

Laboratory for Environmental Acoustics (ACAM)

Type of Infrastructure

The infrastructure consists of equipment for the execution of acoustic measurements and for the management and analysis of measured data. The instrumental skills are accompanied by an increasingly strong integration with the modeling and methodological capabilities of CIRA.

Main technical features

Noise measurement system consisting of:

- microphone systems, microphone power supplies, microphone calibrator;
- portable data acquisition systems CRONOS PL-3 (8 analog channels) and CRONOS-PL2 (4 analog channels), integrated sound level meter and real-time analyzer 4-channel soundbook for measurement, analysis and monitoring of noise and vibration;
- artificial head-shoulder with measurement microphones and headsets, for aurally-accurate, psychoacoustic binaural recordings;
- radio communication and synchronization system;
- weather system.



(a) 1/4-inch pressure field microphones
(Max Acoustic Pressure 194 dB).



(b) Acquisition system Cronos PL3.



(c) Artificial head HSU III.2 with ICP® microphones

Application Domains

1. External noise prediction (aircraft, rotorcrafts, drones)
2. Characterisation and certification of aircraft noise
3. Passive systems and techniques for environmental noise mitigation
4. Analysis and monitoring of air quality in airport areas
5. Characterization of aeronautical and space thruster emissions

Main measuring instruments/techniques

The skills and abilities are available to carry out the following activities:

- Acoustic certification of aircraft according to international standards
- Acoustic characterization of fixed wing and rotary-wing aircraft

- Monitoring of noise impact in airport areas
- Noise impact analysis for expected traffic conditions
- Definition of optimal flight paths for the reduction of noise impact
- Analysis of aircraft and space thruster emissions using standard and advanced diagnostics

The Laboratory is accredited by ENAC for acoustic certification in accordance with the ICAO standard (Annex 16).

Operational Status

The lab is fully operational.