SAILING INTO THE FUTURE

As the industry looks to find green solutions, it's down to the collective power of the sailing industry to lead the charge on the eco-tech boom. We talk to the yards who are using a variety of cutting-edge technologies and designs to bring about change

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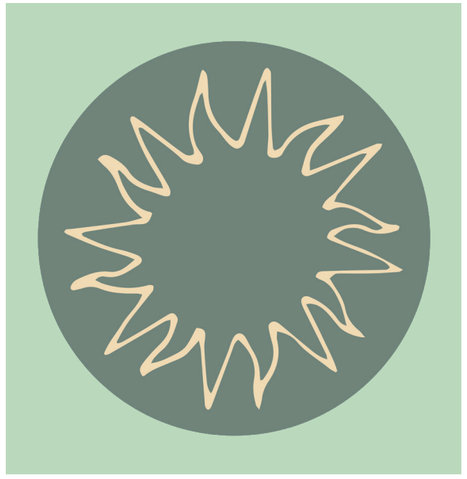
If you conducted a survey of all the Superyachts at sea, you'd find that little over 15 per cent have sails. Though harnessing the power of the wind may appear to be the answer to environmental concerns around the yachting industry, the reality is far from simple.

More and more, designers are turning to cutting-edge hybrid energy sources, and specifically a combination of diesel and 'green' electric propulsion. Indeed, far from being a low-tech alternative to motor, on occasion today's sailing yacht designs embrace such highly advanced technology that they appear more akin to a space shuttle than a descendant of the traditional sailing boat.

These developments in technology and yacht design have led to many owners who are relatively new to sailing joining the ranks. With advances in energy efficiency, regenerative power, high performance sailing technology, and an increase in long-range cruising potential – yet still with all the luxuries associated with superyachting – there is now much more to a sailing yacht's eco-credentials than simply being powered by the wind.

Harnessing the wind as efficently as possible to move a sailing yacht from A to B is of course the simplest way to minimise its carbon footprint. However, given that the average yacht spends much of its time sitting at anchor or in port running generators, this is by no means a panacea. Power generation for hotel loads is still required in some format or other. It is alternatives to using traditional internal combustion engines for power generation that have become the primary focus for many designers looking to make sailing yachts greener.

A number of the larger sailing yachts have the deck space to host solar panels to contribute significantly to power generation, such as the award-winning 44.6m *Path* from Baltic Yachts. Hydrogeneration (generating energy through the propeller while sailing) has also become more commonplace. *Black Pearl*, the 106.7m from Oceanco, is one such yacht which uses this format to generate energy to store in its batteries.



Hybrid power is probably the most exciting recent innovation in the yachting world, and more and more sailing yachts are being built with hybrid systems that combine diesel and electric energy in an efficient way.

Royal Huisman's sailing yacht *Ethereal* was the first Superyacht to pioneer the use of hybrid technology. Launched in 2008, her design and build were so ground-breaking in their environmental goals that new technologies and research in bio-engineering were required. Stuffed to the gunwales with sustainable features, the heart of the 58-metre yacht is a hybrid with a dual propulsion system that charges the batteries instead of using generators while under sail, while her various onboard systems also recycle energy.

Royal Huisman has continued to refine its technological lead in sailing yacht construction, with hybrid models like the 52m NextGEN ketch *Elfje* in 2014, and the 59.7m Project 404. The high-performance Malcolm McKeon sloop, which is currently in build, features twin, retractable electric drive propulsion units. "The yacht can motor in 'quiet mode' using only the batteries, so an early morning silent departure from a peaceful anchorage is possible," says Gregory Monks, the owners' representative. The yard recently announced the signing of an 85m New World Sloop Project 410, too. "The innovative technology used on Project 410 qualifies for the new Lloyds 'Hybrid Power' certificate, as the yacht will be capable of regenerating energy during sailing," says Royal Huisman CCO Peter Naeyé. "It is an extraordinary honour to be entrusted with a project of such scale, ambition, and technical sophistication. It will be a true performance Superyacht with supersized dimensions, and full of technical innovations. We're all going to enjoy the realisation of bespoke excellence embraced with 'New World' technology."

Over at Huisfit, Royal Huisman's refit division in Amsterdam, they have also been keen to embrace all the latest hybrid technology benefits to improve the green credentials of the existing yacht fleet. Nowadays, the shipyard always looks to work with owners to future-proof their legacy yachts during refit periods. "There are a wide range of green solutions to reduce the use of energy on existing yachts, including the hybrid conversion of the 30m cutter *Foftain*, and more recently, the 44m sailing yacht *Juliet*," says Peter.

All the major builders have followed suit to a greater or lesser extent, and with every year there are more and more new hybrid sailing yachts penned by leading naval architects in the field. One omnipresent name with a portfolio of sailing yachts that includes the iconic *Black Pearl*, and the J Class *Rainbow*, is Dykstra Naval Architects. The latter is one of the first J Class yachts to use a hybrid propulsion system. This provides large fuel savings as well as reducing noise, and the batteries can be charged while sailing. "The hybrid regeneration system allows the yacht to operate entirely on wind

energy without running a generator set for the onboard electrics," explains Thys Nikkels, CEO & Naval Architect at Dykstra. *Black Pearl* is another Dykstra design with an obvious nod towards sustainability. Featuring a hybrid propulsion system like *Rainbow*, as well as other onboard systems such as waste heat recovery, she also has a power regeneration system using her propellers to run the onboard electrics.

The Dutch shipyard Vitters has also been looking beyond widely accepted technical solutions for a number of years, with power management systems featuring on a number of their builds. "Peak shaving battery systems have become the new standard for Vitters," says Bas Peute, Vitters' Sales and Marketing Manager. "It won't be long before the first zero emission sailing yacht projects are on the drawing board. We have seen two things: electric propulsion engines replacing combustion engines with conventional drive trains, and an increased trend in power generation via the propellors while under sail."

For Italian-based Southern Wind, it is all about ensuring compatible systems. The yard currently has three performance sailing yachts in build, two of which feature hybrid propulsion systems. "Although we always hope to be at the leading edge of technology, we've also learned from the difficulties other shipyards have had in the past with hybrid propulsion, and we didn't want to assemble a system from different suppliers," says Andrea Micheli, CCO of Southern Wind.

In Northern Europe, Baltic Yachts, who are known for their green and innovative sailing yachts, also recently announced a new hybrid model. The Baltic 110 Custom follows on from the Baltic 142 *Canova* and Baltic 117 *Perseverance*. How the shipyard will improve on these award-winning yachts remains to be seen, but according to Henry Hawkins, Executive Vice President at Baltic, every hybrid yacht built is an evolution of the previous one. "The speed at which the technology in this sector is developing means that while the hybrid system in *Perseverance*, for example, was the perfect solution at the beginning of 2020, just a couple of years later hybrid technology has moved on to the next generation."

Certainly, hybridised propulsion isn't the answer to everything. The primary limitations – how much energy can be stored in a battery, and also the afterlife of batteries and their disposal – remains a sticking point. However, the industry is witnessing continued improvements in efficiency and capacity, meaning diesel-electric hybrid yachts are currently the preferred solution until alternative power sources, such as hydrogen fuel cells, can be fully adopted.

"Just about every shipyard in the industry is looking to the future and to moving away from fossil fuels entirely," says Andrea. "But this is something we need to do collectively, as an industry, and with clients willing to take the plunge."