Sailing Yacht Tank Testing

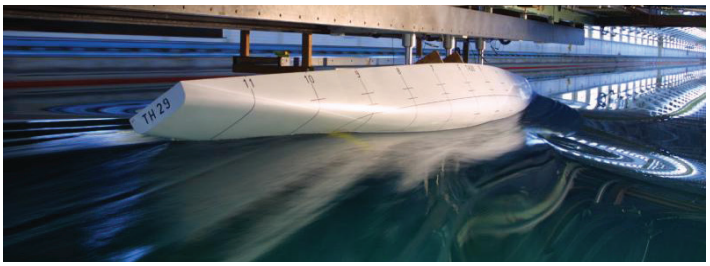
WOLFSON UNIT
FOR MARINE TECHNOLOGY AND INDUSTRIAL AERODYNAMICS

Background

The Wolfson Unit has been conducting sailing yacht towing tank tests since its inception in 1967. It has remained at the forefront in developing its technological offerings in terms of testing equipment, processes & analysis techniques to keep up with the ever increasing demands of the sailing yacht design market.

This includes the testing of yachts for the America's Cup, various Ocean Races and inshore racing yachts, superyachts and sail training vessels.

The Wolfson Unit operates regularly in a large range of testing facilities which provides freedom to select the tow tank and model scale that are most appropriate for the project objectives and clients budget. The service supplied is a one stop shop where, model construction, facility hire, all testing, analysis & reporting is delivered as one complete package to the client.



Towing tank testing of a 1/4 scale Class 5 Americas Cup Class Yacht

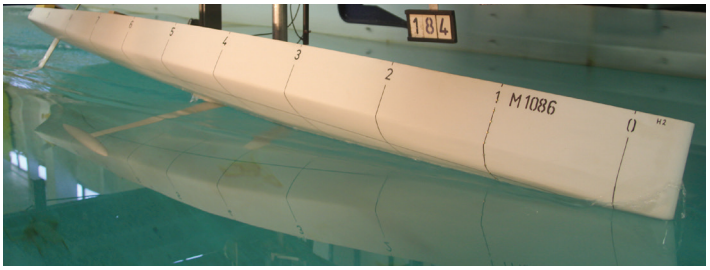
These tank testing capabililties are fully complemented by our CFD and wind tunnel services.

Examples of sailing yacht tank testing services

The benefits of towing tank testing are that it offers yacht designers a capability with which to optimise and confirm their design choices with a reasonable degree of reliability. The following examples highlight a range of areas where our services can and have been used.

Calm Water Resistance

- Evaluation of basic effects of parametric hull form changes, e.g. length/displacement & beam/draft; performance of 'sizing' studies.
- Motoring powering requirements
- Minimisation of hull drag within a given set of rating parameters & assessment of rating/performance trade off for design ideas.
- Canoe body development, e.g. overhang length, stern shape, LCB position.



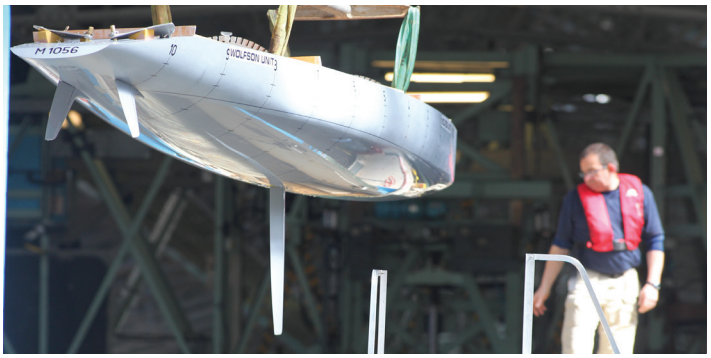
Towing tank testing of the 100ft ocean racer 'Comanche' - VPLP & Verdier

Appendage Development

- Determination of optimum keel/bulb profile, shape & volume.
- Evaluation of dynamic lifting appendages (foils, DSS, etc.)

VPP Refinement

- Refinement of the designer's velocity prediction routines & mathematical models of hull & appendage performance.



Large scale model for Dubois Naval Architects Ltd.

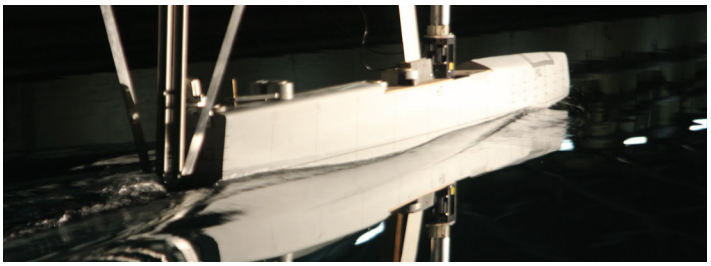
- Definition of the best yacht proportions for a transoceanic race based on weather routing programs.

Hydrodynamic and sailplan balance

- Assessment of hull balance and control through measurement of the centre of lateral resistance.
- Evaluation of keel & rudder configurations to achieve good helm balance & directional stability.

Multihulls

- Testing & performance evaluation of multihull in calm water & in waves, demi-hull only or both hulls combined.



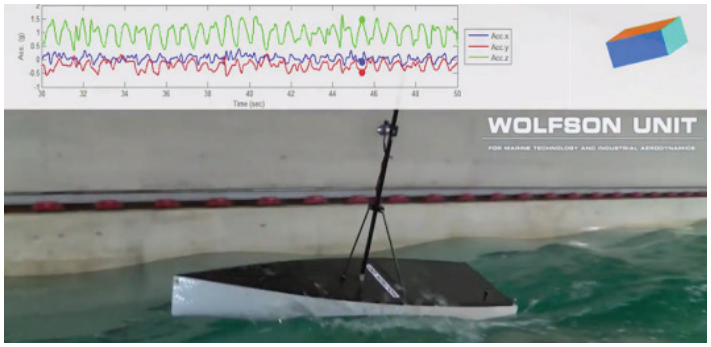
Towing tank testing of an AC72 Americas Cup catamaran

Flow measurement

- Establish correct alignment for bilge keels, shaft brackets & other hull appendages.
- Flow measurements and pressure mapping techniques, using pressure sensors, LDA & PIV.
- CFD validation using flow visualisation & measurements, i.e. forces, moments, wave elevations, etc.

Seakeeping & manoeuvring

- Optimising bow shapes for good seakeeping & spray deflection.
- Un-restrained tests to assess controllability & seakeeping characteristics of multiple configurations at a range of conditions & sea states.



Un-restrained tests of an Open 60 in waves

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