



BEST PRACTICES
**FOR ECO-
FRIENDLY
YACHTING**

VOLIV



Sustainable
Yachting
Network



PRINCE ALBERT II
OF MONACO
FOUNDATION

EDITORIAL

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Since 2006, the Prince Albert II of Monaco Foundation has strived to protect the Earth and mitigate the devastating consequences of a changing climate. By supporting both private and public projects, the Foundation works to limit the impacts of climate change, safeguard biodiversity, and promote the sustainable management of water and natural resources.

In 2019, the Foundation decided to further its effort supporting the transformation of the yachting industry into a more modern and environmentally friendly sector. In partnership with the Yacht Club de Monaco, the Cluster Yachting Monaco, the Secretariat of the Ramoge Agreement and the Monaco Yacht Show, it has launched the Sustainable Yachting Network, an initiative which wants to gather, connect, and inform actors of the yachting industry around the development of eco-friendly solutions and practices.

Launched by the Prince Albert II of Monaco Foundation in 2016 to promote eco-friendly yachting practices, this guide is a tool to inform the yachting industry in a condensed and effective manner. With more content, we hope to give you a more complete image of eco-friendly yachting's solutions and possibilities. This industry is evolving and has the tools to evolve even more to respond to the biggest concerns of our society today, the protection of our ocean and our environment at large.

The fourth volume of this guide exemplifies changes that have occurred in past years and nevertheless hopes to inspire continuing innovation for years to come. Following an increase in customers' demand for sustainable solutions coupled with regulations trying to enforce such much-needed change, the industry is understanding that its vitality and its resilience lies considerably on whether or not it will be able to truly become an environmentally friendly sector. New propulsions, new raw materials, new methods and practices are starting to be developed but will need much more effort in order to permanently change the sector into one that manages to respond to the tremendous environmental challenges of the 21st century.

Yacht owners, builders, designers along with all stakeholders in the sector have the power to affect real change today that will pave the way for a sustainable tomorrow—in yachting, marine transportation, and the luxury business. We hope this guide inspires you to participate in that change.

Mr. Olivier Wenden
Vice-President and CEO
Prince Albert II of Monaco Foundation





The Prince Albert II of Monaco Foundation has promoted sustainability and eco-responsibility in the yachting sector since its inception in 2006.

In January 2010, within the initiative “Monaco s’engage contre la déforestation” (Monaco makes a commitment against déforestation), the Foundation launched the Wood Forever Pact to promote eco-responsibility in the yachting sector, specifically in the purchase of sustainable wood products. This program has been a forerunner of the sustainable approach in yachting and incremental in helping several yachting actors be more proactive on the topic.

Today the context has changed and the industry is much more aware of the crucial importance of taking environmental impact into account, although the potential for progress is still very much there. This is why in replacement of the Wood Forever Pact (but still carrying its mandate along with more), **the Foundation wishes to take a step further by creating the Sustainable Yachting Network (SYN). The mission of the SYN is to gather, connect and inform actors of the yachting sector around the development of sustainable solutions in order to help the transformation of the sector into a true modern and responsible industry.**

The SYN’s Steering Committee includes the Monaco Yacht Club, the Monaco Yacht Show, the Ramoge Secretariat, the Cluster Yachting Monaco, and the Prince Albert II of Monaco Foundation. It wishes to cover all facets of yachting including the construction/purchase of raw material and maintenance/management as well as all interactions with the marine, waterway, and coastal environments.

The SYN was announced in January 2019 by H.S.H. Prince Albert II of Monaco at the Boot Düsseldorf. **As of September 2019, the network already gathers more than 160 international actors** and has already supported and co-organized various successful activities in its starting year - notably the Yachting Environment Symposium during the Monaco Ocean Week in March, the sustainability conferences during the Solar Energy Boat Challenge and the first meeting of the Monaco Hydrogen Working Group both in July.

The SYN has defined two main areas of action:

- **Organizing or supporting match-making events** meant to effectively link sustainable solutions with corresponding needs and develop constructive partnerships.
- **Producing information tools** which will present new solutions and technologic advancements, projects and regulations which help the yachting sector to have a better impact on our planet. This annual guide being one of the core tools of that information sharing.

SYN Actors

The network actors profiles include:

- Shipyards (both build and refit)
- Designers (both interior and exterior)
- Equipment providers
- Toys and tenders providers
- Sales, charter and management companies
- Captains and crews
- Raw material suppliers
- Federations and associations
- Regulators and certification providers
- Media
- Environmental organizations
- Events and task forces
- Education institutions
- Service providers specialized in yachting (bank/financing for ex.)
- Yacht owner

Want to become part of the network?

Contact syn@fpa2.org

RULES & REGULATIONS

Regulators are certainly some of the main stakeholders shaping the yachting sector of tomorrow. In order to curb the environmental impact of sea-faring vessels, the International Maritime Organization (IMO) has pushed for reductions in the emissions of harmful substances and greater cooperation between different sectors involved at sea. The Red Ensign Group (REG) Yacht Code, for its part, has detailed rules to ensure the safety of yachts and their passengers.

REGULATION

IMO & MARPOL

The IMO Marine Environment Protection Committee (MEPC) met for its 74th session at the IMO Headquarters in London in May 2019.

An important outcome of this MEPC 74 was the **reinforcement of MARPOL Annex VI Tier III**. MARPOL Annex VI Tier III regulates ships' SO_x (sulphur oxides) emissions, which are highly harmful to our ecosystems. **After January 1st 2020, permissible sulphur content on ships' fuel oil will cap at .5% except for designated Emissions Controlled Areas (ECA) where the cap is at .1%** (The IMO projects a 77% drop in SO_x emissions from ships in the 2020-2025 period once the rule is in place). France, with the support of Italy, Spain and the Principality of Monaco, have proposed **to designate the Mediterranean Sea as an ECA**. A road map was handed in June 2019 by REMPEC (The Regional Marine Pollution Emergency Response Center for the Mediterranean Sea) which could lead with enforcement of the region as a designated ECA in 2024.

During MEPC 74, certain actors in the yacht industry proposed to delay the regulation's implementation for an additional five years. The request, however, was rejected. The Committee moved forward approving detailed guidelines, guidance documents, and circulars that facilitate the implementation of the 0.5% Sulphur limit.

MEPC 74 also adopted resolution MEPC.323(74) which encourages cooperation between the port and shipping sectors to be proactive in reducing greenhouse gas (GHG) emissions from ships with onshore power supply from renewable sources and the promotion of low-carbon and zero-carbon shipping.

For more info

Consult the 2019 Guidelines on consistent implementation of 0.50% Sulphur limit under MARPOL Annex VI and other documents available at www.imo.org

REGULATION

REG YACHT CODE

The REG Yacht Code entered into force on January 1, 2019. The Code consolidates international industry standards and grants flexibility to innovation from designers and naval architects.

The Code comprises a Part A, Part B, and Common Annexes applicable to both parts. Part A concerns yachts over twenty-four meters carrying no more than thirteen passengers. Part B covers pleasure yachts of any size which carry between thirteen and thirty-six passengers.

The new Code includes what is known as a "retrospective application clause." This means that sections within the Code apply to new and existing vessels certified under the Large Yacht Code (Part A) or Passenger Yacht Code (Part B).

For more info

Consult the REG Yacht Code at <https://www.redesignngroup.org/media/1094/reg-yacht-code-january-2019-edition-part-a.pdf>

INDUSTRY-WIDE INITIATIVES



Commendable pooling efforts have recently emerged, prompting initiatives that, understanding the importance of environment preservation, can help the yachting industry become a modern and sustainable sector. These burgeoning groups reflect the potential of positive change within the yachting industry.

ISO TASK FORCE

Established at the end of 2018, the International Standards Organization (ISO) Task Force on “Environment & Sustainability” represents a recent initiative with a lot of potential to help global sustainability efforts for the yachting industry. The task force’s objective is to **evaluate the possible creation of an ISO Working Group** that will consider the environmental impact of large yachts. A working group would be **responsible for developing ISO standards** covering the design, construction, equipment, methods, and technology used in the building and operation of large yachts. Discussions have included measuring the sustainability of yacht construction, reducing GHG emissions, and managing energy use onboard. With ISO standardization, the task force hopes to shift the yacht industry’s paradigm on sustainability.

For more info

Contact Jo Assael, Task Force Coordinator at jassael@dohle-yachts.com

WATER REVOLUTION FOUNDATION + YACHTING 4.0

Cognizant that the yachting industry depends on the well-being of the oceans, the Water Revolution Foundation (WRF) is determined to promote and invest in marine protection, management, and restoration. By allying ocean conservation efforts and superyacht actors, the WRF hopes to empower the superyacht industry to take responsibility for protecting life offshore. The WRF’s activities include implementing standards to **define sustainability in the superyacht industry, using new technology and information to reduce wastage, use less materials, and optimize manufacturing processes**. This joint effort also provides for sector-wide educational programs and support of ocean conservation projects.

In partnership with the WRF, **Yachting 4.0 is a new tool which supports decision-making in yacht production**

processes within a program. As a benchmark, the program enables quantifying the environmental impact of construction processes.

For more info

Contact Robert Van Tol, Co-Founder and Executive Director, at robert@waterrevolutionfoundation.org

REV OCEAN

The REV Ocean initiative is currently building the largest ocean research vessel in the world and is expected to begin science missions in mid-2021. The vessel is built with a ‘green’ philosophy and is incorporating sustainable solutions such as a heat recovery system for hot water delivery and freshwater generation, various applications for energy efficiency and waste management, soundproofing, and decks covered in either synthetic coatings or controlled wood materials. **Furthermore, the project has launched three ambitious solutions** which will engage and inspire other yachting actors to help in ocean conservation:

- **The World Ocean Headquarters: an ocean research and innovation center** bringing together private, public, and NGO initiatives in the maritime sector to provide sustainable solutions to the challenges facing our oceans.
- **The Ocean Data Platform: A unified global ocean data platform** to help make better decisions and enable efficient conservation and use of ocean resources.
- **Plastic REVolution Foundation: an initiative to combat plastic pollution**, encourage waste recycling/energy production, and encourage local employment opportunities in recycling.

For more info

Visit www.revocean.org

SPORT AND SUSTAINABILITY

**Inspiration for many yacht builders and designers, boat racing could also appear as an inspirator when it comes to implanting more sustainable solutions in the nautical world.
Here is why.**

For one week in July, researchers, academics, engineering students, and professionals working in the yachting and energy sectors from all over the globe gather at the Yacht Club de Monaco for **The Monaco Solar & Energy Boat Challenge**. This **gathering of innovators showcases alternative propulsion systems solely using clean energy sources**. However, students are at the core of this event, racing with their latest inventions in green technology. In 2019, the TU Delft Solar Boat Team from the Netherlands took home first place in the Offshore Class; an astonishing feat as the trimaran did not stop to recharge and was thus completely solar powered throughout the entire challenge in a 60 km race from Monaco to Ventimiglia and back. The wow factor of this Challenge was heightened with the event speed record set by an electric boat designed by Italian team Anvera ELab: 74 km/hour (40 knots)! **The 2020 edition of the Challenge will take place from 1 July through 4 July.**

Dubbed as one of the toughest team challenges in sport, since 1973 **The Ocean Race** has proven to be a true test of human ambition, and on top of that **has managed to develop a pioneering sustainability program**. In 2017-18, The Ocean Race's unique platform actively contributed to the global movement against plastic pollution, encouraging millions of individuals, businesses and governments to commit to ocean health restoration.

[For more info](#)

Visit archive.theoceanrace.com/en/sustainability.html

[For more info](#)

Visit mcsebc.org



The Prada Cup - the Challenger selection series - and the 36 **America's Cup** match will take place in Auckland in 2021. To stress the vulnerability of our oceans before a changing climate, the Challenger of Record for the 36th America's Cup has partnered with the Intergovernmental Oceanographic Commission of UNESCO to support the launch of United Nations Decade of Ocean Science for Sustainable Development in 2021. This partnership marks the cornerstone of the Prada Cup ocean science and sustainability program, **Attitude Ocean**. The Challenger of Record for the 36th America's Cup is committed to leading by example and **applying sustainable solutions** throughout the America's Cup World Series and Prada Cup events; while leveraging this unique platform to **inspire, educate and advocate for the restoration and protection of our oceans** for generations to come.

For more info

Visit www.americascup.com

The sailing boat **Malizia**, skippered by Boris Herrmann and team founder Pierre Casiraghi, is a celebrated IMOCA 60 vessel, which arrived 5th in the 2019 Route du Rhum, helped Greta Thunberg cross the Atlantic in August 2019 and will participate in Vendée Globe 2020/2021. Starting in 2018 and continuing over the next three years, **the boat will collect CO2 data over 70,000 nautical miles of offshore racing**. Malizia has partnered with prestigious scientific institutions like the Max Plank Institute for Meteorology and GEOMAR that will help study the ongoing effects of CO2 in the oceans. As part of its global mission, each stop the sailing boat makes the Malizia team will have programs in place to **educate and empower kids on environmental protection**.

For more info

Visit team-malizia.com/myoceanchallenge/

Oceans Lab is working to replace fossil diesels for cleaner offshore and inshore transport, by **advancing safe and practical application of fuel cells and renewable fuels for marine transport**. Following successful demonstration of drop-in biodiesels, Oceans Lab is now developing advanced fuel cell packs and hydrogen storage systems which are trialled and tested offshore. The technology enables large amounts of clean energy to be stored aboard, for high power propulsion as well as auxiliary charging, leaving zero emissions in the vessel's wake.

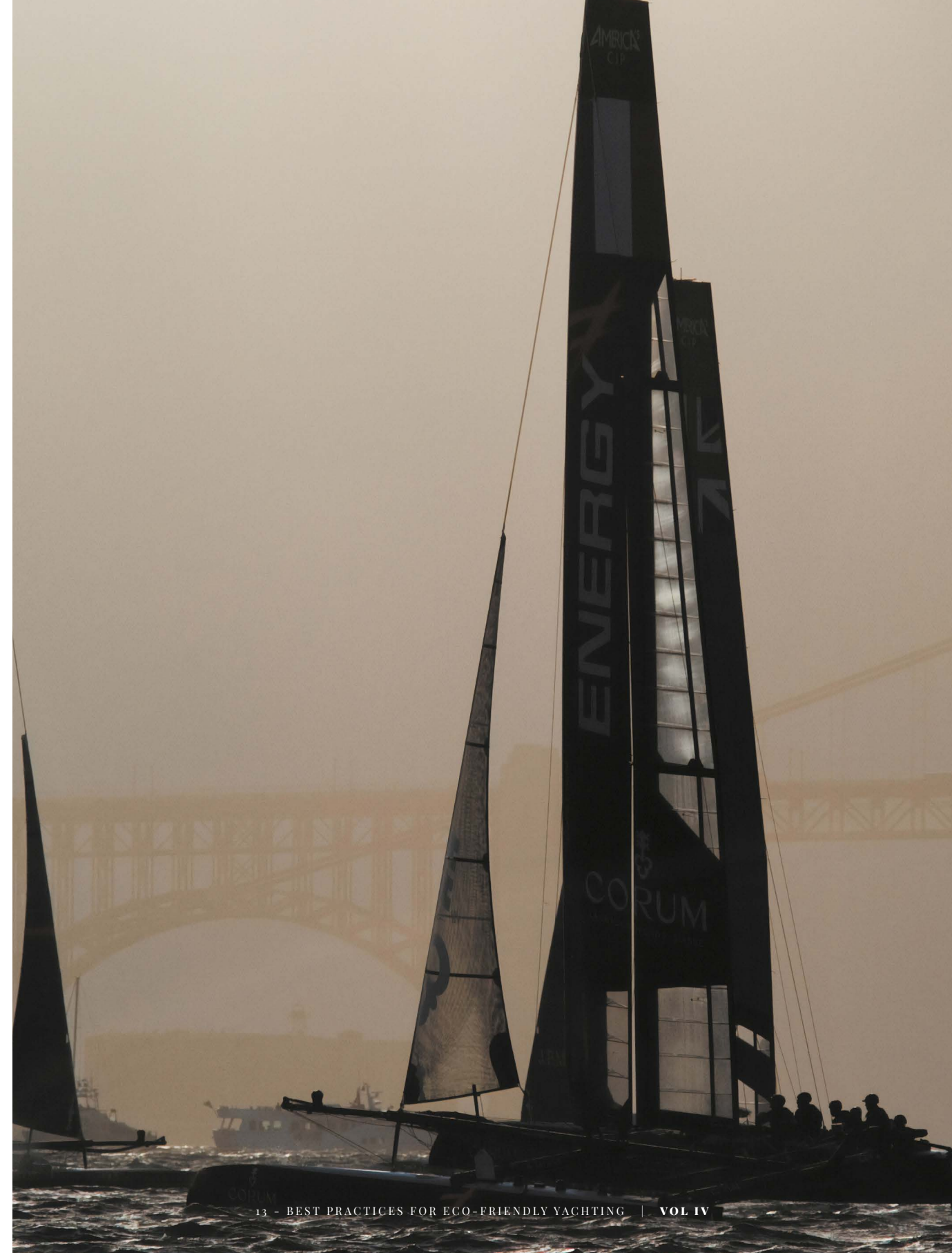
For more info

Visit oceanslab.world

World Sailing, the international governing body for the sport of sailing recently released their **Sustainability Agenda 2030 integrating eco-friendly solutions in their sport standards and core activities**. The document highlights 56 targets aligned with the UN's Sustainable Development Goals 2030. From single-use plastics to water quality, the organization strives to better the world through sport. The **Paris 2024 Olympic & Paralympic Games Organizing Committee**, working with World Sailing on nautical sports, is likewise defining an ambitious **environmental and climate strategy** to leave a legacy of sustainability on world sports. As a first example, it has announced its commitment to be **the first carbon-neutral Games** with the lowest amount of carbon compensation possible, focusing on lowering emissions.

For more info

Visit www.sailing.org



PROPULSION

The race to acquire the most efficient, sustainable, and innovative propulsion is more competitive than ever. The days of diesel combustion engines are far from gone but could very well be counted –even for larger vessels– given the emergence of hydrogen systems and infrastructure; meanwhile electric propulsions are thriving for smaller yachts and tenders. Green, clean propulsion is now accessible, and ready to be developed and embraced by all actors of the yachting world.



SOLUTION

Nicknamed the tesla of the seas, **Silent Yachts' line of luxury yachts** (see picture on the left) **are silent, self-sufficient and emission-free while operating propulsion and on-board systems.** Silent Yachts are fully powered by solar energy, utilizing an electric motor, solar panels and batteries. In 2018, the Silent 64 put the power of solar to the test by completing a transatlantic voyage. The catamaran spent 38 days at sea and covered 5,567 nautical miles traveling from Cartagena, Spain to West Palm Beach, Florida. Silent Yachts offers vessels up to 80 feet long.

SOLUTION

On top of proven green technologies, new very innovative designs and mechanics are coming for yacht propulsion. Since 2018, **FinX develops a bio-inspired underwater thruster to replace traditional propellers on boats, drones, underwater scooters, etc.** This company's innovative technology is based on an electric, undulating membrane that mimics the movement of a fish's fin. This system is not only more energy efficient than a propeller, promising to use up to 30% less energy, it is also safe and less disturbing in marine and lacustrine environments.

SOLUTION

AQUON One (see picture on top), a green hydrogen-powered, 18-meter-long motor catamaran from Zurich-based "Swiss Sustainable Yachts," will set new standards in sustainable yachting upon **entering the market in 2020.** The motor ship's system **uses solar energy to split pure water into green hydrogen by electrolysis.** The hydrogen gas is compressed and filled in lightweight tanks as long-term energy storage. Fuel cells convert the self-made hydrogen back to electricity, which can in turn be used to power the electric engine or appliances on board making it **fully autonomous to operate.** The photovoltaic installation further stores part of the generated electricity in small batteries for short-term energy supply and to balance out peaks.

SOLUTION

Seabubbles, the shipyard which developed **electric propulsion taxis running on hydrofoils**, seems to be at a new point in their development. In 2019 they ran new tests on fluvial ways in Paris and announced that a fleet of taxis will be operating there in spring 2020. They also announced the creation of the Flybus, a ferry vessel that can accommodate 49 passengers and based on the same technology. A technology that, if developed and adapted to open sea conditions, could inspire the yachting world.

RENEWABLE ENERGY

SOLUTION

The world's first network of electric powerboat superchargers launched at the Yacht Club de Monaco in May 2019: Vita superPower™ (see pictures below). Designed to support the use of high-performance electric boats, each station offers AC and DC charging options with a maximum power output of 150 kWh, allowing DC-compatible powerboats to recharge in under two hours. The network is being developed by Vita Yachts, a pioneer in the conception of electric powerboats, propulsion and charging stations. Having debuted at key locations along the French Riviera, the stations will be rolled out globally, paving the way for electric powerboats of the future.

SOLUTION

Energy Observer [see picture on the right], the first hydrogen vessel around the world [101 stopovers in 50 countries] and the first French ambassador for the United Nation's Sustainable Development Goals, is leading the movement on renewable energy sources of tomorrow. Born out of a unique feedback experience acquired on board Energy Observer, Energy Observer Developments has been launched during the Monaco Solar & Energy Boat Challenge in July 2019. The mission of Energy Observer Developments is to offer privileged access to the deployment of clean hydrogen on all territories, and in particular maritime, coastal and isolated ecosystems, which are willing to integrate this formidable energy carrier today. By working on an industrial scale, Energy Observer Developments hopes to put real hydrogen solutions into practice to reach the greatest number of people.



In July 2019, the Sustainable Yachting Network organized the first meeting of the Monaco Hydrogen Working Group. The meeting gathered representatives of several Monegasque institutions and international hydrogen specialists to study the feasibility of creating a hydrogen infrastructure in the Principality. The event showed the developments of hydrogen infrastructures around the globe, and its clear potential as a conveyer of green hydrogen ("green hydrogen": hydrogen carrying electricity created by renewal sources – grey hydrogen carrying energy brought by natural gas or other fossil fuel sources, this method not being a sustainable one). This initial meeting's success will act as a steppingstone for future meetings around the transition of hydrogen energy from a possibility to a reality.

SOLUTION





New energy sources require modern and efficient storage methods. **LOHC (Liquid Organic Hydrogen Carrier) technology stores hydrogen under ambient conditions, which could very well revolutionize the way we use hydrogen.** German company **H2-Industries** provides solutions to implement this breakthrough technology in yachting. Subsidiary H2-Maritime is building the world's first zero-emission while operating all-electric LOHC yacht: an explorer 95 feet flybridge super yacht at the **Nobiskrug** shipyard. Together with the Dutch inland waterway company **PortLiner**, the company will also participate in building the first all-electric inland container vessels. H2-Industries has also developed the first energy-autonomous 71 mega yacht.

SOLUTION

Saule Technologies has developed **lightweight solar cells in the form of thin, flexible foil.** Thin, low-cost and ink-jet-printed, the high performing material harvest solar energy with the use of halide perovskites. Due to the singularity of the perovskite material, **the solar cells generate power even when illuminated by weak light sources (allowing even indoor applications!).** Ink-jet printing, for its part, enables for production in ambient conditions and produces negligible waste. Overcast weather, low incident angles, and artificial light induce the material's operation. Perovskite is also versatile in possibilities for placement—it can cover your entire hull from bow to stern and perform.

SOLUTION

ECO DESIGN

We decided to let famed yacht designers **Espen Øino** and **Marc Van Peteghem** explain design's pivotal role in crafting the sustainable yachts of tomorrow.



Monaco-based Norwegian naval architect Espen Øino has designed over sixty luxury yachts to date for a worldwide clientele.

How can design make yachting sustainable?

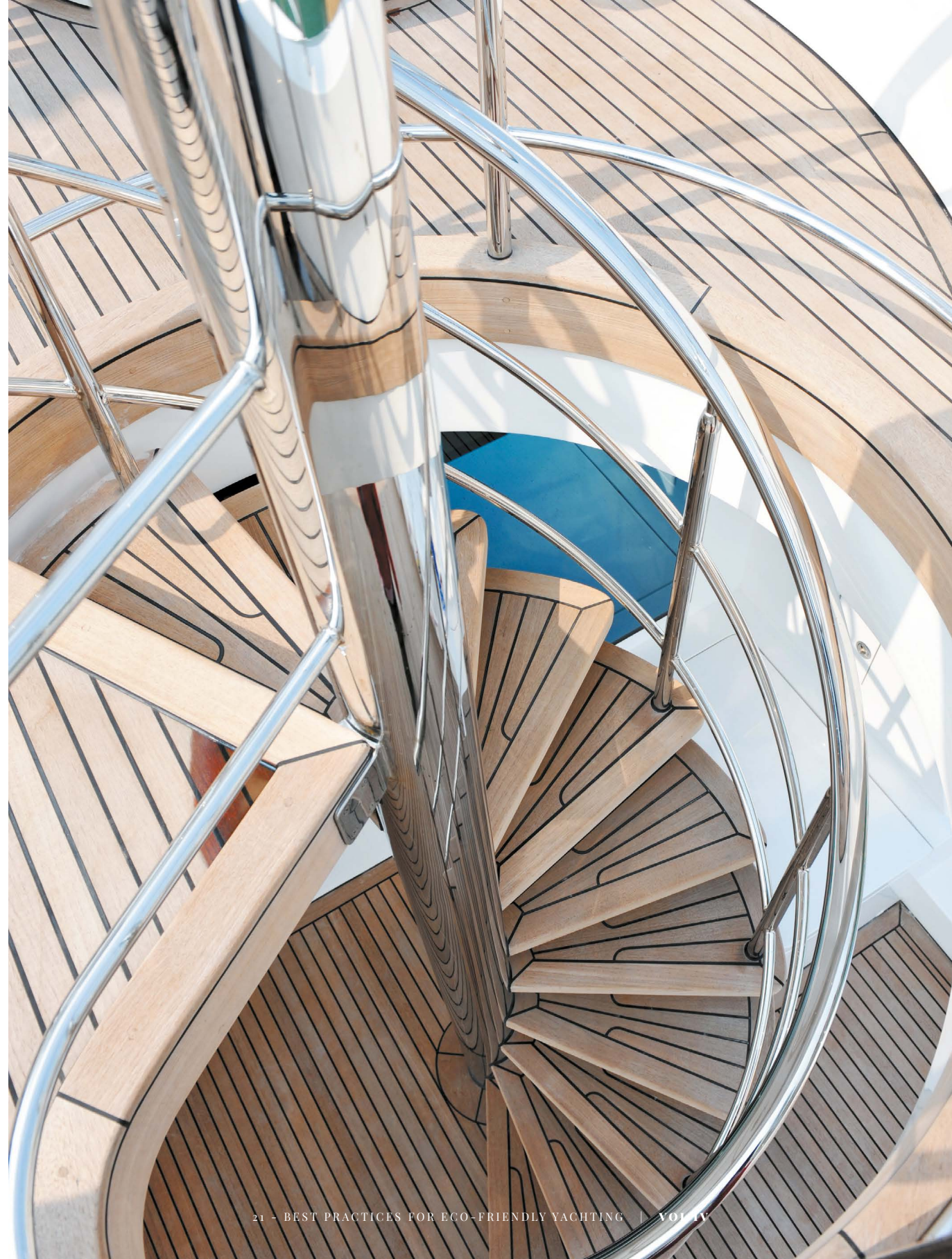
Espen: No singular item can achieve sustainability in yachting. For sustainability to become a reality, a whole range of factors must come into play. However, clever design can contribute to making yachting sustainable. That's where I come in. A yacht is synonymous with freedom and range. The end goal is to preserve these values without sacrifice to the environment.

What does sustainable yachting look like today? What will sustainable yachting look like in the future?

Espen: There is one important principle to understand. A vessel at sea displaces oceanwater according to its size and the conditions at sea. Bigger, heavier hulls displace more oceanwater than a smaller vessel at the same speed. This is referred to as wave-making resistance. This is the most important force to overcome because it is where the most energy is dissipated. In order to be sustainable, we must take back the energy lost and utilize it to our advantage. That is where design plays a crucial role.

By increasing a vessel's length-to-beam ratio, we can counteract, at least partially, wave-making resistance, allowing ships to emit less energy while maintaining speed. Opting for multi-hulls as opposed to singular hulls also make this a reality.

It is important to choose the option of least resistance to optimize sustainability. In the long run, I believe that this design component will make yachting and sustainability one and the same.





Visionary naval architect Marc Van Peteghem is a co-founder of the renowned design studio VPLP, with sail and motor craft projects across the globe.

How can design make yachting sustainable?

Marc Van Peteghem: Design is all about concept and project creation. Sustainability, for its part, is a matter of will from the consumer. We recognize that our business is nothing without the consumer, and so we strive to cater to the sustainable wishes of our consumers.

VPLP comes from the racing tradition. The progressive tools needed to reduce resistance and push advancement further in this sector are embedded in our culture.

What does sustainable yachting look like today? What will sustainable yachting look like in the future?

Marc Van Peteghem: Wind propulsion was the case for 5000 years. It was only 150 years ago that other propulsion systems became the norm. Today, advancing multi-hulls is an option to be considered, as it is the fastest moving platform to date. In the end, technology plus change in human habits will be the deciding factors in bringing about necessary change.

There remains a lot to be done, but there is hope.



SOLUTIONS

OceanWings

OceanWings, designed by VPLP and that have just been added to the Energy Observer Vessel (see page 16-17), delivers a safe, simple, and automated wind propulsion system that does not require a traditionally skilled crew to sail and considerably reduces fuel consumption. Features include a free-standing rig, a 360° rotating mast and an onboard intelligence boat-monitoring software.

VPLP just announced this October 2019 a contract agreement with one of the world's leading aerospace groups ArianeGroup to equip its 121m equipment transport ship from JV zéphyr et Borée-JIFMAR with Ocean wings which will cut off its fuel consumption by 30%.

WASTE MANAGEMENT

SOLUTION

Producing waste is inevitable. How we manage what we use ashore and offshore, however, makes all the difference in protecting the environment.

A good place to start is by limiting the use of plastic in your day-to-day life. **Clear Ocean Pact**, for example, seeks to address plastic waste solutions in yachting and expand it to the world at large. The Pact's mission is **to remove the dependency of single-use plastics from yachting**. The non-profit initiative aims to provide viable alternatives to single-use plastic items and explore solutions to halting microplastic waste in our oceans. Designed to engage those who wish to start making a change to the consumption of single-use plastic in yachting, the Pact raises awareness to engage captains, crew, yacht managers, suppliers and owners to take ownership of their yacht's plastic footprint.

If you are interested, [take the pledge at www.clearoceanpact.org](http://www.clearoceanpact.org)

SOLUTION

Instead of using plastic water bottles aboard your yacht, consider Clear Ocean Pact-vetted **Water Without Waste, Octo Water Treatment, Aquapax Water** and **Berkey Water Filters** for your water filtration needs.

SOLUTION

Moreover, washing machine discharge releases innumerable amounts of microplastic waste in the ocean. Opt for microplastic-collecting systems in your washes like the **Guppyfriend**, the **Wexco Filtrol 160 Lint Filter** and the **Cora Ball. Water Without Waste, Octo Water Treatment, Aquapax Water and Berkey Water Filters**

REGULATION

Grey water describes water flowing from sinks, washing machines, showers, and dishwashers. Grey water often contains phosphates, which spur invasive algae growth at sea, creating a lack of oxygen for marine species. It also contains toxic substances evidently harmful to the environment. **Black water**, on the other hand, refers to toilet waste. Nutrient-rich and teeming with harmful bacteria and viruses, black water spurs algae growth the same way grey water does and exposes both humans and animals to disease. **In order to limit the spread of these wastes, some nations require ships to have a holding tank for black water when in coastal waters.** France, for example, requires that vessels made after 1 January 2008 be fitted with a treatment system or retention tank if they wish to have access to French maritime ports, moorings, and/or anchorages (source: noonsite.com).

It is critical not to project waste overboard. Isolate and dispose of garbage aboard your yacht with Superyacht Rubbish's **MARI](naut vacuum system. The vacuum reduces and seals polyamide and polyethylene bags by up to 50%, halving the volume of marine waste and saving the cost of waste disposal at harbor.**

Beyond Plastic Med (BeMed) is an association that aims to combat plastic pollution in the Mediterranean Sea. Launched in 2015 on the initiative of the Prince Albert II of Monaco Foundation and its partners the Tara Ocean Foundation, Surfrider Foundation Europe, the Mava Foundation, the International Union for Conservation of Nature (IUSN) later joined the pack in search of alternatives to plastic.

To learn more about BeMed, visit: www.beyondplasticmed.org

SOLUTION

SOLUTION



RAW MATERIALS & LIFECYCLE

Improving recyclability/reusability and sustainability of raw materials is a critical part of the yachting sector's positive evolution. Teakwood is a commodity which is very often hurting already endangered ecosystems if not harvested sustainably. Alternatives do exist with as good if not better characteristics.

SOLUTION

When it comes to choosing a wood essence to outfit a yacht, it is crucial that it be the most sustainable. One solution is **FSC®-certified Fineline teakwood** proposed by **Wolz Nautic**, sustainable plantation teakwood re-engineered to satisfy yachting needs. FSC®-certified wood which has been modified through **Kebony** technology also seems a very solid option. Finally, an interesting new wood alternative is **LIGNIA Yacht**, based on modified radiata pine, also FSC®-certified and presenting very interesting characteristics.

FSC® Denmark program Lesser Known Timber Species provides a very good basis for finding sustainable wood essences for your yachting interior/exterior applications. These timber species tend to cost less than their more popular counterparts and they are harvested in a sustainable manner.

To learn more about which timbers best fit your needs visit:
<https://www.lesserknowntimberspecies.com/species>

SOLUTION

Synthetic teaks can also get the job done. **Flexiteek** promises a lighter, cooler and high-quality alternative to traditional teakwood. Plus, the material is fully recyclable. Similarly, NuTeak requires minimal maintenance and prevents usual wear and tear.

SOLUTION

SOLUTION

XShore, the Swedish manufacturer of electric boats which has just raised 1.5 million euros through crowdfunding (investment campaign closed October 2019), is in discussions with the Sustainable Yachting Network over the production of an electric vessel which will **use recycled bottle corks, locally sourced in Monaco, as the raw material for its decking.** Stay tuned for more on this in 2020.





A challenge to pegging sustainability to yachting is finding the appropriate recyclable materials that will make up a yacht's building blocks. When a yacht reaches the end of its life, it is important to be aware of where these building blocks will end up

The project of developing a sustainable supply chain of teak in Myanmar, supported by the Prince Albert II of Monaco Foundation and operated by **PEFC**, is moving forward with successful milestones accomplished. The Myanmar Forest Certification Council, the Myanmar main partner of the project, is now running the Myanmar Timber Legality Assurance System which ensures the legal compliance of the timber harvested in the country. Throughout the past months, the **first trial shipments**, especially of natural teak, have been shipped to Europe. **The sustainability certification system is under finalization with the goal to be implemented in 2020.**

SOLUTION

Persico Marine is developing alternatives to carbon and glass fibers, the two most common construction materials for yachts and which are difficult to break down. Persico **has focused on integrating natural fibers such as flax, bamboo, basalt and bio sourced resin into the construction of their sea-faring vessels.** As a result, these lighter, natural materials go well beyond enhancing a boat's speed: they are recyclable for future applications at a yacht's closing chapter.

SOLUTION

Amer Yachts works with oceanographers to research how to best reduce carbon emissions related to yachting. Including interesting navigation and propulsion sustainable tools, waste waters facilities that responsibly discharge waste out to sea, the company thought a lot about sustainable raw materials. First, it uses cork for its decking. An adhesive film free of biocides, guaranteed to last for five years, covers the recyclable hull. Finally, it **has recently abandoned fiber glass and GRP (glass-reinforced plastics) utilizing the recyclable basalt fiber FILAVA®.** The fiber allows to recover and recycle all manufacturing scraps (including the mold at End of Life) back into new virgin FILAVA® fiber without any downgrade of properties.

SOLUTION

NAVIGATING INTELLIGENTLY

Adopting a sustainable attitude towards yachting includes protecting Posidonia, seagrass critical to the Mediterranean's health, and seabeds across the globe. Mooring in sandy areas is strongly encouraged if not often regulated. Likewise, being cautious of marine fauna's natural habitats and the noise produced from a vessel comprise intelligent navigation.

REGULATION

Mooring of yachts is strictly regulated in the French Mediterranean Sea by decrees 155-2016 and 123-2019 :

Decree 155 – 2016:

- While mooring, yachts must be on VHF standby (channel 16) and DCS [70] and continuously transmit their AIS information.
- Yachts > 45m must contact the semaphore at least one hour before anchoring and declare their mooring plan.
- Yachts > 80m must receive a mooring authorization from the semaphore.

Decree 123 – 2019:

- The anchoring of yachts in Posidonia Oceanica is strictly prohibited, especially for yachts > 24 m (with fines up to 150 000 euros and 1 year of jail).
- Local decrees are under process to define by summer 2020 compulsory mooring areas for yachts > 45 – 80 m along the French Mediterranean coast.
- For latest information, contact the semaphores and look at the bookmark included in recent editions of the Yachting Pages.

In addition to the French regulations above, local environmental legislation are under process all across the globe. It is thus important to check with local port authorities and use web tools like **MAPAMED** developed by MEDPAN and the RAC/SPA, or the **RYA website** for instance for the UK region.

To steer clear of the seagrass, download the free **DONIA** app available on iOS and Android. The **app lets you easily identify sandy areas where it is safe to anchor**. The application shows real-time data on happenings on the surface of the sea to ensure safe and conscious mooring.

SOLUTION

As briefly mentioned before, **Amer Yacht, along with the Tethys Institute, has developed a program for the navigating system, My Green Pages**, which allows you to be aware of marine fauna protected areas, send information when encountering wildlife, and understand which behavior to adopt.

SOLUTION

Superfluous underwater noise and light can interfere with aquatic animals' ability to feed, mate, migrate, communicate and evade predators. **Noise-free sailing options** continue to evolve and spread. For instance, you could consider reducing noise levels of your engine room with Dutch-born **Alara-Lukagro**. The company provides a large array of sound-insulating solutions. **Light spots under water also should be reduced especially** in marine protected areas.

SOLUTION



THE ABC'S OF SUSTAINABILITY: ANTI-FOULING, BALLAST, HOUSEKEEPING, DECORATION

The choices you make regarding the products you use to complete your daily chores matter. Luckily, tidying up and protecting the environment can be done with simple fixes.

SOLUTION

New, efficient and sustainable options are available on the market when it comes to paint and antifouling products. For example, **Airlite paint solutions** use technology based on the photocatalytic oxidation effect of titanium dioxide for interiors and decks. It also offers outdoor paints that act as an antifouling agent, as the hydrophobic and non-toxic properties of the paint induce a self-cleaning process and protect against the accumulation of organic substances on the hull of your ship. You can check out their **air purifying paint** (for buildings but has seen applications in yachting), **mentioned in 2019 by the United Nations as one of the four best technologies in the world for air purification.**

To prevent biofouling on the hull, as well as at hard-to-reach spots, **Finsulate antifouling provides an efficient, durable and sustainable solution without using any toxic treatment.** The material consists of nylon fibers that are attached to a self-adhesive sheet with a water-based adhesive and provide durable protection for minimum 5 years and keeps its performance when a yacht is moored as well.

SOLUTION

REGULATION

According to the IMO, invasive marine species are one of the four greatest threats to the world's oceans. As a result, **the Ballast Water Management Convention** that took place in 2004 sought to protect the marine environment from the transfer of harmful aquatic organisms carried by ships' ballast water. **The convention entered into force in September 2017 and requires that all ships have a ballast water management plan, a ballast water record book, and an International Ballast Water Management Certificate** (source: IMO.org).

UniBallast provides options and information on ballast water management. One of these is the **Ballast Water Treatment Finder App** which is free and helps you find the most suitable ballast water treatment system for your vessel. It contains all current ballast water treatment systems on the market and filters treatment systems to match what you are looking for.

SOLUTION

SOLUTION

Hepburn Bio Care offers an array of environmentally friendly **cleaning products for your yacht** from the deck and engine room to laundry and dishes. **Biodegradable and non-toxic**, these products are sure to pose no risk to neither you, your yacht, nor the environment.

SOLUTION

Nature Squared creates interior design pieces made from recycled and discarded materials. Eggshells, nutshells, and seashells, byproducts of the fishing and farming industries, transform into wall coverings and worktops. Unusual in application yet common in nature, all materials are sourced responsibly.

SOLUTION

Do you like seafood? Visit the **Mr.Goodfish** website (www.mrgoodfish.com) or download the app on your mobile to see which products are sustainable. Overfishing is one the biggest threats to our oceans but also to marine communities and our overall long term food security. The Mr.Goodfish program raises awareness for both the fishing industry and consumers on this situation to help everyone make better choices and potentially save each year tens of thousands of tons of endangered fishes.



SIMPLE STEPS TO SUCCESS



BECOME INFORMED AND INVOLVED

- Stay updated on the latest IMO and yacht code regulations.
- Reach out to industry-wide initiatives turning the tide on sustainable yachting and learn how you can contribute to making a difference.



ECO-FRIENDLY MATERIALS

- Choose sustainably sourced and recyclable/reusable raw materials when fitting or refitting your vessel.
- Make sure your cleaning products are biodegradable and non-toxic.



PROTECT MARINE LIFE

- Use mooring buoys or equipped anchorage areas whenever possible. If not, anchor in sandy and authorized areas.
- Make sure to clean anchors as soon as they are on deck to prevent spreading invasive species.
- Use appropriate chain length and warp
- Reverse at 0.5 knots max. When leaving, make sure the bow of the boat is positioned directly over the anchor.
- Be sure to have an effective ballast treatment in place and respect discharge rules indicated by respective authorities at port.
- Minimize sound pollution.



MARINE DEBRIS

- Prevent harmful chemicals from spreading at sea by responsibly storing or treating wastewater for disposal at port.
- Limit single use products (whether it is plastic or other materials) and prevent microplastics from cleaning products from being introduced at sea.
- Buy in bulk and use your own reusable grocery bags rather than plastic ones.
- Do not dump trash overboard.



MIND THE HULL

- Use a biocide-free antifouling agent when cleaning your hull.

Supporting Partner



Other Syn Partners



You can find this volume and volumes I, II and III on the SYN's website at:
www.sustainableyachtingnetwork.org

Want to propose an innovative solution that could be featured in our next edition? Contact: syn@fpa2.org



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