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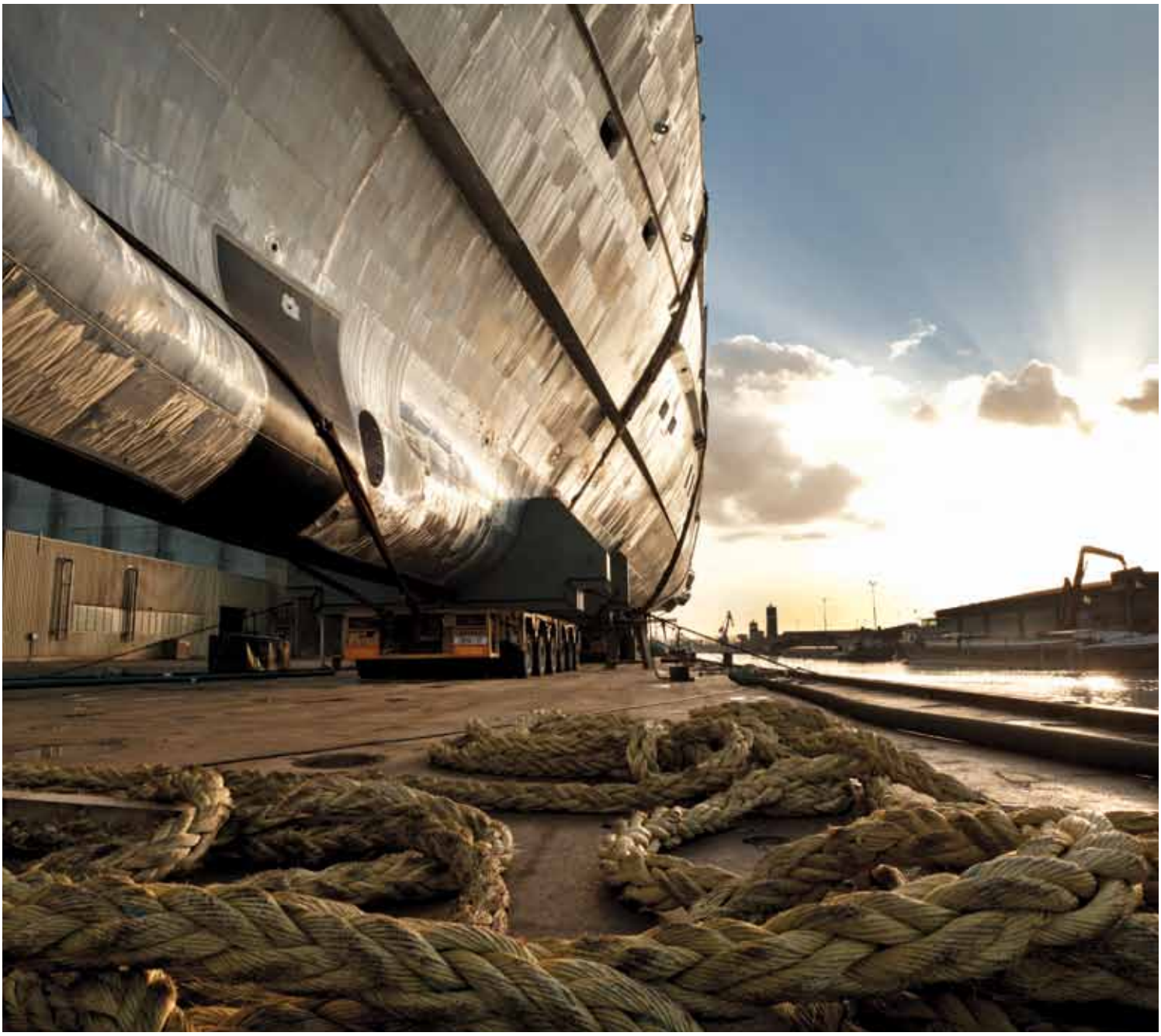
The Superyacht REPORT

TRUTH • OPINION KNOWLEDGE • IDEAS AND EXPERT INDUSTRY ANALYSIS



THE HEESEN WAY
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XVINTAGE 99
Intelligent Design v Efficient Application

It is rare to find a project or concept that can generate excitement and be seriously interesting for today's market. These rarities provide a refreshing approach, with partners working together to develop concepts that are well thought through, buildable and not just someone's unlikely dream. **MHR** explains.

ABOVE: STEFANO PASTROVICH AT GSF
BELOW & OPPOSITE: SHOWING THE ONE-DECK LAYOUT

Last November, Stefano Pastrovich and a team from Fincantieri and Wärtsilä presented their latest concept at the Global Superyacht Forum (GSF) to enthusiastic applause from their industry peers. To my mind, this is a project that has to be built. There is so much to like about the project, while still so much to understand and explore.

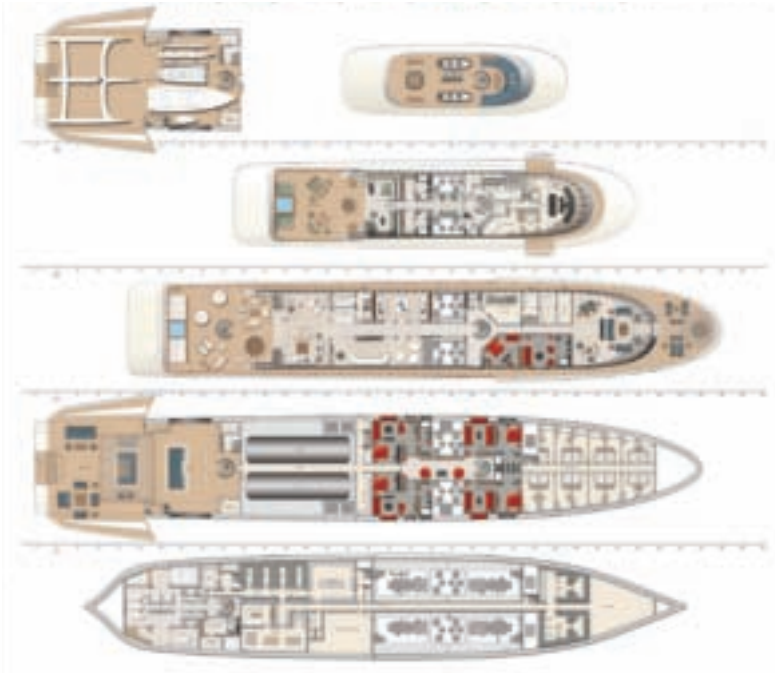
THE VISION

Code-named the XVintage 99 (XV99), Pastrovich has developed a project that has many exterior lines that have been seen before, but in this case, it's his harmonising and application of these lines that are to be admired. As with all projects in the world of large-yacht design, there are few unique ideas or styles. Everything is, rather, an advancement of what has been done before, in what is essentially a form of refinement.

With the XV99, however, what is interesting is just what hides behind the exterior lines. Yes, there is a forward shift of the superstructure, with a long, sloping aft section and the accommodation is all shifted to the bow section, but it is fair to say that due to the sheer scale of the project (99m LOA) the cabins and interior staterooms for guests and crew all fit into a sensible mid-section of the yacht, adding to their comfort.

Putting all of this sleep space in a fairly conventional position appeared to make sense, even more so when one understands XV99's power plant. It is what happens on the main deck and bridge, though, that illustrates that the designer has been allowed to have some fun.

The main deck delivers an individual space that doubtless many will attempt to plagiarise and develop further on other projects. From the perspective of living onboard, the main deck provides a continuous exterior/interior platform that is both exciting and logical due to the location of the power plant and a vast array of toys and equipment. Having a seamless space to walk effortlessly through from aft to the forward deck has likely been done or looked at before, but when one considers the space and the volume, and the level at which main deck is located, this space is elevated well above waterline.



Living at this level affords two interesting perspectives: increased privacy and the illusion that you are floating in the air above the water, in the way that a penthouse space might. Pastrovich extols the virtues and the inspiration of this elongated life space, with Frank Lloyd Wright as his virtual mentor. One long space, connected through open spaces and seamless connections between indoor and outdoor, is a signature that may become the norm for the future.

The sea breezes, the connection between family and guests and the ability for anyone to base themselves on one deck could provide a level of elevation that means no one has a vantage point to look down upon another person in their primary living space. The bridge deck obviously provides for navigation priorities, but aft of the wheelhouse there is a new norm – the complete owner's penthouse apartment, something that all owners could strive for if they want to escape from the rest of the crowd. Indeed, in the case of a couple just enjoying the yacht, where else would they want to be? As one observes the layouts and illustrations featuring this wonderful space, one has to understand why everything has moved upwards and away from the waterline; the simple answer is the application of new propulsion technology.

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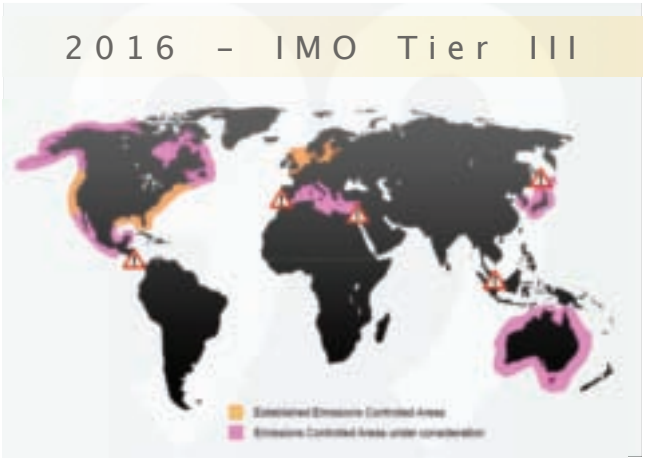
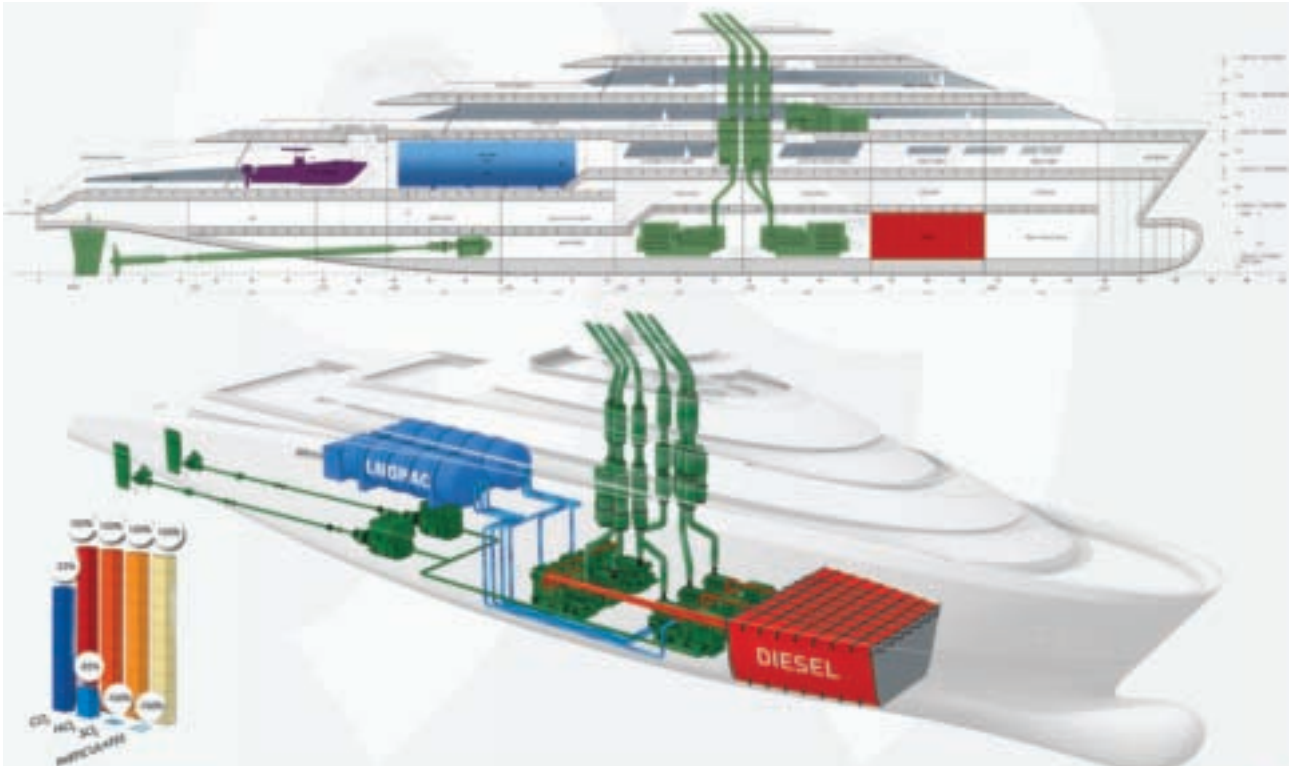


- Can use both diesel and LNG as fuel
- "Seamless" change between diesel- and LNG mode during operation
- No need for backup system in the gas supply
- Gives great operational flexibility and high redundancy



TOP LEFT: IMO TIER III WILL COME INTO PLAY IN 2016 & MAJOR YACHTS WILL BE AFFECTED. THE REGIONS IN WHICH IT APPLIES ARE THE ENVIRONMENTALLY SENSITIVE AREAS & KEY COASTLINES TO WHICH MANY YACHTS MIGRATE. LNG IS ONE SOLUTION TO THIS LEGISLATION.
TOP RIGHT: CONVENTIONAL DIESEL WOULD BE BURNED FOR TRANSATLANTIC OR PACIFIC PASSAGES, WHILE IN RESTRICTED REGIONS, THE SYSTEM WOULD CONVERT TO LNG, ALMOST AT THE FLICK OF A SWITCH.
ABOVE: THE STORAGE OF THE (LNG) FUEL BECAME THE FUNDAMENTAL CONSIDERATION FOR THE YARD & THE DESIGNER.

THE TECHNOLOGY

The word 'new' is often used in yachting, and it is fair to say that Liquified Natural Gas (LNG) as a clean fuel for power is not completely new, and many other yards and integrators have considered its use. Its primary applications, however, are in the offshore and commercial shipping sector, with over 100 applications afloat. Wärtsilä and Fincantieri both decided that the use of LNG is worth evaluating for large yachts above 70m.

The reason behind this decision is that by the time the IMO Tier III NOx emission rules come into play and apply to yachts (by 2016), the technology and source of the fuel should in fact be at a suitable level to consider this fuel as a viable alternative. Their studies obviously ensured that the XV99 would meet the IMO Tier III requirements, with significant reduction of NOx gases, but the additional benefits of zero soot in the exhaust gas and a much reduced CO_2 percentage added to their proposition.

So by the time the IMO Tier III rule enters the market in 2016, with punitive restrictions of NOx emissions, the exploratory work being done by many players today is an approach to be applauded. But obviously with any new system for yachting there are drawbacks and issues to address; while the application of the technology is explored later, it is the storage of the fuel that became the fundamental consideration for the yard and the designer.

LNG, by definition and understanding the physics of turning a gas into a liquid, means a change of physical state. In order to do this and maintain the liquid gas in a stable condition, the storage system requires incredibly high-strength capsules with double skins, rather like very large scuba tanks. The temperature at which LNG exists in its liquid state also creates a major consideration, as at minus 160°C it can add issues that need dealing with. The gas itself is not dangerous and will disappear into the atmosphere without any concern of ignition, as the right conditions for burning have to exist, but in its liquid form, in the case of a leak, the incredibly low temperature would in fact cause immediate freeze damage to the metal hull plates, hence the need for very sensitive storage considerations, double skin tanks and double skin hulls too, plus other systems that require attention.

So with high-tech storage and low temperatures being two key issues, some conventional owners may shy away from LNG. The two tanks for XV99 are housed in a storage facility below the main deck and aft of the guest staterooms that measures 15m x 9m x 4m (approx) in height. Obviously, this has had an impact on the location of the living accommodation, but Pastrovich and the team saw this as a challenge to work with, hence their clever one long main-deck configuration.

THE APPLICATION

IMO Tier III will come into play and major yachts will be affected. However, at the moment, the regions in which it applies are the environmentally sensitive areas and key coastlines in which many yachts congregate. The Baltic regions and the east and west coasts of the USA are definitely on the IMO list as Emission Controlled Areas (ECA), but larger areas like the Mediterranean, Alaska, the Gulf of Mexico, the Australian coastline and some Chinese and Japanese areas are all under serious consideration.

It is important to note – and a debate will be published in our next issue on the impact of IMO Tier III on the burning of diesel and how efficient and clean the systems can be made using filters, catalytic systems and other new technologies – that LNG is not the only solution to this legislation.

I like the exterior and interior space configurations that have evolved out of the requirements for LNG storage; and the cleanliness and cost of LNG have to receive serious attention in a market that requires a responsibility towards environmental impact and financial considerations.

WITH SIDE BULWARKS FOLDING DOWN AND A COMMERCIAL-STYLE DOUBLE-J FRAME CRANE SYSTEM APPLIED TO REMOVE THE HANGAR'S CONTENTS, WHEN DEPLOYED, THE TOYS AND TENDERS CAN ALL BE TIED ALONGSIDE AND THE SPACE REMAINING IS CONVERTED INTO AN INCREDIBLE BEACH CLUB THAT COULD HOUSE A VAST COLLECTION OF FRIENDS.

However, for the purposes of this report, XV99 is a solution, and one that requires some interest and recognition for its thinking and application of technology. A yacht of 99m would invariably have a conventional fuel capacity that would deliver a cruising range of perhaps 6,000nm, even though it is rare for any yacht to cruise that distance non-stop.

To deliver this range just with LNG would in fact require a gas storage system some 250 per cent larger than designed. Coupled with the fact that the Tier III rules only apply to specific cruising regions, the team decided that a dual-fuel approach would be ideal, with a multi-purpose diesel electric configuration delivering the best solution. Conventional diesel would be burned for transatlantic or Pacific passages, while in restricted regions, the system would convert to LNG, almost at the flick of a switch.

With a 2,000nm range under LNG and 4,000nm with diesel electric power, the yacht would still provide the required operational criteria expected of a vessel of this size. Obviously, bunkering LNG is not straightforward at the moment and you cannot just call up your supplier and order X amount of gas to be pumped onboard.

However, the rate at which the technology is being applied and further developed, it is easily possible that the proposed number of LNG bunkering terminals will expand dramatically. Today, there are several terminals in all of the key cruising destinations and with the US Navy looking at converting and developing many of their vessels to LNG, it is a simple suggestion that this technology is going to be part of the maritime industry's future.

There are further advantages: in addition to that of having a clean conscience, that of no soot falling on the pristine topsides of you and your neighbour, and complying with the future environmental rules, one principally of cost. It is projected that LNG will cut your fuel bill by up to 50 per cent compared to burning conventional marine diesel, so in cruising mode with guests onboard during charter or with owner onboard, there is a financial benefit.

For ocean passages and crossings, with the right voyage planning and at optimum speeds with diesel, again the yacht could be operated more efficiently. This system will have its sceptics and opposers, but ultimately, there is no reason to suggest that with the right understanding and the right client that this yacht and the technology have a future.

Returning to the application of the technology, Pastrovich explained that the use of two vast tanks of LNG of some 4m in height was an obstacle to overcome, not a pain to the process. The cavernous space created aft of the guest accommodation would require some intelligent thinking and within the 99m structure and with only 15 per cent being occupied by the tanks, this left a large space forward for sleeping quarters and another space aft of the tanks for XV99's large inventory of proposed toys, including a dynamic 12m trimaran for some serious fun.

With the tank storage space requiring more than 4m in height and by creating an enclosed extension of this space to house toys, this massive garage would provide an unrivalled space that would be the envy of all significant yachts. As Pastrovich suggested: "It's more a hangar than a garage."

With side bulwarks folding down and a commercial-style double-J frame crane system applied to remove the hangar's contents, when deployed, the toys and tenders can all be tied alongside and the space remaining is converted into an incredible beach club that could house a vast collection of friends. So when guests want to get closer to the water, there is no need to walk down any long, winding steps from deck to deck, but could instead be housed on this level with all of the entertainment one could ever wish for.

In addition, when running on LNG while at anchor, the noise, soot emissions and oily residue floating around the yacht that are typical of under-loaded generators are all,

in theory, eliminated – an exciting prospect for any client who wants the best of everything.

IN CONCLUSION

The XVintage 99 is an intelligent proposition to the market and one that I admire and applaud. I truly hope a brave client will consider taking this project a step further for two reasons: one, because I like the exterior and interior space configurations that have evolved out of the requirements for LNG storage; and two, the cleanliness and cost of LNG have to receive serious attention in a market that requires a responsibility towards environmental impact and financial considerations.

While construction and system costs are likely to exceed conventional comparable 99m projects, the XVintage 99 is a project that will make a statement to the rest of the world, "Here is an intelligent and responsible owner who appreciates beauty and nature together." I am sure that many other projects similar to XVintage 99 will explore this technology and it is easy to see why. LNG is in good supply, it is cheaper than marine diesel and burns more cleanly and more efficiently, meeting future IMO regulations. What the engine manufacturers, fuel suppliers and chief engineers think is another story, and one we will discuss in a future issue. ■

Images: courtesy of Fincantieri, Pastrovich & Wärtsilä

To comment on this article, email *issue131@superyachtreport.com* with subject: XVintage 99

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