

IN-SITE

INSIGHT FOR OWNERS & CAPTAINS FROM JMS INTELLIGENCE

Green Yachting

BY: Rachel Fisher
Marketing Manager



How does the shipping industry contribute to protecting the environment?



There is an increasing awareness of the environmental impact of diesel-powered vessels on the atmosphere and the oceans. It is great to see that builders, seafarers and owners are reacting and adopting eco-friendly measures to the yachting industry. During the yacht shows, you can notice how widespread green yachting is being promoted and the subsequent interest that arises from it. On one hand, we will be looking at the technical side of implementing green yachting and on the other hand, we will focus on the eco-friendly management and habits to adopt in the yacht interior.

THE TECHNICAL SIDE...

So how do the authorities minimise environmental impacts?

There is already a vast number of environmental regulations in place. Shipping is usually behind the curve. For instance, a serious accident happens first and then the IMO starts making some regulations. For the environment, the first regulations came into force after big oil-spills from oil tankers in the 70's. This was when MARPOL was born. Over the years more and more regulations were added. Currently, they involve the prevention of oil spills, the discharge of oil, sewage, anti-fouling and garbage management for obvious reasons. There are also regulations regarding ballast water management, which are preventing marine species from being carried into the ballast water from one part of the world to the other part. Consequently, they become an 'invasive' species threatening native species. There are also air-pollution regulations to ban ozone depleting substances and regulations concerning engine exhaust emissions (NOx & SOx) and also Ships' Energy Efficiency where a management plan is required.

The latest MARPOL Annex detailing rules to prevent air pollution came into force at the beginning of 2006 and are contained in the "International Convention on the Prevention of Pollution from Ships", known as MARPOL 73/78. Regulations are more and more stringent. The last amendments specify new fuel quality and engine design requirements. Each cutting the amount of harmful sulphur (SOx) and nitric oxide (NOx) in the emissions. Nitric oxide emissions are regulated by the Tier I, II and III requirements which influence the design of the engines. Manufacturers have come up with various clever ways to meet these increasingly strict standards: catalytic reducers and simply making the combustion process more efficient. All industries are looking for renewables because of the negative impact on the environment and at some point, fossil fuel will be gone.

These are compulsory regulations every ship/yacht have to comply with. But what can be done by owners who want to go over and above the minimum standards?

There are Class notations like ECO / ENVIRO / Green Plus which set additional 'stricter' standards. Having these standards are not just good for the environment, they also provide you with better conditions for chartering and increasing chances for the resale of your yacht. Engaging an independent third party to provide an environmentally friendly yacht will differentiate your yacht in a highly competitive market. Regular inspections and "a different set of eyes" can only be beneficial in the environmental upkeep of the yacht, ensuring that nothing is missed and constantly keeping up to date with new technologies on the market. In fact, technological advancements help to diminish the impact of environmental discharges. In addition, International treaties and conventions, aimed at further protecting the environment have introduced more stringent requirements towards the prevention of environmental pollution.

The ABS (American Bureau of Shipping) guide is for the use of designers, builders, owners, and operators in the marine industry. The latter specifies the ABS requirements and criteria for obtaining the (ENVIRO) or Environmental Protection Plus optional notations Environmental Protection (ENVIRO +) for vessels. For the ENVIRO+ notation, this Guide invokes compliance with strict criteria in line with environmental protection based on design characteristics, management and support systems, sea and air discharges.

The competitor Lloyd's Register has developed rules for a design's compliance that leads to the award of the ECO notation. As per ECO Rules consist of two parts:

- a) Core requirements covering the major operational pollutants, which are mandatory and,
- b) Supplementary characters with stringent requirements, which are optional.

The core requirements always need to be met. However, if you would like to find out about the options for a more environmental and efficient yacht, you can fill in a survey on their website which is strictly confidential. ECO notation from Lloyd's Register does not just include requirements for the design of the ship but also its machinery, the equipment on board and the requirements on how they are operated.

You can also get the ISO 14001 accreditation which is an Environmental Management System. It basically works like an ISM system but is designed for the environment. A person is appointed to be responsible for the EMS's coordination and the organisation will identify how crew and vessel interact with the environment. The company will set actual and potential environmental impacts whilst monitoring the progress to achieve its objectives. As a result, the company sets policies, targets, procedures to continuously reduce the environmental impacts. Although the compulsory standards are strict and do contribute to the well being of the planet, there are many other cost effective non-compulsory options that you can implement which will not only make your yacht run more efficiently but will also be beneficial towards the upkeep in the long term, and maintain her value or perhaps even increase it! If you would like to go even beyond management systems, you can even look at the benefits of redesigning or refitting your yacht.

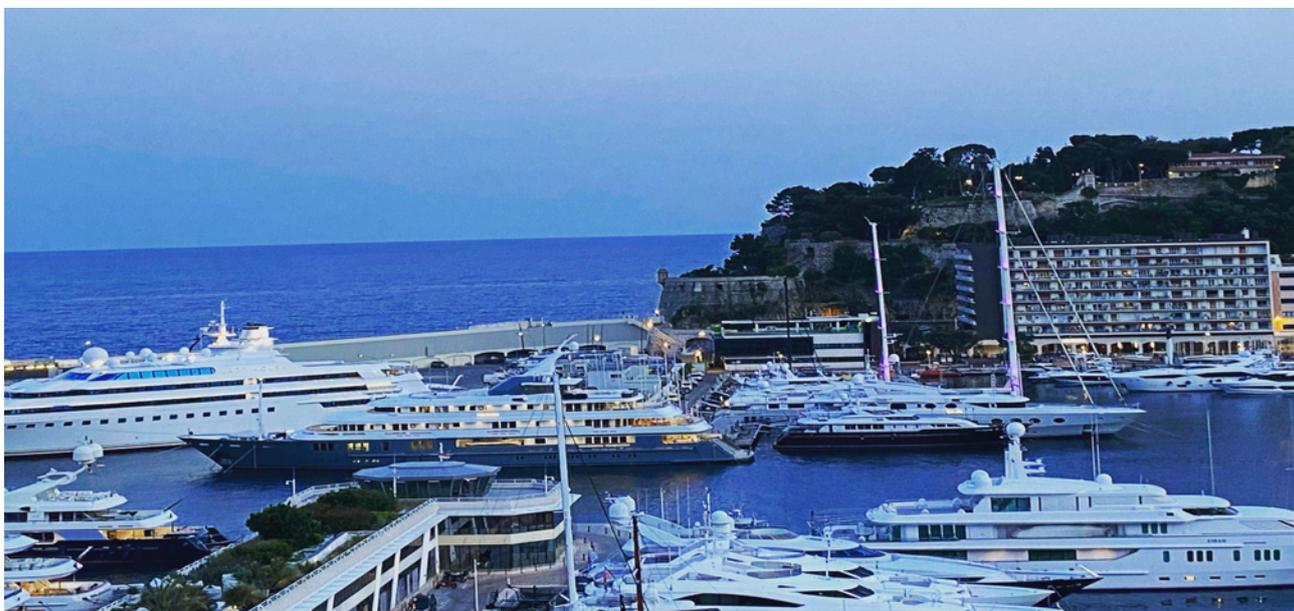


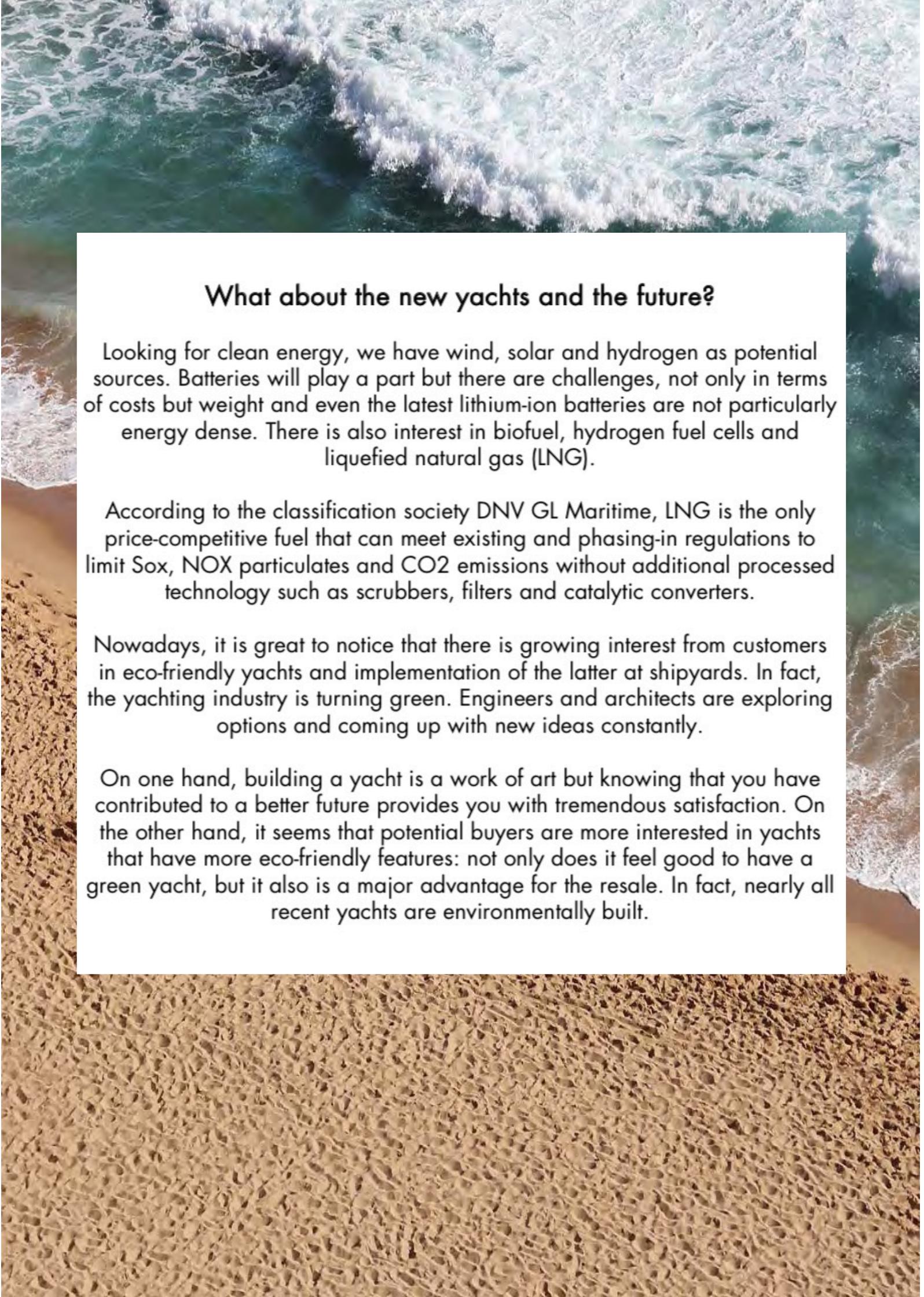
What can be done in terms of green designing your motor or sailing yacht?

Our industry is evolving with the use of wind, solar, LNG, hydrogen, diesel and electric options. Existing yachts can be converted into an eco-friendly operation. This is what shipyards do! Understandably, the options for existing yachts are more limited than the freedom you will have when designing a new yacht. However, the easiest option currently available is to convert existing conventional yachts into diesel - electric operated yachts by replacing the main engines for an electrical propulsion with different sizes of generators, powering the electric propulsion and the normal grid. The system must be designed so that generators always operate on the optimum engine load. Depending on the space available, batteries and solar panels can be added for full electric operation. Emission abatement systems will ensure the output is as clean as possible. For sailing yachts, generating power via shaft generators is possible. It is important to note that the space in engine rooms in existing sailing yachts is normally limited.

LNG and hydrogen are not the best options during a re-fit, these fuels are difficult to source and transport.

Although it can be tricky, there are available options to convert your yacht or sailing boat. However, some conversions can be quite costly. Although it is the right thing to do in terms of the environmental impact, making these changes can be expensive which will affect the decision of whether to carry out the works or not. Any "green" conversion over and above the minimum standard should morally be completed but the reality is that owners will outweigh the monetary investment in terms of the value, the chartering and the resale. The key here is to outweigh the opportunity cost based on the monetary and environmental long-term result. If you need any information, JMS Yachting have experienced project managers and engineers who can provide you with surveys and guidance whilst looking at the benefits for all parties.



An aerial photograph of a beach. The top half shows the ocean with white-capped waves crashing onto the shore. The bottom half shows the golden sand of the beach, which is covered in numerous footprints. A white rectangular box is overlaid on the image, containing text.

What about the new yachts and the future?

Looking for clean energy, we have wind, solar and hydrogen as potential sources. Batteries will play a part but there are challenges, not only in terms of costs but weight and even the latest lithium-ion batteries are not particularly energy dense. There is also interest in biofuel, hydrogen fuel cells and liquefied natural gas (LNG).

According to the classification society DNV GL Maritime, LNG is the only price-competitive fuel that can meet existing and phasing-in regulations to limit Sox, NOX particulates and CO2 emissions without additional processed technology such as scrubbers, filters and catalytic converters.

Nowadays, it is great to notice that there is growing interest from customers in eco-friendly yachts and implementation of the latter at shipyards. In fact, the yachting industry is turning green. Engineers and architects are exploring options and coming up with new ideas constantly.

On one hand, building a yacht is a work of art but knowing that you have contributed to a better future provides you with tremendous satisfaction. On the other hand, it seems that potential buyers are more interested in yachts that have more eco-friendly features: not only does it feel good to have a green yacht, but it also is a major advantage for the resale. In fact, nearly all recent yachts are environmentally built.

Which yachts are already operating with Eco-friendly features?

The concept of the first world hydrogen powered yacht: **AQUA** designed by the Dutch firm Sinot Yacht & Architectural Design runs entirely on renewable energy sources and Eco-friendly designs. As a matter of fact, it offers a quieter experience. The generators still need to be backed up by diesel because of the range and limited availability to bunker hydrogen. This chemical substance proves to be a solution for the future since there are no emissions, other than water vapor and the fuel savings which are equivalent to about twice of conventional fuels. Hydrogen is also abundant and can be made from renewable energy. However, there are still some challenges to consider as it is expensive, dangerous to store, difficult to move, highly inflammable and dependent on fossil fuel. Hydrogen seems to be the solution for the future but at this stage, we cannot source hydrogen as there is not secure distribution network in place, yet the industry is working on it!



SAVANNAH is also a great example of the drift towards green yachting. It is a superyacht of 83.5m which was built in 2015 at the Dutch Feadship yard in Aalsmeer.

She has eco-friendly features such as a single diesel engine (most yachts have 2 main engines), three gensets, batteries, propellers and azimuthing pioneering electro-mechanical propulsion platform.

These combinations offer fuel savings of 30 per cent. These features would make a significant difference if all yachts geared towards the same design.



BLACK PEARL built by Oceanco of 106.7m is another success offering real zero-emissions cruising which is unique for a yacht of her scope and size. She uses her propulsion system to generate power when under sail. In other words, when they are under sail, her propellers feed power back into the yacht through a pair of shaft generators providing enough power for the yacht to be self-sufficient. What a success!



Photo: The SuperYacht Times

ICE, a 90m yacht built by Lurssen is also a step forward to green yachting. It is the first yacht fitted with Azipods which entails that no rudders are needed, normally installed on diesel electric system. The advantages are the limited space needed for the main propulsion and the exceptionally low emissions. She runs off generators supply power to two azimuth thrusters which also add the advantage of a comfortable ride. One should note that diesel electric sailing can be less efficient if you are sailing at the same speed since you are converting energy twice (diesel-electric propulsion instead of diesel-propulsion). If the yacht often sails at a low power output, you do not have to run your main engines at a low output, which consumes more fuel per kW and pollutes the engine. However, if you connect an electrical propulsion system to a grid with more engines, you can run engines at the optimal load even at lower speeds. Therefore, at slow speed, running smaller engines are more efficient than the normal main engines.



Photo: The SuperYacht Times

The 58m **ETHEREAL** sailing yacht delivered in 2009 and built by Royal Huisman was at the forefront of green yachting at the time. It was the world's first superyacht built with hybrid propulsion. She uses Lithium batteries to store energy for silently manoeuvring, buffering peak loads, and providing energy at anchor or at berth without the use of generators. It was also one of the first yachts to use LED lighting throughout the yacht. Now everyone has followed the example and 'hybrid' is the hype!



Photo: Franco Pace & Royal Huisman

There are many more examples of eco-friendly yachts. The yachting industry is stepping up their game! However, if you are looking for the "real thing", silent yachts are the answer.

An innovating company is **SILENT YACHTS**, an Austrian company which designs yachts which run on solar power. The goal is to eliminate yachts' environmental impact without sacrificing luxury on board. Their solutions are solar panels on the decks to charge batteries which in turn run the propulsion and all hotel services. The result provides a completely silent cruising. They proved their concept back in 2018 when one of their solar powered yacht crossed the Atlantic. The company has mainly built smaller yachts and is now building a series of larger 80ft catamaran yachts in Ancona, Italy. In fact, JMS Yachting is proud to be representing the owner of the first SILENT 80. Silent Yachts' vision is; "We believe in a world where yachting works with nature, rather than against it." JMS is fully committed to this vision, and we think that this is a huge step for the future of yachting.



Photo: Silent Yachts

What about innovative R&D integrating solar panels?

Industries and societies have been looking at many ways to use clean sources to produce electricity. It is not only interesting to see how these ecological innovations work but also proves to us that environmental alternatives are possible. Even though we have a lot more to do, these methods have already contributed to the planet's health. Clean fuel sources do not pollute the air like power plants which rely on fossil fuels, such as coal or oil; being the catalyst of greenhouse emissions causing global warming. And, the reality is that fossil fuel will be gone at some stage. Therefore, the sooner we start researching, testing and executing green innovations, the more time we have, not only to perfect them but to be familiar with these alternatives. And, eventually, to become the new norm and most importantly prevail in our education and culture.

On shore, there are windmills which convert wind into rotational energy with propellers producing wind energy by using the aerodynamic force from the rotor blade. This process spins a generator saving tonnes of Co2 emissions and creating electricity. One can also see an increasing number of solar panels on buildings, houses and factories. These panels absorb sunlight with photovoltaic cells which generate current (DC) into a usable alternative current (AC). The AC energy then flows through the electrical panel which is then distributed accordingly. Installing solar panels may be costly, yet it is a great alternative since it is a renewable source which supplies energy indefinitely at no cost.

Offshore, in the yachting industry, there is an increasing trend to implement solar energy. One would say that approximately 1 out of 10 boats have integrated solar panels. With more awareness and understanding of the advantages, we can definitely do better! Innovative companies such as Rondal and custom solar panel specialist Wattlab have started a collaboration in state-of-the-art solar modules, fully integrated in a composite mast. Wattlab designs, develops and produces



high-quality custom applications for solar energy. Originated from the Vattenfall World Solar Race Challenge Winner Team 2016, and further developed during their partnerships with Technical University of Delft and Eindhoven, Airbus Space, Vripack and Damen Shipyards; Wattlab is specialized in maritime tailor-made solar modules and provides the most solar energy yields at any desired location of the yacht!

Rondal delivers custom superyacht solutions which do not just involve fully integrated sailing systems consisting of 50mtr+ carbon masts, performance booms and captive winches, but also composite structures such as radar masts, superstructures and large tender hatches. Combining both specialists' knowledges, Wattlab and Rondal are putting their hands together to bring forward the best of both worlds.

The use and feasibility of solar panels on yachts will vary depending on the system and infrastructure as follows:

- For smaller sailing yachts which generally run at 24 volts DC / 230 volts AC and do not use the generator 24/7 most of the time, it would be a great idea to link solar energy to save the battery banks.
- For Superyachts with a diesel electric system which mainly run off the generators powered by fuel or batteries, it would be very beneficial to link the battery system to solar energy which will save fuel and time charging onshore.

Clean sources are definitely the answer: it is about doing it smart and raising awareness on the options and innovations. Solar energy definitely has its advantages and installations can be tailor-made to yachts bringing cost savings to owners and helping towards climate change. Energy is all about balance: ensuring that production is in line with the demand. Since the solar panels will produce when the sun is shining and will possibly produce more energy than needed at that moment, it is crucial to be able to store it. In finding answers on how to store the energy produced there are thoughts about converting the energy produced into hydrogen. When making hydrogen, more energy can be stored in less volume. We still have a lot to learn before we are able to use hydrogen as a fuel for cars and ships commercially. However, there are currently many clean energy options which can be easily implemented on shore and offshore.

POWERED BY NATURE!



And what can be done better with the yacht toys?

The use of jet skis has a significant impact on the environment and wildlife caused by massive leaks of unburned fuel into the waters. In fact, it is estimated that approximately 25 percent of the fuel used in personal watercraft and other watercraft with two stroke engines fail to combust. As a consequence, it is flushed out into the water as raw fuel vapor emissions (Pearce, 1998). In addition, jet skis are usually very noisy : whales and dolphins are particularly impacted by noise pollution. These marine mammals rely on echolocation to communicate, navigate, feed, and find mates. Excess noise interferes with their ability to effectively echolocate. The noise also causes health issues to marine life consisting of hearing loss and rapid heart rate which induces fear and the subsequent abandonment of their habitat.

As much as these jet skis would be deemed as less « important » due to their size and engine in comparison to yachts : they are very popular and more accessible to the world population. As a result, it is high time that we look at improving technologies to make them more eco-friendly. And the good news is that it is happening !

Taiga Motors, a Canadian company behind the world's first electric snowmobiles have presented electric personal watercraft called Orca. These jet skis are aerodynamically designed, elegant, practical and more importantly, environmentally friendly!

Being purely electric, there are no more trips to the gas station, no fuel leaks and no noise. Charging is fast and very easy. Great for the planet and even more fun for the thrill seekers: these jet skis generate over 134 kw and have a top speed up to 104 km. As a result, there are no compromises for going green, it is quite the opposite!



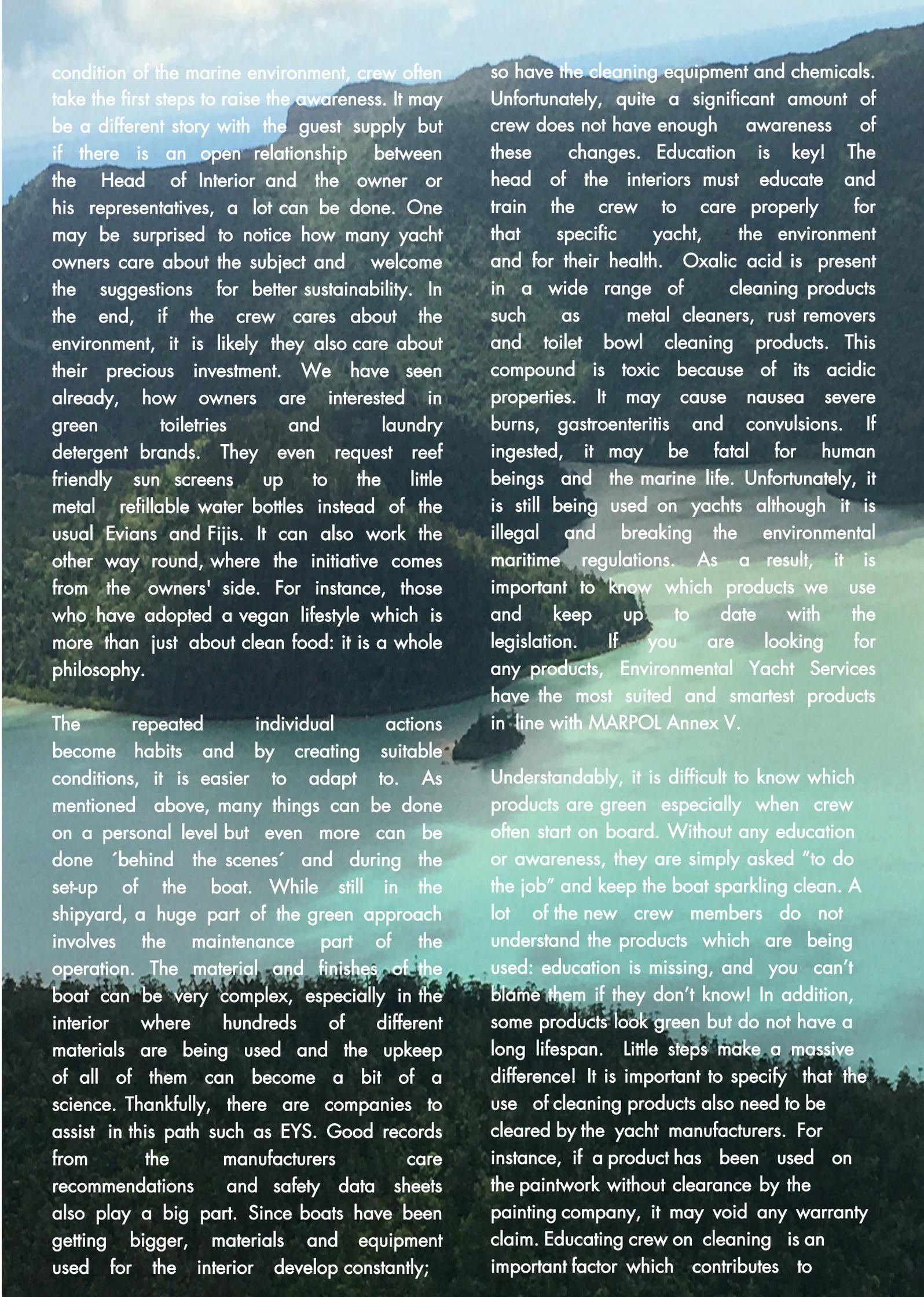
AND THE GOOD HABITS...

Over the past 20 years, the global fish stock has been reduced by 30%. Since 2013, the discharge of garbage at sea is prohibited. Management companies should ensure that captains and owners are well aware of the regulations contained in Annex IV of Marpol. It is illegal to dump raw or treated sewage close to the coast. If the yacht is equipped with a cleaning system, only treated sewage may go overboard over 3 miles from the coast. Raw sewage may go into the sea at 12 miles from the coast with a minimum speed of the vessels of 4 knots. However, you must bear in mind that there are some special areas to be considered such as the Baltic Sea and the polar area where the discharge of sewage is generally prohibited.

These days, we came across a lot of videos and footage over the social and mainstream media about the devastating damage of the plastic waste caused to our oceans and the marine life. But as heart breaking it is to see, on the bright side this helps to raise our awareness of the need for change. In recent decades, the maritime legislation has implemented several strict measures to reduce the on-board waste and regulate or even ban the sewage discharge. The Marpol regulations have become part of the compulsory reading material for familiarization of the new crew. It has to be said that 5 years ago, a couple of "old school" seamen would roll their eyes over the request for separating the garbage. However, nowadays, it is predominantly the young crew who are very aware and passionate about the environmental topics. The separate bins for organic, plastic, metal and carton waste are fixed standards on every Superyacht now and it has become the elementary

practice to follow these procedures. But this is where we want to go further by creating maybe little but very effective habits to even have a stronger influence on the environment.

The pioneer here is often the interior department of the yacht. The majority of the waste on board is created by crew and guest provisions. There is a lot we can do before even getting to the garbage separation. When a boat uses the provisioning company, one can look for the supplier delivering their goods in recyclable boxes and agrees waiting until the goods are offloaded to the boat to return the cradles, or is willing to collect them later. When the interior crew goes for food shopping, always bring reusable shopping bags. In the supermarket, we have an option of picking the double plastic packaged apples and tomatoes but we can also hand-select the fruits and vegetables ourselves and instead of taking the little clear plastic bags, we use the durable nets, which later can be collected, washed and used again. It is firstly a question of being aware and then a question of not being lazy. The biggest source of plastic waste is definitely the water bottles. Many boats though have brilliant water makers on board which can make purer and healthier water than bought in the bottles. For the lovers of carbonated water, there is an option of Soda Stream machines with the little CO2 cylinders. It actually doesn't take much to get crew feeling comfortable having their own personal water bottles; and if these principles are communicated by the captain through the SOPs, it just becomes one of the boat's policies. Being so closely involved and influenced by the



condition of the marine environment, crew often take the first steps to raise the awareness. It may be a different story with the guest supply but if there is an open relationship between the Head of Interior and the owner or his representatives, a lot can be done. One may be surprised to notice how many yacht owners care about the subject and welcome the suggestions for better sustainability. In the end, if the crew cares about the environment, it is likely they also care about their precious investment. We have seen already, how owners are interested in green toiletries and laundry detergent brands. They even request reef friendly sun screens up to the little metal refillable water bottles instead of the usual Evians and Fijis. It can also work the other way round, where the initiative comes from the owners' side. For instance, those who have adopted a vegan lifestyle which is more than just about clean food: it is a whole philosophy.

The repeated individual actions become habits and by creating suitable conditions, it is easier to adapt to. As mentioned above, many things can be done on a personal level but even more can be done 'behind the scenes' and during the set-up of the boat. While still in the shipyard, a huge part of the green approach involves the maintenance part of the operation. The material and finishes of the boat can be very complex, especially in the interior where hundreds of different materials are being used and the upkeep of all of them can become a bit of a science. Thankfully, there are companies to assist in this path such as EYS. Good records from the manufacturers care recommendations and safety data sheets also play a big part. Since boats have been getting bigger, materials and equipment used for the interior develop constantly;

so have the cleaning equipment and chemicals. Unfortunately, quite a significant amount of crew does not have enough awareness of these changes. Education is key! The head of the interiors must educate and train the crew to care properly for that specific yacht, the environment and for their health. Oxalic acid is present in a wide range of cleaning products such as metal cleaners, rust removers and toilet bowl cleaning products. This compound is toxic because of its acidic properties. It may cause nausea severe burns, gastroenteritis and convulsions. If ingested, it may be fatal for human beings and the marine life. Unfortunately, it is still being used on yachts although it is illegal and breaking the environmental maritime regulations. As a result, it is important to know which products we use and keep up to date with the legislation. If you are looking for any products, Environmental Yacht Services have the most suited and smartest products in line with MARPOL Annex V.

Understandably, it is difficult to know which products are green especially when crew often start on board. Without any education or awareness, they are simply asked "to do the job" and keep the boat sparkling clean. A lot of the new crew members do not understand the products which are being used: education is missing, and you can't blame them if they don't know! In addition, some products look green but do not have a long lifespan. Little steps make a massive difference! It is important to specify that the use of cleaning products also need to be cleared by the yacht manufacturers. For instance, if a product has been used on the paintwork without clearance by the painting company, it may void any warranty claim. Educating crew on cleaning is an important factor which contributes to

protecting the environment and reducing plastic use. Times where the majority or harsh chemicals were bought off the counter, are hopefully over soon and the understanding that "we did it on my last boat" may no longer be sufficient. Yet, there is a lot we can do. For the laundry operations, there are great systems available by a company called Kreussler which introduces a self-dosing detergent system for the Miele washers. These days, the washing machines are as clever as your smart phones; instead of getting spots cleaned, they can be programmed to treat different fabrics and stains based on their structure and origin for optimum result. There is a lot of talk about microfiber, drying sheets and so forth. It is possible to find alternatives! We can also reduce the use of power and water by choosing the easy care (non-iron, fast-dry) crew uniforms. The heavily concentrated products allow to reduce the plastic. By purchasing the refill bottles, we can dose the products ourselves. One still has to remain cautious with all DIY product suggestions which can be found online as they may create a fire hazard or damage surfaces, possibly leading to voiding the warranty claims. However, using a bit of lemon juice in water for cleaning the microwave or diluting some fabric softener with water for grease treatment, instead of buying the Febreze bottles, harms no one. These are exactly the baby steps towards the right direction: these habits allow energy efficiency and reduce plastic significantly.

Moreover, our oceans are affected by sunscreen which kills sea life. Sesame oil is available for purchase from most grocers, it works as a natural alternative to commercial sunscreens, blocking out approximately 30% of the sun rays. Another huge problem for our oceans is toilet paper as it is for one-time use.

Coloured toilet paper has not only been proven to cause skin irritations, but it also has dyes which are harmful for the environment. Therefore, it is recommended to buy 100% recycled bathroom tissue with no coloring. Having an awareness of how we choose our daily items and acting on buying the better alternative makes a huge difference.

Another aspect of helping the environment is the use of LED lights which are now widespread on yachts as they are more energy efficient, they last longer and can consume up to less than 80% in comparison to halogen lights. Ensuring that you switch off lights and appliances will save electricity. It is popular thought that you should do so if you leave the room for more than 15 minutes. You could also identify some areas where you could install motion sensor lights. Provided that it is safe to do so and legal, on Earth day being on the 22nd of April, management in consultation with the crew can aim to reduce the lighting on that day. Not only it is a good initiative for the planet but also great for team building. Little gestures do make a difference. There are a lot of options and it is all about educating yourself, showing the example, spreading the word and following the environmental maritime regulations. The philosophy of the boat is crucial so that everyone works towards a greener future.

As a result, the options are there, it is just about raising awareness whilst educating crew and owners. The yachting industry has been looking at many various ways to contribute towards the environment and there has definitely been improvement. It is so important that we all do our part not only because it is the right thing to do but because it will also give us satisfaction for being part of building a better future.

Good to know!

Sustainable companies for the interior of your yacht...

Environmental Yacht Services:

This company promotes ocean-friendly cleaning products for laundry, bathrooms, pantry plus a large selection of easy to find refills. The products are all in line with the guidelines of MARPOL Annex V. EYS has been expanding for the past ten years thanks to their knowledge of environmental impacts of overboard water discharge and empowerment of the yachting community. You can make a huge difference by using eco-friendly products.

For more information, please log onto

<https://eyservices.com>

The Green Stewardess:

If you are looking at ordering any environmentally friendly items for your yacht, The Green Stewardess provides eco-toiletries, bamboo Q-tips and toothbrushes, biodegradable cleaning products, organic linen and so much more.

You will find more information on their website by logging onto

<https://www.thegreenstewardess.com>

The Natural Bed Company:

This environmentally friendly company also provides sustainable, natural and ethical products creating vegan bedding. The linen is elegant, eco-friendly and very good quality.

You can check out their wide variety of items at

<https://www.naturalbedcompany.co.uk/2019/06/03/vegan-bedding>

Mohawk Group:

A creative company which uses recycled plastic bottles to make carpets. Not only is this such a fantastic green innovation, it is also a durable carpet with textures and colours featuring exceptional colour clarity.

If interested, log onto

<https://www.mohawkflooring.com/carpet/brand/everst>

Yachting Organisations promoting sustainable yachting...

The Sustainable Yachting Network:

Founded by the Prince Albert II of Monaco Foundation, the aim is to support shipyards, designers, crew, ship owners, suppliers, services providers, federations, regulators, media and educators in promoting and raising awareness on environmental impacts and solutions.

If you wish to attend to any events or make a donation, please log onto
<https://www.fpa2.org/sustainable-yachting-network-en.html>

Water Revolution Foundation:

Founded by SEABASS, an organisation of yachting and shipyards: <https://sybass.org/news/action-towards-sustainable-future>. Their goal is to preserve the world's ocean by promoting new technology, empowering innovation and conserving the ecosystem. There is advice on activities and tools that one can adopt.

You can also subscribe to their newsletter by logging onto <https://waterrevolutionfoundation.org>

Seakeepers:

An international society which supports scientific research and ocean conservation through yacht programs. You can make a donation to support their research and make the world a better place. You can also download a copy of the DISCOVERY Yacht Application which will provide you with insight in accordance to your interests and vessel by logging onto

<https://www.seakeepers.org/yacht-owners/join-the-discovery-yachts-program>

With thanks....

A big thank you to our team and collaborators who have shared their knowledge:

- Rob Pijper, Fleet Manager, DPA & Director of JMS Palma
- Franc Jansen, Founder & Director of JMS Yachting
- Sam Thompson, Director, Yacht Manager & Head of JMS Crew
- Meeli Lepik, Interior Manager for Project Enzo
- Sheila Goddard from Environmental Yacht Services