



A New Wave of America's Cup Yacht Hulls

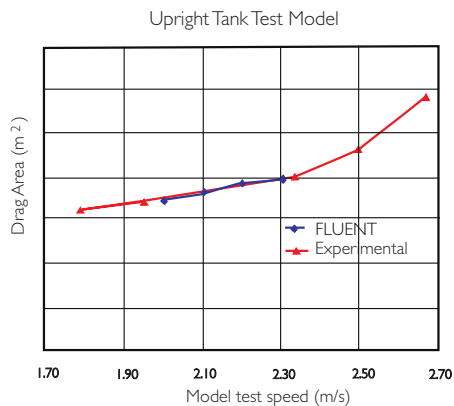
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The competitive technological nature of the America's Cup necessitates a major research and development process when designing yachts for this competition. In order to better understand the flow of water around an America's Cup Class (ACC) yacht, teams

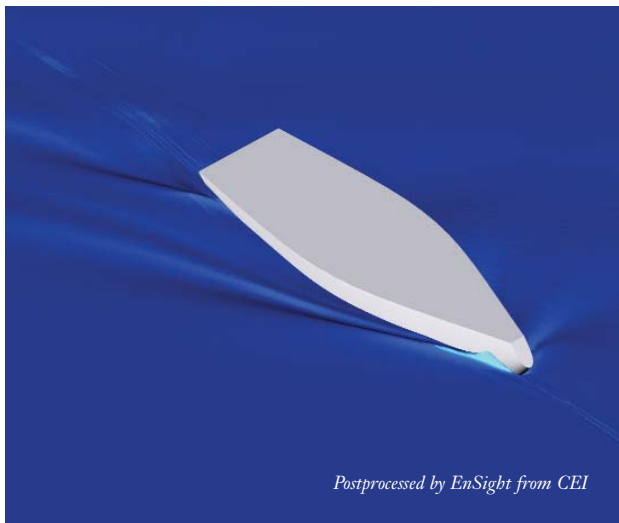
use a variety of experimental and numerical methods. For South Africa's Team Shosholoza, FLUENT has produced results which are in good quantitative and qualitative agreement with experimental data.

The use of CFD to evaluate and

compare prospective hull shapes is not an obvious decision. In practice, designers use a range of methods, including simplified calculations and experimental tests in towing tanks. It is technically risky to use only one of these methods for evaluating hull



FLUENT drag results vs. experimental results



Surface waves are predicted by CFD for a yacht hull traveling through the water

designs, but in combination they can be extremely effective. The most persuasive argument in favor of using CFD is that it greatly enhances the value of the tank testing program. It can be used not only to help pre-select suitable candidates for testing, but can also provide better understanding and interpretation of the results.

CFD engineers at Team Shosholoza worked to develop a reliable methodology for computing the shape of the sea surface under a variety of conditions. This type of calculation is more difficult than some, because both the water and the air must be included in the calculation. The results predict not only the contour of the waves on the surface, but the drag of the water on the hull as well. Comprehensive results such as these help engineers select the best possible hull shapes to test in the towing tanks. In all cases, FLUENT's ranking of candidate hull shapes has agreed well with the rankings obtained experimentally. ■

