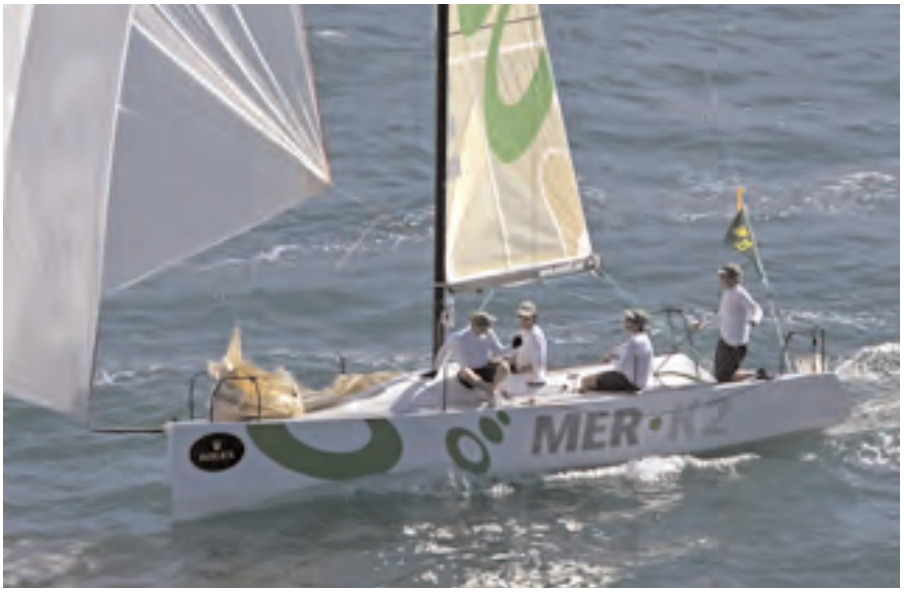
Starter pack

The shallow waters of Mar del Plata are proving fertile breeding ground for the smallest of the ORC's Box Rule classes, the new GP26. Argentinian designer Nicolas Goldenberg will soon be among the first afloat with one of these fast pocket-racers



The class

After a long wait in the summer of 2005 the ORC published their new Grand Prix rule. The rule was principally derived from the TP52 class and established box rule criteria for three more smaller sizes of boat at 26ft, 33ft and 42ft overall.

The Grand Prix rule defines key parameters to ensure close and exciting elapsed-time racing with differences in performance potential coming down to narrower elements, including the refinement of the hull and appendage shape, to make the boats fast in as wide a range of conditions as possible, build quality to optimise weight distribution, plus a good deck layout with optimal rig geometry and execution.

Marking a clear break from the past, the ORC GP class rules are quite simple, the main constraints being sub-divided into the following categories:

- Hull size (length and breadth)
- Appendages
- Rig and sailplan
- Stability
- Accommodation
- Construction materials

Following the success of the bigger GP42 things are now starting to move for the smallest member of this emerging box rule fleet, the GP26. Since the creation of the Grand Prix rule a good number of GP26s have been designed and several are now sailing.

The first big objective for the class is to be ready for a successful inaugural GP26 Global Championship in January 2009 in Punta del Este, Uruguay.

The Goldenberg GP26

Due to the growing interest in the class in South America and its worldwide potential it was natural for our relatively young practice to try to get a new project underway as soon as possible.

Having studied in Southampton with Charles Bertrand, who is now with FoX Technology, and after lengthy discussions about the specific requirements of the GP26 Class, by mid-2007 we had begun work together on a joint project.

The design started with a lively brainstorming session. This provided a good opportunity to throw around fresh ideas without fear of judgment or too much adverse comment. Once all the ideas had been explained, each one was evaluated… needless to say, only a few made it forward for our base boat! This base design is our reference boat, a start point, and at this stage we can begin sizing appendages, rigging, working on the preliminary structure and weight estimations.

At the same time the major variables were constantly being updated in our VPP, to find the best compromise between hydrodynamic and aerodynamic forces at each stage of the design's evolution.

To refine each component to the maximum we decided to break the boat down into the areas of aerodynamics, hydrodynamics, deck layout, aesthetics and construction. Clearly these areas are not independent and they must be constantly evaluated as part of the whole design; but working in this way provided us with a great deal of detailed research and subsequent refinement for each component part of the final yacht.

Rig

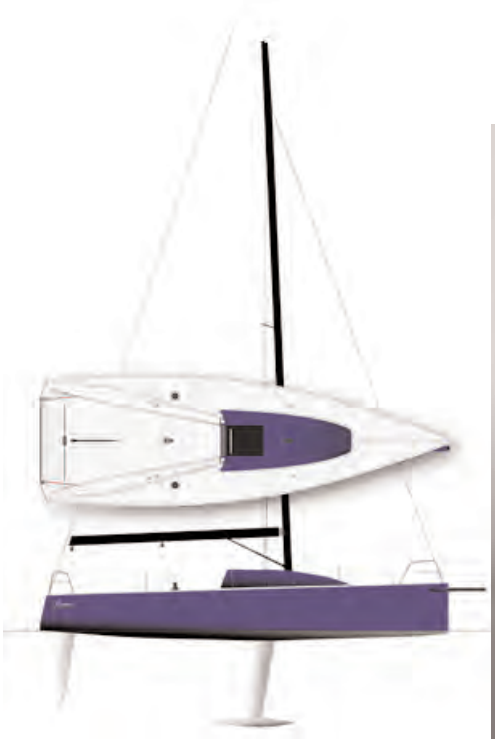
The class rule places several restrictions on the dimensions of the rig and sails which result in an almost fixed sailplan; our objective has been to maximise and optimise this sail area and geometry to produce a fast, balanced and responsive boat.

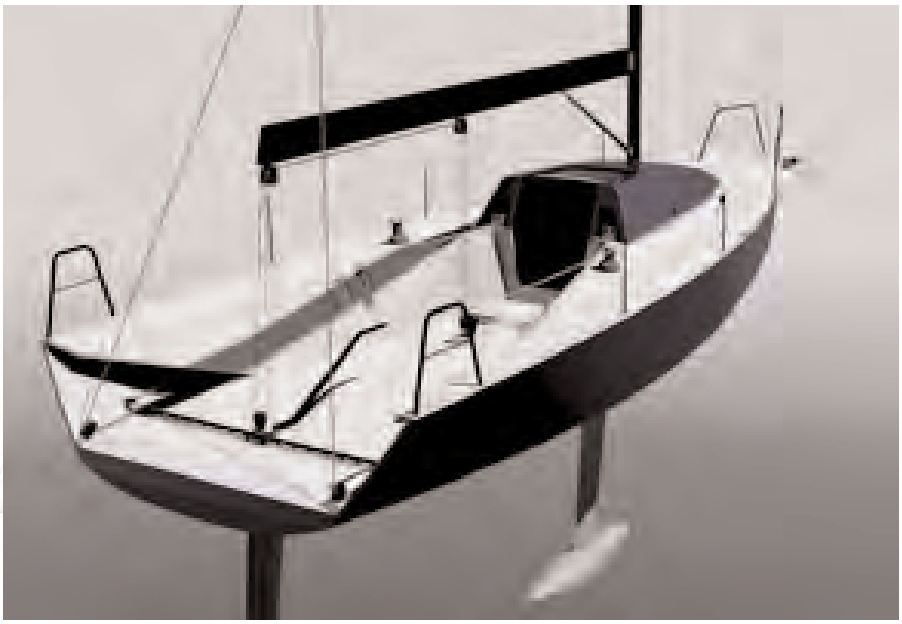
The 'parent' Grand Prix rule also allows for either a carbon or aluminium mast and specifies, in the case of the GP26, the use of a bowsprit and no separate spinnaker pole. The specified class sail inventory comprises one mainsail, two jibs and two asymmetric spinnakers.

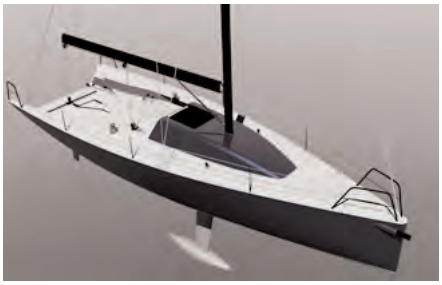
Hull

After a quick evaluation of the GP26's primary characteristics, of light displacement, high ballast ratio and substantial sail area it was easy to determine that these vessels will often be sailing in a semi-planing or planing mode. Therefore, we were soon looking at hull shapes featuring a very straight rocker with a flat bottom – a combination that we adopted through the use of chines running along the final third of the hull.

Clearly, the aim has been to trigger early planing, and enhance the dynamic lift at higher speeds to further reduce wetted surface area. In the heeled state the long chines also generate transom immersion to







***Far left*: prize for the first GP26 to go sailing went to Argentina's Carlos Oliva Velez with his Martin Billoch-designed *Mer K2*. *Left/above*: Nicholas Goldenberg's own new GP26 design should be afloat by the time this issue arrives. Whether the GP26 moves in to fill the vacuum left by the smaller Ton Cup classes will depend on the marketing abilities of today's better young designers; to date the signs are promising with at least six boats sailing by the spring**

maximise the dynamic waterline and dynamic wavelength, resulting in a boost in upwind performance in displacement mode.

The bow entry is fine, but without any hollow, which is a big contributor to good behaviour in a seaway… something that is never easy to achieve on any relatively small keelboat design.

The big issue for us concerned waterline beam. Most VPPs tend to 'like' beamy boats with high form stability, showing a better raw speed performance in medium to high wind speeds. But, on the other hand, a narrow waterline will result in a more versatile and manoeuvrable vessel.

Taking into account the fact that the maximum crew weight of 340kg represents around 25 per cent of sailing displacement, it is easy to appreciate the significance of effective hiking on the overall stability of these small yachts. To take maximum advantage of the crew lever our design therefore ended up with a compromise of maximum beam on deck with moderate waterline beam and almost flat topsides.

Appendages

The appendages comprise high aspect ratio foils to achieve maximum efficiency within the rule's draft requirements. The maximum weight of the keel is also set by the class rule, and because of this a detailed design study was undertaken to ensure we achieved the lowest possible centre of gravity. A T-type top-flange arrangement that fits into a hull recess provides a simple system to satisfy the class rule requirement for an easy 'plug-in' keel to ease transportation and shipping.

The torpedo-like bulb features a maximum section located well aft as well as a flat bottom with sharp side edges. These features promote a lower centre of gravity, reduce induced drag and promote laminar flow to reduce friction drag.

The rudder design was refined into a very high aspect ratio blade supported by a carbon rudder stock.

Deck layout

In the search for a simple and lightweight arrangement we came up with two solutions. The first is a two-winch layout, requiring the halyards to run directly along the deck and not over the coachroof as in a classical 'level rating' design.

The second route is a no-winch option, with all halyards and control line loads reduced with cascades. This arrangement saves a couple of kilos and has proved to be easy to handle, but it needs to be checked constantly to avoid gear failures.

Aesthetics

We believe that a race yacht is about performance but that good looks never hurt. For this project we were looking for a simple deck layout combining fair lines and profile together with some interesting aesthetic refinements. To achieve our goal, we played around quite a bit with several of the smaller details such as the junction between the cockpit sides and the deck.

We also worked on a good-looking coachroof which includes recesses to accommodate the halyards and clutches, making the structure nice and flush and providing a clean look to the finished deck.

Construction

Our first GP26 has been designed as a one-off and because of this the creation of an affordable and yet reliable mould was necessary. Following our own recent experience we decided to go for a one-shot laser-cut female mould; this type of mould tool is easy to put together and enabled us to cut down on excessive costly labour.

Primary materials are vacuum-bagged and oven-cured E-glass/epoxy sandwich. Some extra custom details have also been added to the first boat, such as laminated chainplates and backstay tangs.

All the scantlings comply with ABS to ensure both a sound and reliable yacht as well as reasonable resale potential.

Price

For a ready-to-sail package the factory price is US$50,000 including Harken/Spinlock deck hardware, aluminium mast and a full suit of sails from North Sails Argentina. The option of a carbon mast will add around US$10,000, based on a locally built spar from King Composite.

The future

Capitalising on this first successful co-operation between FoX Technology and G Yacht Design we are currently working on new GP33 and GP42 designs as we believe there is still more performance to be found in all the new ORC GP classes.

And finally, for anyone considering joining the exciting new GP26 class we will shortly be confirming a very favourable shipping arrangement for the first Global Championship in January next year… See you in Uruguay!

Nicolas Goldenberg graduated from the Southampton Institute in 2004 and worked for two years in Italy before setting up his own practice in Buenos Aires: www.gyachtdesign.com ❑