University of Oxford High Density Tunnel

HS4

Location: Oxford

Designation: Supersonic/Hypersonic intermittent blowdown

Owner(s):

Osney Thermofluids Laboratory
Department of Engineering Science
University of Oxford
Parks Road, Oxford, OX1 3PJ
United Kingdom

Performance

Working gas: Air
Mach Number 3,4,5,6,7 and 9
Maximum Flow Speed: 3 km/s
Max unit Reynolds No: 5x 10^8 /m
Total Pressure: 27.5 MPa (max)
Total Temperature: up to 2000 K
Turbulence intensity: not known
Run Time: up to 70 ms
Typical Turn Around Time: 10 mins.

Test flow size: 0.25-0..35 m (diameter).
Test section size: 2.m diameter, 1.4 m long

Operational Status: Under installation

Number and Type of Staff:

Scientific: 3
Technical Support: 2

Test support:

Workshop for wind tunnel model design, manufacture and modification capability.
Test Controller

Testing Capabilities:

Model Support: Remote actuated support (+/- 20 degree AoA and +/-10 degree BoA)
Data Acquisition: NI PXI –128 channels @ 2 MHz/channel. 4 Channel Oscilloscope up 5 GHz. Freeflight DAQ up to 6 channels, 20 kHz
Data Ports: 3 x 35 channel
Measurement hardware: Megahertz Schlieren at full HD resolution, laser based optics, high response pressure transducers, high response bespoke thin film heat transfer gauges, hot wire anemometer, FLDI, high current and voltage power supplies

Specialist Rigs:

Boundary Layer Stability and Transition
Supersonic/Hypersonic Intake
Boundary layer separation studies
Freeflight testing
Aerodynamic testing
Thin Film Gauge sensitivity and frequency response calibration
Pressure transducer sensitivity and frequency response calibration