ORC

About time!

W36: a custom ORC-IRC racer

It was the approval in late 2016 of the Dutch bid proposal for The Hague Offshore Sailing World Championship 2018 that set the wheels in motion for a brand new Dutch-based IRC-ORC design perfected for this event. The format of seven inshore and two offshore races meant a versatile boat was needed to meet the diversity of conditions expected in the North Sea in July. And there was a twist to the project… could a competitive high-tech design be built with naturally sourced materials that are sustainable and friendly to the planet?

The answer came, in (very) bright yellow, with the launch of the new Waarschip W36 2018 Edition from Waarschip Composites. Even at first glance this Arthur Pelzer design is clearly a race yacht: flush deck for efficient crew work, freeboards sufficient for workable interior volume but also to withstand potentially nasty North Sea

There's no doubting that the 36-footer Arthur Pelzer drew for the 2018 offshore worlds is very rule-driven; it also looks better in the water than out, when a squat keel accentuates the high freeboards. Several elements appear to specifically reflect one or other of the two rules more than both; a modern IRC 36 would have no keel bulb but would carry more draft; an ORC 36 would be likely to have larger mainsail girths and less stern overhang. The high freeboards are very much an ORC feature. Bandit or camel? Actually, it's just good to see an aggressive custom design tried in a class dominated by production boats (PS: hopefully bandit)

weather and waves, and a plumb bow and long waterline for optimum upwind speed. Upwind stability comes mainly from a high ballast ratio (57%) on a draft of 2.08m with the hull sections themselves quite rounded to limit wetted surface. The end result is, shall we say, purposeful rather than sleek, at least in the traditional sense.

'Our parameters were to push as close as possible to the upper end of the ORC CDL limits for Class C,' said project manager Erik van Vuuren. 'This will be the largest and probably the most competitive class at the worlds, so we wanted to optimise everywhere we could.' This means enough sail area to be fast in light air, but not so much as to trigger a rating increase beyond the CDL limit of 9.8m… the most recent test certificate lies extremely close at 9.794m. Their goal is to be fast off a crowded startline, hold a lane and stay out of the traffic to be first to the top mark.

(To translate the ORC-speak: CDL stands for Class Division Length and is a calculated term that adds the boat's speed upwind in 12kt of wind to its rated length. Class limits in ORC championships are defined using this term in recognition that most races start upwind and that there is a tactical edge to those boats who are fast upwind relative to their overall rated speed, General Purpose Handicap – GPH, which was the former criteria. The reason for this change was to discourage optimisation towards big, long boats that were fast upwind and could use this advantage to take the lead and simply defend it on the net leg even with a slow downwind sail plan.)

While the plumb bow helps extend the sailing waterline upwind, for a friendly IRC rating the stern overhang is slightly longer than usually seen in ORC-only designs. And, to help reduce leeway and improve control in the Class C crowds, designer Pelzer has drawn his foils visibly larger in plan than is typical. Other considerations were having a target crew number of eight, to be maximised under IRC along with a crew weight rated favourably in ORC.

The light carbon rig supports a high-aspect and lofty sail plan, with no backstay to hinder the large headboard; despite this the main has smaller girths than you would typically see on a pure ORC design. But this may be a trade in downwind sail area for large masthead spinnakers, and since IRC allows only three van Vuuren said a lot of thought has gone into this area.

'Symmetrical spinnakers are (still) necessary to get the best VMG for the inshore windward-leeward races,' he said, 'so the challenge was identifying the right mould shapes for the varied conditions expected in the offshore races as well.'

The Dutch team have chosen a hell of a class to test their ideas: ORC Class C has generated more new custom and production boats optimised to the rule than any other class, so the competition will be fierce. Without necessarily making predictions it's nonetheless useful to do some comparisons with existing designs. For example, when compared to the Cossutti-designed NM 38S, a perennially strong Class C performer, in ORC the W36 rates slightly faster upwind in all conditions and about even off the wind.

Another good benchmark could be Aivar Tuulberg's Cossutti-designed *Katariina II*, custom-built in Estonia in 2015 but with regular updates since she first went afloat. This is the team who won the 2016 ORC Europeans in Greece and have probably raced in more ORC championship regattas in the Baltic and the Med than any other team. *Katariina II*'s 2018 certificate indicates a slightly lower CDL (9.670) with the W36 rating a little faster in the breezy conditions on windward-leeward courses as well as on the distance races. Regardless, they are both very close in ORC rating – perhaps they will be in IRC too.

Besides rated speed predictions as it relates to performance, the other significant innovation in the W36 is the materials and techniques used in the build. Led by Roelof Niezen, the wood/glass composite construction is carefully tailored to be close in weight to glass composite, halfway between glass and carbon in stiffness and stronger than either in impact. Panels range from 10mm Okoume plywood with 1 x 450g/m^2 glass layer in the topsides to 16mm red cedar with 900g/m^2 glass in the mid-bottom part of the hull (with mahogany for the keel area and local reinforcement).

The bio-based epoxy resin employed in the build is also made from renewable organic oil instead of crude oil and therefore has a smaller carbon footprint, a bit like bio diesel. It has almost the same chemical structure, mechanical and working properties as conventional epoxy. With a clear finish to all of the interior surfaces this fairly contemporary new design offers an appropriately natural feel that is very different from today's traditional carbon cave.

This month's Delta Lloyd Regatta is the first event on the agenda in the run-up to the worlds in mid-July. Many eyes will be on the yellow canary.

Dobbs Davis ❑