

5. Over my career I have gained considerable knowledge relating to the current understanding about the parameters which are significant for boat performance.

Any Variation in Measurement Details is Critically Important in Multi-Hull Racing.

6. Multi-hull performance is largely dependent on the following basic design parameters: waterline length, waterline beam, displacement (weight) and sail plan dimensions. It is the combination of these basic parameters which produces the specific performance profile of the boat: the actual speeds through the water over a range of sailing angles (boat's heading relative to the wind's direction) for different wind strengths.

7. With a multi-hull's high speed potential, subtle changes in design can translate to large performance gains. Higher speeds generate higher relative wind strengths and therefore more available power.

8. In a design competition event, like the America's Cup, all design parameters are free. Designers must properly choose parameters to adapt the boat's performance profile as they see fit. Subtle changes in key parameters can improve the boat's performance in some conditions or on some headings at the expense of degrading performance in other conditions.

9. Under the Deed of Gift, the mast length and sail surface is unrestricted. In such a case, determining the speed of the boat is entirely related to its waterline length and beam. Any difference, even a small one, in either the length or beam, is critical for determining the overall capacity and power of a vessel. In short, a boat with a different beam or length is a different boat.

10. One key for a multi-hull's performance is the ability to "fly a hull". Flying a hull would be defined as the condition where the windward hull or hulls are out of the

water (the windward hull out of the water for a catamaran and both the windward and center hull out of the water for a trimaran). Hull flying is important for two basic reasons.

11. First, a multi-hull produces its maximum righting moment at the instant when full displacement is carried on the leeward hull, the initiation of hull flying. From that point on, as the heel angle increases, the righting moment reduces and sail forces have to be reduced to avoid capsize.

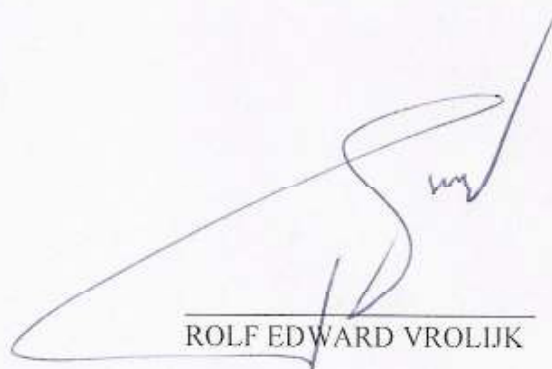
12. Second, once the boat is hull flying, total resistance is reduced at the exact instant the boat is at maximum stability and can support a maximum aerodynamic roll moment which translates to increased forward driving force.

13. As a consequence, beam of the boat is the most critical dimension for determining the performance profile of a multi-hull. Each individual hull has its own distinct waterline beam, but it is the waterline beam of the boat that drives the stability of the boat and thus the maximum driving force. Beam selection, when viewed in light of the need to hull fly, is a major determinant of the boat's performance profile.

SNG Has Materially Relied on the Information in GGYC's Certificate, As Well as GGYC's Statements Regarding its Challenge Vessel.

14. The design of Alinghi's boat was based upon the dimensions contained in GGYC's certificate -- 90 feet in length on load water line by 90 feet in width on the load waterline. Had GGYC declared a narrower or shorter vessel, SNG would have designed its vessel differently.

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ROLF EDWARD VROLIJK