Packing the field

The 40ft market for new (much) higher-performance designs has been getting busier, but this one is intended to go out at night too... as Dobbs Davis reports

Fast boats sell and plenty of (modern) horsepower will ensure that the new Farr 400 is fast. Most boats are expected to be tiller-steered but twin wheels are available as an option – one that may prove popular with those planning to head offshore...

It's been too long that we've been without a modern performance offshore one-design at the 40ft mark. This is due in part to the immensely popular wave of offshore one-designs that swept the world in the 1990s, some of which have just refused to die in their delivery of great racing, most notably the Farr 40 itself. Many of these boats are now in their second, third and even fourth-generation ownership and still racing.

But the state of the art in construction and design, as well as the prevailing rating rule paradigm that influenced these designs (IMS), have advanced such that now there can be boats that can deliver even better performance for this size. The new boats are narrower, stiffer, deeper, faster and more athletic to sail than the last generation, resembling larger versions of the smaller sportboats that inspired their design. In fact, it may be more accurate to describe this latest generation as 'offshore sportboats' rather than 'offshore one-designs'.

This offshore-capable aspect is an important distinction to make among the newer offerings: there are several designs that have been turning heads recently with their no-compromise emphasis on inshore performance – the new McConaghy 38 and the RC44, for example, in carbon and the Soto 40 in E-glass – but none of these would attract many of us over the age of 25 to wanting to do any overnight racing of any appreciable distance. And because their low freeboards offer just enough interior space for sail handling, but little for any accommodation so the resale market is limited in its breadth.

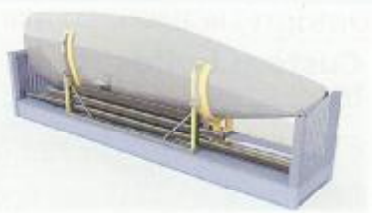
Another feature desired for a new offshore sportboat is, just like its smaller cousins, to be easily commissioned and decommissioned, and transported to allow for low-cost commuting to race venues.

Oh yeah, and it has to be truly one-design. And as affordable as possible.

Achieving all these in one package is daunting, but between them Farr Yacht Design (FYD) and Premier Composite Technologies (PCT) believe they have achieved a solution in their new Farr 400. Like its predecessor, which is actually closer to 41ft long, the name is an approximation of the magic 40ft size that has resonated so strongly in race markets over the years. But being 2ft shorter than the F40 (12.4m with the Farr 400 at 11.8m) has huge significance in getting the boat and its transport apparatus within another magic parameter: the standard 40ft container length. This is an important hallmark to the design in an age when boats are built in Dubai and sailed in Europe, the US, Australia and beyond.

Being 2ft shorter, however, has no deleterious effect on performance, as the 400 will easily outperform the F40 in all conditions due to a combination of moderate beam and light displacement, with an emphasis on power and low drag. This boat approaches GP42 levels of performance so, with two GP42 designs behind them, FYD have further explored that important balance between wetted surface, tracking and submarine tendencies when surfing at high speeds, with a refined low-drag hull that can still balance well at high heel angles.

Luke Shingledecker of FYD concedes that the design has 'aggressive looks' with its reverse shear, but besides the modern styling this helps achieve interior volume for the lifting-keel assembly as well as headroom. The full-looking sections forward, slight hull rocker and partial chines in the full stern sections will help give the boat wider tracking grooves upwind without too much drag yet provide easier handling off the wind at speed.



***Above*: the transport system developed for the Farr 400 mimics that used successfully by the RC44 fleet (*left*). A big square-head main makes twin backstays essential (*far left*), although the aft-swept shrouds give security for the carbon spar. The hull is a nice mix of low wetted surface rounded sections plus a moderate raised aft chine. Production boats feature a lateral grinder pedestal for easier use when heeled – the grinder also drives the keel-raise system**

The keel-lift feature will not be of great concern to everyone interested in the design, but it can be vitally important where harbour draft is an issue (such as off FYD's own front porch in Annapolis). Losing 1m of draft from 2.9 to 1.9m can make all the difference, and making the lifting system simple, watertight and vibration-free was an engineering challenge that project consultant Dee Smith, PCT and FYD have taken on with elegance: no hydraulics, just a tidy system operated by the pedestal-driven primary winches.

With many designers details are left to the builder to work out in the first boat, but FYD and Smith gave much thought to ensuring that the keel fit is tight enough to prevent vibration yet allow for easy draft reduction. The removable bulb also allows for keel blade removal out of either the top or the bottom of the keel trunk.

The choice of a single rudder was made because it offers less drag than a two-rudder arrangement and is complementary to the boat's modest beam, while the composite-wrapped iron fin is one of very few concessions to rating rules. Wrapping in carbon would have been lighter, and easier for a big composite operation like PCT, but the IRC rating trigger for having carbon in the keel fin is fairly punitive.

But this really is one of few concessions made to IRC or ORC: at 4,100kg the boat is nearly a tonne lighter than the F40 and even the new Ker 40, and a full three tonnes lighter than where the IRC typeform has suggested in the Summit 40.

This light displacement is easily achieved by using carbon/epoxy/foam construction, one of the few larger production boats in the world made with these materials. PCT's own five-axis milling operations have produced the necessary high-precision tooling, with strict material weight control achieved through SP-I High Modulus's Smartpac system, where complete fibre and core packages are delivered ready for assembly. Resin is vacuum infused to reduce variation and control resin/fibre ratios in the laminates.

The sophisticated milling operations at PCT, Dee Smith says, are also central to achieving another hallmark of the F400: the extremely high level of finish detail throughout. Besides the minutiae of the deck, cabin and interior parts, this level of detail stretches even to the stanchions and pulpits, which are fabricated in aerofoil section to reduce weight and windage, and improve aesthetic appeal.

Spars will be from Southern, with a two-part sleeved mast section of standard size and shape, and C6 carbon rigging as standard... which is another first among production raceboats, and not often seen in boats of this size. Split backstays terminate just shy of the masthead to allow for more direct control of headstay tension, while also controlling mast bend for mainsail shape and to stabilise loads from those big masthead kites.

Design and construction innovations are also found in the considerable effort placed on refining the deck layout and sail-handling systems to reflect the realities of modern high-performance sailing, where the majority of racing is inshore, but some offshore work requires additional flexibility not found on, say, a MedCup TP52. The effort also reflects the strong desire to think through the layout so that minimal changes are needed in the one-design rules, an enduring and very carefully protected feature of the Farr 40 class.

On-deck the first item to notice is the offset foredeck hatch which keeps the retractable prod on centreline and facilitates an under-deck kite-retrieval system, and the offset companionway hatch which allows direct line leads from the mast to the single pit utility winch – this saves not only on friction, but cost, weight and complication as well. A lock on the jib halyard means the mast man can just pull up that sail at the mast without needing a tail, and leading the kite halyards to the pedestal means no more jumping off the rail at offset marks.

Genoa lead adjustments can be made from the windward side, and strops rather than padeyes are used whenever possible. Jib tracks have been kept low-profile as part of the local deck structure. (It's worth noting that FYD president Pat Shaughnessy spent two years at the mast – pun intended – on the Roma GP42 programmes, so he has very direct experience of helping make these systems efficient and workable.)

The athwartship-mounted pedestal is oriented to allow the grinder to keep his weight just that extra half-metre to weather while kite reaching, which when looking at the polars of this boat will be most of the time even on downwind leg courses.

Early drawings showed a liferaft well aft of the main traveller, but it was decided to save on the weight and complication by just letting teams add above-deck strops as needed for Cat 2 sailing.

Last but certainly not least is easy transport. Since the grand prix end of the game relies on easy mobility for the multiple venues that good one-design fleets desire, these costs have to be kept within reason. This looks achievable in the F400 through a clever transport apparatus that allows the hull, cradle, appendages and two-part mast to fit within the road transport limits of most countries in similar style to that successfully employed by the RC44 fleet.

Similarly, the F400 transport trailer includes a device to rotate the hull and its support bunks about 80° to keep width to within 2.4m and height to within 4m. The trailer also has articulating support arms to allow the hull to be swung upright for keel attachment.

This boat's stiffness and ease of handling make for an easy crew limit of eight people, more practical than the 10-11 usually found on a typical 40-footer. The projected IRC rating of 1.230 is certainly fast, but in light air and in breeze there's little doubt the boat could sail to this, especially against heavier competitors in bumpy conditions. The projected ORCi rating of 532.7 sec/mi (1.126 TCF) is slightly kinder, but still recognises this to be a very fast boat. Nonetheless, Smith and Jim Schmicker at FYD think the design can be competitive under either rule in most conditions.

So, with carbon construction, a low-VCG and a 60 per cent ballast ratio, strict one-design rules, reasonable handicaps, and a price tag around US$395,000, the Farr 400 should add to the push for a new era of 40ft class racing, and lure back to big-boat racing some more of those who have defected to smaller sportboats in pursuit of high-performance fun. ❑