

the crew

www.yotcru.com

REPORT



Intelligent Green Thinking



To coincide with the environmental focus, *TCR* approached two members of the yachting industry to share their views on the importance of green design in yachting. Paul Dielemans is managing director of renowned shipyard Holland Jachtbouw, which is building a motoryacht with more eco-friendly solutions. Michael Healey is founder Trente Metres Plus Yachts, a new shipyard that has an unusual approach to yachtbuilding on many levels.



The Hollander

Paul Dielemans

The genesis of the *Hollander* started with a conversation I had with an owner in 2007. He was considering refitting his motoryacht at HJB and the potential costs were such that I asked him to consider a new build instead. The answer was clear: “Motoryachts are all the same and I have no wish to build the next white boat in a fleet of white boats.” What if it were different, I responded. “What’s different?” came the riposte.

Great minds

Having no definitive answer to this frank question triggered me to seriously examine the possibilities in the powerboat sector. HJB is renowned for sail yachts and for some time we had sought to branch out more into power (*Cassiopeia* being a fine example). I had already recognised we needed to do something extraordinary to establish HJB’s credentials in this sector and, prompted by the above exchange of views, I decided to consult some of the leading minds in our industry. The brainstorming

team included two men with enormous motoryacht experience at Feadship, Hein Velema of Fraser Yachts and Hugo van Wieringen of Azure Naval Architects. Andre Hoek brought in his inimitable design flair and, together with the top technical folk from HJB, we developed the first *Hollander* concept. Unveiled at last year’s Monaco show, the combination of an exceptional hull shape with a hybrid propulsion package was enthusiastically received. A straight bow maximises the waterline length, reducing pitching and increasing comfort. People liked the >>

Profile view of Hollander



Hollander's retro/classic looks, which pleased me as the concept was intended to offer a new challenge for smart clients, not an unfeasibly futuristic design.

Intelligent and green

To be honest, we set out to make an intelligent gentlemen's motoryacht rather than an especially green vessel, yet the environmental aspects have dominated headlines. We have leveraged further on the industry and market input since Monaco, but let me explain the reasons why *Hollander's* hybrid power system is generating such interest.

I emphasise that we are using tried and tested technologies; not being experimental in terms of the equipment itself, just in the way it is combined with other parts of the yacht. The alternators, for example, will be supplied by an established company, and the system is water-cooled, lightweight and compact.

Smart gensets

The key to *Hollander's* innovation is that generators supply all power. The total power requirement for propulsion and hotel load is divided between variable speed gensets, offering a much wider and more efficient power range compared to a single rpm genset. For instance, 100 kW from a single genset at 1,500 or 1,800rpm demands a certain horsepower. Varying the speed, a requirement for 100 kW can be met with a much smaller engine at a higher rpm, ie *Hollander* gets more kW from the same power source. Similarly, if less than the maximum output of a generator is required, decreasing the rpm keeps it fuel efficient and clean.

This applies to one generator – multiply these effects by four gensets, each with its own capacity, and you have a clever choice of combinations, especially in combination with our intelligent management system. The crew always makes the final decision but if you request a certain speed or hotel load, the system will decide which generator runs at which percentage. Smaller generators create the maximum required kW, and run more fuel efficiently in doing so.

When lower than maximum speed is required of a normal diesel propulsion installation, you will switch to half throttle. On the *Hollander* you can shut down half the generator capacity instead. In this way two generators might be running at 85 per cent capacity, which is ideal in terms of wear and fuel. Because the running time is much lower than with traditional systems, the gensets require less maintenance and have a longer lifespan. This is both green and handy for the crew.

In addition, the combination of the hybrid system and low resistance hull offers considerable fuel savings of up to 35 per cent, depending on the design and length of the boat, and whether it is built in aluminium or steel. There is also the layout flexibility of having the generators on the tank deck level, leaving the lower deck entirely free for interior accommodation. We hope owners will use some of the added space to increase the facilities given to crew.

A battery bank is integrated into the hybrid system and comes into play when it is barely worthwhile starting up a second generator. When one generator is running and has surplus power this is used to recharge the batteries. A battery bank also offers a silent operation option for entering marinas without running the engines, docking and hooking up to shorepower, which is sure to impress your neighbours. The boss will also be pleased that this allows access to restricted areas due to the zero-emission capability and swimming without the smell of exhausts.

Other eco-friendly enhancements of the *Hollander* concept include the widespread use of LED lighting, which consumes less energy than halogen; the demotic philosophy developed for smart offices and homes, which provides push-button control over large areas of the boat to reduce aircon or dim lighting, for example; and heat recovery from the generators, used for warming water, the aircon and swimming pools/whirlpool baths for example. Alternatives for traditional window glazing, teak decking and reduced exhaust emissions have also been chosen

for *Hollander*, which furthermore improves its green credentials.

[Look out for the article on working with hybrid systems for engineers in TCR32 – Ed.]



Michael Healey

Why are there not more revolutionary, eco-friendly yacht concepts in your opinion?

The yachting business is essentially based on "tried and true" methods. A yacht is a big investment and every time you move away from these "tried and true" methods we are getting into an area of exposure where the owner may not be getting back his investment, and that is something that a lot of people are not willing to get involved with.

Do you believe it has to take pioneering owners to lead the way forward in green yacht design?

I would say that what we really need is people to come out and say, "Yes, we had thought about doing it another way that is more typical, but we decided that for the good of the environment – or the environmental issues we faced – we decided to go in a different direction." There will always be a certain number of naysayers. The "trendsetter" is pioneering but people want to make sure that they are not too far from what can be popular, because resale is so important.

A trendsetter is someone who is willing to invest in going in a different direction. And then others will say, "Hey, that is not so bad."

What is the best way of creating an eco-friendly yacht?

What makes most sense is to deal with what is causing the most amount of pollution, but people are not engineers and they are not always able to determine what [this is]. They are not able to take a correct approach as to what is actually polluting until they are educated; for example if smoke is coming out of something then it is automatically assumed to be polluting, but this could be steam. Also, the initial interest to being educated needs to be there because people have all their other day-to-day problems. Usually only motivated people who are in circles with other environmentally friendly individuals tend to discuss this. On the yacht the idea is for all of us to move towards trying to come up with solutions that can make everything that we deal with a lot more ecologically friendly.

What are your new approaches to hull exteriors?

I like the idea of using wood on the exterior hull of a yacht, as with the research and development we have done, for a number of reasons. One is crew-orientated: someone once explained to me why gravel drives are used in front of mansions. The gravel represents the status that is associated with the high level of maintenance as opposed to a surface that does not require maintenance, which I initially found very shocking. Do individuals really want to go out and clean or rake all day? To me these are redundant, boring tasks that create huge amounts of work to show that someone can afford to pay someone to do these things. It is certainly status-oriented, but is it the way to make a happy crew? My thinking is that no-one would buy a house if they had to wash and dry it every day, but every boat needs to be cleaned like this. We try to accomplish two things with our wooden hulls: we try to create an exterior that does not need to be dried, because it is



not producing any halos or marks; and to produce a product that, if a piece has been knocked off the hull and a child tries to put it in its mouth, then you will not be worried. I know that a child can safely chew a piece of pine that has been treated with vegetable oil all day. The idea is to try to treat the outside of a yacht the way a lot of building exteriors are treated today, using façade systems that are a product of the digital world. Through digitally mapping buildings it became possible to manufacture puzzle-like pieces to attached to them.

Is bigger worse for the environment in terms of yachts?

I don't have a problem with a yacht's size, whether it is small or big makes no difference on its environmental impact other than the choices that you make. Just like a banquet for 500 people could be organic or it could not be, that is the choice of the chef. When [addressing]

what technology is available today to propel a certain mass, as we get down to smaller boats perhaps it could be propelled by solar panels but as soon as you increase by a few tonnes this is no longer possible. I think that realistically today, unless you are talking about a sailing vessel – which is basically all that 30m+ is getting involved with at present – you are talking about something that is using primary propulsion, burning fossil fuels at present.

We are working with SkySails and think this is an advanced concept. People are not aware that the power that is produced by the SkySails system not only propels the yacht but also eventually provides the hotel load through turbines driven by the movement through the water. A lot of people I have spoken to find the concept bizarre and funny, but so did people with the concept of the car or the aeroplane in their early stages. ■