed at solving current capacity issues at container ports.

Developing industries require not just investment, but also robust standards and regulations. As with all rules, these sometimes have a painful aspect as well as a positive side. Take the IMO's tightening emissions regulations and Ballast Water Management Convention. We welcome measures to protect our environment, but we also feel the pain. The average age of tankers in our fleet is 15 years. It is becoming increasingly hard for shipping companies such as ours to comply with the strict regulations and compete against global players.

Indonesian cabotage rules, which were first introduced in 2008 and have since evolved with various additions and exemptions, are a clear example of regulations being a double-edged sword. The basic premise – that ships operating in Indonesian waters must be Indonesian-flagged and operated by an Indonesian crew – helps support our shipping and shipbuilding industries, as well as providing stable demand for Indonesian seafarers.



Courtesy of Soechi Lines



On the other hand, such policies can have unintended consequences, such as reducing competitiveness or frightening off potential investors. We trust that the government will continue to adjust cabotage policies to avoid controversy and further benefit Indonesian shipping.

The cabotage rules, as well as another national regulation limiting the age of vessels that can be bought second-hand, are helping to drive demand in shipbuilding in Indonesia. This is a positive sign for our shipyard in Karimun, which is one of very few in Indonesia that can cater to ships above 8,000 GT – which make up around 5,000 of Indonesia’s fleet of over 15,000 merchant ships. So we are looking forward to developing our shipbuilding and ship repair business in the coming months and years.

To meet the challenge of building new, high-tech vessels and upgrading older ones, we are aware that we must continuously improve our shipyard’s capabilities. This is partly a question of technology and equipment, which we upgrade in response to specific demands from customers. But more than that, it’s about expertise. We hire the best graduate engineers from Indonesian universities and bring in foreign specialists where necessary.

In this sense, RINA is an extremely valuable source of expertise for us. RINA experts provide not just a classification service, helping us to comply with class requirements and regulations, but reliable and tailored advice on a regular basis. Fourteen of our ships are classed by RINA and we are currently collaborating on an FSO conversion project. I can’t count the number of times their advisors have helped us to find smart solutions to new challenges or provided constructive advice and training.

Over on the tanker side, specialist expertise and new digital technologies are helping us to maximise our tanker utilisation rates. These are currently around 80% across our fleet of nearly 40 tankers. By minimising downtime due to docking and repairs, and with the help

of new database software and big data analysis, we hope to raise our utilisation rates to 85–90%. That is one of my major goals in the coming months.

My job as COO of Soechi Lines sounds quite simple in theory. I have to make sure our ships and storage vessels are running efficiently and effectively at all times. But in practice, shipping is a fiercely competitive business and we appreciate all the support and input we receive. Soechi Lines, like Indonesia in general, has great potential in the shipping and shipbuilding industries of the future. With continued support to overcome our challenges, I believe our future is bright.

## HANDARA UTOMO

Handara Utomo is Chief Operating Officer of Soechi Lines, one of the largest tanker players in Indonesia. Offering interrelated services in oil, gas and chemical transportation, Soechi Lines operates nearly 40 vessels with a total of around 1 million DWT, ranging from small size (1,500 dwt) to VLCC (308,000 dwt). The company covers several routes in and around Indonesia, Southeast Asia, India and the Middle East.

The company’s shipyard subsidiary, Multi Ocean Shipyard in Karimun Island, provides shipbuilding, ship maintenance and O&G platform construction services.

[www.soechi.com](http://www.soechi.com)

# Winning factors in shipbuilding

RINA asked Johan Hartman, CEO, Hartman Marine Shipbuilding, for his opinion on what makes a successful shipyard

The question of what makes a successful shipyard is an interesting one, and no doubt everyone will have a different answer. Based in Urk in the Netherlands, my company has been operating since 2003 with three divisions: shipbuilding, yachtbuilding and oceangoing transport. But the roots of Hartman Marine Group go back to 1775 and I am now the seventh-generation skipper-owner. So it is a topic that has been in my family for a long time.

Versatility is important, both for shipyards and for the ships they build. The many new environmental regulations that are coming into force means older vessels will either have to undergo major renovations - at high cost - or be scrapped at an earlier stage of their lifetime than previously anticipated. Ship designs must therefore be adapted to "future-proof" ships against new regulations. Innovation is key. Shipyards may also have to move fast to fulfil orders for new vessels, as it appears likely the market will soon face a shortage.

The ships themselves must also be versatile to

cope with changing market demands. We specialise in designing and engineering multipurpose cargo vessels. Our Trader 18 Deo Volente design won the Dutch Ship of the Year Award for its innovative features. These allow it to achieve speeds of 18 knots, instead of the usual 12, with only a moderate increase in fuel consumption. Its speed - it is the fastest in the world in this class - along with its lifting capacity of up to 240 metric tonnes with a 24-metre outreach and a shallow draught, gives owners a unique combination of features that are unmatched even now. In addition, being below 3,000 GT keeps costs to a minimum.

It is this smart use of special combinations of features inside one type of vessel that sets shipyards apart from their competitors. We are always looking for advantages in clever combinations of specifications compared to normal vessels. Our other ships have extremely low fuel consumption at 11 knots, combined with a large amount of square metres for a vessel below 3,000 GT. Built in 2017, MV Baltic has another interesting combination of features: a ro-ro



Courtesy of Hartman Marine Shipbuilding



Northern Rock - Courtesy of Hartman Marine Shipbuilding

carrier that can take heavy loads of up to 80 tonnes per axle, in combination with low fuel consumption and generous square meterage. These combinations of desirable features are the winning factor - not one aspect alone.

So versatility contributes to a successful shipyard. Quality and efficiency are also vital. Thanks in part to its long heritage, Dutch shipbuilding is highly efficient and geared towards quality. This means that the vessels we build can deliver higher return on investment in the long term compared to vessels built in cheaper countries. The proof is in the figures: despite being 10 to 20 percent more expensive than cheaper alternatives, our ships achieved positive results even during the lowest markets of 2009 to 2012.

Versatility, quality and efficiency. All three are important ingredients of a good shipyard. But to be really successful, well-designed ships and efficient shipbuilding processes need to be combined with three other things: a highly skilled crew, smart management and a charter operator who can handle these features. These are the main focuses of our oceangoing transport business, Global Seatrade.

My priorities in terms of our shipbuilding business are to develop new, versatile and innovative vessels that meet market demands and regulations both today and in the future. Over on the yachting side, we are working with RINA on the classification of a pleasure yacht and have always found their experts to be fast and professional in responding to any issues that arise.

[www.hartmanmarine.com](http://www.hartmanmarine.com)

## How RINA helps shipyards innovate

Fast-changing markets and trading patterns, new technologies and evolving rules and regulations threaten normal ways of working. With long experience supporting shipyards of all kinds and all sizes, all over the world, RINA knows the value of competence and correct, timely and constructive information.

These are the keys to fully exploiting the potential of innovation and making the most of a shipyard's winning factors.

With the help of new digital technologies, RINA can offer maximum support to shipyards. In a user-friendly way, RINA provides clients with all the information they need to ensure that ships are fit for purpose, in compliance with applicable rules and regulations and delivered on schedule and within budget.

What happens when innovative solutions are not yet covered by rules and regulations? RINA can help with its experience in risk analysis-based equivalence studies, alternative design procedures, approval in principle of novel solutions and technology qualification certification.

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# The challenges of lengthening ro-ros

RINA asked Remontowa Shiprepair Yard, Poland, for their opinion on the challenges of ro-ro lengthening projects

Stretching a ro-ro vessel is a smart move in terms of improving energy efficiency, but comes with several technical and logistical challenges. Finnlines' successful lengthening project at Polish shiprepair yard Remontowa SA offers an insight into the process.

Finnlines' €70 million Energy Efficiency and Emission Reduction Investment Programme started in 2017 with the lengthening of its four Breeze series vessels: Finntide, Finnwave, Finnsky and Finnsun. The contract included an option for two additional vessels, Finnbreeze and Finnsea, which Finnlines decided to exercise in March 2018. All six ships are being lengthened at Remontowa Shiprepair Yard in Gdansk, Poland.

The basic process goes like this. Upon its arrival at the yard, the ship's hull is cut and divided into two parts. The ship is then lengthened with an insert, which is fabricated prior to the ship's arrival at the yard.

Building such an insert is like building a very large Lego model, but with extra logistical complications. Different sections are constructed in several places in the shipyard. Each section is transported by a floating sheerleg and transferred to a semi-submersible barge. The first six steel elements form the base section. The remaining 20 are then fitted like Lego pieces, creating the complete giant insert for the vessel.

Each insert weighs 1,500 tonnes and is 29.5 metres long, 26.5 metres wide and 23.5 metres high. Before it is welded and integrated into the ship's hull, it undergoes maintenance, painting and launching.

The most important and technically challenging part of the process is to adjust the new insert to the existing hull. When the ship is delivered to the owner in the final phase of the project, the rules and standards it must meet are similar to those applied to new ships, as virtually all ship systems are discontinued due to cutting the hull. All sections must fit to the last millimetre, with surgical precision.

After modification, each of Finnlines' vessels is 217.7 metres long and has a capacity of around 4,200 lane metres. Thanks to the lengthening, the ships will be more energy efficient and contribute to cutting the fleet's overall emissions.

Thanks to an efficient process at the shipyard, the project is running smoothly and on schedule. The contract was signed on 31 March 2017, the cutting ceremony took place on 19 May and the first steel section for an insert was laid on 29 June. The first three vessels were successfully converted between November 2017 and March 2018, with the fourth expected to be ready at the end of May. The lengthening of Finnbreeze and Finnsea will be carried out between September and December 2018.

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Chief Commercial Officer  
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Courtesy of Finnlines



# Breakthroughs in fuel cell technology

RINA asked Helbio, a high-tech company affiliated with the University of Patras, about innovation in marine uses of hydrogen

Radical innovation is needed for the shipping industry to achieve its ambitious emissions targets. Hydrogen fuel cells are a promising technology in this respect. Combining hydrogen and oxygen in a fuel cell generates electricity and heat with zero emissions and without noise or vibration. There are various cost, safety and technical issues, but recent breakthroughs in research indicate promising and viable marine applications for hydrogen fuel cells.

For shipping, a flexible and holistic approach is needed in which fuel cells, combined with batteries and other technologies, serve a variety of main and auxiliary energy needs on board. This is the principle behind a research proposal for a Sustainable Short Sea Shipping System that RINA Hellas is coordinating, leading a consortium of Greek academic institutions and industry partners.

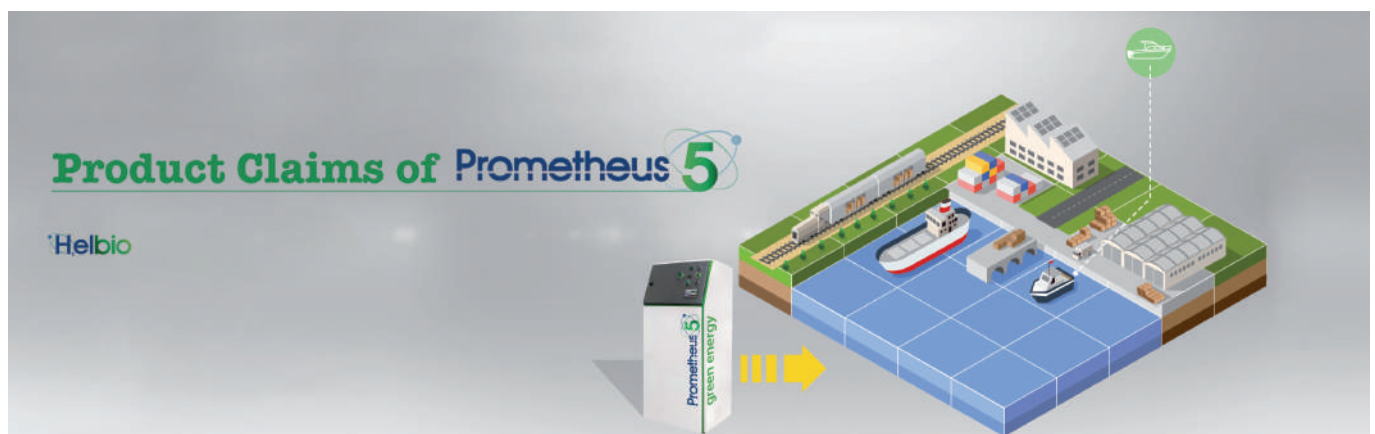
Our goal is the swift integration of renewable energy in short sea shipping. The project's integrated solution will employ technologies developed in Greece. Helbio, a high-tech company specialised in hydrogen and energy systems, will integrate the fuel cell into the energy system on board. Helbio was founded by Dr Xenophon Verykios, a Professor in the Department of Chemical Engineering at the University of Patras. The National Technical University of Athens will design the energy unit and Greek shipowners are willing to test it. This solution could serve as the main source of propulsion for ferries serving short routes and provide auxiliary power to a larger vessel on a longer route. In port, it has significant potential for generating clean shore-side electricity for berthed ships.

RINA also coordinates the EVERYWH2ERE project, a five-year European project funded by HORIZON 2020 that aims to develop affordable hydrogen fuel technologies. Starting from "plug-and-play" fuel cell gensets designed for niche, everyday applications, the project aims to demonstrate the feasibility of using transportable hydrogen fuel cell gensets in larger industrial contexts, including cold ironing in ports.

Fuel cell technology can support the use of LNG, whose contribution to reducing greenhouse gases is not enough to meet future targets set for shipping. Since LNG is an attractive source of hydrogen, it can be used to feed reformers that then feed fuel cells. Combined heat and power micro-systems based on hydrogen are already available in the range of 5 to 50 kW, (e.g. Helbio's Prometheus5). These can be used as main power for small ferries and yachts but can also serve as an auxiliary source of electricity for LNG-fuelled ships.

Fuel cell technology is rapidly progressing. Initial applications on board ships represent promising solutions for hybrid/distributed power generation. With the support of research, industry and policy players, RINA is now putting effort into accelerating this technology with the aim of contributing to a sustainable future for shipping.

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# Extracting value from data with RINACube

The value of data in the marine industry has been clear to RINA for years. With the aim of improving energy efficiency, for example, we have worked with countless shipowners all over the world to collect and analyse useful and accurate data. These days, the industry is experiencing a veritable explosion in data. Whereas before we had the challenge of gathering sufficient information, in many cases we now seem to have too much.

We are therefore looking ahead and planning how best to help our clients manage and extract value from this data in order to enhance operations and improve regulatory compliance. The fast pace of technological development means we need a flexible, forward-thinking approach and a platform that can serve current needs as well as easily adapt to future developments.

Flexibility is the thinking behind RINACube's platform, released in 2018 with the aim of hosting a variety of marine services by the end of the year. The cloud-based platform integrates third-party data, applications and powerful analytics capabilities. These features combined will enable clients to manage information from many sources efficiently and to extract greater value and business insights from it.

RINACube's core classification services are designed to make it easier for clients to obtain the services they need. These include issuing e-certificates, booking a survey or exchanging documentation online to obtain an approval. Clients can also obtain direct operational benefits through the platform. A key example is RINA's fleet performance management system. This collects

data on board ships, analyses it and provides optimisation recommendations, helping owners take effective, evidence-based decisions. The system is now hosted on RINACube and is the backbone for future applications covering maintenance, compliance, environmental and safety issues.

Shipowners and operators will be interested in the Fleet Operation Centre (FOC), which enables real-time information sharing between ships and specialist onshore teams. An FOC brings additional benefits from a regulatory point of view: it responds to the IMO A.1072 (28) requirement for "an integrated system of contingency planning for shipboard emergencies".

Clients will also see efficiency benefits as RINA engineers and surveyors start to use the platform themselves. For example, a smart checklist when carrying out a survey saves time creating a survey report back in the office.

As an independent third party with a 360-degree view of ships and shipping, plus deep experience in developing vertical software applications, RINA has a unique advantage. We can efficiently gather data from many different sources and process them in accordance with both international regulations and shipowner requirements. RINACube will evolve in line with developments in technology and customer demands. But its ability to extract useful business insights from data will remain a central pillar.

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Marine Innovation Sector Head



# Barbara Poli: “best digital innovator”

Barbara Poli, RINA's Chief Digital Officer, has been awarded the special “Alfredo Gatti” prize by the judges of the CIO+ Italia Award 2018. Named after CIONET's former president Alfredo Gatti, the prize is awarded to the manager who “directed their company towards a visionary project with the aim of improving business dynamics”.

At the ceremony in April 2018, six Chief Information Officers & Digital Leaders won awards for their presentations of innovative and digital projects. Joining RINA's Barbara Poli were representatives from Rome Airport, the hospital of ASST Papa Giovanni XXIII, Deutsche Bank, Italian electricity and gas provider Enel and Ducati Motor Holding.

“For us,” Barbara Poli said, “digital transformation is the opportunity to capitalise on what we have been doing for over 150 years: gathering, verifying, analysing and transforming data into value through the expertise of our 3,700 people.

The concept of a network is increasingly pervasive. New technologies are enabling integrations that go beyond the boundaries of a single company and expand to the entire supply chain.

This is why we have defined a new business model and developed our digital platform, RINACube. This cloud-based platform is designed to host modular software applications and is conceived vertically for individual industries. It is built around the virtualisation of a physical asset, such as a ship, power plant, refinery or factory, and the flow of data related to it.”



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