

Imperial College Hypersonic Gun Tunnel

HS1

<p>Location: London</p>	<p>Designation: Intermittent impulsive facility</p>
<p>Owner(s): Imperial College Aeronautics, Exhibition Road, London SW7 2AZ</p>	<p>Performance Working gas: Nitrogen Mach Number: 9 Maximum Flow Speed: 1500 ms⁻¹ Reynolds No: 7-47 x 10⁶ m⁻¹ (variable) Total Pressure: 600 bar (max, variable) Dynamic Pressure: Total Temperature: 1150 K (max, variable) Turbulence intensity: unknown Run Time: 20 ms Typical Recharge Time: 1 hr</p>
<p>Test Section Size: 0.6 m (diameter) x approx. 1 m. Key point is that tunnel can accommodate models 800+ mm long if slender</p>	
<p>Operational Status: Operational</p>	
<p>Number and Type of Staff: Scientific: n/k Technical Support: 1 – 2 technicians</p>	<p>Testing Capabilities: Large working section: Can accommodate slender models 800+ mm in length, giving a unique (in the UK) capability for achieving high test Reynolds numbers Measurement hardware: 64 channel high speed (100 kHz) DAQ with potential for further 32 channels, high speed Schlieren, surface pressure, hot films, thermographic liquid crystal, PIV & PLIF (currently in development)</p>
<p>Test support: Fully equipped workshop for wind tunnel model design, CNC 4-axis mill, CNC 3-axis mill, CNC Lathe, CNC etching and cutting, a range of rapid prototyping manufacture and modification capability, 3D CAD support and drafting.</p>	
<p>Specialist Rigs:</p> <ul style="list-style-type: none"> • SWBLI: Numerous fundamental axis-symmetric rigs (e.g. compression ramp / cowl) for studies of SWBLI, with and without shock-induced separation • Transition: e.g. Cone with roughness elements – producing laminar and transitional flows, characterisation of turbulent spots • Cavity flows • Optical laser-based diagnostics: Toluene-based PIV / PLIF currently under development 	