Sports Engineering Aerodynamics and Hydrodynamics

WOLFSON UNIT

FOR MARINE TECHNOLOGY AND INDUSTRIAL AERODYNAMICS

Background

In recent years, the Wolfson Unit has been developing into the area of Sports Engineering, where customers are asking similar questions and need the same high levels of expertise to solve their problems.

All work is carried out in secure conditions and full confidentiality is maintained at all times. No details of, or results from, any test programme are ever published without the express permission of the client. The engineers have experience and a proven track record in innovative research and development of testing procedures and techniques.

The Wolfson Unit specialises in sports areas where there is a significant influence from aerodynamic and/or hydrodynamic forces. This necessitates the use of experimental facilities such as wind tunnels and towing tanks.

Experimental Testing

Experimentation can be applied to all stages of a development programme. Models can be modified quickly and re-tested if new ideas develop or unusual results occur.

The towing tank and wind tunnel are only two of the many types of research facilities available to the designer. By working through the Wolfson Unit, he/she has access to the wide range of academic staff within the University, specialising in such disciplines as computational fluid dynamics, aerodynamics, electronics, materials and structures. Wolfson Unit engineers have experience of working in facilities all around the world, which allows the most effective solution to be found for the clients requirements.

Wind tunnel testing for cycling Team Sky

Performance Evaluation

Often the key link between the gathering of test data and developing a better product from it is an accurate and reliable performance evaluation method. Definition of the performance trade offs available and rapid assessment of alternative design concepts can be carried out using towing tank and wind tunnel test results combined in a simulation program to define the performance of different designs.

Computational Fluid Dynamics (CFD)

The Wolfson Unit's range of consultancy services encompass Computational Fluid Dynamics (CFD), as well as experimentally based methods. Working closely with a number of partners ranging from academics at the University of Southampton to commercial software vendors and specialist CFD analysts the Wolfson Unit has developed its CFD capabilities in order to compliment the experimental testing and other services we provide.

Stroke monitoring for calm water caneoing

Wolfson Unit engineers have had experience of, and been using, CFD since the early 1990's. This experience ranges from having conducted academic research to assisting designers on best practice to incorporate CFD within their design development, and using a variety of CFD codes to evaluate fluid flow in a variety of problems. Any results obtained by CFD should ideally be used in conjunction with experimental data, with the experimental data providing the overall forces and the CFD providing an accurate breakdown and distribution of the forces, as well as giving greater understanding of the flow features and any trends to the data.

Towing tank testing of a rowing shell

Programme Management

With our experience of America's Cup, round the world racing yacht campaigns, and as a UK Sport Innovation partner, the Wolfson Unit is accustomed to managing large budget, long time scale research and development programmes. Understanding of specific deadlines and milestones for both commercial and private clients has allowed us to repeatedly deliver detailed goals.

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