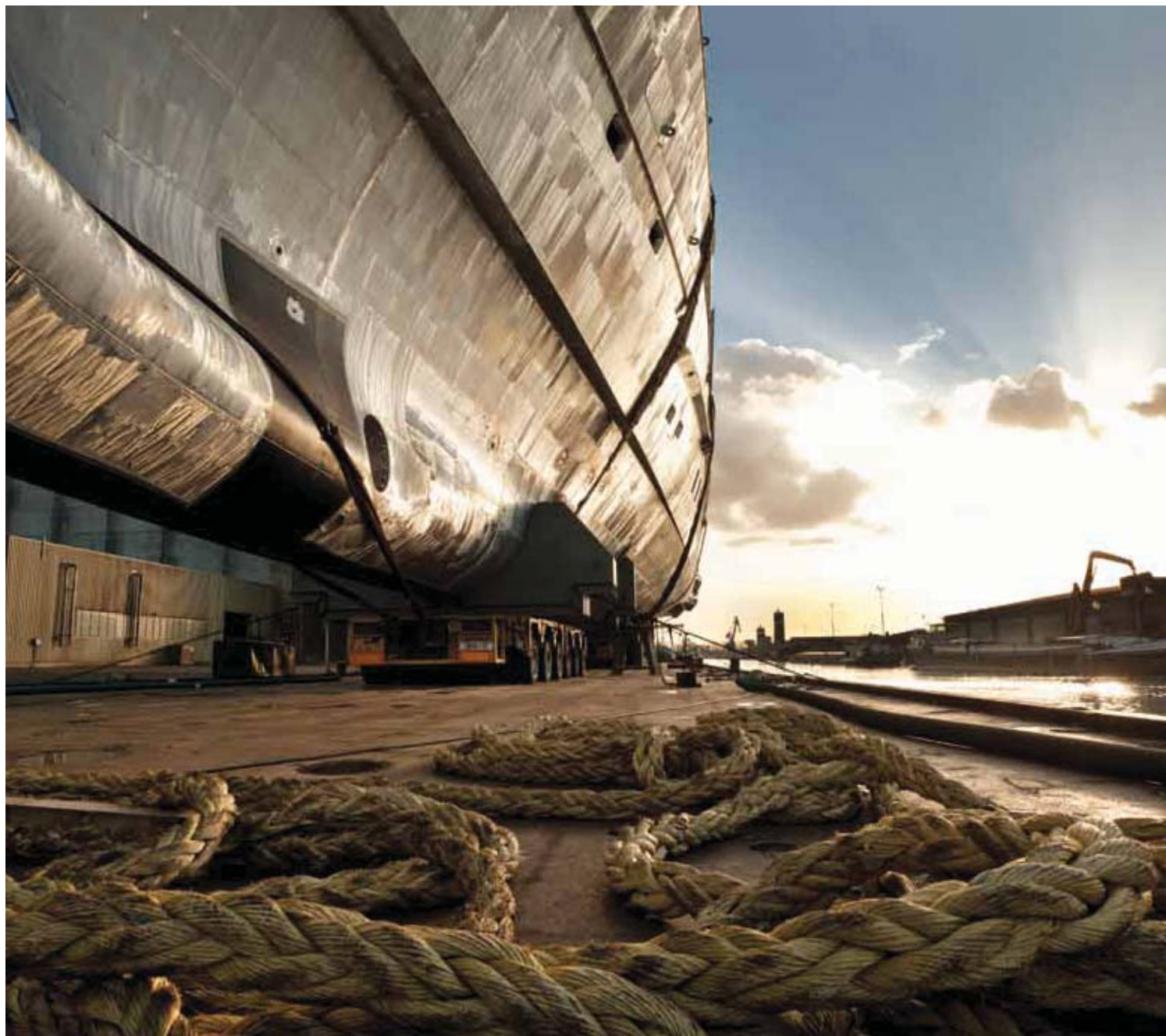


The Superyacht

TRUTH • OPINION KNOWLEDGE • IDEAS AND EXPERT INDUSTRY ANALYSIS



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A STAR ATTRACTION

Following on from the deliveries of 62m *Candyscape II* in 2009 and *Roma* in 2010, Viareggio Superyachts (VSY) has begun fitting out the 72m *Stella Maris*. All three yachts have been designed by Espen Øino, but whereas the 62m vessels were sisterships, *Stella Maris* is based on a new platform that takes the 'villa by the sea' concept and gives it maximum expression. Our European Editor, **Justin Ratcliffe**, reports.







GENERAL MANAGER FEDERICO BENNEWITZ

Stella Maris represents a decisive evolution of her predecessors. First and foremost, she is a very high-volume vessel. An updated and slightly longer version of the 62m with a bulbous bow and extended aft platform currently in build is 1,100gt, compared with 2,300gt for the 72m – more than twice the volume for less than 10m additional length.

An even more revealing comparison can be made with Rossi Navi’s 70m *Numptia* (featured in *TSR* issue 128 and *SYD Q9*), which is just over 1,640gt. And if you’re still not convinced, consider that the total interior guest surface area is 628sqm, which corresponds to an average 52sqm per passenger with a full complement of 12 guests. What all this volume means is that the designer had a huge amount of interior space to play with, and the freedom this provides has led to some unconventional layout solutions.

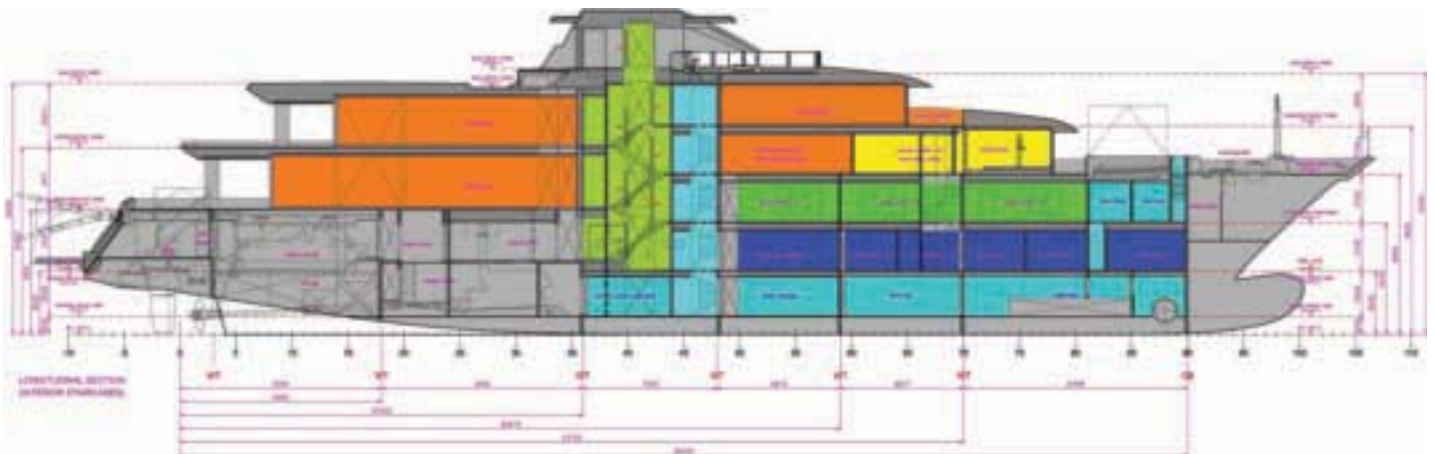
“In order to get the maximum volumes that aesthetic factors would allow, we opted for staggered decks separated by the vertical communication section located amidships,” explained general manager Federico Bennewitz, when *TSR* recently visited the yacht in build. “This is where all the main external and internal stairs converge, separated into those for guests and those for the crew: sun deck included, there are six decks fore of the stairs

and five decks aft. The result? Salons of greater height and decks separated into those for guests, owner and crew use.”

A glance at the general arrangement (below) reveals this staggered deck configuration. The bilge deck houses the two-tier engine room and technical spaces, crew quarters and storage/service spaces, such as laundry and cold stores. All accommodation is located forward of the central column: crew on the lower deck, six guest cabins on the main deck and owner’s suite above the wheelhouse. Social areas, with the exception of the open sundeck and fitness/spa space on the bridge deck, are aft of the central column to take full advantage of the exceptional headroom of up to 2.70m, which reportedly eclipses – excuse the pun – even 163.5m *Eclipse*.

The generous ceiling heights on the main and upper decks aft are enhanced with full-height windows wrapped around both lounge spaces, combined with low bulwarks for 180-degree panoramic views. These huge glass windows define Espen Øino’s angular exterior styling, but also presented technical challenges in terms of sheer weight for naval architects Laurent Giles in specifying the hull form (see side bar on page 61) and when it came to minimising sound and vibration levels, as one of the biggest potential set-backs of large

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glass panels is the resonance from the machinery in the engine room just below the salons.

Dedicated noise control engineering is beyond the resources of most shipyards, so VSY brought in Joseph Smullin of Soundown Corp in Massachusetts, USA. Studies in conjunction with glass specialists Isoclima revealed that double glazing on yachts can accentuate rather than attenuate vibration noise. With this in mind, the type and thickness of the laminated panes vary in size and type of glass according to their location and the potential source of vibration.

“In the forward areas, such as the wheelhouse, where noise reduction is not an issue, lighter glass with a SentryGlas interlayer has been used to enhance structural strength and weight saving,” explained Bennewitz. “In the salons, where comfort is a priority, the windows were engineered to enhance thermal protection and acoustic comfort, so glass with a special PVB (polyvinyl butyral) acoustic interlayer was used, along with an infrared filter to reduce direct penetration by more than 40 per cent.”

The floor-to-ceiling windows presented another issue known as ‘racking’ that had to be resolved. As with tall buildings, which are subject to lateral forces in windy conditions known as racking or shear deformation when high walls and partitions want to twist into parallelogram shapes, the large glass panes aboard the yacht had to be securely bonded to the aluminium superstructure to avoid deformation with normal flexing. Aesthetically, part of the visual appeal of the glass panels is the lightweight look they help to create, so the rest of the superstructure had to complement this appearance and be sleek as well. Oversized mullions would have killed this effect.

A close look at the yacht’s sectioned profile shows that the phased deck levels fore and aft intersect at the vertical column amidships, which houses not just the guest elevator and main staircase, but also a service lift

The Designer ESPEN ØINO

Having collaborated on VSY’s previous projects, Espen Øino describes the rationale behind the innovative design features that characterise *Stella Maris*.

Unlike *Candyscape II* and *Roma*, which were projects I took over after the design process was already well advanced, with *Stella Maris* I started with a blank sheet of paper. I’m obsessed with getting as much of the outside world into the boat as possible. You can see that in *Skat*, for instance, and to some extent *Stella Maris* has a lot in common with that design, such as the slightly flattened bow to create more foredeck space.

Early on in the design phase we thought very carefully about what we could do differently. The client’s vision for this project was that of having a home, or rather villa-like feeling in his yacht to extend the ability to enjoy the yacht in all seasons of the year, no matter the location of the voyage or charter. Privacy was also of primary importance, so the owner’s deck is completely separate and cannot be seen from any other onboard. While in summer there is abundant light to experience the pleasures of sunlight and sea, this is not so in the other seasons, when the idea of being shut inside is not very inviting. This leads to yacht owners being obliged to transfer, albeit for a limited period of time, to the Caribbean and other such climes. Lack of headroom in the main guest spaces is one reason why yacht interiors are relatively underused and what distinguishes them from residential architecture. With *Stella Maris* we wanted to really open up the interior and we did this by staggering the deck levels fore and aft and ‘suppressing’ one deck to create higher ceilings in the two lounges. The semi-enclosed dining area on the upper deck aft of the salon is an extension of this philosophy. It is protected by sliding glazed panels to enhance the feeling of open space, but can also be air conditioned as required. Much of this panelling can be opened up to join the internal and external areas and the aft bulwark has been tapered down to deck level to give an unimpeded view of the sea. The full-height windows were a collective decision and part of the mission to open up the interior to the outside environment. There were no particular Class issues as all the large panes are in the superstructure aft of midships above the bulkhead deck. Even so, we had to keep a close eye on weight, acoustic and distortion issues, not to mention the MCA/VHCA certified helipad immediately above the upper deck lounge. But if allowed for at the beginning of the design process, these are all technical considerations that can be sorted out; I always say that a problem recognised is a problem halfway resolved.





CLOCKWISE FROM TOP LEFT: FORWARD SUNDECK, HER BATHROOM, UPPER SALON, MAIN SALON, AFT BEACH PLATFORMS, TENDER BAY & SUN DECK POOLS.

and crew staircase, in addition to a shell door adjacent to the refrigerated garbage store to port and guest access to starboard on the lower deck, plus two exterior stairs connecting the main and sun decks.

The multiple deck levels demanded careful attention to the design of the main staircase and elevator shaft, but such a large void space also required Finite Element Analysis (FEA) of the column structure to avoid problems of hogging and sagging, the conditions brought about by increased buoyancy forces created amidships (hogging) or at the bow and stern (sagging) by wave crests (in a worst case scenario these forces can induce bending that may cause the hull to crack, believed to have been the cause of the sinking of the oil tanker *Prestige* off Spain in 2002).

As if these considerations were not enough for the shipyard and Laurent Giles, *Stella Maris* is believed to be one of just four superyachts to have a fully HCA/MCA certified helideck (the others are the 60m support vessel *Sputnik*, the 81m Feadship *Air* and Fincantieri's 134m *Serene*) – quite an achievement on a 72m where an imposingly large helideck would interrupt the elegant exterior lines, but one that required almost two years of study and consultation.

“If you want a certified helideck, you have to plan it from the beginning,” affirmed Bennewitz. “Espan introduced us to Nigel Watson of Heli Riviera, who was on the HCA/MCA steering committee when new regulations were introduced in 2007. The introduction proved invaluable and we travelled to Aberdeen early on in the design phase to visit the Helideck Certification Agency (HCA) and get their feedback on what we were trying to achieve.”

They learnt that the main safety concerns influencing HCA certification are landing area size and obstructions, but crew training, turbulence criteria and marking/lighting are also important. In the case of *Stella Maris*, this meant ensuring that a helicopter could take off and land safely in winds of up to

30 knots by approaching the platform sideways in Royal Navy fashion, rather than from the stern, the idea being that in the event of catastrophic engine failure the machine falls into the sea rather than on to the deck below. HCA requested modifications to the ‘fall’, or inclination, of the aft superstructure to further avoid just such an outcome, plus additional sprinklers to cool the glass windows on the deck below in case of fire.

VSY originally requested notation for a Eurocopter EC135, one of the most popular twin-engine models, which has a D value of 12 (for a rotor diameter of 10.20m), but at the request of the owner this was upped to D13 for the larger EC145 (with a rotor diameter of 11m), which required the platform to be increased in size by a corresponding 80cm.

The advantages of pre-planning to account for new or evolving regulations are also evident in that *Stella Maris* was designed from the outset to meet 13-36 Passenger Yacht Code compliance with minimal modifications. Four of the six double guest cabins on the main deck also have Pullman beds, but the 70sqm gym on the upper deck could easily be transformed into two additional VIP cabins. If a future owner requested a yacht with nine cabins able to accommodate 18 or more guests, the *Stella Maris* platform already fulfils the 13-36 Code principal criteria and VSY claims the only additions required would be davits for launching self-inflating life rafts. That said, Bennewitz feels that the wider implications of operating a superyacht with more than 18 or so guests have not been fully explored.

“Can you imagine 30 or more guests onboard, each with a different agenda? How many of them will want to do the same thing or visit the same place at the same time? Not to mention the additional crew and service space required,” he pointed out. “To my mind, 18 to 20 passengers represent the maximum feasible capacity from an operational standpoint.”

VSY's avowed intent to chase north European quality and build to the

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The Naval Architects LAURENT GILES

David Lewis is managing director of Laurent Giles Naval Architects Ltd in Lymington. He talks us through the firm's principal responsibilities during the design of the 72m.



We were retained by VSY to look after the overall naval architecture, but our major contribution was with the hull design, which was extensively tank-tested at MARIN (Maritime Research Institute Netherlands). The hull is a development of a series of forms we've been working on for over a decade. We're lucky in that one of our directors, Steven Wallace, is a course leader at Southampton University, so we get virtually unlimited access to the facilities there. We also worked very closely with Espen Øino to help him achieve the shapes he wanted above the waterline, and what we wanted below. Espen is both a designer and a naval architect, so he understands very well the processes we have to go through. We then worked with VSY on the various technical aspects, such as appendages and stabilisers.

One of our main responsibilities throughout the build was weight. Weight tends to creep up on you and there is very little way out, because whereas on a commercial ship added weight just means the hull sinks a little lower in the water, on superyachts the tender bay doors and other hull openings mean that freeboard is critical. There is also a penalty to be paid in terms of speed as the weight increases.

Stella Maris is a high-volume yacht considering her overall length and the amount of glass onboard presented some challenges. One square metre of structural aluminium weighs about 23 kilos, whereas one square metre of glass of the required strength for this project weighs 55 kilos – in other words, more than double the weight. This considerable increase in weight and VCG (Vertical Centre of Gravity) had to be taken into consideration in the design of the hull.

The lightship displacement is around 1,300 tons, a reasonable figure for this size of yacht as we've introduced some weight-saving measures to counteract the heavy glass. For example, VSY worked on keeping insulation to a minimum – a difficult task as minimising vibration noise usually involves adding more insulation, not less. We've also kept a careful eye on the filling and fairing, another source of unwanted weight, and lightweight furniture and fittings for the interior. We're very pleased with the hull design. You'll find smaller vessels with the same propulsion package as this one and the tank testing at MARIN showed that *Stella Maris* should be easy to drive and perform well in a seaway.

highest standards is also reflected in the eco-friendly technical specifications of its vessels. *Roma*, for example, was the first superyacht to receive Environmental Safety (ES) certification from the American Bureau of Shipping (ABS), in addition to RINA Green Star notation.

Stella Maris continues this mission with Lloyd's Environmental Protection notation that includes particle filters for the main generators; recycled exhaust gas heating systems for HVAC; pool water and hot-water supply (even the warm water produced by the fridge compressors is recycled for wash downs); black and grey water Biodisk sewage treatment; CFC-free refrigeration systems; and a Kongsberg Dynamic Positioning (DP) system that is now being marketed as a 'green anchoring' solution as it avoids having to deploy anchors in environmentally sensitive areas (although DP can also mean more fuel consumption, CO₂, SOx and NOx emissions). The DP system dictated the variable-pitch propellers and powerful 350kW Schottel stern thruster and 260kW Voith bow thruster, but the decision to have four generators of 290kW each was taken with optimum loading distribution and power management in mind. Efficiency was also behind an HVAC system that draws cool air from inside the guest salons during the exchange cycle to cool the aft decks on especially hot days.

Ample beach clubs are an increasingly common design feature to maximise contact with the sea. But whereas on most superyachts, the side garage doors fold up – usually so shorter gantry cranes can be used for launching and retrieving tenders and toys – aboard *Stella Maris* they fold down to increase the usable surface area of the teak-lined beach club (and to avoid emissions when the beach club configuration is in use, exhaust from the generators can be directed to the sun deck). The interior design by Michela Reverberi will be covered in detail in a future edition of *SuperyachtDesign*; suffice to say that it includes a climate-controlled, living garden that spans two deck levels between the main salon and the upper deck lounge – yet another feature



normally seen only in homes on dry land that reinforces the 'villa by the sea' concept.

Established in 2004, VSY is a relatively young shipyard that has been keeping a low media profile, aware perhaps that actions speak louder than words.

Neither *Roma* nor *Candyscape II* was present at the Monaco Yacht Show the year of their launch – surely a disappointment for a new yard that was keen to display its capabilities.

The good news is that *Stella Maris* is expected to be at this year's show, where it is likely to be one of the star attractions. ■

Images: Justin Ratcliffe and courtesy of Viareggio Superyachts

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