

# GAME CHANGER

Developed specifically around the Semi Rigid Wing sail, the K8 Sport claims to be a 'game changing' design. **ANDI ROBERTSON** sifts through the rhetoric and finds real substance behind the claim



## SPECIFICATIONS

- LOA: 7.99m
- Beam: 2.55m
- Draught: 2.1m
- Raised keel: 1.65m
- Displacement: 900kg
- Mainsail: 29sq m
- Jib: 12sq m
- Asymmetric: 78sq m



This three-to-four person lifting keelboat turns design convention on its head. Boasting the world's first production semo-rigid wing sail, the hull has been designed to optimise the power the rig delivers and blend that with an ease of handling intended to make a new generation of performance sailing accessible to the masses.

### CONCEPT 9/10

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The concept behind the Semi Rigid Wingsail (SRW) is far from new, having first been developed by Australian brothers Greg and Patrick Johnston during the 1980s, and trialled with great success in 18ft Skiffs. Predictably though it was banned, and the prototype consigned to Greg Johnston's garage. But with the 33rd America's Cup in Valencia and BMW Oracle's wing technology leading to where we are now, development has taken off.

The Semi Rigid Wing cleverly uses a counter rotating mast to induce a foil shape by causing the battens on the leeward side to compress and curve, simultaneously setting the battens on the windward side in tension and therefore holding them straighter. The thickness or depth of the foil is controlled by the angle of rotation of the mast. The two membranes are set on parallel tracks on the aft, outer edge of the mast, which produce a near perfect, flush interface between the mast and foil. The mast drag

is effectively nearly eliminated and the wing section creates a proportionately faster, more attached and smoother flow over the foil. Camber control is easily and smoothly achieved.

The benefits in performance and handling are significant. The sail is powered up earlier and remains almost completely stable as the centre of effort hardly moves at all. Hence rudder corrections are minimised. Heeling moment is reduced. The net effects are a boat that is faster in any given wind strength and easier to control. Sheet loads on the mainsail are minimal; you are controlling the angle of attack and the flow over the sail. And subsequent learning on jib design and sheeting angle has led to a small self tacking jib with a wide sheeting angle.

The hull shape is powerful and uncompromising. The raised sheer bow allows more volume in the forward sections, promoting maximum lift.



Narrow static waterlines are achieved by slab sides and a gently curved bottom section. Form stability is a primary goal, that means the boat is sailed legs in by the four crew, maximising appeal to experienced owners who no longer want a big crew, high maintenance bills or to be racing an out-dated design. Boat number one is going to the US; there has also been significant interest from Etchells and Dragon owners. A big attraction is that two boats can be top and tailed into a container.

The K8's hull is designed by Argentina-based Nicolas Goldenberg for G Yacht Design, whose biggest and most recent success is the series Classe Mini RG650, which took hold in South America as an entry level series boat, and Valencia, where a fleet of 15 is based. There, the unique combination of the K8 and its SRW are attracting the attention of pros and there's a definite buzz about the class beginning to emerge.



1. The spinnaker is on a single line and so is easy to hoist
2. The small, self-tacking jib is the result of much testing
3. Despite experimenting with different shapes for the leading edge, the mast is actually fairly conventional
4. The two sail membranes are set on parallel tracks in the aft, outer edge of the counter-rotating mast
5. The central control box from where the sail shape can be adjusted
6. Camber is controlled through mast rotation and is crucial to depowering and powering up

### HULL AND DECK 8/10

★★★★★★★☆☆

The hull has a very powerful form with chunky forward sections and the beam carried quite far forward. The chine runs full length, right into the bow, maximising the effective waterline beam, but so too the chine is relatively high above the waterline indicating that it is designed to sail with some heel. That reverse bow keeps ample volume forward to induce early planing and minimise stamming. Otherwise the lines are relatively straight with a gentle, smooth and quite straight rocker.

The hull is moulded in e-glass throughout with carbon reinforcements only in key areas, primarily on top of the ring frames and the hog.

The deck itself is pretty standard; a small wedge shaped coach roof allows a little more living area. Production boats will have a pipcot either side, and a little galley. Otherwise the key feature is

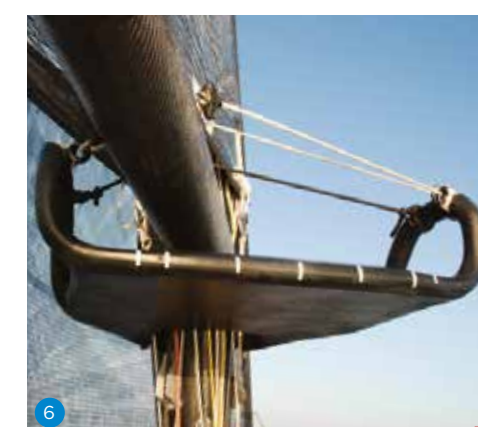
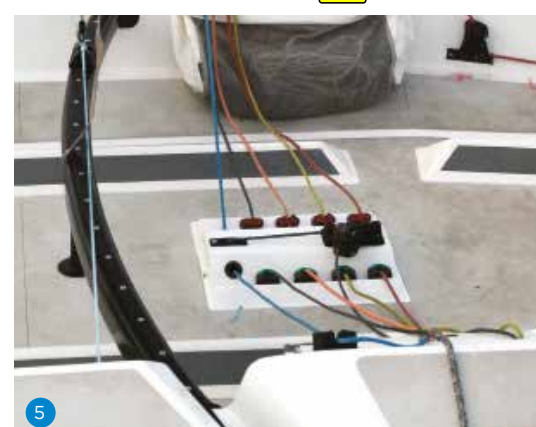
the big, open cockpit, the cutouts for the radiused main track and the pod for the main controls. Sailing with four there is plenty of space to work, albeit slightly more static work than say the SB20 or Melges or J80, where it is all about crew weight on the rail and dynamic, fast sail controls in manoeuvres. There is an integrated space for a cooler box for the beers, fitting in the void above the keel stub – an obvious Aussie influence!

### RIG AND APPENDAGES 9/10

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Appendages are straightforward. The lift T shape keel has a 230kg bulb on it and is raised on a simple crane, reducing the draft from 2.1m to 1.65m. Twin rudders are set with fixed angles and give the optimum mix of grip at heel. Gables and shallower draft at the cost of slightly more drag.

But the rig is the key and while it might look complex, in fact it is both







surprisingly simple and very clever. The semi rigid foil is formed by the twin membrane 'sails' tapered back to a single leech. The carbon mast counter rotates to control the camber of the wing. Total rig weight is about 55kg all up with just 18kg in the mast itself. This is not a rotating wing mast, so does not provide lift in the same way. Despite experimenting with different shapes for the leading edge, there is no real departure from convention, as the width of the mast only really governs camber.

#### LAYOUT AND CONTROLS 8/10

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The efficiency of the SRW is governed by the angle of attack, the angle of the boom to the wind rather than the leech of the sail and so there is no conventional mainsheet. Instead the

**Above**  
No conventional mainsheet means the helm sails without touching a rope

single line is more like a vang, dumped in extreme gusts or bear aways. Mostly when you are overpowered you poke the nose up and sail higher with the jib pretty much inside out, multihull style, but by all accounts this produces a nice 50-60m gain to windward.

The controls box is a central pod, incorporating the 8:1 traveller control, which is essentially the accelerator, controlling the angle of the sail. It is the aft-most control on this little bank in the middle of the cockpit, essentially for the wing trimmer who is beside the helm (the helm touches no strings). Next forward control is the fine tune backstay control, then the lines, which control lower section camber control (what would be the outhaul on a conventional main). Next forward is the camber control governing

**Below**  
Despite only the faintest zephyrs for our test the boat felt nicely powered up

the mast rotation angle, flattening off as windspeed increases. This is a vital control. And at the front of the pod is the upper section camber control.

The self-tacking jib is set at an angle of about 12 degrees, much more open than many grand prix racers. That's because the jib is doing a completely different job here; in essence, you are not squeezing and accelerating the air through the slot to attach the flow to the leeward side of the main, trying to create a single element foil, instead the SRW foil is doing all that. So the jib's main purpose is simply to help the bow through manoeuvres.

The mainsail's square top profile requires twin running backstays. The tail runs under the cockpit and comes back to a Spinlock clutch on the cockpit side for coarse setting; there is also a 4:1 fine tune on the pod.

The 78sq m kite is hoisted on a single line. The tack goes out automatically to the end of the fixed sprit. All deckgear is Harken.

#### UNDER SAIL 8/10

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Despite there being no more than a few knots of breeze for our test, the K8 Sport was breathtaking. We sailed from the moment we got out of Valencia's Real Marina Juan Carlos and never stopped. It's uncanny, all the time sailing at windspeed. With a little human induced heel the boat moved brilliantly, burbling along with a beautiful smooth wake.

The helm is positive with a heavier feel but you are not making constant course adjustments. This is much more about setting your course angle. In light airs you are sailing at about 40 degrees upwind. And all the time we were making 2.8 to 3.5 knots in only the faintest of zephyrs, but the boat felt nicely powered up. The only frustration in these super gentle breezes is when the zephyr dies then you sail over your apparent wind and it takes a big dip and rise and to find it again.

I have no reason to disbelieve the reports that the boat is semi planing upwind in less than 10 knots of breeze. In testing, before the K8 Sport was developed, this identical rig was set on a RG650 Mini. Upwind flat out the Mini will usually be doing 5.5 to 5.7 knots. With the SRW rig it is making 6.5 to 6.8 knots and sailing 5 degrees higher. In 13 knots of breeze the K8 Sport is making 15.8 knots steady, so they tell us, which makes it all the more annoying to have such a light airs day!



