



Photo: Yvan Zedda

The world's fastest offshore race boat?



We take a look at Pascal Bidegorry's Banque Populaire maxi tri

See the video of our sailing on board the *Banque Populaire* maxi [here](#)

To get the full Banque Populaire experience listen to [this sound file](#) (of the boat going upwind, with her daggerboard playing the note 'F')

On paper the new *Banque Populaire Maxi* is the world's largest racing trimaran at 40m LOA, so big in fact that she could fit an ORMA 60 on to her foredeck (if she had one). Given that with maxis, both mono and multi, the longer and more powerful you get, so the breakage and nightmares increase exponentially, it appeared when we first heard about this new beast that skipper Pascal Bidegorry had turned megalomaniac and her crew would be spending as much time fixing the boat as sailing her.

In fact after a day out on board, we can confirm that we only blew up one runner block and judging from the way the crew drive it – Bidegorry and helmsman Yvan Ravussin cranking what is probably the world's fastest offshore race boat up to 22 knots upwind in around 16 knots true and flying the main hull (we got the full experience) – they are not as terrified of their new weapon as one might expect. In fact in theory the loads on the present Jules Verne Trophy record holder, Bruno Peyron's *Orange 2* should be larger as despite the two boats being similar length and *Orange 2* having one less hull, her 35 tonne displacement is over 10 tonnes more than the new *Banque Pop*.

Obviously being the latest so-called G-Class maxi-multihull, *Banque Populaire*

conforms to no rule. However there are limitations. Traditionally this is the size of the sail plan the crew can manage, but we understand that this was not the case here.

One constraint was righting moment. For designer Vincent Lauriot Prevost (the half of design house VPLP who now deals with their race boat projects) the new boat is the latest of some 25 years designing racing multihulls including both previous G-class trimarans - Olivier de Kersauson's *Geronimo* and of course the main competitor, Franck Cammas' *Groupama 3*. In terms of righting moment *Groupama 3* still hits the high score at 290 tonne metres, compared to *Geronimo* at 220.

Vincent Lauriot Prevost explains: "*Orange* was something like 260 tonne metres, so the target for righting moment [with *Banque Populaire*] was 240, but keeping the same aim of *Groupama 3* in terms of beam, sail plan, hull shape developments and appendages. What we have done too is to try to add the maximum features dedicated to performance such as a canting mast and foils. We have been quite conservative in fact." That is if an ORMA 60 is considered conservative. Lauriot Prevost points out that while *Banque Populaire*'s curved foils in the floats and the canting mast have obviously been used extensively in the ORMA fleet, they have also both been scaled up previously: foils have been used on *Groupama 3*, canting rig on *Geronimo*.

He expands on why they settled on 240 tonne metres. "If you increase the righting moment you have to be able to use the righting moment and using the full righting moment will increase the loads everywhere and for a Trophée Jules Verne, maybe you don't need that. It is not the same for a boat like Oracle where we are looking for more righting moment."

According to Antoine Gautier (Alain's nephew), who is one of the Banque Populaire team's in house designers and also one of her crew, another major constraint they placed upon themselves was limiting displacement to 24 tonnes all up, ready to rock. The reason for this was this was the limit they felt comfortable engineering the curved foils to. For these must be designed to accept the full weight of the boat, plus a safety factor. "2x?" we ask Prevost. "Something like that..." he replies. To engineer a curved board, complete with the typical 'hook' on its end, to withstand 48 tonnes (ignoring dynamic impacts), it is made out of 13cm of SOLID carbon.

The reason for this substantial structure is the Breton world of maxi-multihulls is small and they know that *Groupama 3* broke two foils in close succession. "The main concern was to have foils that could support the weight of the boat, without going too heavy," says Gautier. "So we have a very strong aspect ratio in the foils, so they have a low relative thickness."

The radius of curvature to the foils is the same as it is for ORMA 60s and *Groupama 3*, one of many parameters set because it is a 'known' based on prior experience. However Prevost admits that the result isn't the most elegant. "Compared to an ORMA 60 we can't have as efficient foils on a boat of this size. The efficiency of these foils is at higher speeds - 23-26 knots. Of course at this kind of speed, reducing the drag of the floats and increasing speed is a point, but the other thing is to provide more safety when sailing hard, to give a more bow-up trim."

Background

Banque Populaire have been around as a sponsor on the ORMA circuit for more than a decade. One of their subsidiaries is also well known to the sailing world - Foncia - and the bank today also sponsors Jeanne Gégout's Figaro campaign. Past ORMA 60 skippers who have flown their colours include Francis Joyon and Lalou Roucayrol. The bank got serious about the ORMA class in the late 1990s

building a new Marc Lombard design (the first to feature curved foils in the floats) but this folded up in the 2000 Transat. A second boat was built from the existing moulds but this never really delivered either.

Towards the end of 2004, Solitaire du Figaro winner Pascal Bidegorry took over the campaign and the team acquired the Irens-designed former Bayer CropScience, renaming it *Banque Populaire IV*. In this the following year Bidegorry won the Transat Jacques Vabre and the IB Group Challenge, finally ousting Franck Cammas from the top spot to win the 2005 ORMA championship. In the closing moments of the ORMA class *Banque Populaire* and *Groupama* were the two main rivals. But now with no ORMA class both campaigns have since graduated up, where it seems they still remain rivals.

The go-ahead was given for the new monster trimaran project in May 2006 and the team did the rounds of the designers - VPLP, Nigel Irens/Benoit Cabaret and Orange 2 designer Gilles Ollier who offered a 41m catamaran. It should be remembered that it was around this time, the summer of 2006, that Franck Cammas' new maxi-tri *Groupama 3* was launched and considering the team's background it is not hard to see why they went down the VPLP three hulled route. Over the winter of 2006-7 they carried out their R&D to establish the fundamental criteria for the design.

Given the 24 tonne maximum displacement they could then juggle with the other principle parameters. The main hull was originally 38m long, the floats 37m and on this platform they chose a beam of 23m, just half a metre wider than the 32m long *Groupama 3*, on the basis that increasing beam is extremely costly in terms of displacement. With this platform and a mast height similar to Orange 2's, VPLP did a weight study and seeing they still had some displacement in the bank, extended the main hull to 40m to provide greater security downwind. As Gautier puts it "Pascal [Bidegorry] is also 40 this year - so we wanted a 40m boat for his 40th birthday!"

They also went for 'dreadnought' reverse sheer bows on all three hulls (as seen on the floats of the *BMW Oracle Racing* tri). While there are some wave piercing benefits, Gautier admits these bows don't show much hydrodynamic advantage. In terms of the floats he says they borrowed a lot from the shape of the Irens-designed *Banque Populaire IV* hulls.

While the longer LOA should serve *Banque Populaire* well when they are trying to keep the beast under control surfing down Southern Ocean swell, a potential weak spot in their performance is in lighter conditions where the more nimble 18 tonne *Groupama 3* could have the edge. It is for this reason that from the outset they added the go-faster ORMA features such as the foils in the floats, the canting mast, plus a longer daggerboard fitted with a trim tab. Only the first of these *Groupama* featured in her original guise (at present it is unclear whether any more will be added during her present re-build).

As on *Groupama 3*, the mast is positioned a long way aft in the boat and while ORMA 60s used to have the daggerboard forward of the mast, which sat on the main cross beam, on the *Banque Populaire* maxi, the daggerboard is aft of the main beam with the mast stepped further aft still.

Obviously *Banque Populaire* features a rotating wingmast and this was built by Lorima around 400m from the team's base within Lorient WW2 submarine silos. For this they used the same mould as *Groupama 3*, although with some detailing tweaked.

The build itself was farmed out all across France. While the boat was put together in Banque Populaire's base, the floats and main hull were made by JMV Industries in Cherbourg, the beams by CDK Composites in Port la Foret, the daggerboard, foils and main rudders by C3 Technologies in La Rochelle while the rudders in the

floats came from Thierry Fagnent's AMCO yard in La Trinite, best known for its Stradivarius-like work within the Mini class.

Construction was for the most part in carbon-Nomex sandwich but with foam used as the core material for the underside of the crossbeams (a lesson learned in the ORMA class, post 2002 Route du Rhum disasters).

The Banque Populaire team also learned considerably from *Groupama 3* and not only from her sorry breaking-up during the Jules Verne attempt earlier this year which resulted in them making the outside of the floats foam-cored too. Before this they say that a fair amount of uni-directional carbon was added retrospectively within all three hulls to stiffen them.

Slamming and wave impact damage are a significant problem with multihull structures that try to be as light as possible. In addition to the construction the arch of the cross beams is such that at their highest point they are 1.9m clear of the water - this is around the same air draft beneath *Orange 2's* main beam and compares to around 1.7 on *Groupama 3*.

At a fundamental level the location of the crossbeams relative to the hulls is extremely important, particularly how far aft the forward beam is from the bows of the floats. According to Gautier the position of this beam is further forward on the float than it is on *Groupama*, however there is still 18m of main hull in front of the forward beam!



On deck

In essence, aside from the relative positioning of the main daggerboard and mast in relation to the main beam, the deck layout of the *Banque Populaire maxi* is similar to an ORMA 60, just much much bigger and with considerably more hull up forward.

The cockpit is enclosed forward by the aft crossbeam and aft by the substantial semi-circular beam supporting the main sheet track, creating an elliptical shaped

cockpit similar to ORMA 60s. The significant difference - and here she also differs from *Groupama 3* - is that on *Banque Populaire* the cockpit is larger fore and aft and has a substantial canopy mounted on top of the aft beam and doghouse to protect the crew and helmsman. The 'pit area' is either side of the doghouse with the helm positions further outboard. Immediately aft of the doghouse there are four pedestals, two more than on *Groupama*. And, boy, are they needed...

Banque Populaire expects to sail with 13 crew rather than *Groupama 3*'s 10 and in terms of managing the sails 13 is too few. To hoist the 450sqm main alone is a painful eight man grind for 12-15 minutes. Hauling the sails around also requires most of the crew. In fact pretty much any sail manoeuvre is an all-hands affair.

Fortunately there aren't too many sails. The inventory made by Incidences in La Rochelle comprises: main, solent, staysail, ORC (storm jib) and three gennikers. The gennikers are masthead, fractional and one the crew mysteriously call 'the string' which we understand to be tiny fractional blast reacher for use in 30-40 knots. All the sails are in Cuben fibre, all the headsails on furlers.

With the mainsail area at 450sqm, roughly the same as *Orange 2*, the headsails are much bigger - the solent is 270sqm while the biggest genniker is 600sqm. Part of the reason for this is also to keep the mainsail area manageable. We have mentioned the big grind necessary to hoist it, but a long footed main makes the sail harder to trim and get the battens to bend correctly, observes Vincent Lauriot Prevost. "And if you gybe the shorter the batten is, the less risk there is of breaking them."

However moving the mast even further aft, which might be a good solution for a downwind boat, results in further balance issues plus excessive forestay sag, plus an exponential increase in forestay chainplate sizes, with the stays being even further off the vertical.

As we have mentioned the mast can be canted up to weather, moving the centre of effort and relieving heeling moment. To achieve this there are enormous hydraulic rams mounted horizontally fore and aft in each float that attach to the shrouds, allowing the mast to cant by a massive +/- 8 degrees (compared to +/- 5deg on the ORMA 60s). The team did look at being canting the mast fore and aft, as the ORMA 60s can, but the necessary hydraulics to manage this was deemed too heavy. It is something they might look at as a future development, says Gautier.

To reduce compression on the mast the sails are on locks and for security they have opted for the beefy Facnor solution. Obviously on board a boat of this size some of the gear is erring towards custom. While the main car track is Lewmar (as it was on *Orange 2*), the majority of the deck hardware is Harken including some special very top of the range winches, 17in diameter 1135s, which are similar to *Groupama*'s 1130s but with some construction modifications.

Certainly the deck gear being man enough for job looks set to be a problem on a boat this big where there are such humungous load. Compression at the bottom of the mast (remember the mast sits on a mast ball that allows the spar to rotate and be canted) is 80 tonnes (think of six Volvo lorries sitting on top of it) while there is 20 tonnes in the main sheet and 12 on the Solent. This is as big as you can go without having to have 2:1 sheets on the headsails and this would have the potential for untold damage with blocks on the clew flaying about during manoeuvres.

More photos on the following pages...

Tomorrow in part 2 of this article we have a look down below and consider whether Banque Populaire is the ultimate G-Class maxi-multihull



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Offshore



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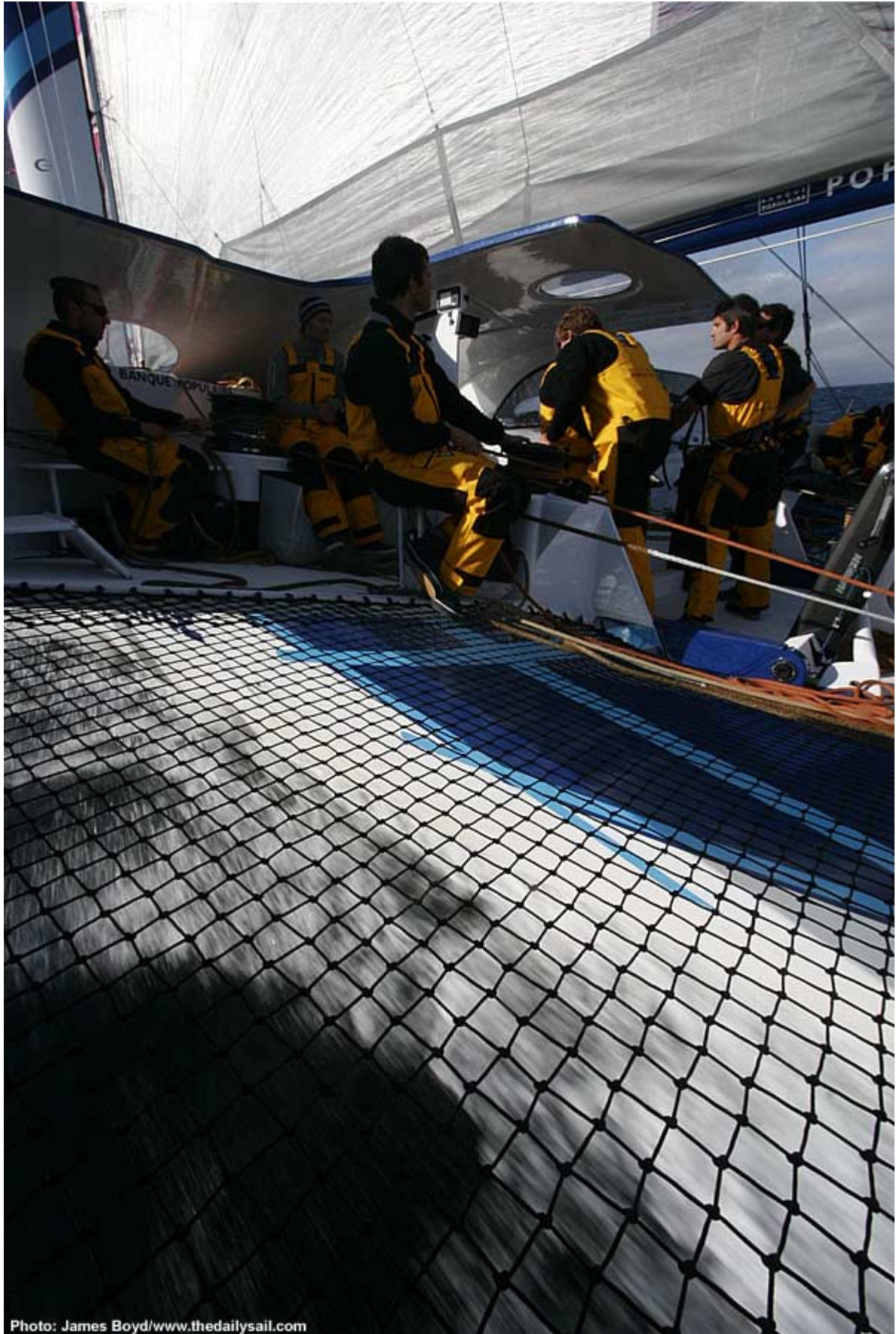


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The world's fastest offshore race boat - part 2



Is the Banque Populaire maxi tri a Groupama 3 killer?

This part follows on from [part 1](#) published yesterday

Down below

Large by racing trimaran standards but probably the smallest accommodation of any 120ft long yacht... We weren't allowed to photograph below, but coming down the companionway (offset to port) there is the area for the offwatch with hanging space for the foul weather gear on the port side and a seat to starboard with the compartment for the engine and generator beneath. The Banque Populaire maxi is believed to be the first maxi-multihull to be fitted with a prop shaft that lifts inside the boat.

Forward of this the galley area is to port, fitted with a sink and twin burner stoves (with light coming in from an escape hatch) and seating and stowage opposite. The compartment ahead of this has three pipecoats in it and beyond this, in the darkness, is the daggerboard case.

Going aft, behind the companionway is a compact nav area offset to port with another escape hatch on the starboard side. There is also a tiny table with a computer on it for the crew to use. Aft are more bunks for the navigator, skipper and watch leaders and there are more bunks further aft still, although it is believed that these will be virtually unusable at sea due to the motion and will probably be used for stacking. Aft of this is the substantial rudder stock and behind that the water ballast. The size of this the crew won't divulge but we suspect it is in the order of 3 tonnes.

Maintenance has been considered and there is access to both the inside of the cross beams as well as the mast.

Conclusion

The upshot of this is that we personally expect *Banque Populaire* will be faster pretty much across the performance spectrum than *Groupama 3*. Upwind they have trim tab on the daggerboard and a length advantage. The result as we saw was a performance of more than 20 knots upwind at 50deg (this compared to 18 knots and tad higher in their ORMA 60). Off the wind they again have a length advantage, plus a canting rig and foil to reduce drag on the leeward float. Antoine Gautier reckons that in winds of more than 20 knots they should be "a lot faster than *Groupama* and we won't have to back off as soon as well." The sweet spot is obviously with the wind just aft of the beam and on this point of sail they should be looking at 37.5 knots in 19 knots of true wind...

While one might imagine a top speed of 50 knots to be possible, but the boat is geared up primarily for long daily runs. The 24 hour record at present held by *Groupama 3* is a shade under 800 miles and it is felt that 850 miles might be possible on the new boat (the *Groupama* team feel they are capable of this too). This represents about 35 knots average speed.

"An ORMA 60 could reach 38-39 knots, but couldn't keep this speed," says Gautier. "On this we can hold 35-40 knots pretty easily if the conditions are right. In terms of top speed, the boat accelerates almost as fast as a 60, so I think we will be able to reach 45. We will be surprised if we don't reach 45 knots." Gautier observes semi-jokingly that there may be times on a boat like this where an autopilot might drive faster since it doesn't have the fear factor a human helmsman might have.

In terms of how the *Banque Populaire* maxi might do on a Jules Verne attempt - her raison d'être - Gautier believes that in the Southern Ocean boats are limited by the eastbound speed of the depressions: "In the south you don't need to be really really fast. You could see - Francis Joyon was almost as fast as *Orange* there." By G-Class standards this is relatively slow, around 25-30 knots, so there is the constant potential for boats to sail off the front of a depression and into the ridge to the east of it. We suspect it won't be long before we see these boats overtake the ridge and are able to sail into the system ahead. However at present the view is that the greatest gains are to be made in the Atlantic - hence the team's focus on ensuring that the new boat performs well in light and upwind conditions.

Obviously there is a fairly high price tag on a boat of this magnitude. On the water the *Banque Populaire* maxi is reckoned to have cost in the region of 10 million Euros, a little over twice as much as a Volvo Open 70, but still pretty cost effective in terms of price v performance.

So bigger and with more toys - does this mean that *Groupama 3* is obsolete? Far from it. Firstly there is the issue of reliability. This has already proved an issue on Franck Cammas' boat. On a boat even larger it seems likely to be bigger again, regardless of the lessons learned and how it is speced.

Vincent Lauriot Prevost believes *Banque Populaire* to be the faster boat (how could he say otherwise, it being his latest design?), but points out that is not as clear cut as it might seem. "It will be interesting next winter!" he says - both *Groupama 3* and *Banque Populaire* are scheduled to make Jules Verne attempt over the winter of 2009-2010. "I am pretty sure that *Groupama 3* has some very very good performance in up to 20 knots of wind and after that it is down to the sea state when I think it will be easier for *Banque Populaire*. From our VPP results the gap between the boats is okay for *Groupama 3* I think. When we speak to the *Groupama* crew they are quite confident with their lighter option."

The million dollar question is - is the *Banque Populaire* maxi the ultimate G-Class maxi-multihull? Clearly on paper a bigger boat would be faster, but the 120-125ft size seems to be at the present limit of technology for a boat where humans must grind the winches and where any degree of reliability is to be maintained.

"If we built a new one, bigger might not be faster," says Gautier. "Smaller and lighter, maybe wider might be faster. We will discover with this one - if the boat is not about to pitchpole all the time, we will be able to say the boat is too long for the sail area, so we might be able to reduce the length [and therefore displacement]."

Vincent Lauriot Prevost is more cautious: "At this stage for sure we don't have enough feedback to think about a bigger boat. Up until now in early sea trials it looks like the boat is easier to sail than expected. You get used to the size quite quickly. Pascal and the crew I think they have that same feeling about it. The boat is not as monstrous as you could have imagined."

One avenue Lauriot Prevost thinks might be the next step on would be a boat that works more on its foils. He states that *Banque Populaire* is 'foil assisted' and not a 'foiler'. So could you for example add another set of curved retracting foils in the floats? "No. There would be too much extra drag and it would affect the balance of the boat too much. If we had two foils I don't think we would be able to use them independently. If we wanted to push the foiler option we would have a smaller boat to be able to work on the efficiency of the foils. At the moment we are stuck with the compromise between efficiency and structural problems."

Next summer when both the newly rebuilt *Groupama 3* and the *Banque Populaire* maxi are eating up miles around the Atlantic we should get a better idea, but the one we'll all be waiting for is the Jules Verne Trophy show-down in a year's time. The rumour is that both boats will be setting off together in a race...

More photos on the following pages...



Photo: James Boyd/www.thedailysail.com

Offshore



The world's fastest offshore race boat - part 2

Is the Banque Populaire maxi tri a Groupama 3 killer?





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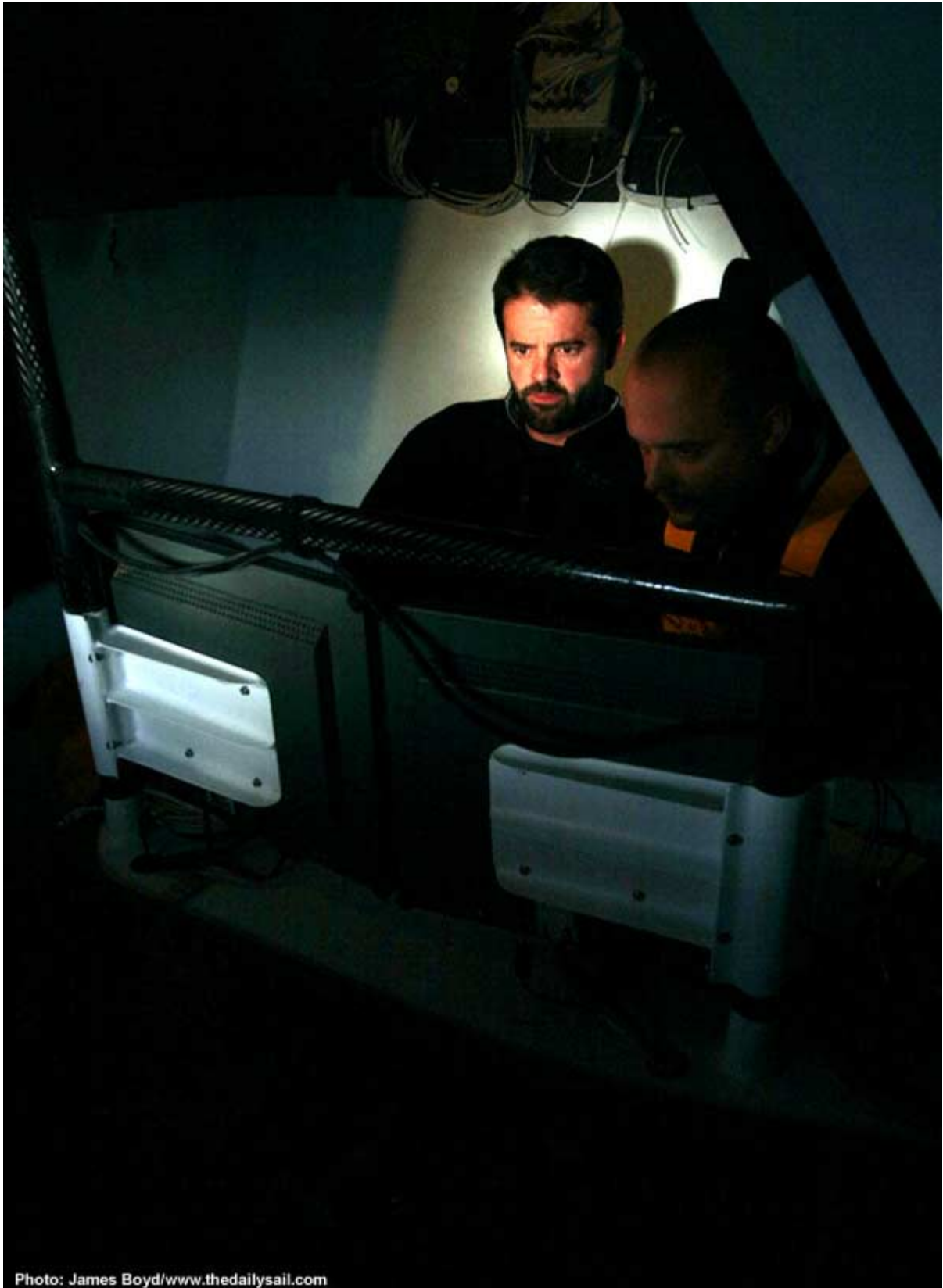


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