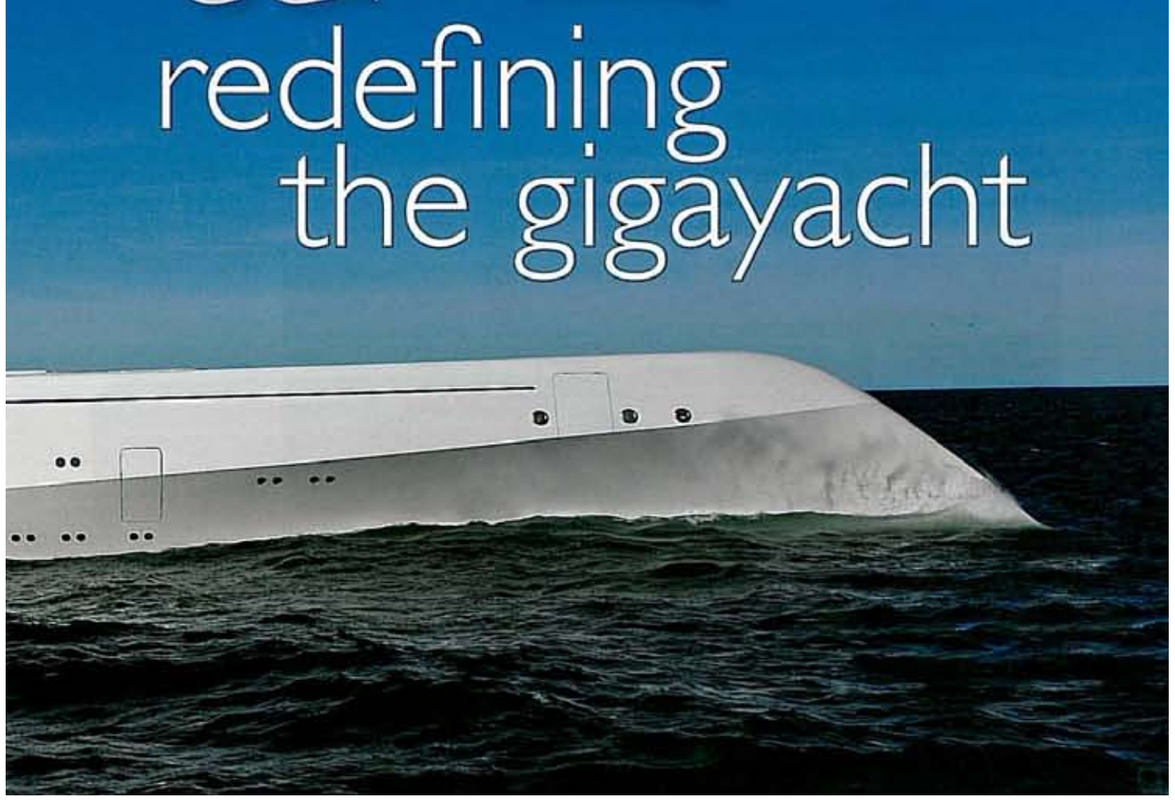
She has been called *SF 99* then *Sigma* but her true name is a simple letter – A. *A* is one of the most speculated upon and about (rarely correctly) yachts ever built. *A* is a yacht whose profile and inaccessibility made paparazzi of almost every yachting news source. The speculation stops here; patience rather than virtue proved to be our reward as finally we were granted access to the Chief Concept and Art Designer, the Technical and Naval Designer, the Yard, the Owner's Representative and of course *A* herself. What we found was a beautiful yacht, of simple technical spec that took great effort and complexity to reach completion. *A* is destined to be in – all the best and legitimate ways – one of a kind.

the story OF A

redefining the gigayacht



Some years ago a young Russian client approached a number of designers to build his first yacht. One of those who pitched was Martin Francis (pictured right) – he recounted to me at our meeting that he was pleasantly surprised to have his presentation applauded. He'd been advised that this was an owner who didn't want anything too radical. In the end, or in fact at the beginning, he did not secure the contract and it went briefly to another designer. That relationship was doomed to brevity as was the concept that the yacht should not be radical. By the time Martin was approached again, Philippe Starck (pictured opposite, who was already working with the owner on other projects) had drawn up a profile (below) which was anything but conventional and well deserving of the description.

It's about love

I met with Philippe in his Paris studio to discover how the design came about. Very quickly, the answer came. The renowned mathematician and philosopher René Descartes was known for doing his best thinking in bed and M. Starck is, it seems, very little different from his 17th-century countryman: *"I designed it in my bed, (my wife) was sleeping and I designed it completely outside, inside – the hull, everything, in three hours…(or) three hours, 30 minutes."*

The original rendering still strongly resembles the finished yacht and while we chatted he sketched in only a few bold lines the profile as he first envisaged it. What – I wondered – drove the unique profile and accommodation up and aft. Philippe could not really say: *"The proportion for me, the elegance, is to make something which is this proportion. I cannot explain (to) you why. I cannot, but I (knew immediately) it was this."*

As to the form and design philosophy of the yacht he had this to say: *"I love boats (and) I am not happy with what I see. For me …when I (look at) … megayachts, I see nothing. I just see things which don't deserve to exist."*

That is because of a cookie-cutter approach I suggest? *"They… only (exist) to show… the power of money, the vulgarity of the power of money… I am absolutely against that. And because there … (are) more and more yachts I said we must fight that, because it's (a form of) landscape pollution. And there is nothing human, no positive value in that…poor people are jealous, nature is destroyed and even the people who live in these boats are not happy because they are so (bored), so uncomfortable and so (bored)…so what are the main ideas of (M/Y A)? First…no vulgarity. The main axis for this boat is harmony…harmony with nature, with the sea, and with (the) humans who will live in this boat. When you see the boat all the shapes are very smooth (so) I have no strong reflection, never … a flat surface…also there are no details."*

(Here he is referring to protrusions and the items that often by regulatory or practical necessity destroy the homogeneity of line he seeks – on how this became practical more later.)
"We worked for five years to avoid any small details like that which are common in boats… to finally have a boat which looks like (the) computer (rendering). (Such) a boat is (the) vision, (the) dream."

I commented that he spoke of harmony with nature and one very notable thing, at a purely hydrodynamic level, is the wave pattern of the vessel; it moves through water in the tank tests and in reality in a minimally invasive manner. *"Absolutely… And that's why I work (with natural forms) like fish. (The yacht is fine in form) like a fish and all the lines are more like waves, fish and things like that. That was the spirit and (finally) the reality of the whole thing. And the pictures definitely show it. Also because we take off all the details, the boat has no scale."*

This is certainly true and observing the photos of the yacht it's very difficult to establish absolute size. This is obvious without a human figure to provide scale yet even with people in place – as when I visited the yard in Kiel – the size is still elusive – not that it looks larger or smaller but a certain trompe d'oeil simply makes size very hard to determine. It's also not apparent from pictures but the hull slopes in and is narrower at the main deck than at the waterline – also the stern is concave not flat and a real challenge to fair! For Philippe the bow form was not a hydrodynamically driven choice rather an instinctive, aesthetic one; yet one which all agree has a remarkable effect on the vessel's seakeeping. *"And afterwards I sent all the drawings to Martin Francis…he made studies (then)… he called me and said Philippe you made a miracle. We have invented a hull which makes no waves. I remember he said it makes no waves at 25 knots."*

Perhaps the instinctive concept owes something to the fact that M Starck's father was a renowned aeronautical designer; after all, air and water are both fluid media. In a very broad sense the yacht is low impact. *That's why we can say today this megayacht is an ecological boat. Because (it leaves) almost no signature on the landscape...That is very interesting."*

The hull and superstructure are steel with a few composite elements; however, for Philippe the yacht is: *"The beauty of the happiness of the people who will live in (her). The elegance of the quality of life for these people inside and outside, and their relation with the sea. That is the masterpiece. It's not a boat made with steel, aluminium, etc. It's (above all) a boat made with a philosophy."*

We can say very little about the interior of the yacht even though I have visited it, However, I can, I believe, say that the space use is highly unusual. Philippe's view: *"I cannot make a boat which is harmonious and ecological from outside and have straight complicated architecture inside. That's why I have created inside the same harmony (in the interior) and created a new type of life where the way to work, to take a bath, to make love, to cook, to speak with your friends, is (inside) a loving boat between the walls. It bubbles like that. It's harmonious. It's fluid, if I can say that. That is very, very important."*

One idea which languished was an underwater room in the bow with massive picture windows. The oval window of this can be seen below the bow shell door (and the waterline) on the concept drawing from Starck. This provided a little too much for Class and was eventually abandoned. Spaces are ambiguous and designed for a way of living where some separation of area uses is ignored. There are also bold even potentially jarring style notes where certain decorative elements that appear out of place in reality increase and sustain guests' interest in the interior environment. For Philippe: *"The diversity is intentional; life is (enriched) by diversity…I don't want to have The Look".*

In fact he intends the space to be completed by the client; not to impose a concept upon them perhaps rather to provide a canvas.

The yacht's outdoor spaces connect to the interior and the fore deck is widely opened to an already unconstrained salon space. The bulwarks are very high; here is a yacht that in profile hides her secrets, guests and activities from observers yet connects those aboard to the sea around. The aft beach area is rather unique and it can be seen that there are no fewer than three enormous shell doors opening on to an aft garage. However, that aft garage is actually a finely finished public space for dyneema line, hooks and hoists where they are part concealed by rich dark wood panelling. Here the two tenders are stored, which Starck designed, and a third Pascoe one amidships. The upper and lower bays forward of this are in a technical space finish and store various water toys and two crew tenders. The toys

are finished to match all the tenders. Aft of the side bay doors is a multi-purpose area. It's a beach and a bathing platform, an entrance lobby and even a kind of passerelle; doing so requires VERY complex hydraulics and mechanics (see top image on page 55), as Dirk Kloosterman explained: "A, *like any iconic design does not produce mild reactions, rather strong ones, of which some are inevitably negative.*"

Philippe continued: "*You know I don't try to please everybody. I have clients – I love them, I do it (for them). And damn the people who don't (like) it...This market is so, so conservative (that) I was not expecting a lot from the market. I'm used to that. But Martin Francis, I think, told me that there was a (famous) broker…(who) sent (some of the), paparazzi pictures, to a major)…client, to see their reaction and …(he) was astonished that everybody loved (the yacht)…(in fact)…some people want the same (style).*"

Now at this stage the concept had to be validated and proved to be as a build-able design. Despite his instinctive feel for hydrodynamics Philippe will point out he is not a naval architect and for that part of the project Martin Francis was approached and asked if he would be interested to work with Philippe on his profile and concept. Martin told me: "*Starck had said…I don't know about naval architecture…you need somebody else to do that sort of stuff. (The) owners, the Melnichenko Family of Russia, asked him … would he be prepared to work with me? And (he) asked me the same thing. I was (a bit) nervous about the concept of working with (Philippe given)... his high profile. But…we met and got on like a house on fire…the chemistry was just absolutely right…he had produced (a form), but it was without engines, without crew accommodation, without any of those things. It was (just) an idea.*"

Probably the biggest issue was the validity or not of the hull shape (there was some time before the comments about its worth were made to Philippe by Martin). They decided a large part of the work one might expect a yard to do in testing and modelling (both hard and soft) would need to be done in advance. "*I didn't want us to be in a situation that we would go out to bid with something that actually didn't sustain itself*".

They engaged the Wolfson Unit to develop a model (top image) and tank test it; this turned out to be "amazingly efficient". That model still hangs in Martin's Paddington studio. It's notable that it actually has a bulb and a long one at that though the sloping bow masks its form. The bow entry is incredibly fine, as can be seen opposite. The wave pattern results were quite amazing as can be seen in these shots from the test tank (middle image). In broad terms the faster you go the less the wake. Later Dirk would recount how bizarre (in a very good way) the yacht motion was; it simply glides along

with minimal pitching, the bow wave rises then drops back; overall, very little wake is thrown at all speeds.

Even so Martin wanted to be sure, so they sent their in-house design for verification by third-party Naval Architects. They were also concerned at whether *A* would broach and whether the bow would dig in with following seas. Accordingly, Martin and James Carley took a radio-controlled model down to the Solent and tried it out (above image). Somewhat short of natural waves, they used ferry wakes and found no evidence of broach problems or issues at that scale. Now they could go ahead and develop GA, crew accommodations and equipment spaces.

There was, Martin told me, an original concept for a Helo garage in the bow. However, at that time, he told me the *Ecstasea* project was having some issues with certification of their bow hanger because of the effect of vertical accelerations on the aircraft, so the idea was abandoned for A. The Helo facility is a landing platform only. It has got – very unusually – the "H" the correct way round – though it's not really an "H" at all but rather an approach line-up mark for the pilot.
The owner had set no size parameters; in his first

discussion with Philippe, though, a figure of around 100 metres was mooted. In fact the first name SF 99 is from Starck and Francis; the 99 had little to do with the length, however. *"We deliberately wanted to make it not the length (because) at (that) time (it) was changing weekly. So we just picked a number. And then (also) we wanted to downplay the size. The final LOA, 118 m, grew from the space required for guests, machinery and crew."*

The interior, Martin added, was all Starck – though they offered some suggestions. He commented on the guest interior: *"From my point of view the exciting thing was (Starck) completely re-looked at the way the spaces were used and the nature of the main salon and all (those items). (And) the way the owner lived…there is more private forward living space (forward) rather than aft, and the height of the bulwarks are quite high…again, maintaining privacy."*

The concept was for a top speed of around 25 knots. *"A key factor was – we all felt – Starck, myself and the owner – that you couldn't make a boat look like that and have it going 16 knots. It wouldn't be appropriate."*

One of the major parts of the hull's look is the hard knuckle that runs from the bow almost to the stern (pictured). Was that a functional item or an aesthetic one? Clearly it started aesthetically as is seen on the initial Starck rendering. *"It's very attenuated, in the Starck initial (rendering) – it's very, very soft. But if you take the shape that you're going to need here, in terms of the bow and the fine entry, then for me that implied that you would need to have a more rapid transition. And the other thing I wanted quite clearly (was) to make sure we didn't bury the bow (and) that there was very clearly an increase in buoyancy and…wave shedding."*

In fact Martin told me they planned raise-able wave breakers and was not sure if they were ever fitted (I later found they were). Martin's involvement ended around when the yard was chosen. Martin was ill-pleased (as were many others in the project) by the paparazzi-esque shots that found their way onto the net and various yacht news websites. They were shot with the technical shell doors forward open and did little to enhance the delicate bow line. The anchors are stowed behind these doors and a platform deployed just ahead from where crew can observe dropping and weighing of anchors. I asked Martin if he had considered using a Wallygator like bomb bay door system where the anchor drops straight from the boat's bottom. This allows better swinging and of course eliminates the inevitable chain chafe on the bulb. *"I did, and even people from the shipyard talked about it – it's very unusual for me to be on the side of conservatism, versus a shipyard, but I just felt…this is a large vessel (and say)…you're going to drop anchor and run astern in Monaco and…somebody… fouls the anchor - how do you get somebody else's anchor chain – (one that is) caught over here, is underneath your boat, and is 6 metres down – how do you get that off? I mean the forces we're talking about – it's bad enough on a 50-footer…I just felt it was irresponsible!"*

It can be seen aft that the props are in tunnels: *"We have got tunnels, definitely, because…if you're going to get that speed…you need large props and large props at that point…needed great draught. (Without tunnels) you just can't get the prop diameter in and get the buoyancy and everything else."*

The propulsion is conventional not diesel electric; I wondered why as the assumption is often made that on larger yachts (like *Octopus*) the electric ship is optimum. One yard that bid for the build was convinced that DE was the only way to go but in fact (and in large part based on his experience with cruise ships – and that Francis Design recently drew the exterior for five Celebrity 120,000-gt ones) Martin wasn't convinced; BCP, who did the spec, agreed. *"It (would) probably (have been) substantially heavier – (by maybe) 20% and a lot more money and slower. It just didn't stack up for a vessel of this size, with a small amount of accommodation relative to its length, and with a speed requirement in excess of 20 knots…the whole rationale of diesel electric is the fact that you're sharing your hotel load with a propulsion load."*

For cruise vessels hotel loads are enormous; in fact he told me the biggest stack on a cruise ship is not engine or genset exhaust, but the galley one.

The shell game

With the bidding process completed the yard chosen was HDW Kiel (or, as it is officially known, TKMS AG, Blohm & Voss GmbH Kiel). A company was chosen as owner's representatives as well but they were replaced after the build started. Dirk Kloosterman was then brought in for that role. One of his former projects was *Rising Sun* so yachts above 100 m were not an unknown – still this project would through build, and as it heads to handover, require all his skill and experience. Not only is the yacht very large but the lack of conventional style makes every item extra hard to realise. The yacht has no wing stations, I expressed some surprise at this and so it seemed did Dirk. However, when he arrived it was already too late to change. The solution mirrors many on M/Y *A* to do with the practical aspects of sailing and manoeuvring – it's a pop-out. On either side mini shell doors open and forward and aft facing cameras emerge. Using these the Master within the bridge (one deck down from the top) can manoeuvre.

Where it's necessary to be outside the Master or pilot can use a (decidedly) non-hand-held remote to access the DP system. This is stowed aft on the main deck and may be removed and temporarily mounted on the nearby handrail for manoeuvring. One reason it is non-hand-held is that its daylight-capable screen needs serious cooling; so much that there is a mini HVAC inside; very cool, but unfit for wearing round the neck.

The bridge on deck 5 is clean, simple with all info displayed on seven screens from an Imtech Alarm Monitoring, Control and integrated bridge system. Windows throughout are of heat-reflecting glass but cannot be tinted on the bridge due to regulation. To address this they are proposing to fit reflective roller screens by Solarsolve; these are IMO approved for daytime use. Deployed they cut out massive amounts of radiated heat and light – at night they are lowered. This is the first use of these screens I am aware of on a yacht, although they are long in use on merchant

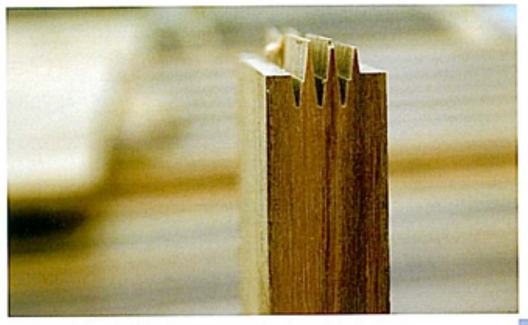
ships. In the bridge area is a captain's cabin and office and a meeting room which has evolved into a very necessary crew office given the 37 crew aboard. The narrowness of the fore part of the ship reduced the volume available for crew cabins and there are some with three sharing; relatively unusual today. Officers are forward; which is also rare. The galley is – again due to volume considerations – quite small (although crew have a good size mess), with a multiple bain-marie-equipped central island that should help with space issues in the galley. Crew also benefit from a separate lounge.

DP is the default manoeuvring mode. Dirk was originally sceptical about that: *"I was hesitant, you know… like when I was doing the* Rising Sun *thing (because) I thought – what's wrong with levers and bow thrusters; the old fashioned way – can't you manoeuvre that way?"*

However, in practice he has become a convert and if all else fails one can rapidly return to levers and thrusters anyway. The rudders are on Rolls-Royce rotary actuators and of Becker type – that is with variable geometry provided through a flap on the trailing edge. They normally turn in sync but are split for DP manoeuvring. For'd are twin Brunvoll resiliently mounted, fixed-pitch, proportional electric 5,350-kW thrusters.

As mentioned above, anchoring is carried out from an anchoring and line handling space opened to the world via shell doors. Aft something similar occurs with (composite) shell doors in the bulwark which rise up to allow access to the line-handling equipment. In total there are seven major shell doors on each side (plus anchor doors); for guest tenders and beach area (one per side), crew tenders, upper, toys lower (two per side) guest boarding door (with passerelle for alongside), plus crew area access door. There are a number of minor ones too. A knuckle boom crane with a 10-metre reach allows pallets to be lifted from the dock and lowered directly to the tank deck storage down a shaft (top). On either side, the liferafts are stored beneath covers and are hoisted then inflated and swung round to be boarded. All this is done at main deck level, before being lowered to the sea with the evacuees already aboard. This is carried out either on an emergency genset or for total dead ship abandonment on hydraulic accumulator bottles.

The yacht is LR and SOLAS but not passenger ship SOLAS. She is over 5,500 gt so cannot be LY compliant but carries only 12 guests so is SOLAS compliant as a cargo ship. This, under the Bermuda flag, allows non-Orange lifeboats and other allowances easier to achieve than SOLAS Passenger vessels. Nav lights are deployed from mini shell doors and the MOB smoke buoy is too; a button on the bridge is pressed to deploy, as the traditional option outboard of the bridge wing is – given their lack - impossible. The black foremast is hydraulically raised as are the



Free Surface Moment, although for long passages or larger sea states it would be emptied. On the sixth deck there is a Jacuzzi just under the twin stacks and round roof. These are of composite construction and are the items referred to in *TYR* issue 86, p 99, when I visited Rhebergen composites (although I could not then reveal they were for *A*).

Main propulsion is by medium speed 1,000 rpm diesel MAN RK 280 at 9,000 kW (see page 61, bottom). Their flywheels face aft and the power passes through a reversing gearbox then returns – outboard of the mains – to CP props. Propulsion is – once clutched in – by varying pitch and RPM in accordance to a combinator curve. At rest they are declutched; shaft brakes are supplied allowing placing voyages on one engine, although Dirk told me at higher speeds it's better to let the lazy shaft freewheel.

All exhausts dry-stack to vertical outlets atop the sixth deck, one of the few straight design elements as they set nicely against all the curved forms. The gap between them is practical too as it has a venturi effect that accelerates the air and pushes the exhaust plume (and any smuts) up and away when under way at speed. Likely though that that speed of air movement means deck 6 is at its best when at anchor. Under way at 20 knots into a 20-knot head things would get a bit breezy. Top speed is, Dirk told me, 24 and up with cruising at 19 knots and a theoretical range of about 6,500 miles at 18.

The long forward shade overhang and large shell door openings aft make one wonder if the structure needed bracing in the area between the doors athwartships. Dirk considered it a risk so had the foundations added in build but held back until sea trial on making the decision as to whether the pillars would be

aforementioned wave breakers for'd of the fore deck. These, although Class mandated, do not appear to be necessary as no seas have yet made it that high or aft. Dirk reckons they are most likely to end up as quite efficient wind breaks for the passenger area for'd.

The yacht has both aft and forward pools. Originally the forward one was organically shaped but an owner preference for a pool in which one could swim against a water jet changed the shape. The aft one has rather clever construction and is baffling within to minimise

required; his instincts suggested they would not be and so it proved. Forward there are pillars but they are resiliently mounted (left), as there may be some anticipated hogging and sagging in this area.

The unusual shapes and cleanliness of line brings its own challenges. There is a strong training culture; crew are regularly sent for specialised training. The oddest may seem to be a course in climbing for deck crew; however, looking again at the areas to be washed down it does not seem so odd. Washdowns

are inevitably both long, tiring and technical, often requiring abseiling and tying off to scrub. Bring on Lotus-effect self cleaning paints! Windows are automatically washed with demineralised water drawn from the 50 tonnes of technical water carried aboard. The full specs of the yacht are available as a Synfo extra.

You might expect something mechanical to be the unique aspect of *A*, but in fact perhaps the most innovative technique is in the most traditional of materials – teak. Dirk explained that Mike Kimble of Teak Solutions developed something special for the yacht. Wide and very long teak planks were needed; maybe even up to 23 metres in length; these are pretty nigh impossible to find. The normal answer would be to caulk athwartships then add another plank continuing till you reach the length required. However, on the lengths needed here that would simply be unacceptably ugly. Instead the ends of planks were machined into finger joints of great precision (page 62, top).

The planks were laid out on a ultra flat table. in the portable workshop that Mike set up alongside the building dry dock to do this. They were pressed together (using an advanced phenolic glue) and a 50-tonne force and were backed with a special fabric; groups of about five planks were pre caulked – full depth – then once dried were transported aboard and glued down using a vacuum bagging technique (no screws). We will look in to the broader use of this technique in detail in a future issue and also at Mike's controversial yet (for me) logical view on Burmese teak, forest management and embargoes.

Tender love

The yacht tenders are as special – albeit in 10-metre-long packages – as the 118-metre mothership. They are built on a proven hull platform of design by Patrick Benfield, Rodney Cull told me. Rodney worked previously with Dirk on *Rising Sun* and here he was responsible for overseeing the tender build and refining the usability and detail of them. There are two of these built by Vaudrey Miller in NZ as well as a high speed RIB from Pascoe. The Vaudrey Miller boats are in Limo and Open forms; the Limo is quite exceptional having a very unusual look and full standing room within (at least at 1.9 metres its good for me – Dirk doesn't quite fit). It's air conditioned and equipped with head, an iPod entertainment system, fridges and much more. Despite a radical look they are well arranged for crew to operate and guests to enjoy. The deck is varnished teak and holly, but even here are details like non slip applied, but to the holly inlays only (pictured here).

The open is designed to be multi-purpose; despite a fast speedboat style it can quickly be transformed into a ski boat or a dive tender. The neatness of the operational aspects is excellent. The layout of practical aspects equally will likely never be noticed by guests but will be loved by crew (see page 62, middle). They are cleverly conceived from an engineering viewpoint. Motors are common to all three; prime movers by Yanmar with Bravo 1 and 3 outdrives reducing the spares burden. All have fresh-water systems, black-water systems and 150 litres of fresh water and 500 litres of fuel offering autonomy of about 470 miles. They are lifted on hidden lift bars using soft strops to protect the finish. The finish itself is very fine including a brushed chrome paint, which offers great looks despite, as Rodney told me, being horrendously difficult to apply.

A Conclusion

Thus the story of *A* is finally told. *A* is a yacht destined to attract outrageous amounts of attention that will likely gather a spectator fleet on entry and exit of each harbour to rival that of the *Maltese Falcon*. What does *A* mean for the superyacht industry? Philippe Starck commented: *"Every project must have legitimacy. There (are) some different ways to have legitimacy. First (one) good way…is to (realise) that every project is always the result of a human relation, a human affair. That means if you want beautiful children parents must be in love. If you want a beautiful project, the partners of the project must be in love. In love (here) means (to have) the same way of thinking (and) on the same lines. People who share the same vision about life, about philosophy, about the future, about evolution, about boats, about the sea, about the ecology and things like that."*

With a satisfied owner *A* will have achieved that legitimacy but she also legitimises adventurousness in designers and owners. Even for those who may hate the yacht's looks the fact that she exists is important. It is noteworthy that a particular size was never the aim (no 'mine's bigger' here); her length was developed from the space needed to achieve the desired function. Thereby she both affirms and negates the validity of the 100-metre plus yachts. *A* affirms it because the yachts works well and *A* looks good rather than big – *A* negates (or at least questions) the gigayacht because she shows the same legitimacy can be achieved with (of course different) parameters at any size.

Tork Buckley

Photos: Tork Buckley, Martin Francis, Jean-Baptiste Mondino, Guillaume Plisson and Superyachtart's Justin Ratcliffe; rendering courtesy of Philippe Stark

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