

# RINAUTIC



RINA MAGAZINE - YACHTING EDITION



**INSIGHTS**  
from key industry figures

**INNOVATIONS**  
in yacht building

**FUTURE**  
of the superyacht

Welcome to RINAUTIC, our magazine covering the latest trends and developments in the yachting sector.

What does the future superyacht look like - and the future of the market? How can yacht builders boost efficiency? Does the regulatory framework need a rethink? Key industry figures from Baglietto, Camper & Nicholsons, Espen Øino, Rossinavi and Studio Vafiadis offer thought-provoking insights into these topics and more.

We also hear from two Captains and a selection of RINA experts, who explore recent innovations with the potential to transform many aspects of yachting. Find out how our new platform, RINACube, acts like a “digital cockpit” to streamline the management and maintenance of superyachts. Learn how crew training programmes could benefit from virtual and augmented reality, and how additive manufacturing can open up new possibilities for yacht designers and builders.

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# Superyacht insights

The superyacht industry has confirmed 2017 growth expectations and sparked hopes for even stronger years ahead. Despite political uncertainties in some regions, global signals are positive. The US charter market is expected to grow, while Russian owners appear to be returning and the potential for growth in China and the rest of Asia remains high.

As well as growth in the market, yachts themselves continue to grow in size. The 30- to 45-metre segment remains at the core of the industry, but in the next years we will see more yachts over 45 metres on the water. The current Global Order Book counts 206 yachts between 30 and 45 metres that are launched, under construction or at the concept stage between 2018 and 2022 – and as many as 181 yachts over 45 metres. Worldwide, the length of new orders averages just under 50 metres, while the length of yachts under construction this year is expected to be 48.2 metres. Both yacht length and design are influenced by the lifestyles and expectations of the new generation of owners. There is a growing desire for space – particularly outside space such as beach clubs and wellness areas – where fun and relaxation combine with the highest levels of comfort. Our specialist expertise in noise and vibration is helping yacht builders push the boundaries in terms of the comfort and quality of the cruising experience.

The growth of the global fleet is partly due to growth in niche areas such as the explorer segment. Expedition yachts usually require special specifications and standards, such as ice class, as well as complex features like helicopter pads, space for high-tech diving equipment and the flexibility to hold expedition-specific toys and tenders. In need of both high quality and high performance, the explorer segment is at the cutting edge of innovation in yacht design. Technology is helping to support this innovation and set new standards of comfort and efficiency on yachts. Vessel management platforms are becoming smarter and more integrated. We expect that the Internet of Things will significantly transform onboard systems relating to navigation, steering, connecting and monitoring yachts.

Sustainability is the other major aspect affecting today's yacht industry, with forthcoming regulations on air emissions and ballast water treatment aimed at minimising the vessel's environmental impacts. Growing demand for RINA's additional class notations for environmental aspects that go beyond the legal requirements, including Green Plus and Hybrid and Electric Propulsion, shows that this move towards "green" yachting is driven by owners as well as regulations.

Despite technological advances in shipbuilding generally, it still takes a long time to design, build and launch a new custom yacht. This fact, combined with the need to comply with today's high environmental and safety standards, will continue to drive the booming refit and conversion sector. We see further opportunities for this sector to grow, boosted by the desire of the leading newbuild yards to specialise in refits and conversions and promote their ability to provide these services.

RINA, as always, will continue to work closely with our partners and clients in overcoming the challenges of today to build the excellence of the future.

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*Manager*

*Italy & South of France Yachting Centre*



# The value of time and craftsmanship

Interview with Michele Gavino,  
CEO, Baglietto



Time is precious. When it is gone, it is gone. You cannot replace a lost hour like a lost screw. And if a single supplier doesn't deliver on time, everyone else wastes theirs. It is a great pleasure to relax and admire a beautiful yacht you have designed and built – but not while you are still building it. Is the yachting industry generally too relaxed? If we want to remain competitive, then perhaps it is.

I joined Baglietto in early 2016 with a background in a variety of industries, including beer, helicopters, motorcaravans and plastics. In these and other highly competitive sectors, the value of time is taken really seriously. Working with the teams, I have invested a lot of effort – and time! – in improving time management for our projects. Day by day, we are seeing the benefits of every single one of us playing our part at the right moment, both at our La Spezia shipyard and within our supply chain.

A new scheduling and monitoring system that we are currently implementing will help our programme managers and project engineers gain even greater efficiency. You cannot rush quality, of course. But

working to a steady and reliable rhythm brings great benefits to our business, our teams, our suppliers and most importantly our customers. Italian yacht builders face competition from other European yards and now a few Middle Eastern yards are also appearing. We have to be fast and lean to keep the attention of prospects and meet the expectations of owners.

The importance of variety and versatility is another insight we can draw from other industries. This is particularly true in today's world of mass production, where the ability to own something unique and custom is a rare privilege. We have therefore been working to widen our offer in terms of range and design, so that prospective yacht owners who are attracted to Baglietto by its reputation find more choice and freedom in designing their dream boat. Along with our longstanding and highly successful design partner Francesco Paszkowski, we have started to work with Milan-based studios Hot Lab and Santa Maria Magnolfi, plus Mulder Design from the Netherlands. The concept is to keep the platform below water the same, while encouraging greater design freedom and interpretation above the water.



Courtesy of Baglietto

As a company with a long Italian heritage, it is perhaps natural that we focus on “Made in Italy” suppliers. The main reason, however, is the level of craftsmanship and attention to detail that we find in Italy, with a vast of pool of talented and specialised artisans capable of shaping all sorts of materials into beautiful designs and finishes. Each individual element must be perfect, and all elements must work perfectly together to create something unique and in line with the owner’s vision. It is this type of synergy that we can achieve with our supply chain. And it is truly one of the greatest pleasures of this job to deliver a stunning new and totally custom yacht to its owner – on time, of course.

Not only aesthetics, but also functionality and sustainability are essential elements of our mission. Research and development in these areas is more difficult for a yacht builder compared to, say, a car manufacturer with billions to invest in developing and testing new propulsion systems and materials. We are naturally restricted by resources and the setup of our shipyards. Coordination and collaboration are therefore essential, for example in working with major engine manufacturers to develop hybrid propulsion solutions for yachts. We are also leveraging the excellence of new and existing suppliers through an Italian association, Nautica Italiana. One important aim is to identify and develop materials, including new alloys, that will have zero environmental impact at the end of the lifetime of the boat.

RINA is helping us refine several aspects of functionality and sustainability, both in our processes and in the yachts themselves. Their expertise in noise and vibration is a fine example of Italian specialisation and attention to detail. As well as the classification of a 40m yacht currently under construction, we are also working with RINA to regain our ISO 9000 and 45001 certificates.

In fact, the two companies share a rich heritage. Baglietto was founded in 1854 in Varazze and RINA came into being seven years later in 1861, just a few kilometres away in Genoa. Having lived and grown together during 160 years of Italian history, we are proud to work together with RINA as we move forward into the fast-evolving future.

## MICHELE GAVINO

Michele Gavino was promoted from General Manager to CEO of Baglietto in 2016. A graduate in aeronautical engineering, Mr Gavino has held several high-responsibility positions in the field of operations during his career. These include the role of Plant Manager at beer brewing company Birra Peroni, Quality Manager at helicopter design and manufacturing company

AgustaWestland, as well as General Manager and Industrial Development Director at SEA Group – Società Europea Autocaravan. From 2013 until joining Baglietto in 2015, he was the COO of a leading company operating in the rubber and plastics industry.



# Adapting to industry transformation

Interview with Paolo Casani,  
President & CEO, Camper & Nicholson's



In a fast-changing market, the major challenge for Camper & Nicholson's – as well as other companies who wish to survive in the luxury yacht industry – is to evolve into a stronger, larger and more modern organisation. Since the end of the last global financial crisis, the brokerage market has changed significantly. A new generation of clients is entering the arena, with different lifestyles and expectations. Existing clients are also changing their approach to yachting. Meanwhile, the share of global wealth is shifting geographically as emerging markets become more powerful.

In order to survive and thrive in the future market, yacht companies require a much higher level of professionalism than before. A more structured organisation and greater investment in new technologies, marketing and infrastructure are essential, as is a solid shareholder base that supports change and growth.

At the moment our industry is highly fragmented, with a small number of major players and a multitude of smaller ones. It will be difficult enough for the larger companies – never mind the smaller ones – to sustain the level of

investment required by this market evolution in order to guide and control market changes over the next few years. This is an opportunity for a new type of investor to enter the scene and help drive the consolidation that is a natural consequence of the current industry fragmentation.

By 2022, I predict that we will see a very different industry. There will be fewer companies, but the ones that survive will be larger and financially stronger, with more solid organisations. Camper & Nicholson's will be one of these. We have a clear strategy for developing the company and transforming it into a position of leadership in a short time. Our business model will take advantage of new technologies without aiming to disrupt or shock the market.

We already have a solid base for growth, with nine divisions that work hand in hand to provide a professional service in all aspects of yacht brokerage, management and new construction, charter, charter marketing, crew placement, refit and repair, insurance and capital. This complete suite of turnkey services is designed to



Courtesy of Camper & Nicholson's



support yacht owners through their entire lifecycle of ownership. The result is more convenience, less complexity and the freedom to simply enjoy yachting.

We are also expanding our worldwide network of offices into promising emerging markets, notably Asia. We launched Camper & Nicholson's Asia in Hong Kong in 2017. This year, we have reinforced our presence by increasing the team to 18 people and opening an office in Phuket, Thailand. This brings the total global network of Camper & Nicholson's to 12 offices: five in Europe (Antibes, Geneva, London, Monaco, Palma), five in the US (Fort Lauderdale, Miami, Newport, New York, Palm Beach) and two in Asia (Hong Kong, Phuket). Our staff numbers have also grown significantly over the years. Our current international team totals more than 145 people, speaking 28 languages.

This is important, because a fresh focus on professionalism in yachting relies on a large network of professional people. The most important and interesting part of my job is working with my team, whom I believe to have the qualifications and experience to bring our company to a leadership position.

In addition, during the course of our client services we work a great deal with classification societies. The surveyors perform periodical class surveys as well as flag inspections, ISM audits and other technical services. At times, we have appointed expert consultants to advise on complex issues such as vibration analysis, assessing the efficiency of equipment or sourcing fuel contamination. RINA in particular has proved a very yacht-friendly and flexible classification society to work with. The RINA Academy in Genoa holds numerous training courses and the Yachting Centre in Viareggio is a good initiative.

We look forward to continuing to benefit from RINA's expert support as we adapt to industry transformation and create a company with the strength, synergies and global reach to provide high-quality services to new and existing customers all over the world.

## PAOLO CASANI

Mr Casani's career began in the luxury goods and fashion sector, establishing himself with brands such as Armani, Valentino, Calvin Klein and Ferragamo. In 2008, he fused his experience in the luxury goods sector with the yachting industry and joined Azimut/Benetti Group. Here, he pioneered the Yachtique Division before becoming CEO of Azimut Yachts.

Mr Casani joined Camper & Nicholson's as President and CEO in 2015, bringing with him a wealth of experience spanning all sectors of the luxury lifestyle industry. He has actively been working with the Board of Directors and the operational teams to consolidate Camper & Nicholson's' market position and tap into exciting market development opportunities.

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

# Keeping yachting creative and fun

Interview with Espen Øino,  
Yacht Designer and Naval Architect,  
Espen Øino International



I'm often asked what the yacht of the future will look like. But who knows this? One of the beauties of yacht design is the aesthetic freedom owners and designers enjoy. Unlike buildings, which are often restricted in their size, shape, visual impact and aesthetics, nobody tells you what a yacht should look like. That is fundamentally important, because this freedom has given me the opportunity to create an incredibly diverse range of yachts over the last 25 years.

Those rare individuals with the means to build the yacht of their dreams are without exception deeply fascinating people. Their boats should reflect their unique story, vision, lifestyle, family, interests and personality. And it is not just about appearance and luxurious features, but about the fun and freedom a boat can provide. Yachts give their owners the chance to enjoy the experiences they desire, whether that's hopping between Mediterranean ports or – increasingly – expeditions to remote and unspoiled areas like Antarctica and the dramatic coastline and fjords of Norway.

Will superyachts get even more supersized? I don't think

so, but then I keep saying that and they keep getting bigger. The first yacht I designed, back in 1994, was 52 metres and that was considered huge. We have delivered nearly 50 yachts since then, with the average length increasing every year. Today, half of the 10–12 boats we currently have under construction are over 100 metres.

The challenge for naval architects is to keep these massive yachts feeling intimate, personal, fun and easy to operate. And those elements are essential, because nobody in fact needs a yacht. Owners invest a huge amount of money – as well as their own time and engagement – to build one. If we make things too difficult, they will choose to spend their money elsewhere.

I fear that we are in danger of taking the fun out of designing and sailing superyachts with regulations that are ill-suited to the reality of how yachts are used today. If we are talking about trends in yacht design, I would like a trend towards a simplified regulatory framework that conforms to common sense, evolves with the sector and supports, instead of suffocates, creative design.



Courtesy of Espen Øino





Courtesy of Espen Øino - © Josip Baresic

In this sense, we have a lot to learn from commercial shipping. The highly competitive nature of the shipping industry means that the major players have a greater incentive to shape standards that make sense and suit the industry's needs. The same goes for cruise ships: as they have gradually transformed into floating cities, the rules are being adapted accordingly.

In contrast, standards originally applied to yachts with 12 passengers or less have been superseded as the vessels have grown in size and sophistication. Attempts to adapt passenger ship rules to large yachts are messy, and we now we find ourselves with overly burdensome and restrictive regulations that don't reflect the true service of the boats and risk driving owners away.

With my naval architect hat on, I understand that regulations are essential to maintain the high safety record of yachts and minimise any environmental impacts. But some regulations restrict design freedom in an attempt to solve safety issues that have never been a problem, like recent Large Commercial Yacht Code regulations on the use of glass in balustrades. Others fly in the face of common sense, like an attempt to shape yacht crewing into a 9 to 5 job. Regulations that consider yachts as a worldwide service with passengers on board don't reflect the fact that 99 percent of the time, when a yacht is carrying guests it is sailing in safe waters up and down a coastline.

One thing I greatly appreciate about RINA is its expertise spanning the yacht, cruise and commercial marine sectors, in Italy and worldwide. We can sit down and have an open conversation about standards, working out problems together as human beings and not blindly applying sets of rules irrespective of the consequences.

This human aspect of my work as a designer is what I love most. Over the three or four years it takes to design and build a superyacht, I have the chance to develop close relationships with the owners and create something unique and reflective of their personalities and stories. Let us stay human, use our common sense and keep the fun and creativity in yachting.

## ESPEÑOINO

Espen Øino International is one of the leading designers of large superyachts. Founded by Espen Øino 24 years ago, the company is based in Monaco and has 24 employees spanning different nationalities. Mr Øino is a Norwegian-born naval architect who graduated from the Department of Naval Architecture, Ocean & Marine Engineering at the University of Strathclyde in Glasgow. Of the nearly 50 yachts designed and delivered by EOI, 13 of them are within the top 100 largest yachts.

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

# Shaping the yachts of the future

Interview with Stefano Vafiadis,  
Yacht Designer, Studio Vafiadis & Associates



The yacht industry is undergoing a renaissance. After several difficult years, the market is finally expanding again. This growth gives us a unique opportunity to create iconic vessels that will shape the future of the market and accelerate the evolution of yacht design. In our family studio, we are already looking ahead and taking advantage of this positive trend. We have recently launched several exciting new vessels, including the first in our DOM line, tailored to a dynamic and modern lifestyle.

As designers, we should focus on creating unique vessels inspired by our artistic passions and tailored to the needs and desires of owners. In my case, my passions revolve around architecture, sailing, cars, art, design and social life. I combine all these aspects to create a universe that reflects the dreams and wishes of the owner, and, most importantly, his or her passions too.

Looking ahead and judging from yacht design trends, I expect we will see a lot less formality than in the past. I anticipate more open spaces, a greater focus on social life and a relaxed feel. Yachts will be more dynamic and user-friendly, with easier boarding and quicker access to

the water. Tenders will get bigger and bigger. I also expect that the concept will shift away from the idea of a floating building and more towards being close to the sea.

Using lots of glass helps to achieve this blurring of boundaries between the interior and exterior. It is great that classification societies have started taking a more open approach to glass in recent years. As a result, we are seeing many new beautiful designs incorporating large glazed surfaces. This is a nice example of what we can achieve when design, rules and the market all converge and go forward in the same innovative direction.

In my opinion, classification societies do their best work when they follow – or even anticipate – market trends and help to encourage progress and innovation. That is why I have always had such a wonderful experience with RINA. RINA experts understand the needs of designers and have an open-minded approach to innovative ideas. Their flexibility and the friendly response I receive every time I deal with them are simply fantastic.

Of course, class rules and standards are essential for



Courtesy of Studio Vafiadis



Courtesy of Studio Vafiadis

ensuring safety and improving functionality on board. We take the rules very seriously and incorporate them into the design in a holistic, organic way. All good designers consider these standards right from the start of the conceptual phase in order to define a clear framework for the design.

In the near future, I anticipate a greater crossover between different types of vessels. Rigid definitions are increasingly breaking down. We already see this happening in the automotive industry, with new car designs refusing to fit easily into existing categories. I am therefore convinced that the future of yachts is hybrid, both in terms of propulsion and design. This mix of styles and functional elements will make yacht design even more interesting as we move forward.

It will also make yacht design more challenging, so designers and classification societies need to quickly improve communication on both sides. Easier, faster feedback on projects will help us all to achieve more ambitious and innovative designs. Like design, communication is about developing strong human relationships. That is why I am proud to be part of such a positive partnership with RINA. It is incredibly beneficial for our studio and, more importantly, for the quality of our owners' boats.

Taking advantage of digitalisation and the development of new tools like social media and instant messaging apps will help us to improve communication on a global scale.

Despite the benefits of digitalisation, I believe pen and paper will always have an essential role to play in the work of a designer. Computer modelling is useful for refining designs and testing out ideas, but without real ink and paper it is easy to start off in the wrong direction. Drawing and sketching are the "big bang" at the start of each of my projects, helping to generate creative ideas that drive innovative designs and bring passions to the fore.

## STEFANO VAFIADIS

Born in Rome, Mr Vafiadis grew up in a stimulating cultural context where he learned to love art and architecture. His passion for boats started when his father Georges Vafiadis, an established yacht designer and founder of Studio Vafiadis & Associates, took him to visit a shipyard in Italy to see one of his boats under construction.

After completing an architecture degree at Roma Tre University, Stefano Vafiadis moved to London to work in a high-end residential architectural office. After this positive British experience, in 2012 he came back to join the family studio.

In 2013, Mr Vafiadis was awarded the prestigious title of Young Designer of the Year at the ShowBoats Design Awards, now known as the Boat International Design & Innovation Awards. He has since designed many successful new yacht lines and concepts for some of the most important shipyards in Italy and abroad. Among other projects, he has worked on iconic yachts including the 72m O'Pari 3 (now Natalina A.) by Golden Yachts and the 50m Elsea by CCN.

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

# Utopia IV: the Porsche 911 of the Florida coast



## Interview with Federico Rossi, Chief Operating Officer, Rossinavi

We spend a lot of our time at Rossinavi working with clients to understand their vision and what they really desire to create. What will they use the yacht for? Where? With whom? What kind of lifestyle do they have? What is their character? Is speed a big factor or is comfort more important?

Generic yachts, built without a specific owner in mind, don't excite our customers. We are seeing rising interest in vintage boats and new luxury yachts inspired by heritage designs, like M/Y Taransay, our 2015 replica of a 1929 British-made boat of the same name. The market is clearly changing its focus, and we must stay on top of new trends while keeping the boat at the centre of our vision. Through investment and innovation, we are reinterpreting and reinventing our yachts, not just in terms of how they look but also how they will be used.

I am passionate about research and development that will drive the brand forward in terms of the yacht design and building techniques of the future. Through a partnership with the International University of Monaco in 2016, for example, we commissioned research on

superyachts and millennials. We have since used the findings to develop three new yacht concepts (Attitude, Project I-Tron and Mark 48) aimed at future millennial yacht owners.

We would never try to convince someone to buy a generic yacht that was created without their lifestyle and desires in mind. The perfect boat for a client is a synthesis between their needs and our nautical knowledge.

Launched this year, M/Y Utopia IV embodies our innovative approach to meeting the specific needs of individual clients. The inspiration came from a market observation in one geographical area: the south of Florida. Many American yacht owners like to spend their time navigating between Miami Beach, Downtown and the islands of the Bahamas, which are close by. The draft in this area is very shallow.

We thought: how can we design a fast, good-looking superyacht with a really shallow draught, efficient in its range of navigation, with a smart propulsion system and



Courtesy of Rossinavi



completely tailor-made? And so the Utopia IV was born: a 63m superyacht with a draft of only 2.10 metres.

Arrabito Naval Architects carried out the naval architecture and marine engineering for the Utopia IV project, along with technical monitoring of the construction (see *box*). She is a big tri-deck yacht with everything you could desire to live comfortably on board. She is sporty and fast, with a top speed of 33 knots – worthy of the very fastest 60+ metre superyachts. She is also the most silent in her category, achieving the highest possible score in RINA's Comfort Class. Her design has echoes of the Porsche 911. So she's a perfect boat for the Florida coast: swift, comfortable, gorgeous-looking and with a shallow draft. She'll be the only 63m superyacht docked in Downtown Miami!

The hull is of the fast displacement type. She is powered by four 2,600hp MTU M96L engines, coupled with Rolls-Royce Kamewa waterjets for steering. The engines are light, efficient and well-tested on the market. One major benefit is that through smart utilisation of the two pairs of engines, we can extend the life of the propulsion system and minimise fuel consumption.

M/Y Utopia IV demonstrates how we always strive to find the perfect solution for the needs and desires of our clients. In our efforts, we are greatly supported by class societies and consulting engineers. Rossinavi's very first ship was classed by RINA. We have since had the opportunity to work with other class societies, but our technicians continue to maintain a strong relationship with RINA surveyors and our specifications always indicate RINA as the main certification body.

Our yards are busy with several commissions for American clients in 2018 and 2019, as well as our first ice-class vessel, King Shark, for which Arrabito Naval Architects is also responsible for the naval architecture and marine engineering. We look forward to continuing to push the boundaries of custom superyacht design over the next years.

## FEDERICO ROSSI

Federico Rossi is Chief Operating Officer (COO) of Rossinavi. He was born in the Tuscan seaside town of Viareggio to a family of artisans. His father Claudio and uncle Paride established a reputation for the high-quality metal construction of fishing boat hulls and Federico grew up alongside his cousins within the family business. Federico joined Rossi Shipyard full-time in 1998, when he took over the Pisa production unit. At this time, Federico also began to oversee the yacht construction arm of the business. Federico continued to grow Rossi Shipyards and, in 2007, evolved the company from operational specialists and suppliers into the brand Rossinavi, a leading builder of custom-made luxury yachts in metal. As COO, Federico saw the brand through the global financial crisis and, in 2010, opened the company's fourth production unit in Viareggio.

[www.rossinavi.it](http://www.rossinavi.it)

## Arrabito: naval architects for Utopia IV

Having designed nearly 3,000 hulls since the company was founded in 1980, Arrabito Naval Architects was clearly the right partner for the challenging Utopia IV project. Every element, from the innovative hull form to the choice of propulsion and complex aluminium structure, was carefully calculated, calibrated and tested by them. The result was a fully optimised boat in all aspects, combining maximum strength and power with minimum weight. Arrabito Naval Architects also carried out the technical monitoring of the construction on behalf of the American owner.

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

# RINACube, a digital cockpit

In a world where everything is connected, are superyacht owners getting the most out of their data?

Like the rest of the marine industry, the yacht sector is experiencing an explosion in data. While previously we had the challenge of gathering sufficient information, we now seem to have too much. These days, a superyacht is monitored and operated by different teams of people, on board and ashore, with the help of several digital tools addressing various aspects: predictive maintenance of critical equipment, procurement and cost control, electronic logbooks, tracking and performance management, comfort while sailing, piracy and security warnings...

A single tool that integrates all the digital solutions and allows different teams to collaborate easily will enable the owner to have a holistic view of their asset at any time from their smartphone or tablet. With the right partner, this can vastly improve the customer experience. With the wrong partner, it can become complex and risky. How do you unify data that resides in multiple places (including with third-party cloud providers) and ensure compliance with regulatory, security and privacy laws like the GDPR?

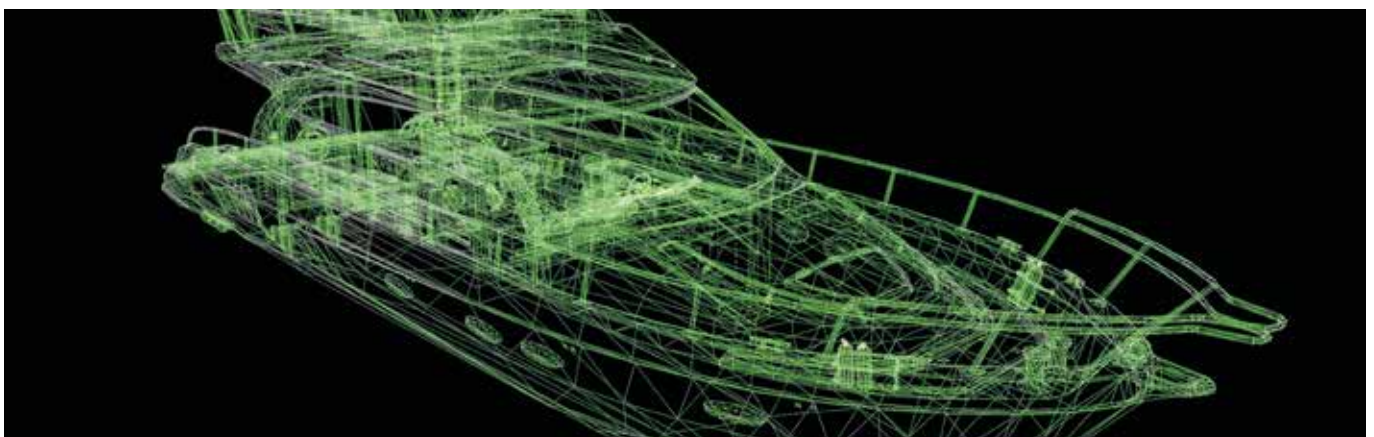
The answer is smart integration. Integration is the primary feature of RINACube, RINA's digital platform. Tailored to the needs of superyacht owners, RINACube provides a 360-degree view over the technical, comfort, recreational, environmental and safety/security-related aspects of the asset.

For example, imagine collecting data from all the systems on board, combining them with real-time weather conditions and applying them to a 3D digital model of the yacht. This will allow the Captain to continuously control noise and vibration issues, as well as take the most effective evidence-based decisions to enhance the cruising experience. This solution is not only available with real-time data, but can also be projected to forthcoming days: the Captain can use the digital model and weather forecast to plan the best route.

Superyacht owners can also obtain direct operational benefits through the platform. As an independent third party with a 360-degree view of ships and shipping, RINA is able to efficiently connect users with different marine service suppliers. This easy and direct data exchange can reduce costs and speed up operations. In addition, the powerful augmented reality embedded in RINACube enables the use of mobile devices to help the crew react to difficult situations and deal with maintenance operations. When a problem occurs, the crew can contact the supplier, explain the situation by sharing actual data and decide if an intervention is needed.

RINACube offers RINA's core classification services with intuitive applications designed to make it easier for customers to obtain the services they need. This includes issuing e-certificates, booking a survey or exchanging documentation online to obtain an approval.

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Marine Innovation Sector Head



# Digital training solutions for yachts

Digital technology is advancing at such a rate that innovation almost seems normal these days. We take it for granted that major global changes in technological trends now take place over months rather than generations. The application of digital technology touches every aspect of our daily lives, from how our children learn at school to the way we navigate and access the internet while out at sea.

Social acceptance of new technologies plays a key role in their success – and not everyone embraces the modern world immediately. Wearable technology, for example, has been available since the early 1980s, yet has only become popular in the last few years.

The same is true for the training industry, which has seen a wide range of new and exciting technologies over the years. Until recently, widespread adoption has been constrained by high costs and a perceived lack of business benefits over more traditional training alternatives. Happily, things are changing. For example, although we have seen many practical examples of virtual reality (VR) since the mid-1980s, it was initially slow to take off within training. Today, VR use is expected to reach 171 million users globally in 2018. An estimated US\$13.9 billion was spent on VR and augmented reality (AR) in 2017.

VR and AR are good examples of the potential of innovative digital technologies in training. Despite their common association, they are quite different. VR is an immersive experience in which the learner is presented with an entirely 3D digital environment via a headset or “goggles”. The learner “physically” interacts with the 3D world by moving their head relative to the digital content. They can

also use hand controls to interact with virtual objects – turning a wheel to make a course correction on a yacht, for example. Applications for this type of technology are endless. Imagine new crew members being able to practise procedures and safety drills on a yacht before going on board. Using VR, new owners could gain experience steering or berthing their boats without risking damage in real life.

AR, sometimes referred to as mixed reality, also requires a headset or “glasses”. Rather than being immersed in a separate 3D world, the learner continues to see their actual environment. The glasses simply project 3D content “on top” of the view, augmenting their experience with new information and instructions. AR can be used to support training in engine maintenance, for example, by projecting digital instructions on top of an actual engine.

Innovative technologies that offer tangible training benefits are now both available and affordable. RINA’s in-house digital multimedia experts provide first-class, industry-leading expertise that brings widespread benefits to training in the yacht sector and many other industries.

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*Corporate Digital Multimedia Solutions Head*



# Hot topics in the UK Yachting Centre

During 2018, the RINA UK Yachting Centre has been involved with an increasing number of new class projects in the Netherlands, the UAE and China, where we are managing plan approval activities. The UK market remains buoyant and we continue to carry out plan approval and survey support for the two largest UK yacht builders, Sunseeker and Princess, who are long-established RINA clients locally.

The UK yachting industry has a relatively small number of yacht manufacturers in the 30m+ category and therefore has one of the highest ratios of “deliveries to number of shipyards” globally. Around 90 percent of UK deliveries are within the sub-500 GT motor yacht sector and use composite construction methods. The UK has a lot of expertise in composites and its application in superyacht construction is clear.

Although most RINA UK yachting activities involve motor vessels, sailing yachts are still an area of great significance. Spirit Yachts, based in the east of England, are currently building their first classed yacht with RINA, the 111. RINA is one of only a few classification societies that still have rules for wooden vessels. RINA's rig rules and certification have now been in use for a number of years and demonstrate compliance with Flag requirements for commercial sailing yachts.

Despite the fact that the UK holds a relatively small share of the global order book for new-build superyachts in terms of gross tonnage, the wider UK yachting industry is involved globally to a far greater extent than one might expect. RINA UK's portfolio of clients includes many UK-based designers, naval architects, marine engineers and consultants, well known for providing services to yacht builders internationally. UK-based engineering and manufacturing companies continue to contribute a large market share of marine equipment in the yachting sector, including propulsion machinery, steering gear, spars and rigging, glazing systems and firefighting and life-saving appliances.

Looking ahead, 2019 will undoubtedly involve some uncertainty in the UK, particularly due to the planned departure of the UK from the EU at the end of March. Some UK class societies that act as notified bodies for the Recreational Craft Directive (RCD), for instance, will have to relocate their notified body head office to another EU member state and apply to a new accreditation body in order to continue to work in the RCD sector.

Fortunately, RINA is already notified through Accredia in Italy, via the RINA headquarters in Genoa, so RINA UK can continue to support many UK small craft manufacturers, as we have done for more than 20 years.



Courtesy of Sunseeker



MARPOL Annex VI Tier III, which sets limits on SO<sub>x</sub> and NO<sub>x</sub> emissions, is a hot topic of conversation within the sub-500 GT sector in the UK. The Tier III requirements do not apply to sub-500 GT vessels constructed before 1 January 2021 that are 24 m or over in length and designed and used solely for recreational purposes. However, although 2021 is still some time away, many manufacturers are currently developing new models which will still be in production then.

Engine room arrangements are set to change quite significantly in order to incorporate Selective Catalytic Reduction (SCR) systems and even greater attention will need to be paid to engine room ventilation. Many manufacturers are looking to reduce engine sizes in order to fit SCR systems within the same engine room footprint and not impact heavily upon guest accommodation. Therefore, a shift towards slower speed displacement hull forms and longer range is likely. This also ties in with the recent trend for explorer-style yachts.

Hybrid propulsion systems incorporating main engines, generators and lithium-ion battery banks are now being incorporated into the design of much smaller yachts. The main challenges relate to location, containment, ventilation and firefighting requirements of large lithium-ion battery banks, which are still

uncommon below 500 GT. The desire to provide a short period of silent running is still the main driver, along with flexibility of power supply for services. RINA has rules for the certification, installation and testing of lithium-based storage batteries and an additional class notation for hybrid propulsion plants.

RINA's Green Plus additional class notation has been used for years by many shipyards in order to demonstrate their green credentials. Within the 2018 rules, a new additional notation, Dolphin Yacht, can be applied by shipyards to ensure a low environmental impact from underwater noise radiation from yachts.

Maybe high-speed, fast-planing yachts over 24m will eventually become a thing of the past?

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Courtesy of Sunseeker

# Additive manufacturing for yachts

Additive manufacturing (AM) is one of the most disruptive technologies of this century, with huge potential to transform design and manufacturing processes. In some industrial sectors, however, resistance towards new technologies, along with superficial knowledge of the potential and capabilities of AM, are proving a big obstacle to innovation.

The marine industry, including the yachting sector, faces the additional obstacle of uncertainty over certification. AM is a new technology and standards are not yet fully defined, leading to scepticism and reluctance to use AM-made parts onboard. RINA has taken this need into account and released general guidelines for the certification of metallic AM parts. We hope this will speed up the process of innovation in this area.

All changes, even disruptive ones, take time to grow and evolve. AM is no different, spreading slowly but surely across many important industrial sectors, including space. In the yachting sector, we are already seeing successful examples of interesting and challenging projects using AM. These range from small components to major structural parts and even the entire hulls of small yachts. Not only polymeric materials are used, but also metallic ones. Of course, there are still challenges in this sea of opportunities, mainly due to the dimensions of the components required for yachts and the technological maturity of big AM machines.

What is the solution, or solutions? RINA has developed strong know-how in many areas relevant to AM, from

feasibility studies to alloy design, refining the skills to identify opportunities in every industrial field. We can say for sure that AM is not the solution to all of our problems in the yachting sector or elsewhere. However, it can be extremely useful in specific situations. We see the greatest added value with highly customised items made in limited numbers.

This is one reason why AM has so much potential to benefit yacht design and building. The opportunities are huge. Take materials, for example. Even though AM offers fewer options for metals than for plastics, we can still use it to offer customers a broader range of appropriate materials and post-processing treatments. Speed is another benefit. Geometrically complex parts can be designed, modified and manufactured much more quickly with AM than with conventional machining processes. Even if the cost of the part may exceed the market price, this is not the most serious issue for luxury vessels, where it isn't uncommon to see parts made of precious metals. There are even big benefits in niche areas. Vintage yachts, for example, can take advantage of AM by rebuilding 3D models of old parts for restoration.

With the help of competence and experience, we can transform the opportunities offered by AM into concrete applications in the yachting industry.

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# The voice of Masters

Can you provide a picture of your experience with RINA, your feelings and any suggestions?



**CAPTAIN MARIO ALLARA - M/Y THE SHADOW**

During my long career as a Captain, I have dealt with various classification societies. As an Italian, I'm therefore especially pleased to confirm that I have always had a good experience with RINA.

In particular, I appreciate the competence and professionalism of RINA's experts. We have worked together many times over the years to solve problems. It is comforting for a Captain to be able to rely on professional and specialist technical advice every time an issue arises.

For example, RINA's team has recently helped me change the status of a yacht from "commercial" to "private" and renew the certificates to take into account this change. They have also recommended the best solutions to meet the new IMO regulations on ballast water management. Their support in these important decisions helps to ensure the safety of the yacht and achieve the best outcomes for the owner.

I appreciate our long relationship and look forward to collaborating with RINA for many years to come.



**CAPTAIN VADIM ZABEIDA - M/Y WILDCAT, 42M**

My first acquaintance with RINA took place some 10 years ago when a motor yacht I had just joined had to go through a routine annual survey. I did not know what to expect and therefore was reasonably nervous about the whole process.

Having prepared the relevant documentation and having contacted RINA to make a request for services, I began to realise that it would not be as stressful as I envisaged. My request was acknowledged very quickly and then I was put in contact with the designated surveyor. We spoke on the phone to discuss the scope of the inspection, exchanged a few documents and then set a date for the visit. During the survey I was very pleased to notice that the surveyor was very experienced, familiar with the yacht, professional and most importantly friendly and a pleasure to work with. We did not experience any difficulties during the inspection and it was successfully completed by the end of the day.

Since that first experience all my subsequent yachts were classed and surveyed by RINA. Not only did we have to arrange annual inspection, but we also had to go through a five-year survey and very recently through the entire newbuild process. The latter was truly a very interesting and fun experience! If I have another opportunity to be involved in a new construction I would be happy to repeat my experience with RINA as it would give me confidence in a timely and proper completion of the project.

Another adequately important note that is worth mentioning is how RINA can collaborate with the Flag State Inspectors to conduct the two inspections on the same day or in the same period. It makes the process of blending two surveys into one beneficial to the yacht as it saves time and resources. On top of that, having two surveyors on board at the same time is extremely valuable as you can learn so much from them during the entire process.

In the future I hope that my co-operation with RINA will continue on the same high customer-orientated level and that we will work together closely to further improve our collaboration.

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*RINA Corporate Image®*