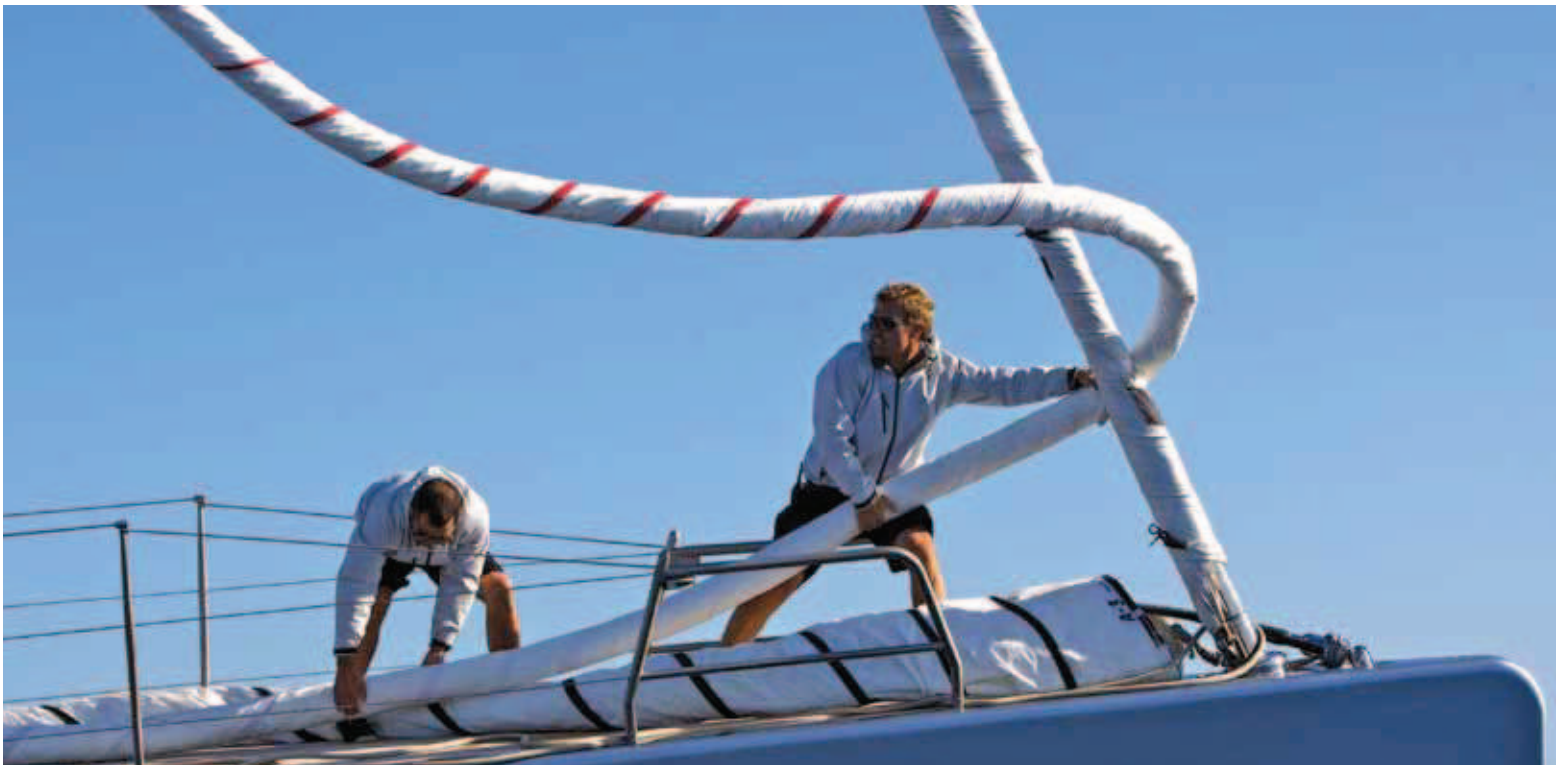


1,150SQM A3 ASYMMETRIC SETS ON A HYDRAULIC CABLE FURLER ON THE BOW.

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 salon, we've effectively added four or five metres to the boat," he added.

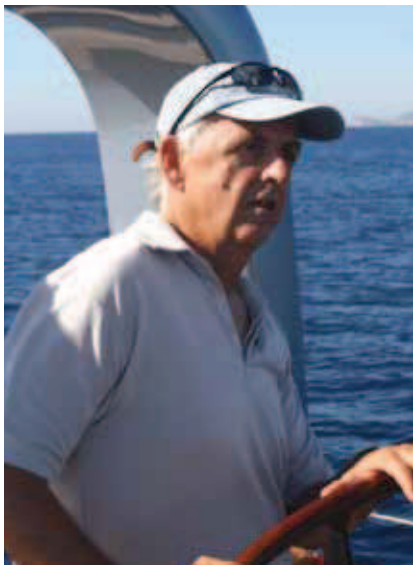
"Using the curve of the lifting keel trunk you can see that the boat is a series of diagonal vistas, and the purpose of doing that is to increase the length of the sight lines. What it does is it tricks your mind into thinking that you're in a bigger space than you actually are, because that's how you 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.

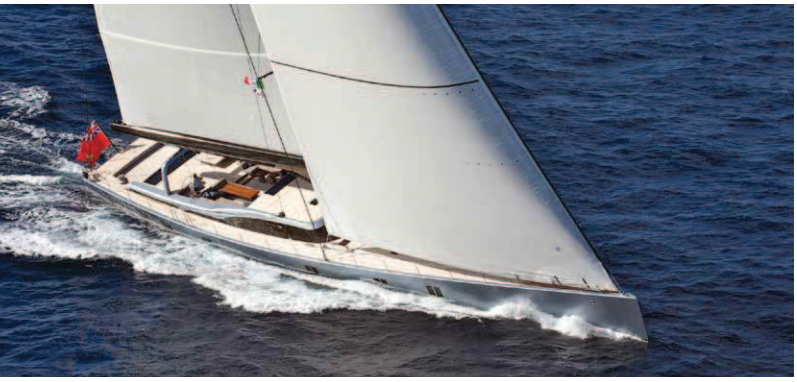
"The owner was also very keen that we express the romanticism of sailing, so where possible we have celebrated the mechanics of the yacht by keeping the carbon mast exposed in the lower salon and the carbon laminate around the rectangular port lights. We used relaxed neutral colours and wood and leather. 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 salon. 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.

ABOVE: 38-TONNE LEAD BULB SET ON A 6.2M DRAUGHT 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 TONNES ON EQUIVALENT ALUMINIUM YACHT.

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.

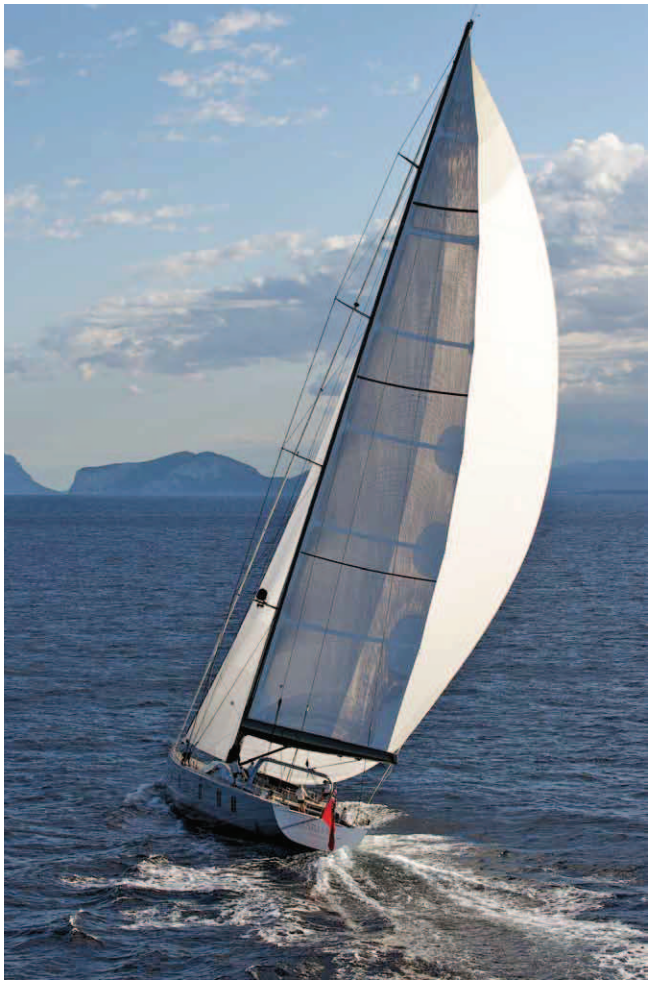
The base datum in the salon is cherry wood, at counter height, and then everything above that is much lighter and airier so the space connects with the outside as much as is possible. Aft of the deck salon a curving stair leads down to a curving corridor to the guest and owner's cabins."Corridors are not very nice and you can very easily end up with a dead straight boring space. So we splayed 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." >>



SPECIFICATIONS

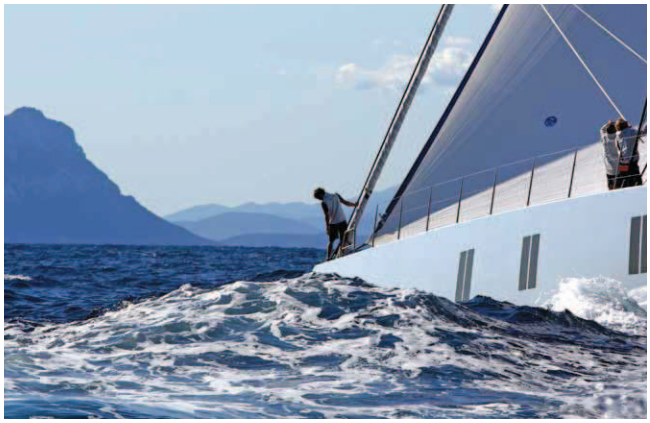
Length overall: 42.6m / 140ft
Beam (max): 8.6m / 28ft
Length waterline: 38.5m / 126ft
Draught: 4.0m (13ft) keel raised / 6.2m (20ft) keel lowered
Type: Lifting keel carbon sloop
Ballast: 38 tons
Displacement (half load): 163T
Gross tonnage: 198
Sails: 3DL by North Sails: I: 51.0m / 167ft, P: 48.8m / 160ft, J: 16.0m / 52ft, E: 18.0m / 59ft
Spars: Southern Spars – carbon (56m/184ft) mast with in-boom furling
Standing rigging: EC6+ Continuous Carbon
Main engine: Caterpillar C12, DI-TA, C-rating 490bhp (366bKW) @ 2,300rpm
Gearbox: Mekanord 270 HS/LS
Shaft & propeller: Korsør controllable pitch, Scandinavian CP10-RS
Bowthruster: 100hp swing type, Maxpower hydraulic
Sternthruster: 75hp swing type, Maxpower hydraulic
Generators: Kilopak, 2 x 50 kW (1500rpm-50Hz)
Fuel tank capacity: 12,000 litres
Water tank capacity: 10,000 litres
Number of owner / guest cabins: Four (one master cabin and three guest cabins)
Number of crew cabins: Three (one captain's cabin and two crew cabins)
Hull and superstructure: Composite by Green Marine
Builder: Vitters Shipyard BV
Naval architect & exterior styling: Tripp Design Naval Architecture Inc
Interior design: Rhoades Young Design Ltd
Owner's representative: Jens Cornelsen Yacht Consultant GmbH
Classification / Compliance: GL / MCA Cayman Islands
Delivery: August 2011

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

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



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,

"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."

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."

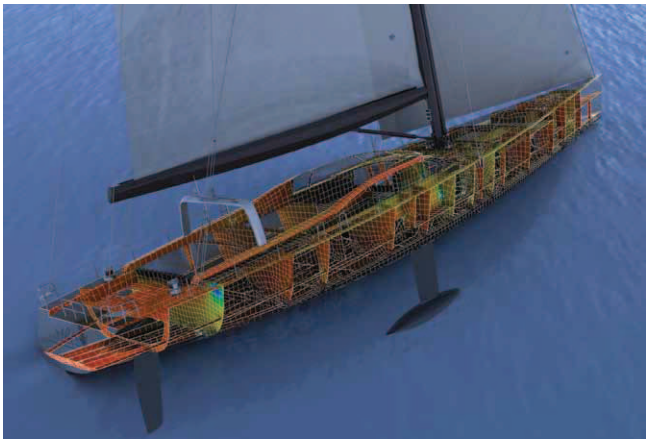
And what have you observed about resale. Do you feel composite yachts have a premium?
Yes, they do. For any yacht, resale depends on a number of things – state of the market, type of yacht, the quality of the build and, of course, the style of the interior.

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-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.



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.

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 craftmanship 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 from *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 North 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."

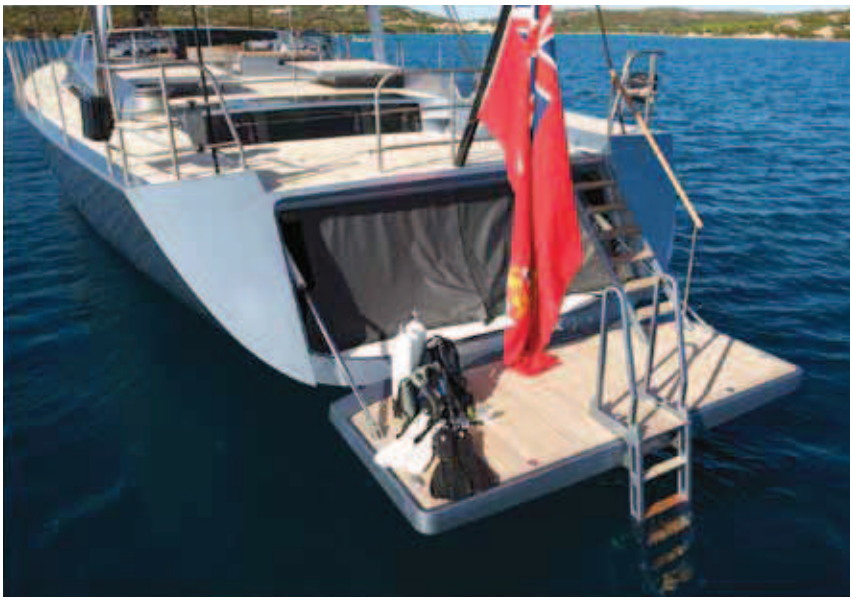
lifting, which fits on the deck. We are looking at improving the efficiency on how quickly we can get the tender in and out, so we might be making some changes next year.

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* with subject: Sarissa