

The Rise of Hybrid Superyachts

As the world becomes a more environmentally friendly place, people are becoming more conscious of their carbon footprint. The industry of superyachts has followed suit.

Are hybrid superyachts the answer? Superyachts travel to some of the most beautiful places to experience the best natural beauty the world has to offer. It is, however, no secret that the industry contributes to the damage of the environment. One of the significant factors is the amount of fuel needed for propulsion. On top of this, the toys, tenders, and onboard generators all need fuel to function.

Thus, more and more yachts, tenders and toys are being built with hybrid systems and electric propulsion than ever before. There is an industry debate regarding how long hybrid yachts have been around. Some say Ethereal, launched in 2008, was the first. Others would argue that Feadship's Savannah was the pioneer in hybrid propulsion.

So, how do they work?



The main aspects of a hybrid system onboard is the battery technology, permanent magnet motor generators and the invertors. In layman's terms, a hybrid yacht is a yacht that two different energy sources can propel. The most well-known, widely used, and developed combination is diesel and electric. This system results in less use of fossil fuels and is, therefore, more environmentally friendly.

In a 2021 interview, President and CEO of Sanlorenzo, Massimo Perotti said:

"The synergy between power sources has inspired us to seek the right balance between energy saving and performance. Between onboard comfort and an eco-technological approach."

The market leader in hybrid systems development is Italy based e-Motion. A system now found on motor and sailing yachts up to 220-foot or 67-meters. e-Motion systems allow owners to have a

propulsion system on board, where the owner can enjoy the benefits of hybrid power without changing the diesel direct shaft propulsion. Using both the diesel and electric engine where the two systems work in sync offers an environmentally-friendly propulsion system, which does not cause the yacht and her guests to compromise on comfort or power. e-Motion also works together with Simrad navigation units. Allowing the captain or officers to switch from electric to diesel at the touch of a button.

In a recent interview, Managing Director of Lateral Naval Architects, James Roy, said:

“Clients are already asking us to engineer, design and build yachts which can ‘leave no trace’. Perhaps even operate in a way that leaves a positive impact on the environment. There is a real opportunity here for our industry to be at the forefront of future tech development and lead the way.”

The benefits:

Where to begin with the benefits of hybrids? First, fuel and engine hours are significantly reduced, and annual CO2 emissions are less. Using the e-Motion as an example, yachts can opt to use the systems Economy Navigation Mode. Whereby one of the main engines does the job of both. As the engine turns the prop shaft, it spins the electric motor, which acts as an alternator. This generates power to turn the other motor, recharging the batteries, and maintaining the power supply. All of which are needed to run the rest of the yacht for things like laundry, galley, lights etc. In a recent interview, e-Motion founder Michele Maggi said:

“This gives you around 30% fuel savings and drastically reduced engine running hours.”

Not only does is a hybrid system good for the environment. It

also betters the guests' experience on board. Hybrids reduce the noise, vibrations and exhaust fumes on board caused by generators, required to keep the 'hotel' load of the yacht running at all times. It will also save owner's and charter guests money on fuel. This can be a huge expense depending on the distance the yacht is required to travel.

Some examples of yachts with hybrid systems are:

M/Y Bravo Eugenia, a 109-meter Oceanco built superyacht. Her quiet electric mode allows her to consume 30% less fuel than other motor yachts in her size class.

<https://www.instagram.com/p/CRgbh0oFdV-/>

M/Y Artefact, an 80-meter Nobiskrug yacht, launched in 2020. She is a very quiet vessel due to her hybrid diesel-electric system. It integrates lithium batteries and also saves 30% of energy and emissions. Artefact also has solar panels and an extensive battery storage system. This allows her to have complete independence of the internal combustion engines.

<https://www.instagram.com/p/CH-do5FBiwZ/>

S/Y Black Pearl is the world's most advanced superyacht featuring zero-emissions. Cruising with a system whereby the pitch propellers feed power back into the yacht via a pair of shaft generators. Providing enough power to support the yacht's 'hotel' load. When commissioning Black Pearl from Oceanco, the owner requested a zero-impact yacht to prove that it was possible to run a yacht without consuming natural resources.

https://www.instagram.com/p/CP7rr_9rE8m/

M/Y Savannah, launched by Feadship in 2015. She uses a Breathe propulsion system which allows the yacht to have five different operation modes. Ranging from diesel to diesel-

electric to electric only. Savannah takes her power from a 30-tonne lithium-ion battery bank capable of holding a million watts of electricity.

<https://www.instagram.com/p/BIkHT5ijq0V/>

However, to reduce a yacht's carbon footprint even more, all yachts can opt for more green toys and tenders. Such as paddle boards, kayaks, sea bobs, wind surfers, electric surf boards, inflatables such as slides, climbing walls and a trampoline. Hydro foils, hydro cycles and electric tenders are also available. They will ensure the overall fuel consumption is decreased.

Is this the future of yachting?



West Nautical's sister company, Nautical Management Services, has a fleet of yachts under their management, providing 24/7 support across all facets of a superyacht's running. From crew salaries, to how the vessel is maintained. With yacht size and sophistication only increasing, management must constantly evolve.

Geoff Moore, West Nautical's Managing Director, gives us his thoughts on technological developments in sustainability on new build yachts:

"We are seeing a lot of yacht owners and shipyards driving towards greater efficiency and sustainability for the future, trying to reduce the environmental and financial impact of the yacht. The maritime industry is always going to be behind the automotive industry. Simply because there is less production and yachts are far larger and more complex. But there is a real move towards hybrid power and fewer emissions. New technologies from other industries are often adopted and used on yachts after they have proven to be successful.

One such innovation is the ever-improving batteries that are regularly available. And, with more and more hybrid and full-battery powered vehicles, this technology is now moving into the yachting industry. And, can be easily retrofitted.

This technology differs in many ways from the traditional diesel-only powered vessels fitted with large main engines, used only for propulsion with separate generators feeding the hotel load. So, it is an improvement in technology for both efficiency and reducing environmental impact with reduced emissions. As well as physically taking up less space in the engine room. Meaning, more space can be made available for the guest accommodation or additional facilities."

Conclusion:

To conclude, hybrid technology is one of the most exciting innovations in the yachting world. With more and more owners requesting new builds with smaller carbon footprints than the traditional yachts we see today.

Sustainability and being as environmentally friendly as possible should be a part of every industry and business model

in the market today. And, the superyacht industry is no exception. With owners, shipyards, yacht designers and engineers adapting to invent eco-friendly solutions, it is only a matter of time before hybrid or even fully electric yachts are the norm.

Building an environmentally friendly yacht is building a yacht for the future.

For more information from West Nautical, click [here](#).

And, for more of the latest industry news and content, click [here](#).

Environmentally Friendly Yacht Charter

How to have an environmentally friendly yacht charter:

Superyachts travel to some of the most beautiful destinations in the world. They experience the finest natural beauty, enjoy the best diving sites and bask in the sun on white sand beaches. However, it is no secret that the industry is a large contributor to the damage on the environment. Whether it's using single use plastics or flying provisions in from the other side of the world, there are ways we can help to reduce our impact.

So how do we make a yacht charter more environmentally friendly?

The crew onboard any charter yacht are responsible for implementing and running the yacht in the most eco-friendly way possible. When a yacht enters a marina or port, the heads of departments should ensure all crew are informed of the correct garbage disposal and recycling plan. Each marina has their own system, and it is important each yacht and crew member adhere to these rules to ensure proper recycling takes place. These can include different colour garbage bags and designated bins for each type of garbage disposal.

Crew can also contribute towards an ocean clean up project such as [40cean](#), who clean plastic and waste out of the ocean all over the world.



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Lady Joys Angels Beach Clean Up

Installing a [Seabin](#) off the yacht's stern is another great way of removing plastic and garbage from the ocean whilst in a marina, at anchor or underway.

Each department on a yacht has their own responsibilities and ways to ensure the running of the yacht has as little environmental impact as possible.

Interior:

The interior team on board can purchase re-usable water bottles for crew and guests. Installing a water filtration system under the pantry and crew mess sinks eliminates the need for purchasing large quantities of plastic water bottles. These systems can produce room temperature or cold still water, sparkling water and have an instant boiling tap. This will save on storage and decrease the amount of waste on board.

The interior team can also make use of reusable or eco-friendly straws, which come in a range of colours and designs, and can make the guests cocktails even more fabulous.

There are several eco-friendly cleaning products, such as [Ecover](#), on the market and companies who provide cleaning products specifically for yachts and professional use when it comes to laundry and maintaining the high-quality interior finishes.

The Chief Steward/ess can ensure the toiletries and amenities for guests, which are provided by the yacht, do not damage marine life. These can include [reef friendly sunscreens](#) and organic shampoos and conditioners.

Coral reefs are amongst the most biologically diverse ecosystems in the world and products such as standard sunscreens can damage them and the marine life that call them home.



Photo by Egor Kamelev from Pexels

Galley:

The Chef on-board can reduce their carbon footprint by provisioning locally and using local ingredients to avoid the need to hire refrigerated vans or planes to fly in produce from another country. Purchasing large quantities of items, which can be stored and used when in remote areas will help with this.

Another way to reduce waste in the galley is by managing portions when cooking for crew and guests to ensure there is a small amount of food going to waste. Alternatively, re-using ingredients when possible is another great way to reduce waste such as making arancini out of left-over risotto.



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Daniel_theyachtchef Making the most of the local produce

Deck team:

The Officers on board are in charge of making passage plans from one destination to another. When doing so consider taking the shortest route possible accounting for weather conditions and local regulations, speed – operating the engines at their most fuel-efficient rpm. This will not only save the guests money it will also ensure the passage is the most fuel-efficient option for the yacht.

When dropping anchor, the Captain and deck crew need to ensure they are aware of a number of factors to decrease the possibility of damaging the seafloor and marine life. These include knowing any local, national or international regulations for anchoring and being aware of any protected areas or nature reserves where anchoring is illegal. These protected areas can change from year to year depending on whether or not a certain area needs time to replenish itself after being previously damaged.

Deck crew, similar to the interior crew, can make use of environmentally friendly cleaning products when conducting day to day cleaning and routine maintenance projects.

As technology progresses, the yachting industry will see an increase in the use of electric and eco-friendly water sports toys, which is a great way to have charter guests still enjoy a day in the ocean but without the increased risk of damage to the marine environment around them. For example, the electric [jetsurf](#) was launched in 2020 and hydrofoils are becoming increasingly more popular. Many existing water sports activities such as kayaks, paddle boards, wind surfing and snorkelling are firm favourites of charter guests and do not have any environmental impact whilst in use.



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Engineering:

Engineers on yachts not only manage what is in the engine room, they also are in charge of the maintenance and repair of everything electrical and mechanical on board. A very simple

way for the engineers to make the yacht more eco-friendly is to change all lighting on board to LED bulbs.

When it comes to making sure the engines are as eco-friendly as possible, the 'fuel curves' need to be analysed. Each engine installed into a yacht is provided with 'fuel curves' and form part of sea trials prior to delivery. These curves not only provide the fuel consumed at maximum speed but also provide information of the most fuel-efficient speed the yacht can operate at. This is often known as the 'sweet spot', and whilst it is not always possible to operate within this range due to charter requirements, operating at efficient powers should always be factored in wherever possible such as overnight cruising or repositioning voyages between charters

With regards to purchasing fuel for the yacht, the Chief Engineer and Captain should use as high a quality fuel as possible. The regulations recently changed in January 2020 reducing the allowable sulphur content of fuel to 0.5%. Yachts already more than comply with this as they generally burn low sulphur gas oil with a sulphur content of 0.1%. However regular testing of bunkers taken, by independent laboratories is recommended, particularly where fuel is not taken from a regular supplier or at an unknown port or marina.



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M/Y Gene Chaser's Impressive Engine Room

Carbon Offset:

Another way to make the engineering department more environmentally friendly is by joining a carbon offsetting

scheme which would mean you are supporting projects around the world that reduce carbon emissions; one example is a tree planting project.

Commercial yachts of 400GT and above currently in operation should review their Ship Energy Efficiency Management plans on an annual basis. It is a great opportunity for the Captain and engineering team to review the way their yacht is operated as well as ensure they are running in the best possible way to decrease the damage to the marine environment in which they operate.

The tanks on board holding waste of any kind needs to be correctly treated as well as following all local, national and international regulations for any discharging into the ocean where permitted. In order to minimise damage to the ocean and marine life.

West Nautical's Yacht Manager Tony Hildrew commented;

"When entering a port and connecting to shore power there are a number of ways superyachts can be a little more environmentally friendly and reduce the amount of power that they consume. Things like reducing the number of air conditioning compressors running, keeping exterior doors closed and harmonising guest and crew mealtimes to reduce the length of time the galley equipment is running can all have an impact on the power a modern-day superyacht consumes whilst in port.

A few little adjustments can make a huge difference when looking at the bigger picture, if every one of the 10,000+ superyachts worldwide made the little changes then the steps in helping to move yachting towards a more environmentally friendly industry would be great!"