

Environmental Flow (EnFlo) - University of Surrey

Location: University of Surrey	Designation: Meteorological Wind Tunnel
Owner(s): School of Engineering University of Surrey Guildford GU2 7XH United Kingdom	Performance: Maximum Flow Speed: 0.5 to 5 m/s Reynolds No: 3.3×10^5 /m (max) Total Pressure: Ambient Dynamic Pressure: Up to 15 N/m ² Total Temperature: Ambient Turbulence intensity: - Run Time: Continuous Typical Recharge Time: n/a
Test Section Size: 20 m x 3.5 m x 1.5 m	Testing Capabilities: Model Support: Turntable, centred at 14 m from the inlet Outputs: Simulation of a range of deep boundary layers with stability from stable (cold wall, hot fluid) to unstable (hot wall), that represent conditions in the atmospheric boundary at scales from about 1:200 to 1:1000. Measurement of mean and turbulent momentum, mass and heat fluxes (simultaneously), surface mean and fluctuating pressures. Fully automatic operation and data archive, plus real-time data processing and visualisation. EnFlo is a specialist facility unique in the UK and is one of the few in the world that allows experiments to be carried out in controlled conditions simulating the Earth's atmosphere in non-neutral conditions
Operational Status: Active	
Number and Type of Staff: Scientific: 4-6 Technical Support: 2	
Test support: in-lab 3D-printing, CNC machine, hot-wire cutter, and fully-equipped workshop for wind tunnel model design, manufacture and modification capability.	
Equipment: LDA, 1-,2-, and 3-component systems; Planar PIV system; tracer concentration measurement, 4-channel fast-response flame ionization detector (FFID); Multi-channel HWA systems, Purpose-built multi-channel pressure scanners, Miniature seven-hole probes, Cold-wire anemometer for temperature measurement, thermistors etc. Capability for momentum, heat and mass flux measurement. Specialist Rigs: Fine control of boundary-layer temperature profile for non-neutral atmospheric flows. Fully-automated laser-Doppler anemometry and tracer concentration scanning capability, a six-component force balance, a five-axis traversing system and a suite of other fully-automated instrumentation systems for quick-turnaround, high-yield experimental testing.	