INSIDE STORY

LATEST NEWS FROM RICHARD NOBLE & THE THRUST TEAM

September 2024 update

WINGS UNDER WATER

BROOKLANDS WATCH Co

PRF Composite Materials · 3DCM · UNIVERSITY OF LEEDS · WILLIAMS JET TENDERS · Xi Engineering Consultants · PCB PIEZOTRONICS AN AMPHENOL COMPANY · ADVANCED FUEL SYSTEMS · AMT Netherlands · EvoScann · PROTOTAL UK · DEWESoft · 3T metal

FIRST PRINCIPLES

It may surprise you to learn that nearly all World Water Speed Record holding boats (including the current jet powered holder and two challengers) feature Nature's Composite - wooden hulls!

Nothing wrong with that up to a point! But since our design goal is 450mph against a 45 year old record of 317mph, we need to go to survival strength. As we learned with our Mach 1.02 World Land Speed Record holder ThrustSSC, research has to be developed from first principles.

SAFE INNOVATION

For ThrustWSH, this means use of hydro and aero computational fluid dynamics as well as live model test boats to give us a real understanding of the performance, forces and weights. Safe innovation coupled with diligent risk and hazard documentation for all project stages makes a real difference.

Alongside this, we are beginning to scope the ThrustWSH C6 challenger. It's a12.2 metre long 7 tonne boat powered by a Rolls-Royce Spey 205 jet engine with reheat – an upgraded version from the RAF F4 Phantom fighter. Controls are provided by a derivative of the Leeds Robotics Group technology using Parker hi-speed hydraulics for actuation.

We need the **20,500lbs** thrust from the Spey which equates to **27,000 hp**. Construction will be almost 100% PRF carbon laminate. The driver's cockpit is positioned at the safest part of an already strong boat with a reinforced safety cell.

C3.2B model test boat under construction

Once we have completed the research and testing phase and we know we have a viable design, we can progress to C6 design and build along side a driver selection programme. Following a project launch, the structural design should take a further year so we could be operational sometime in 2026.

We have done all this with a team of 33 highly experienced volunteers, supported by 31 companies contributing to the research, testing and evolution of the design concept.

For more information, see our website at ThrustWSH.com

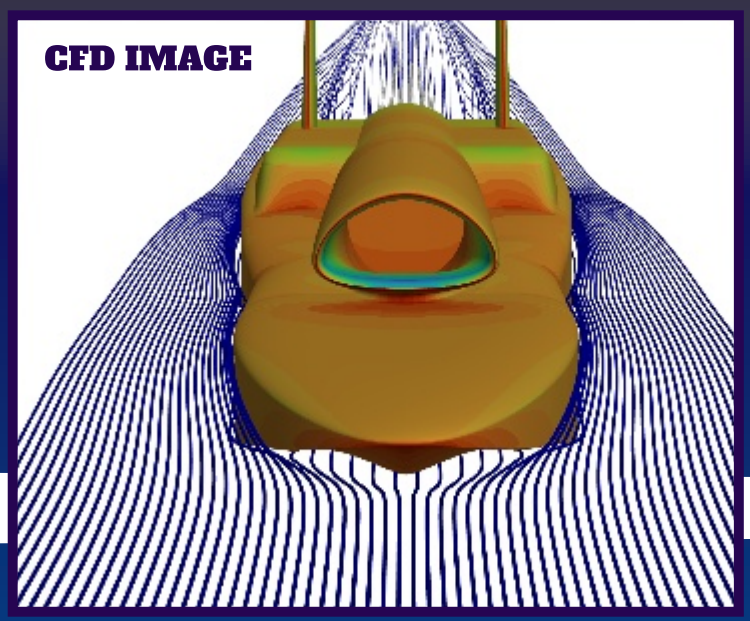
GROUND BREAKING TECHNOLOGY

We also have to match this in build using the most advanced materials. Use of advanced composites is important and necessary for turning our design into reality. The latter stage of research includes the autonomous 225mph 25% scale C3.2B model test boat currently being built for running later this year in Scotland.

Extensive data collected from C3.2B is then combined with the CFD data. With satisfactory results we can progress in confidence to the design and build of the ThrustWSH C6 full-scale challenger.

The C3.2B test boat is an autonomous craft supported by super-cavitating hydrofoils.

...These microfoils control the boat in all axes. Traditional hydrofoils run into problems and stall at around 70mph, but by using super-cavitation principles allows this threshold to be crossed, allowing much higher speeds. The hull lifts out of the water while the small microfoils remain immersed.



The critical stability & directional control systems operating at 100 cycles per second are being developed by the Robotics group at Leeds University.

Four Universities have been working on the programme and we are indebted to QinetiQ Haslar for development of the micro-foils.

All of this is World First technology.

www.thrustwsh.com

MANUFACTURING PARTNERS

Our thanks go to the following :

PRF Composite Materials – main sponsor & sole provider of composites for the C3.2A and C3.2B model test boat build programmes

Brooklands Watch Company – key early stage sponsor

3DCM - 3D composite manufacturing and assembly of C3.2B

3T-AM - 3D additive manufacturing - print manufacture of Inconel 718 microfoils

Hydromar Ltd - composite components water jet profiling

Mikina Engineering Ltd - precision Engineering and metal component manufacture

Prototal - advanced 3D printing of tail fins and complex air intake module

Xi Engineering Consultants – lead for data collection and management program

PCB electronics – data team accelerometer provision

Vishay Measurements Group - linear data transformers

Dewesoft Data - acquisition test and measurement solutions

Advanced Fuel Systems - tanks and C3.2B on-board fuel management and delivery systems

AMT Netherlands - Lynx gas turbine support for C3.2B

Leeds Robotics Group – complete on-board autonomous stability and directional control systems

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