

On the **Pulse** of the Olympics

By Keith Hanna, Fluent News

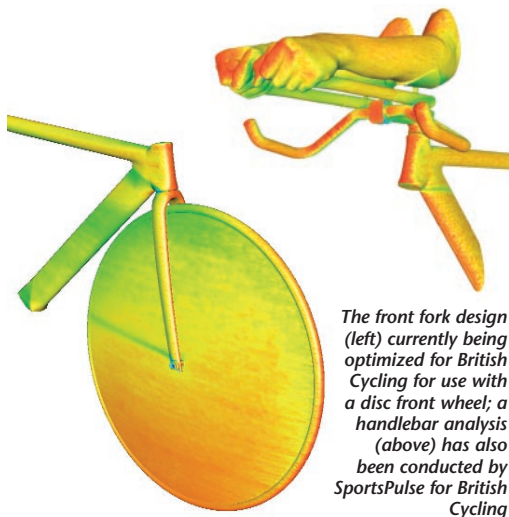


SportsPulse 3D Scanner being used on Olympic cyclist Bradley Wiggins by Olympic triple jump world record holder, Jonathan Edwards

The sports and leisure industry today is a global \$500 billion business. The industry has seen an increased benefit from CFD modeling over the years, with applications that range from Formula 1 racing cars to golf club design, from ski jumping postures to Olympic swimsuit materials. Sporting events are increasingly competitive, both on and off the field. To ensure that UK athletes have the best possible edge, a 2M EU Objective 1 Grant was obtained in October 2003 to launch SportsPulse in Sheffield, England. Sheffield is in the South Yorkshire region of the UK, and has a unique cluster of world-class sports research groups and leading sports industry companies. By drawing together this geographical cluster of sports science, sports medicine, sports engineering, and sports industry economics through a hothouse environment, SportsPulse is aiming to incubate, energize, fund, develop, and commercialize new and innovative ideas for athletes and sports of all kinds.

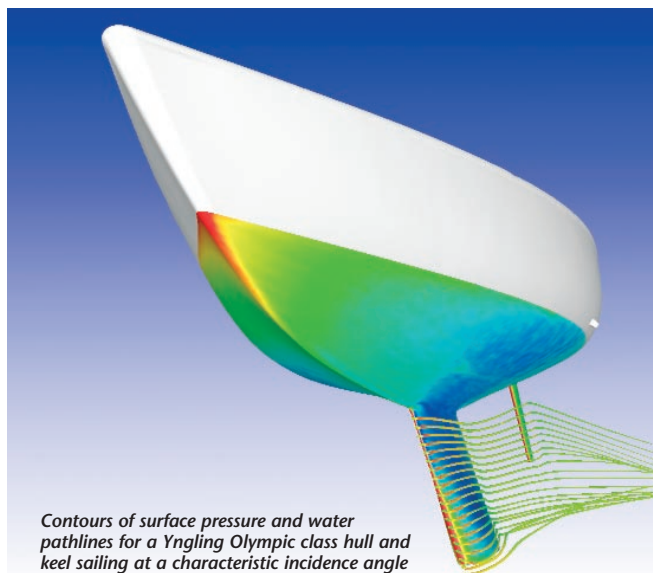
SportsPulse is directed by Dr. Steve Haake, head of the Sports Engineering Research Group (SERG) at the University of Sheffield, and pioneering founder of the International Sports Engineering Association. The SportsPulse project harnesses the synergies of a cluster of eight partner organizations in the region, including Fluent Europe Ltd. in Sheffield. A state-of-the-art 3D scanner and FLUENT software are components of a leading sports CFD center

under development. SportsPulse hosts sports forums three times each year in South Yorkshire to promote cross-fertilization of ideas and technology innovations. In December 2003, the organization was represented at an "Engineering in the Olympics" seminar in London, hosted by the UK Institute of Mechanical Engineers. Special guest attendee at the event was Jonathan Edwards, a physicist by training and the current Olympic triple jump world champion and world record holder. He was intrigued by the combination of modern scanning technology and CFD software to help improve the performance of the British Olympic Cycling Team, represented at the event by Bradley Wiggins, current world individual pursuit champion. Dr. Haake's team is also working with the British Olympic Sailing, Cycling and Paralympic teams for the Athens Olympiad. The team, with its resident CFD expert, Dr. John Hart, is involved in a wide range of CFD applications in support of several British Olympic Performance Directors and is aiming to have a medal-winning impact in these non-traditional CFD application areas in Athens. Fundamental PhD fluid flow research studies relating to sports using CFD are also planned for the years ahead. ■

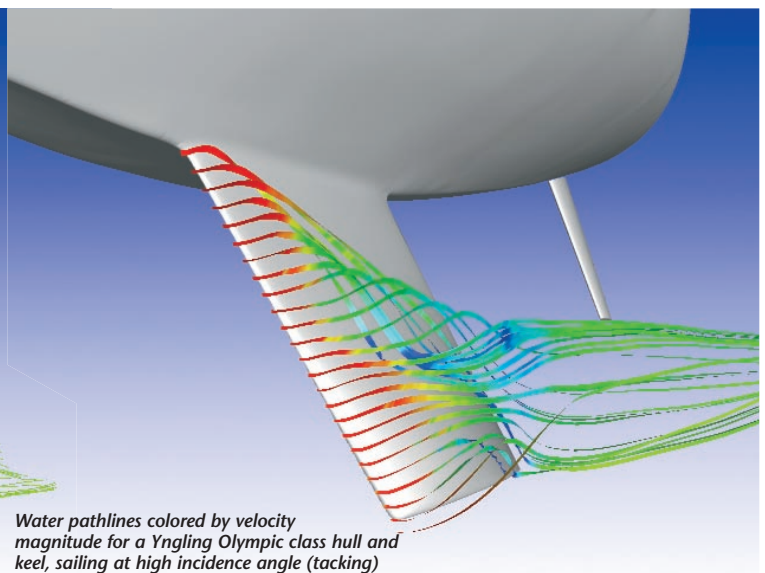


The front fork design (left) currently being optimized for British Cycling for use with a disc front wheel; a handlebar analysis (above) has also been conducted by SportsPulse for British Cycling

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Contours of surface pressure and water pathlines for a Yngling Olympic class hull and keel sailing at a characteristic incidence angle



Water pathlines colored by velocity magnitude for a Yngling Olympic class hull and keel, sailing at high incidence angle (tacking)