

Seahorse

International Sailing

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Cup begins
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New wave – Part II

Shaun Carkeek of Botín & Carkeek Yacht Design concludes his look at the new GP42 Class – which in just a few months has gained a substantial fan base

Horses for courses?

Fast design undoubtedly involves making the best compromise decisions while at the same time minimising the number of such decisions that are necessary.

One of the questions most raised by potential clients – as in the early days of the TP52 class – concerns the need for different optimum hull shapes for US and European sailing. Currently we're inclined to adopt the same shape and concept for all regions where these boats are likely to see class, as opposed to handicap, racing.

Our 2007 GP42 design (series-produced as the Grand Soleil GP42) is targeted to deliver optimum performance across the wind range. The type of course racing and average wind speeds are in fact quite similar in the proposed principal racing areas; in the Med the GP42 circuit includes windier venues such as Cascais (Portugal) and Sardinia (Italy) and these have been factored into our analysis along with conditions at light-air venues, particularly those in the western Mediterranean.

We believe that creative management of a new fleet's racing programme, ensuring a good cross-section of conditions, is a better way to ensure a group of good all-round performers than trying to 'force' similarity through artificial measurement controls.

Once the GP42 fleet is established the game will become more tactical, with the focus shifting to careful observation and understanding of relative performance differences within the fleet and then playing on distinctions. For example, in the TP52s our decisions are influenced by fleet growth and trend prediction, and we prioritise these above regional weather analysis.

Correct balance or equilibrium in all conditions will always be vital for optimum upwind VMG performance. This requires the generation of the correct rudder angles without compromising optimum designed sail shape or rig set-up. It's very difficult to achieve this across a range, and deciding where to optimise and how to minimise losses is a key area of our research.

Rigs

With rule-imposed limits on mast weight, VCG and maximum carbon modulus, our



Above: first GP42 afloat was the Farr-designed *Roma* built by Latini Marine. Like the King/Grand Soleil GP42 from Botín & Carkeek, Farr's GP42 is also now in series-build

main goals are to create a mast that meets the minimum values and delivers the type of performance required for the venues, hull concept, stability and respective optimum sail shapes.

For our GP42 we focused on aerodynamics and creating a new minimum-drag section combined with an optimum spreader envelope for sheeting (without masthead genoas the design problems were slightly easier to resolve than on the TP52). We worked to find the right compromise between high fore-and-aft stiffness, control and tunability, so the sails can be trimmed optimally across the range.

To achieve these goals we have worked closely with the rig suppliers (in this case Hall Spars and King Composites) and sail designers using various CFD and FEA packages, such as North's Flow-Membrain, together with our own in-house Panel, Rans codes and FEA packages. With Hall we are now onto a second-generation mast laminate.

Quality assurance

Racing will inevitably be close in this new class and therefore tremendous effort goes into structural R&D to improve the global stiffness and weight distribution as well as general detailing. FEA models were also run on numerous individual components, such as the keel structure and associated carbon box to ensure optimum weight distribution.

Various production techniques were studied to create an efficient and cost-effective build process without compromising quality. We have opted for female hull and deck moulds, eliminating the need for fairing and filler and squeezing out all excess hull weight while at the same time speeding up the construction process.

SP pre-pregs and Corecell are used with tight control over panel weights. I believe the choice of carbon by the rulemakers was good for a boat of this size and with these performance goals. The improvement in weight concentration and longitudinal

stiffness achievable with carbon are significant factors in the all-round performance.

Even with the restrictions on internal ballast, keel and battery weight, which largely govern the composite weight, weight distribution is important to ensure optimum dynamic performance. Attention to details results in many small gains, which make the difference between winning and losing.

Both wheel and steering options are available; all but one client has selected the tiller.

We spent many hours with our clients understanding their needs within the GP42 concept. As a result we've opted for a slightly different winch distribution from our competitors' to address the ergonomics and optimise weight distribution.

IRC racing

A number of clients have stressed the importance of a good IRC rating in their decision whether or not to enter the class. This is more significant in the States where fleets are spread out and during the initial growth stages of the new class.

It is worth noting our TP52 IRC results in the USA: *Samba Pa Ti* won the IRC division at 2007 Acura Miami SORC and walked away with the overall Grand Prix title ahead of several proven purpose-built IRC designs. This win looks even better when you take into account that in Miami *Samba* was still in full TP52 mode.

Although the GP42 performance vs rating will not be quite as good under IRC as the TP52, our analysis shows that it will still be very competitive. Just as the good IRC performance of early TP52s encouraged several owners into that class, with the prospect of useful 'multi-usage', we are sure a good IRC performance will provide a similar leg-up for the GP42s.

In fact, being a smaller and more affordable boat, we believe the longterm prospects make the GP42 potentially an even bigger success than the TP52... Roll on the first class racing this summer! □