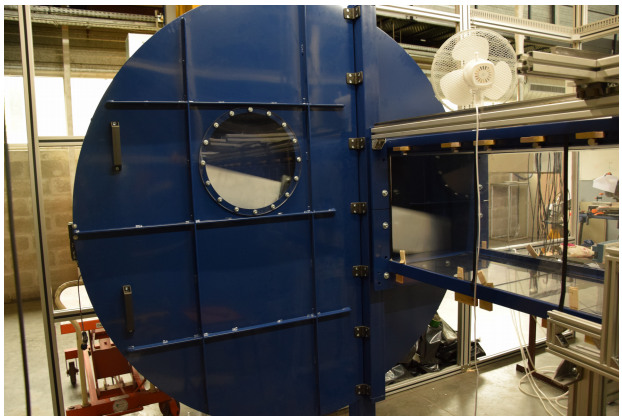
Aerodynamic wind tunnel at the LHEEA lab (ECN/CNRS), France

Description of facility

Pictures:



General description

Type:	Göttingen type wind tunnel
Size of test section:	0.5m x 0.5m x 2.3m (width x height x length)
Configuration:	closed test section
Velocity range:	up to 38m/s in closed test section
Background Ti:	below 0.3%
Cooling:	no
Additional features:	total optical access

Measurement equipment:

Pressure:	40 piezoresistive sensors (range:0 – 25mbar) Furness sensors (FC02, FC04)
Forces:	- 6 axis (Range: Fx=Fy=+/- 32N, Fz=+/- 100N:, Mx=My=Mz=+/- 2.5N) - 2x2 Z6 Bem Beam load cell (Range: 20kg)
Velocity:	hot-wire anemometry (1d hot-wires, X-wires), Dantec DISA system 55M01 Dantec nozzle (60mm^2) of type 55D45 for in-situ or external calibration Dantec mini-CTA type 54T30 (up to 7) Stereo Particle Image Velocimetry (PIV) up to 10 kHz

Acquisition system	16 Analog Input channels with analog. Low pass filters (Acq. Rate: 200kHz/per channel). Filters are at 40% of the acquisition frequency.
Temperature:	pt100 Testo 177-T4 logger

Additional equipment:

Passive grid:	Regular passive grid with mesh size of 7cm and 16.7% solidity
Gust generator:	MOVIE, I. Neunaber & C. Braud Wind Energ. Sci., 5, 759–773, 2020
Traverse:	manual displacement system (3-axis)

Blade Models:

a) NACA65(4)421 (carbon fiber)
b) Blade section at 82% blade span of an operating turbine (2MW MM92)

Inflow conditions:

At different downstream/transverse positions:
TI
Mean velocity and time series
Characterization of the grid with cobra probes