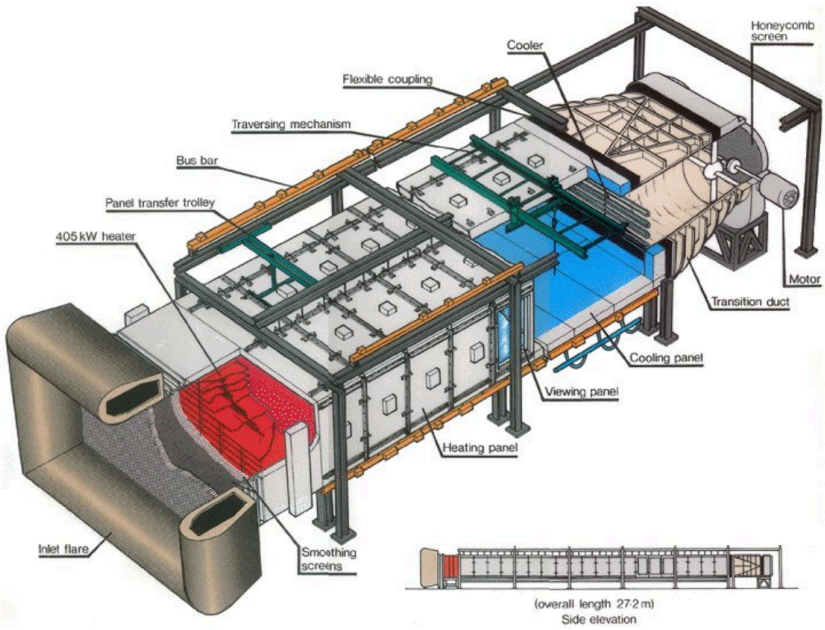
EnFlo meteorological wind tunnel, University of Surrey, UK

Description of facility

Pictures:



General description:

Type:	Twin fans, suck through
Size of test section:	3.5m x 1.5m x 20m (width x height x length)
Background Ti:	1.5%
Configuration:	Neutral and non-neutral thermal stratification
Velocity range:	0.3-3 m/s - depending on level of stratification
Inlet heater:	15 layers at 0.1 m spacing - Max heating 405kW Max temperature gradient/rise 80 °C/m, 80 °C
Floor panels:	Max heating rate 2kW/m^2; Max surface temperature 120 °C Min surface temperature 10 °C (depending on dew point)
Traverse:	Two independent 3-axis traverse systems
Additional features:	Fully automated turntable (diameter up to 3.48m)

Measurement equipment:

Pressure:	SurreySensors pressure sensors (different ranges) Multiple 64-channel pressure scanners
Velocity:	Hot-wire anemometry (single- and X-wire) 2D and 3D Laser Doppler Anemometry (DANTEC) Tomo Particle Image Velocimetry (LaVision) – low speed

Temperature: Thermistor arrays and cold wire anemometry
Gas concentration: 4 2-channel Fast Flame Ionisation Detector (Cambustion)

WEA Models:

No. of Turbines	12
Turbine Type	5MW replica
Rotor Diameter	416 mm
Blade Profile	Near flat plate due to low Re
Blade Material and Manufacturing	Carbon or fiberglass layout
Drive	Maxon system (generator, gearbox, driver, encoder)
On-board Measurement Devices	Current monitoring Photodarlington (independent blade position)

Website: https://www.surrey.ac.uk/centre-aerodynamics-environmental-flow/facilities

Contact:
Name: Dr. Marco Placidi
Email: m.placidi@surrey.ac.uk
Phone: +44 (0)1483 684632