



HAL
open science

Experimental developments in fluid mechanics. Data acquisition and control systems

Muriel Lagauzere, Pascal Meilleur, Romain Depeyre

► **To cite this version:**

Muriel Lagauzere, Pascal Meilleur, Romain Depeyre. Experimental developments in fluid mechanics. Data acquisition and control systems. Multiscale approaches and multiphysic couplings in fluid and solid mechanics, Feb 2026, Grenoble, France. <hal-05533143>

HAL Id: hal-05533143

<https://hal.science/hal-05533143v1>

Submitted on 2 Mar 2026

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons CC BY-NC-ND 4.0 - Attribution - Non-commercial use - No Derivative Works - International License

Experimental developments in fluid mechanics

Data acquisition and control systems

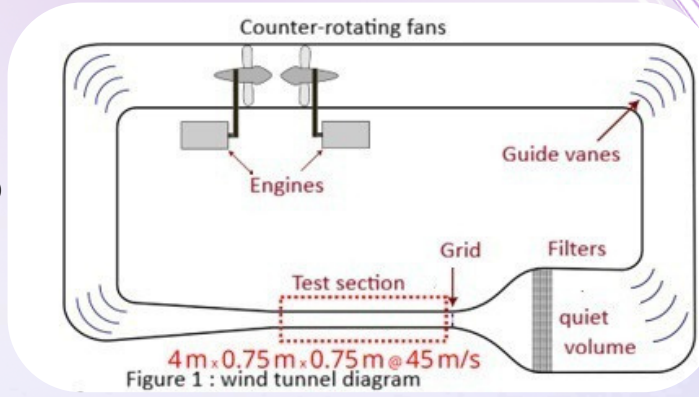
Muriel LAGAUZERE, Pascal MEILLEUR, Romain DEPEYRE
 Laboratoire des Écoulements Géophysiques et Industriels (LEGI), Grenoble

Low turbulence wind tunnel

Overall dimensions
 16 x 5 x 2.6m³

Turbulence intensity < 0.1%

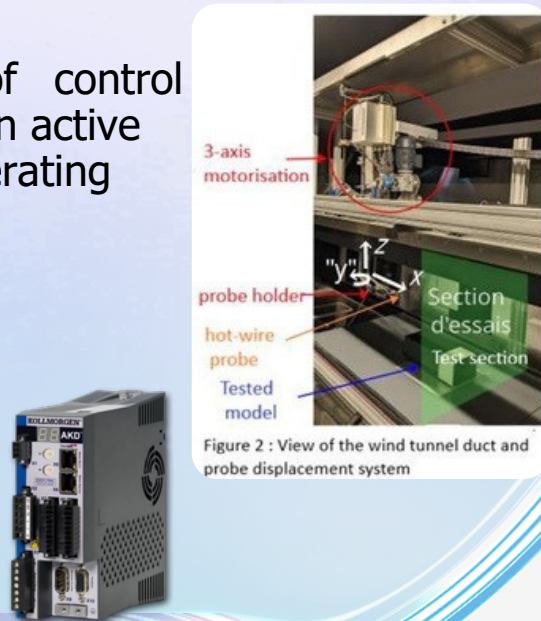
Test section velocity
 up to 45 m/s



Development of control algorithms for an active turbulence-generating grid

Replacement of the 3D probe positioning system by a remotely controlled device

Working with a work-study student

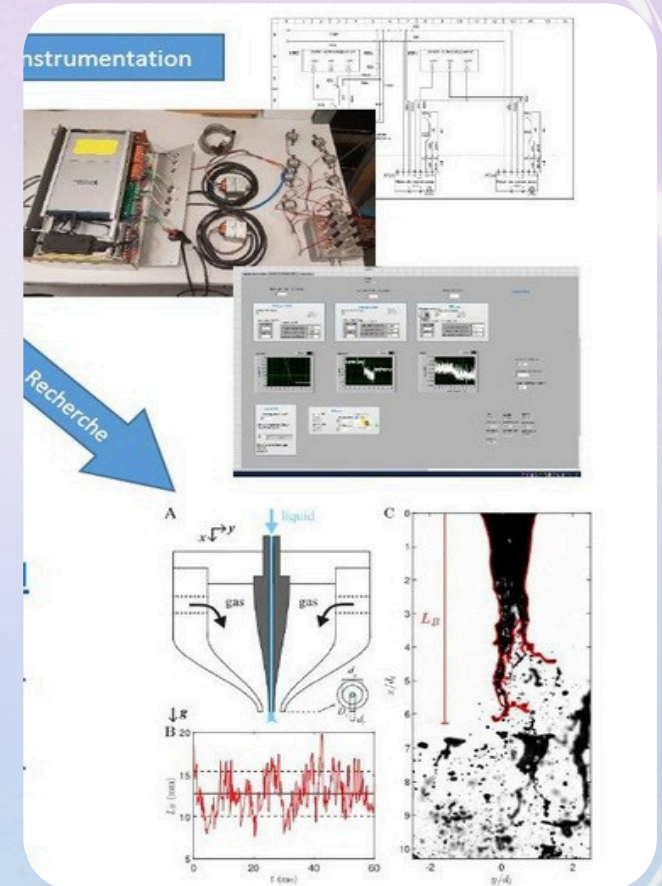
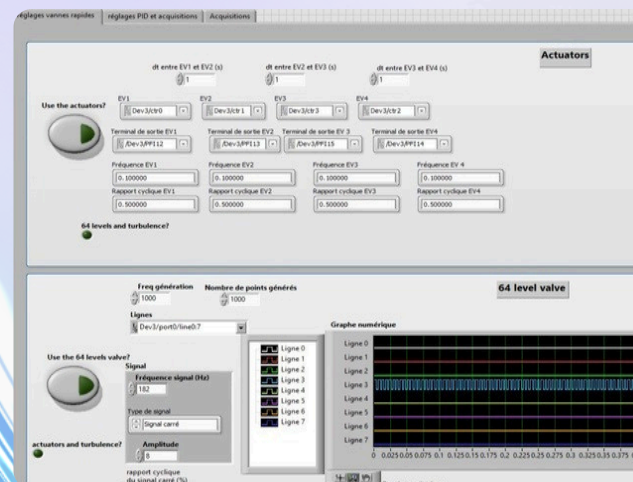


Coaxial dual-fluid atomizer

Study of liquid jet breakup induced by a turbulent gas jet

Software interface for data acquisition and PID control of liquid and gas flow rates

Control of fast-acting valves



Hydrodynamic tunnel

Monitoring and profile incidence control

Test section:
 8 x 2.8 x 1.75 m³



Instrumented profile :
 Simultaneous high-frequency acquisition



Monitoring of operating parameters

Control of the incidence angle of the profile generating cavitation



Coriolis platform

13 m in diameter

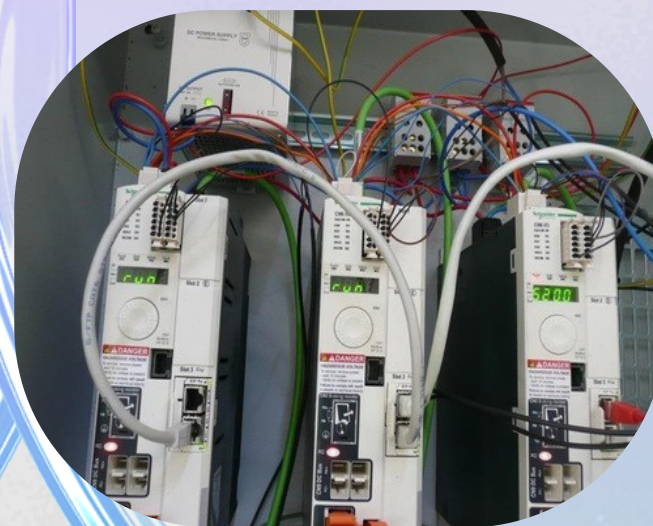


Software design for platform users

Control of probe movement

Acquisition of conductivity probe signals
 Real-time control of three drives / master-slave communication

System testing and validation
 fault diagnosis



Design of an electrical box
 Compliance with electrical safety rules

