



# SARISSA

More and more sailing superyacht owners are facing the difficult decision of building in carbon or aluminum. Is the increase in sailing performance really worth the cost premium of at least 10 per cent for a carbon yacht and how does it affect resale value and ongoing maintenance costs? *The Superyacht Report's* sailing editor, **Jason Holtom**, spent a day onboard the Tripp designed 46.2m lifting keel carbon sloop *Sarissa* recently launched by Vitters to try to understand the complexity of the decision and the arguments for and against carbon.

Right from the outset it was clear that with an emphasis on sailing performance the owner wanted advanced carbon composite construction. "It was never going to be an aluminium yacht; it was always a composite yacht," said Tripp.

On a day out on the Bay of Palma in October, sailing the 42.6m sloop *Sarissa*, it was possible to feel how far the performance of large sailing yachts has advanced in the last few years. Until recently, you would not expect to get much enjoyment or 'feel' on the helm of a 163 tons displacement sailing superyacht in eight-to-10 knots of breeze and would probably just give up and resort to the 'iron topsail'.

In these light conditions *Sarissa*, however, tacked easily and felt light and responsive on the helm.

Connecticut-based naval architect Bill Tripp, the designer of *Sarissa*, is one of the very few in his profession around the world who has successfully made the transition to superyacht design and he has been a passionate campaigner for bringing the pure joy of sailing to superyacht owners and crews. His father, William H Tripp Jr, designed well-known yachts such as the *Bermuda 40*, the *Block Island 40* and the *Columbia 50*. "I was very lucky to grow up in a sailing family. Sailing and tinkering on a yacht to get something just right have always been a source of enjoyment," said Tripp.

A successful career in racing yacht design and engineering has ensured that Tripp continues to pursue the goal of sailing performance for the ever-larger yachts that his team at Tripp Naval Architects is being commissioned to design. The sailing performance for yachts up the size range has been significantly improved by advances in spars, rigging, sails and sail handling. Carbon spars have become the standard, reducing the overall weight and lowering the centre of gravity, as has the increasing use of carbon and PBO composite rigging.

Handling the large sails and the loads they generate has been simplified by hydraulics driving in-boom furlers and captive winches at a touch of the button, removing the need for large crews and offering better safety. The sails themselves, moulded from lightweight high-strength fabrics, are giving more drive up and down the wind range, with the latest furling asymmetrics improving off wind performance. Weight has always been the enemy of sailing performance, which led to a progressive move away from steel to aluminium construction. Now composite and carbon construction for large sailing yachts is offering the next step in performance gains for the enjoyment for owners.

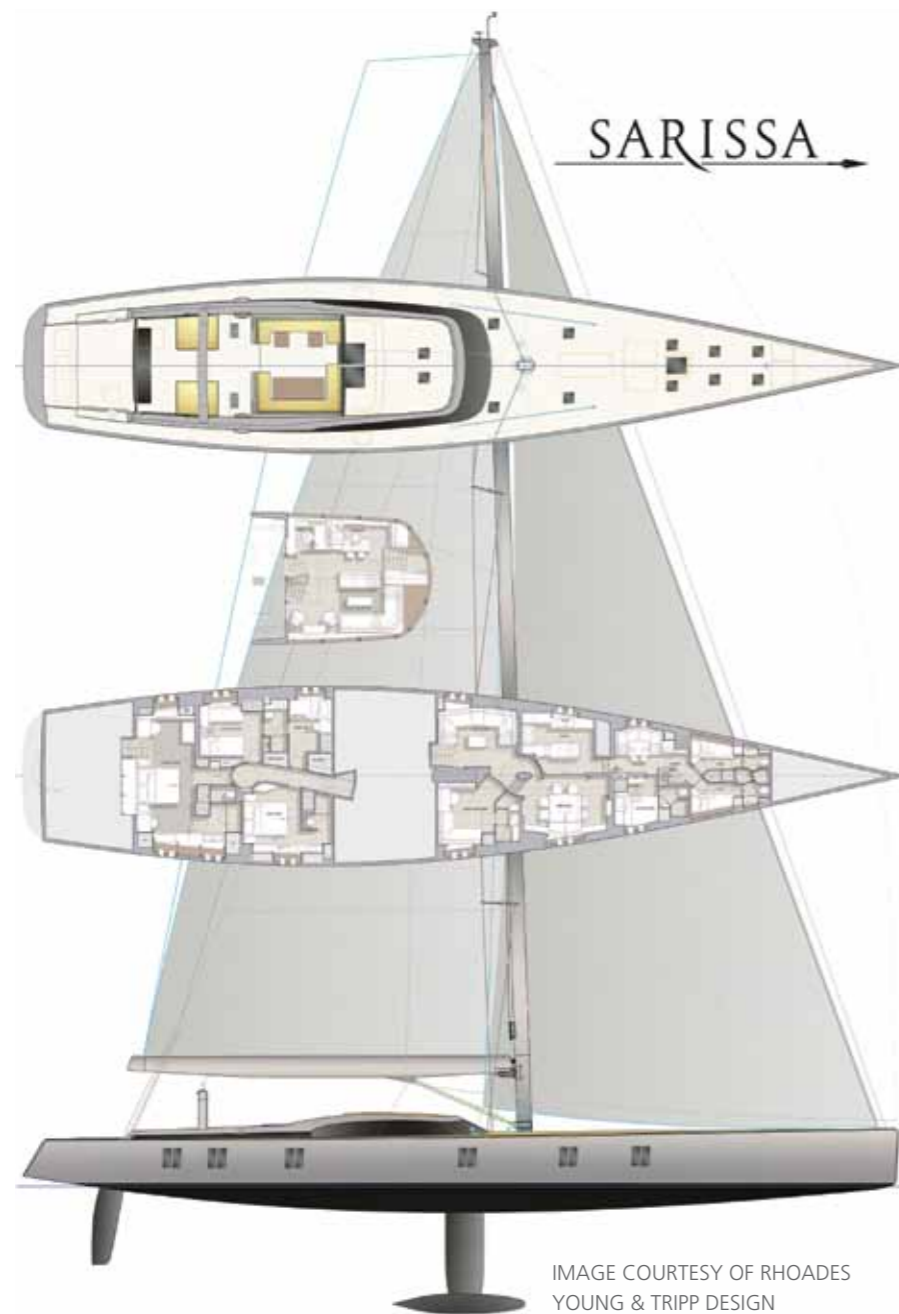


IMAGE COURTESY OF RHOADES YOUNG & TRIPP DESIGN



ABOVE: NORTH'S 3DI 107% FURLING GENOA AND FULLY BATTENED IN-BOOM FURLING MAIN.  
BELOW: TWINNED VERTICAL PORTHOLES EMPHASISE THE HIGH ASPECT RATIO RIG.

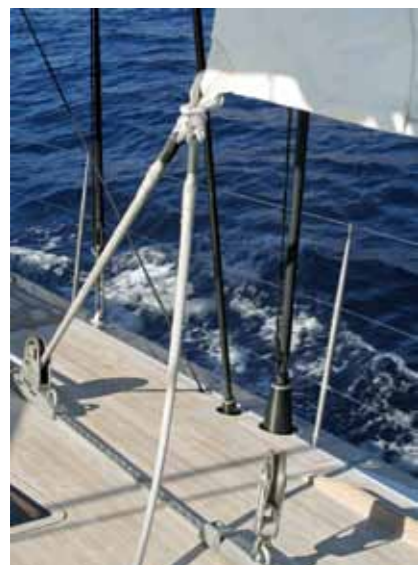
Tripp has been a major proponent for composite hulls, with some significant projects like the 43m *Wally Esense* in 2006, the 45m *Wally Saudade* in 2008, the 39m *Cinderella IV* in 2009 from Green Marine/Vitters and the Wally 50m due to launch in 2012. *Sarissa* has benefited from all the technological developments in sailing performance and from Tripp's design experience with composite yachts. It was the shape of the Tripp designed 40m aluminium sloop *Alithia*, built by Abeking and Rasmussen in 2001, that first attracted the owner of *Sarissa*, an experienced yachtsman who has already cruised extensively in a 25m yacht.

"If I can see what kind of a car a fellow drives, and if I can see his home, with these two intersections I can usually go a long way in understanding what he is looking for in a yacht," said Tripp. "Usually if a guy drives into my office in an S-Class Mercedes, he's not my client. We tend to get the guys who drive Maseratis, Aston Martins or Porches. Maybe a little bit less practical, but interested in a

little more performance. When he saw *Alithia* he really liked her. I think the yacht spoke to him more than anything else. He said it described something to him that he had in mind, a yacht for going around the world, really fun to use and fun to sail. "He wanted something very modern, very sleek-looking with a family friendly layout below deck," added Tripp. "I always say, we're evolutionists not revolutionists, particularly for these size yachts. In the racing models, you can do the revolution, but here you're trying to build something that a family's going to take around the world, so there are a lot of things that need to go into the yacht. Safety and performance have to blend together, not fight each other.

"The owner was very specific on what he wanted above and below decks," Tripp continued. "For instance, he wanted aluminium winches because they're lighter, and once he had established this theme he didn't want bright stainless-steel fittings anywhere else on deck, so he went for the brushed effect to keep the whole





ABOVE: BRUSHED MATT FINISH FOR ALL STEEL DECK HARDWARE AND STANCHIONS. BELOW: AFT COCKPIT TRANSFORMS INTO A PADDLE POOL FOR THE OWNER'S YOUNG CHILDREN.

appearance as contiguous as possible. The stainless-steel stanchions and the deck blocks are all specially glass-blasted to remove any shine.”

Tripp spent a year and a half working with the owner on the design process before the yacht started building. “We want to be part of the owner’s creative process, because you must remember that this is their dream; they’re creating something special and we’re the vehicle that they use to fulfil that dream. Without them we’re not here,” he said.

Tripp explained that they very rarely use tank testing: “We mostly use Velocity Prediction Programmes [VPP], but also the lessons from similar-sized yachts like *Mystere*, *Cinderella* and *Saudade* were applied to his yacht, so in effect, we’re doing full-size tank testing. Then we undertake a lot of

Computational Fluid Dynamics [CFD] work in the office. We’ve got a really good aerodynamicist, David Egan, running CFD pretty much full time.”

Right from the outset it was clear that with an emphasis on sailing performance the owner wanted advanced carbon composite construction. “It was never going to be an aluminium yacht; it was always a composite yacht,” said Tripp. “His previous yacht was a composite – and I think that’s what we find; if an owner has come up from small yachts and composite yachts, he’s not going to want an aluminium yacht.” It’s always an interesting question for an owner; do you build in aluminium or carbon? And it’s a very difficult one to answer, because if a client asks me: what’s the best yacht I can build at a specific size, my answer is immediately composite, but if I am asked: what’s the best yacht





Essentially, a composite yacht is more of a sailor's yacht, as it needs less sail area to power it up and is more responsive in the gusts.

I can build for this amount of money, then it's a much more sophisticated question."

Custom-built carbon yachts cost between 10 and 20 per cent more, so you could have a 46m in aluminium or maybe a 42m in carbon. "But which becomes the better yacht," asked Tripp, "and how do you analyse that? Even if you look at the VPP, the bigger aluminium yacht is faster, at least some percentage of the time. In aluminium, *Sarissa* would be around 20 tonnes heavier. In the middle range of, say, 12 to 16 knots of breeze, the yachts will be fairly similar in performance, and then above that the composite yacht gets much faster. Below 10 knots of breeze the composite yacht gets much faster. For some people that doesn't matter, but where we do find it really matters is if you are sailing in the Med – it means the yacht's much easier and more fun to use in light air."

Because a carbon yacht like *Sarissa* will always sail, even in just five or six

knots of breeze, you can unfurl the Code Zero and pretty soon you are up to 10 knots in very little breeze and it's really fun to go sailing all day, whereas if the yacht is sluggish in light airs it's very easy to just not bother putting the sails up at all.

Essentially, a composite yacht is more of a sailor's yacht, as it needs less sail area to power it up and is more responsive in the gusts. A composite yacht has fewer maintenance issues with corrosion and although aluminium has some advantages in reduction of noise travelling through the structure compared with the stiffer carbon hull, it does not have the same thermal insulation properties as a composite hull.

Tripp also believes that the carbon yacht will hold its value better, appealing to a wider client base. "Some people do not care whether they are buying aluminium or carbon, but an increasing percentage of the buyers are only looking for composite

yachts, so sellers with an aluminium yacht are limiting their potential reach," he said. The problem with choosing to build in carbon is that you are severely limiting the number of yards you can approach to tender for yachts over 40m. Not only does this keep the composite build prices quite high, it can also put constraints on the schedule with fewer build slots available.

Tripp recommended Jens Cornelsen as project manager to develop the specification and the tender documentation and manage the build for the owner. "We worked with Jens on *Alithia*, then *Mystere*, *Saudade* and *Cinderella IV*, so we have 10 years' history now on these projects. I find he's great to work with because he assures quality and successful delivery. The yards know exactly who they're dealing with, he is consistent; they know what the targets are what to expect.

"We talked to Yachting Developments in New Zealand, Baltic Yachts, Green

Marine/Vitters [Holland] and Wally [Italy]. The final choice of Green Marine was based on a balance of reputation, quality, cost and timing. I think the owner felt that the northern European yards had a higher perceived value," said Tripp. "Green is a standard I'm happy to measure by. We built *Shaman* with them in 1995 and I've known those guys all of my professional career, so I've always had a great deal of confidence in them, and we'd give them a drawing and they would build it that way or they would give us a drawing back of a better idea."

For the interior design, Tripp introduced Rhoades Young from the UK to the owner. Tripp had worked with Rhoades Young on the 23.4m *Black Pearl* at Baltic Yachts in 2008 and *Mystere* at Vitters. Completed in 2006, the 42.6m *Sarissa*. *Mystere* brought the same team together with Rhoades Young, Jens Cornelsen, Tripp Design and Vitters, although this time with



OPPOSITE: ARCH TO KEEP MAINSHEET CLEAR OF THE COCKPIT. TOP: CLEAR DECKS WITH A RAISED COAMING AFT OF THE DECKHOUSE TO GIVE PROTECTION. ABOVE: FLUSH TEAK DECKS WITH LOW PROFILE PILOTHOUSE.



ABOVE: MASTER CABIN WITH SKY VIEWS ABOVE THE BED AND PRIVATE ACCESS TO THE AFT COCKPIT. OPPOSITE (CLOCKWISE FROM TOP LEFT): LONG VISTAS INTO GALLEY/DINING AREA AND DOWN FROM THE MAIN SALOON. FORWARD OFFICE/GUEST CABIN WITH DARKER WOOD AND MORE FORMAL RED LEATHER. CURVING CORRIDOR AFT. BELOW: INLAID MARQUETRY DETAIL.



an aluminium hull and carbon superstructure. Her aluminium hull has a deeper under body to support the 187-ton displacement, around 20 tons more than *Sarissa*.

"I understand that the owner talked to several other interior design offices, but whilst there are lots of other offices that obviously do very fine interiors, this yacht is a high-performance lightweight yacht and you need an office that is not only very strong on the aesthetics, but also that has the experience and capacity for engineering an interior efficiently for a carbon hull," said Jonathan Rhoades of Rhoades Young.

One of the important aspects of building in composites is that you have far less flexibility in changing the structure once the hull has been laminated compared with aluminium construction. "You have to invest a lot more effort and resources in the very early stages of the project with a carbon yacht," said Louis Hamming, managing director of Vitters. "The whole process runs in a different way with more engineering upfront. You also have to get owners' decisions and interior decisions signed off at a really early stage in order to make the process

work well. Aluminium is much more forgiving if you want to make changes and adapt things later. Also, in an aluminium yacht, you can cut out parts of the structure, or move items with less overall influence on the structural integrity than on a carbon fibre yacht."

Rhoades says that they started by working out where all the living accommodation fitted, they then looked at the flow of the yacht, and then they made sure that they did not have any redundant space. "We break the yacht up into 600mm squares and then we colour in the squares which are not being used 100 per cent efficiently," Rhoades explained. "We collect all these coloured squares and re-jig the GA until we get less, and then we do the same thing again and again, raking through the plans, until we get to the point where there is no square that's wasted."

"I hope you can see that *Sarissa* is an object of art and beauty, but underneath there is a huge amount of research and development into how to build and coordinate the fitting of a lightweight interior. What look like cupboards in the lower saloon are actually the base of the seats in





JONATHAN RHOADES – RHOADES YOUNG INTERIOR DESIGN

“Every yacht is very different and that’s because they’re reflections of the owner’s lifestyles rather than a reflection of our own egos. *Sarissa* is a really high-tech performance yacht with, what I hope, is a very beautiful modern interior.”

the upper saloon, so we’re effectively adding a metre of length to that space that actually doesn’t exist.”

The whole team worked on every aspect of the design, from the interior layout to the details of the deck with the owner, first over drawings and plans and then in the yard before the hull construction could start at Green Marine.

“The design of the mainsheet arch, the sightlines from the wheels and the position of the winches were all worked really extensively with the owner, with full-size mock-ups where necessary, so that he could have it all clear in his mind’s eye,” said Tripp.

Green Marine are a UK-based yacht builder specialising in carbon racing yachts. *Sarissa* is the third collaboration between Green Marine and Vitters, following on from the 37m *Ghost* (2002) and the 39m Tripp Design sloop *Cinderella IV* (2007). A fabricated female hull mould resulted in a very fair hull surface, minimising the weight of fairing and painting; while the extensive use of pre-impregnated carbon fibre over a combination of SAN foam and Nomex honeycomb core kept the structural weight to a minimum. The hull was ‘cooked’ to 90 degrees centigrade to maximise toughness, and unidirectional fibre was incorporated in hull and deck to make the boat as stiff as possible.

The hull was then shipped to Holland for fit-out and completion at Vitters. The engineering, pipework and

finishing were undertaken by Vitters. They fit their own in-house hydraulic sailing control systems to power the captive winches, Lewmar on *Sarissa*, the Southern Spars furling boom and the Reckmann foresail furlers. The anchor windlass is set in a neat locker behind the forestay, with a clever offset carbon hydraulic arm custom built by Green Marine to launch the 185kg CQR anchor past the forestay.

Throughout the deck layout every effort has been taken to keep it as clean, uncluttered and efficient as possible. “The owner put a lot of emphasis on the sleek lines,” said Hamming. “He wanted to maintain as low freeboard as possible, so there is no bulwark, which does not make our job easy. Green Marine had to engineer special recesses for the stanchion bases, the carbon EC6+ cap shrouds and the Reckmann forestay furler to minimise the visual impact.”

The low coach roof continues the sleek modern theme and brings what is a large powerful sailing yacht back to a human scale with good all round and forward views for the helmsman from either of the twin helm stations. Forward of the helm stations there are the hydraulic sailing control panels duplicated on either side.

Tripp is very aware of the dangers associated with the very high sheet loading of large sailing yachts, even when it can all be controlled at



OPEN PLAN GALLEY INTO THE DINING ROOM FOR LESS FORMAL FAMILY USE ON EXTENDED CRUISING. SLIDING PARTITION WHEN REQUIRED.



CLOCKWISE (FROM TOP LEFT): POP-UP ENGINE AND THRUSTER CONTROLS. RECESSED EC6+ CARBON SHROUD BASES. RECESSED RECKMANN GENOA HYDRAULIC FURLER WITH ASYMMETRIC FURLER FORWARD. OFFSET CUSTOM GREEN MARINE CARBON HYDRAULIC LAUNCHER FOR 185KG CQR ANCHOR. CLEAR SEPARATION OF STEERING AND SAIL CONTROLS CONSOLES FOR SAFETY.

the touch of a button. He prefers to separate the helm station from the sail controls so the helmsman is not tempted to try to operate both simultaneously where there is a chance of become distracted from good navigation, damage a sail or even injure a crewmember by trying to do too much at the same time.

In practice, captain Greg Monks confirmed that for almost all sail furling, trimming and manoeuvres he requires the crew forward, close to and observing the actual sail itself using a hand-held remote-control box. In the original layout for the interior worked up by Tripp Design and the owner, the crew area started in front of the mast. With a brief to create a fun, young, family-friendly interior for extended adventure cruising with long periods at sea, Jonathan Rhoades cleverly opened up the galley into the owner’s formal

dining area, effectively extending the owner’s space further, co-mingling a little with the crew area in a way that the owner really enjoys.

This means that the kids sit down for breakfast and the galley is sort of interactive with them. It does put some pressure on the chef because she is constantly trying to feed 14 people, which can easily become an all-day event. When necessary for owner or crew privacy, the galley can be closed off with a sliding panel.

“It’s a yacht for a young family to have adventures on – I think she’s a modern yacht in many senses,” said Rhoades. “Of course, she’s lightweight and high performance and all of those things, but [I mean] also in terms of lifestyle and the way that people live. The galley is normally the preserve of the crew and is not considered to be a



1,150SQM A3 ASYMMETRIC SETS ON A HYDRAULIC CABLE FURLER ON THE BOW.

guest area, whereas I think, as with my family, we spend the majority of our time in an open plan modern environment at home and we spend most of our time around the kitchen, and so this concept is actually twinned with a couple of different ideas. A yacht is probably the most expensive real estate that our clients will ever buy. The price per square metre is very expensive, so you need to make sure that you use 100 per cent of the space a 100 per cent of the time, and the concept of the flexible galley space achieves this," said Rhoades. "We have to be inventive about the ways of making a boat feel bigger than it actually is. And so by removing the forward bulkhead at the front of the lower saloon, we've effectively added four or five metres to the boat," he added.

"Using the curve of the lifting keel trunk you can see that the boat is a series of diagonal vistas, and the purpose of doing that is to increase the length of the sight lines. What it does is it tricks your mind into thinking that you're in a bigger space than you actually are, because that's how you perceive space, by the maximum dimension you can see." Compared with a traditional layout for this size of yacht with around 10m, the diagonal sight lines on *Sarissa* open up to 15 or 16m, which gives you a much bigger impression of space. Rhoades has used a similar trick in the cabins

by opening up the basin area of the bathroom into the cabin rather than hiding it behind a door, effectively creating around two metres more visual space.

"We designed the bathroom mirrors with bevel edges so you see what's round the corner; it picks up on what's going on rather than just looking straight ahead. The concept of the interior is based on very modern architecture that fits the very modern exterior of the yacht, but it still needs to be warm and cosy and inviting and somewhere nice for a family to stay," said Rhoades.

"The owner was also very keen that we express the romanticism of sailing, so where possible we have celebrated the mechanics of the yacht by keeping the carbon mast exposed in the lower saloon and the carbon laminate around the rectangular port lights. We used relaxed neutral colours and wood and leather. For the materials everything that you can touch has a definite texture. And so it was important that the floors, because you're barefoot most of the time, have a really nice texture to them and the walls have nice texture, and the ceilings look slightly weathered."

Rhoades explained that they spent a lot of time with the owner discussing how visible the navigation station should be within the raised deck saloon. The



BILL TRIPP - NAVAL ARCHITECT

"We want to be part of the owner's creative process, because you must remember that this is their dream; they're creating something special and we're the vehicle that they use to fulfil that dream. Without them we're not here."



For Sarissa's owner, the importance of sailing performance meant that the decision to choose a carbon hull was never in question and the impeccable pedigree of the whole build team he selected ensured a good end result.

instruments are slightly recessed and alongside is the bar with a flat screen under the glass counter so the owner and his friends can sit round in the evening and they can get all the charts up on the screen and discuss the next day's adventure.

The base datum in the saloon is cherry wood, at counter height, and then everything above that is much lighter and airier so the space connects with the outside as much as is possible. Aft of the deck saloon a curving stair leads down to a curving corridor to the guest and owner's cabins. "Corridors are not very nice and you can very easily end up with a dead straight boring space. So we played the stairs so you get this sort of open lobby feeling at the top, so we've sort of knocked off a metre or so before you even start."

An unusual feature for a superyacht is the children's cabin, aft to port. "We wanted to make a space that was fun for the children, but could also work for the owner's friends when they're racing in regattas. So we came up with this idea of a bunk room being a yacht within a yacht, so we've taken the outside hull shape and we've mirrored it to the inside," said Rhoades.

Rhoades believes that their success comes from listening to the clients. "Every yacht is very different and that's because they're reflections of the owner's lifestyles rather than a

reflection of our own egos. Sarissa is a really high-tech performance yacht with, what I hope, is a very beautiful modern interior. But it's got some fun in it as well, it's not taking itself too seriously, and I think that's the lovely thing about it."

Tripp said that the owner is already really enthused by the sailing performance and is talking about racing in the Caribbean this winter at the St Barths Bucket. Tripp, a racing sailor at heart, needs little encouragement and is already one step ahead, having built in the option of setting up the twin backstays as runners and attaching the existing runners to them. Everything was designed and set up with the correct lengths, leads and controls with Southern Spars.

"We already use runners with the standard main in a seaway. Once we set up the existing backstays as additional runners we can set a 3Di square-top fully battened main, like the Volvo 70s and TP52s," said Tripp. "There's enough sweep in the spreaders that you don't have the danger that if you miss the runner you're going to lose the rig. So the spreaders will carry the rig up for the whole time. The square top gives about 200sqm of extra sail area right at the top where it is most effective and will up the performance across the range. It does complicate the manoeuvres a little bit, but increases performance steadily and appropriately for racing." >>



ABOVE: 38-TON LEAD BULB SET ON A 6.2M DRAFT LIFTING KEEL ENSURES GOOD UPWIND PERFORMANCE.

OPPOSITE: THE PLAN IS TO SET A 'FATHEAD' RACING MAIN WITH 200SQM EXTRA SAIL AREA FOR SUPERYACHT REGATTAS. CARBON CONSTRUCTION, SAVING 20 TONS ON EQUIVALENT ALUMINIUM YACHT.





## SPECIFICATIONS

<b>Length overall:</b> 42.6m / 140ft: <b>Beam (max):</b> 8.6m / 28ft
<b>Draught:</b> 4.0m (13ft) keel raised / 6.2m (20ft) keel lowered
<b>Type:</b> Lifting keel carbon sloop
<b>Displacement (half load):</b> 163T
<b>Gross tonnage:</b> 198
<b>Hull and superstructure:</b> Composite by Green Marine
<b>Builder:</b> Vitters Shipyard BV
<b>Naval architect &amp; exterior styling:</b> Tripp Design Naval Architecture Inc
<b>Interior design:</b> Rhoades Young Design Ltd
<b>Owner's representative:</b> Jens Cornelsen Yacht Consultant GmbH
<b>Sails:</b> 3DL by North Sails: I: 51.0m / 167ft, P: 48.8m / 160ft, J: 16.0m / 52ft, E: 18.0m / 59ft
<b>Mast:</b> Carbon (56m/184ft) with in-boom furling by Southern Spars
<b>Spar:</b> Southern Spars
<b>Main engines:</b> Caterpillar C12, DI-TA, C-rating 490bhp (366bKW) @ 2,300rpm
<b>Power:</b> 490bhp (366bKW) @ 2,300rpm
<b>Fuel tank capacity:</b> 12,000 litres
<b>Water tank capacity:</b> 10,000 litres
<b>Length waterline:</b> 38.5m / 126ft
<b>Delivery:</b> August 2011
<b>Ballast:</b> 38 Tons: <b>Gearbox:</b> Mekanord 270 HS/LS
<b>Number of owner / guest cabins:</b> Four (one master cabin and three guest cabins)
<b>Number of crew cabins:</b> Three (one captain's cabin and two crew cabins)
<b>Classification:</b> GL / MCA Cayman Islands
<b>Shaft &amp; propeller:</b> Korsør controllable pitch, Scandinavian CP10-RS
<b>Sternthruster:</b> 75hp swing type, Maxpower hydraulic
<b>Standing Rigging:</b> EC6+ Continuous Carbon

The choice of hull construction between aluminium and carbon is becoming an increasingly common and difficult question for sailing superyacht owners looking for improved sailing performance. You don't have to go very far back to think of the time when carbon masts were in the minority and the very same questions were being asked of mast manufacturers. Whether this will be the case with hull construction, only time will tell. The decision is further complicated by the limited number of established yards that offer the carbon build option which limits when and where you can build and probably adds to the price premium on carbon.

Some of the very best yards for sailing superyachts are committed to aluminium, like Alloy and Fitzroy in New Zealand and Royal Huisman in the Netherlands, although Huisman are now offering a carbon option. At least for *Sarissa's* owner, the importance of sailing performance, both on and off the race course, meant that the decision to choose a carbon hull was never in question and the impeccable pedigree of the whole build team he selected ensured a good end result. ■

Images: Jason Holtom & Tom Nitsch

Interviews with Louis Hamming – the managing director of Vitters, and Greg Monks – captain of *Sarissa*, follow.



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# Building for Performance

Managing director Louis Hamming talked to *TSR* about some of the challenges faced by Vitters Shipyard in creating the largest carbon fibre sloop ever built in the Netherlands. With a premium of at least 10 per cent over aluminium, why is it that more and more owners are taking this option?

**You were one of several yards under consideration when the *Sarissa* project went out to tender?**

Yes. The difference between carbon fibre and aluminium is quite considerable; you have to have quite a different way of thinking. So there were actually only a few yards left in the end and we won the project.

**How much more difficult is it quoting on a carbon yacht compared with an aluminium yacht?**

Aluminium is much more forgiving if you want to make changes and adapt things later. We have experience of quoting for a carbon yacht. You have to invest a lot of effort and resources in the very early stages of the project with a carbon yacht.

**But why is that, compared with aluminium?**

With an aluminium yacht, we take into account the position of the hatches in the cutting files. But we usually make them a little larger so we can have a little bit more room to work with in the later construction. With a carbon fibre yacht this doesn't work. You make your reinforcements in the mould and that's where the hatch is going to be, no room for changes.

**When you have clients coming to you and thinking of either aluminium or carbon, how do you advise them in making that choice – because you offer both construction materials at Vitters.** It's very hard to advise people. We talk about how they want to use the yacht, how much value they put on performance, not only sailing fast

or racing, but also on sea-keeping, motion and all these kinds of aspects. They have to make the decision for themselves because it's more expensive to build a totally lightweight yacht.

**So that comes down to their choices for the interior then as well?**

To the interior, to the whole concept, yes. There is little point in building a carbon yacht and then fitting a solid wood interior.

**Presumably you can still build a lightweight traditional interior?**

Yes, of course, that's no problem. We see various degrees of lightweight interiors, because in our experience owners still want to maintain the low noise values expected on other cruising yachts and that adds a little weight. But still you can make very smart decisions on where you put the weight and keep the noise contained and make sure that it's still a quiet yacht.

**Doesn't a composite hull have better insulation for thermal properties but sometimes more noise than an aluminium hull?**

Yes. The challenge is that carbon is a stiffer material than aluminium so noise travels more easily. So in a composite yacht you're even more aware about isolating equipment.

**Do you have less worry about insulation if you don't have to line the hull?**

No, you don't need to line a carbon hull for thermal insulation. What we sometimes do in carbon yachts, though, to improve the comfort levels,



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**“There are more owners now who enjoy sailing and all our yachts do an incredible amount of sailing of their total time on the water.”**

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is to insulate the decks because the contact noise of deck equipment and people walking can be reduced.

**Do you advise owners that they are likely to see lower maintenance costs with a composite yacht?**

That's a very difficult one. I think the maintenance levels in the end are the same because if you have a 'swordfish blue' hull like *Sarissa*, whether you have it on aluminium or a carbon material, the cost of repainting remains the same. So I think in that respect it is more or less the same. You need to insulate metals from carbon as much as you need to insulate them from aluminium, so I think that is about even.

**What about the amount of fairing required on a composite hull?**

Well, with a yacht like *Sarissa*, built on a female mould, there is less fairing than on an aluminium yacht.

**So you can create a better finish and the paint will stick better?**

The finish will be better, but the paint sticks on just the same with the same paint materials.

**So with aluminium the only question is of corrosion then?**

It's a matter of corrosion, yes. You have to prevent corrosion and that's down to the right installation and to regular maintenance.

**"All the engineering systems we complete ourselves in-house. That's our strong point."**

**And what have you observed about resale. Do you feel composite yachts have a premium?**

Yes, they do. For any yacht, resale depends on a number of things – state of the market, type of yacht, the quality of the build and, of course, the style of the interior.

**Presumably, all the equipment costs are the same, like the engines, navigation and electrical and sail handling equipment on an alloy or a composite yacht.**

Well, that's not completely true. If you have a lighter yacht you have a lower righting moment and so you can save some costs on the mast, rigging and

sails. So you do make some saving there, but it's not considerable.

Overall, you increase the value because you also increase the performance and the sea-keeping abilities. You have a stiffer yacht with less bending and less movement.

**The extra cost of a carbon hull would be the same as if you brought it from Green Marine or elsewhere?**

It would always be more expensive. There are many more hours involved in composite construction and the materials are more expensive. Carbon price is related to oil price.

**Have aluminium prices been going up?**

They've been going up, down and up again. Now it's, let's say, about the same level as in 2008.

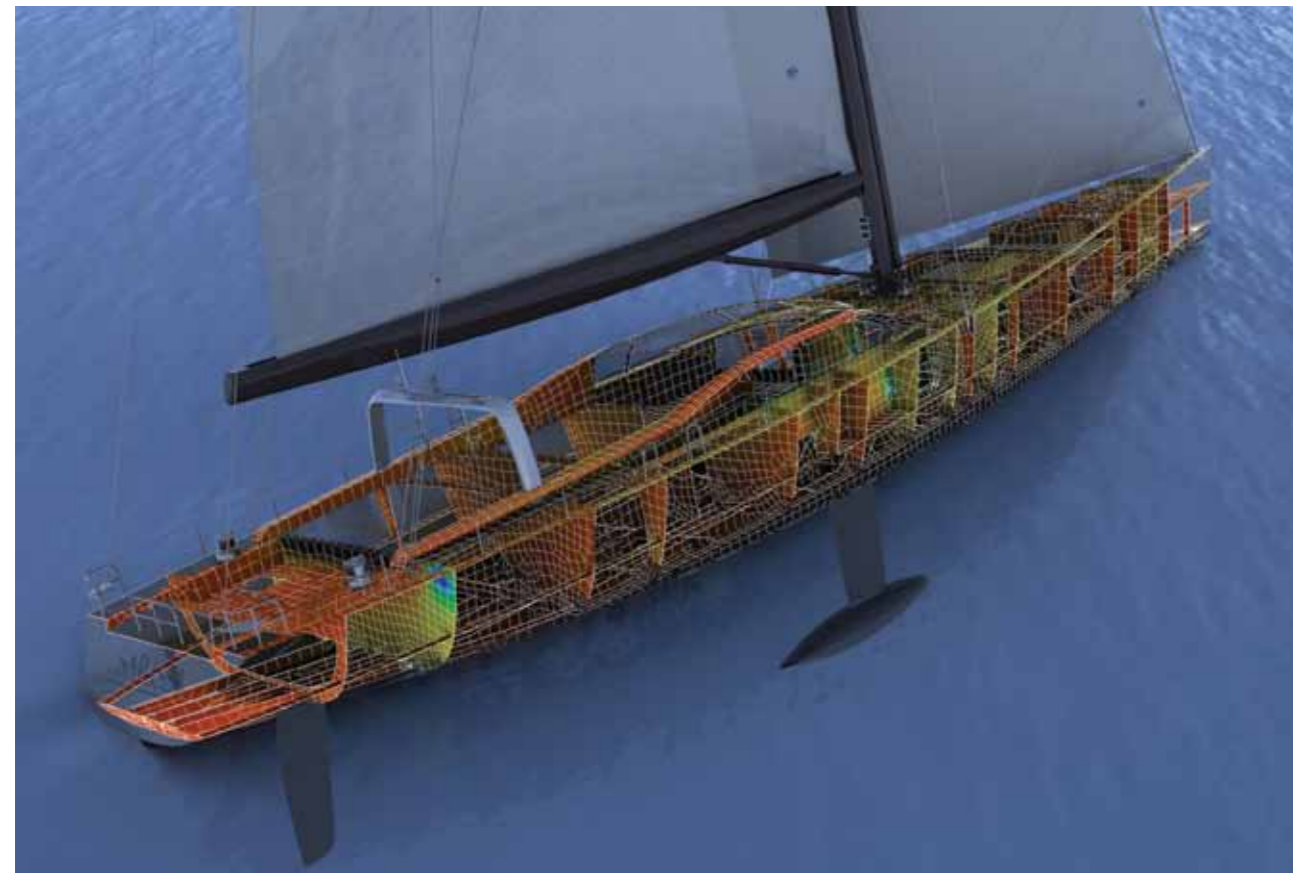
**And as far as scheduling a project do you need a lot more time with a carbon hull?**

We can make up some of the extra time that the carbon hull takes to build. For instance, on the 34m we're building now, we have a one-to-one mock-up of the engine room and we're building every part of the engine room already in the mock-



OPPOSITE: FINITE ELEMENT ANALYSIS (FEA) RENDERING OF *SARISSA* SAILING UPWIND BY TRIPP DESIGN, SHOWING HER INTERNAL CARBON STRUCTURE AND STRESS LEVELS. BLUE AREAS ARE HIGH STRESS, RED AREAS ARE LOW STRESS.

LEFT: *SARISSA* UNDER CONSTRUCTION AT GREEN MARINE. A CARBON YACHT REQUIRES MORE UPFRONT ENGINEERING AND PLANNING AT THE START OF THE PROJECT SO THAT ALL THE STRUCTURAL ELEMENTS ARE INCLUDED BEFORE THE HULL IS HEAT CURED. IMAGES BY ALBERT BRUNSTING & RENDERING BY TRIPP DESIGN.



up, all the brackets – everything. So when the hull comes we can just glue these parts in, the brackets and trays and everything because all the penetrations in the bulkheads are known, so we know where the pipes come in and we can make the pipes, get them painted, get everything done. So when the hull comes in we have a very short production time.

**And as far as the engineering of a composite hull, you can't have the same cut-outs for piping and wiring like an aluminium hull?**

You try not to. In the carbon hull, you try to keep your lines as efficient as possible, because you have certain bays between longitudinals and frames where you route your pipes. If you plan the engineering at an early phase, there is no more up and down, I would even say maybe even less. You try to keep your lines as straight as possible.

**If it is necessary to make a structural change late in the build are you still able to do this in Holland?**

Although not as easy as aluminium, we have a few people at our shipyard who are trained to do composite work, and we have a couple of people right now training at Green Marine to do composite work like secondary bonding. For any major changes with more impact – like moving a beam –

we would bring people in from Green Marine

**Are you getting more enquiries for composite yachts?**

It is increasing. I thought the increase would have been already there 10 years ago, but I was wrong. I think people will tend to go more to composite yachts in the future.

**"I believe that we at Vitters can always be counted to finish to a standard that both we and the owners are very proud of."**

**The naval architects certainly seem to be going that way – do you think they will lead the owners?**

Yes, I think when the owners see what composite can do for them and what the advantages are I think they will increasingly be looking that way. If you go to an architect like Bill Tripp, for instance, you are probably already interested in sailing performance. If you are interested in a different balance between length, interior volume and performance, you will choose aluminium.

**I suppose the superyacht regattas have also been an influence on this?**

Absolutely – not just the regattas, but also the pure pleasure of sailing. There are more owners now who enjoy sailing and all our yachts do an incredible amount of sailing of their total time on the water. As people get the feel for it, they also like to improve on it with new sails to start and hopefully new yachts later.

**What are your plans for Green Marine?**

We made a strategic move by purchasing Green Marine in order to be able to offer carbon fibre yachts to our clients because I think it's an increasing market. Building a carbon yacht is not easy; it requires a lot of knowledge and a lot of experience; that's why we went this way and we're still investing in it.

**Green Marine has greater capacity than just supplying you at Vitters with composite hulls, so other yards will benefit from your investment?**

In a way, yes, they will benefit from that, and if other yards build there that's fine with me as well. It's all good for our profits.

**Is there a limitation on the size that Green Marine can build in the UK?**

No, I think we don't have that many limitations. They have direct access to the water with their new facility.

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Is there some sort of logical cut-off point, when by the time they're putting restrictions on steel encased fire exits at greater than 500gt, it doesn't make sense building in composites? To be honest, I haven't looked at building a yacht of 500 tons in composite. We're not there yet.

**Sarissa is MCA commercial coded for charter. Did you have to add a lot of weight in the galley area for instance?** Yes, in some areas either stainless steel or stainless-steel equivalent in terms of structural fire protection. For instance, we have to use steel in the engine room entrance.

**You subcontract your hull construction, painting, interior fit-out and electronics. Does this still allow you to control your schedules and costs effectively?** Yes, from delivery of hulls we completed: *Aglaia* in 12 months, *Marie*

in 10 months and *Sarissa* in 11 months. And that's overall a pretty short period of time. All the engineering systems we complete ourselves in-house. That's our strong point. Everything where there's, say, a pipe is engineered and built in-house and the sailing system we also do ourselves.

**Was there a good balance between the owner's expectations of price and the final cost?** Yes, I feel it was a good balance. We are always very transparent, we show where the costs are so the owners can see it because otherwise you end up with a two-year fight and life's too short for that. I feel it's never worthwhile under quoting to get the work into the yard. We've lost contracts because of that I'm absolutely sure, but that's the game. People have to see what they're paying for, and what level of craftsmanship we provide. Take, for

instance, the lazarette area or the forepeak; it's very easy to leave it all bare and unfinished. But just the finishing of the lazarette can easily be 400/500 hours – making everything nice, make sure it all fits, custom brackets here, painting, fairing all the detail and bits and pieces. That's something you have to take into consideration. If I leave it out we can save €50/100,000 maybe in the total cost to the owner, but that's not what people are looking for. There is always a trade-off, and I believe that we at Vitters can always be counted to finish to a standard that both we and the owners are very proud of. ■

# Bridge Control

*Sarissa's* captain, Greg Monks, talked to Jason Holtom about the first 6,500 sailing miles in an all-carbon performance sloop and the problem of finding a fully qualified engineer for a sailing superyacht.

**Had you worked for the owner before?** No, it's the first time. I was on *Pink Gin*, which was a Baltic 152, for five years. It was also a carbon yacht, but a very different concept to *Sarissa*, with long overhangs and a traditional counter stern – the focus was more on cruising than performance on the racecourse.

**Did the owner get involved with the crew selection?** The owner provided feedback on candidates that I had selected for interviews, but it was up to me to select, interview and hire the crew. The most difficult part was finding an engineer. It took me nearly five months to find one – there seems to be a shortage of qualified sailing engineers who are willing to work on a yacht this size. Normally, when they start getting the qualifications that we need, for example, to run a coded yacht of this size, the engineers are looking to run perhaps a big motoryacht with a few more creature comforts.

**So you need a fully qualified engineer?** Yes, we're fully commercially run, so we need a qualified engineer. Because all the hydraulic sailing systems are quite complicated we do need someone with good experience. Leo our current engineer has a Y3. When engineers get to this level, they're interested in working on a bigger motoryachts, with their own cabin and rotational positions. As soon as I started looking at the possibility of a rotational position for the engineer, I had so many more options, with many candidates putting their names forward. The owner, however, would like to have full time crew working onboard. And to be honest, for a yacht this size it's quite normal to have a permanent crew.

**How have the first sailing miles worked out since leaving the yard?** When a yacht like this leaves the yard,

it's a prototype – it's a one-off custom yacht. It's not possible to be 100 per cent perfect, so it's just a case of fine-tuning it over the next year to get it up to the right level.

**And the rig and sails have been working fine?** Yes, technically speaking, the yacht has been fantastic. We haven't had a single delay or hold up in the six and a half thousand miles we've covered in the first two months of cruising. So it's proved itself to be very technically sound.

**What do you think of the fully continuous carbon cap shrouds?** We've got EC6 fully continuous. It's really neat and tidy over the spreaders, and is low windage. It looks great too. So far, it has proven to be a good system.

**Are you getting some new Norths 3Di sails with a 'fathead main'?** Yes, but they would be primarily racing sails. The owner might be tempted to cruise with them because he loves sailing performance.

**It's not that easy to change the in-boom furling main though?** You need the right weather and you need a day to change them over, and you need to be in a spot where you can load and offload the sails to the quay and a storage container.

**What is your maintenance plan for the carbon mast?** After three months Southern Spars send a service engineer to check everything. We also have a work list that we will work through with Southern Spars. The crew carry out regular visual inspections on the rig at periodic intervals as well as when necessary.

**How would you operate the tender?** It slides into the transom on a track and then we have a removable davit for



“Technically speaking, the boat has been fantastic. We haven't had a single delay or hold up in the six and a half thousand miles we've covered in the first two months of cruising.”

lifting, which fits on the deck. We are looking at improving the efficiency on how quickly we can get the tender in and out, so we might be making some changes next year.

**Could you store it on the fore deck as an alternative when you need?**

We do actually; we had to send our first tender back after the first few days of charter because it proved to be unreliable, and as a replacement, the owner chose a Zodiac military-style inflatable with a 60hp outboard on the back. Which is just perfect because we can go anywhere in it, it's perfect for beach landings, diving etc, and it's soft-bottom so we can just lift it up with a halyard and store it on the fore deck. We're going to customise it over the next few weeks in Palma before heading for the Caribbean and we're going to use it for the next six months.

**And we understand there's a plan to go racing?**

Yes, we're planning to start with the St Barths Bucket next year, and then when we're in the Mediterranean, initially kicking off with the Loro Piana in Porto Cervo, and possibly the Superyacht Cup here in Palma at the end of June – then maybe wait until September and do the Rolex Maxi Worlds.



**Is the owner a racing yachtsman, and if so, are you expecting him to drive?**

Yes, he's an experienced yachtsman. I wouldn't be surprised if he will want to take the helm, as he certainly enjoys driving. He's also spoken about bringing in a racing helmsman, so let's see what happens.

**How do you set your offwind sails, do you use a sock?**

We have an A2 with a sock and an A3 on a furling cable. The A3 is very easy to use when operating with a small

crew – this is a great sail and a great system.

**You raised the keel immediately after the main came down. Do you have to remember that?**

Yes, it's one of those procedures you don't want to forget: main down, keel up. ■

**To comment on this article, email [issue129@superyachtreport.com](mailto:issue129@superyachtreport.com) with subject: Sarissa**

