

## LAUM and the ACOEM Group launch FullFields joint laboratory

### Creating solutions for lighter-weight structures and innovation in vibration and acoustics design



Le Mans, France March 27. **The FullFields joint laboratory (LabCom) – a collaboration between the University of Le Mans’ Acoustics Laboratory (LAUM) and the ACOEM Group – was officially inaugurated today at the University of Le Mans. The laboratory has been established to market products and services that support the design and characterisation of silent industrial structures using architectural materials and multi-modal imaging systems.**

**FullFields LabCom’s work aims to secure major market outlets for structural vibration and noise control solutions, especially in applications that are subject to weight restrictions. Its multiple applications focus on the mobility industry (transport and automotive sectors) which is subject to constraints like reducing environmental footprints, as well as niche technology markets seeking cutting-edge innovations in the field of vibro-acoustics.**

#### **Two respected leaders in vibro-acoustics unite**

LAUM is a combined research unit managed by the French National Centre for Scientific Research - UMR 6613 (CNRS) and the University of Le Mans. It specialises in a wide variety of acoustics and associated applications. Formed in 1981, LAUM’s research has gained global academic recognition and has also been widely embraced by industry.

The ACOEM Group has been supporting industry for 50 years, providing solutions to complex noise and vibration problems. Its strong innovation-based culture has delivered numerous technological advances and established it as key player in the industrial sector.

The bringing together of these two authorities to facilitate a seamless and cohesive transition from research to industrial application was a logical move. Acknowledging the importance of this collaborative project, FullFields joint laboratory is being funded by the French National Research Agency (ANR).

## An innovative and ambitious roadmap

FullFields LabCom has been built on a strong foundation of closely-interrelated academic research and innovative industrial applications. Integrating the challenges associated with product development from the initial conceptual research phase is pivotal to its roadmap which focuses on two key priorities:

- Design of architectural mechanical structures – LAUM’s expertise.  
The objective is to develop materials and products based directly on the latest advances in research and explore new possibilities in the transformation of materials to improve vibration mitigation and noise reduction performance.,
- Characterisation of structural vibration reduction phenomena – LAUM and the ACOEM Group will develop breakthrough innovations in the metrology of vibro-acoustic properties and work on the development of vibrational field imaging techniques using a thermal camera combined with vibrational and acoustic measurement instruments.

## Reinterpreting the design of structural components

Thanks to its two research priorities, FullFields LabCom has positioned itself as a major participant in the field of vibro-acoustics, capable of driving rapid and significant developments in the design of lighter-weight industrial panels that feature controlled vibro-acoustic functionality.

The joint laboratory will also have access to the University of Le Mans’ 3D robotic laser vibrometer, which can be used to carry out exhaustive vibrational analyses of complex industrial structures. This characterisation research facility is the only one of its kind in France. FullFields LabCom has set its sights on being able to offer industry its first multi-modal characterisation solutions within two years but is already well-placed to work with third-parties on the design of structures based on architectural materials.

## Solving industrial problems with rapid results

The underlying nature of this joint laboratory is its capacity to manage fundamental and applied research simultaneously, focusing on deeply-rooted industrial problems.

Combining the robust LAUM / ACOEM partnership, original research streams and a distinct technical edge, FullFields joint laboratory is sure to attract great interest from transport and related sectors. Projects carried out on behalf of industry will help better target future research, with a view to achieving tangible results faster. The initiative is a natural, progressive step in the ACOEM Group’s strong and continued growth over the past five years.



**Thierry Mazoyer**  
Directeur Innovation  
chez ACOEM



**Kevin Cormier**  
Directeur Metravib  
Design chez ACOEM



**Adrien Pelat**  
Enseignant-Chercheur  
en Vibration Acoustique



*This joint laboratory benefits from the results of several years of research. For a research scientist, industrial application represents both a scientific culmination and a considerable source of inspiration for future academic research. It’s an exciting project and one that is extremely important to me because it emerged from the network of ENSIM graduates that Kevin and I belong to. We have a lot in common with the ACOEM Group and I’m convinced that the complementary nature of our expertise will allow us to achieve the ambitious objectives we have set ourselves.*

**Adrien Pelat, Lecturer and Researcher at the University of Le Mans**



*The FullFields joint laboratory is an outstanding development facility, serving industry. Reducing the environmental impact of vehicles, without compromising vibro-acoustic performance falls within the scope of the ACOEM Group's global mission: to contribute to a sustainable world. The know-how and influence of LAUM, combined with the dynamism and multi-sector expertise of the ACOEM group, complement one another perfectly and will lead to the emergence of concrete solutions for industry. I invite all industrial players interested in our research to come and meet us and discuss their projects with us, because I'm certain we can achieve great things together.*

**Kevin Cormier, ACOEM Design Business Unit Director**



*We are extremely proud of this first partnership with LAUM, which is currently at the cutting edge of research, with an influence that extends well beyond our borders. The analysis of dissipation phenomena, using a thermal camera, is an exciting area, because it's a genuinely disruptive innovation – I'm expecting great things of it.*

**Thierry Mazoyer, ACOEM Group Innovation Director**

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#### About LAUM

Created in 1981, LAUM has gradually established itself as the benchmark French research laboratory in the field of acoustics and vibrations. Initially focusing its efforts on audible and airborne acoustics, it has since diversified and its research now covers a broad spectrum of acoustic and vibration applications. In 2017, LAUM had 138 members, including 59 full-time researchers and teaching-research staff, 44 PhD students, 10 post-doctoral students and 25 technical and administrative staff supporting research activities.

LAUM is built around three scientific teams (acoustics and mechanics of materials; acoustic transducers; and guides and structures), each subdivided into a number of themed groups.

The FullFields joint laboratory is almost entirely supported by the structural vibro-acoustics group, whose research is hinged around three major priority areas:

- the development of vibro-acoustic diagnostics methods: identification of sources of material properties and sound radiation, using acoustic and vibrational beamforming techniques
- the design of innovative vibro-acoustic control devices, exploiting physical effects related to meta-materials, acoustic black holes, granular materials, piezoelectric shunt, etc.
- contact noise modelling and medium frequency.



#### About ACOEM

Reducing your environmental footprint

In a complex and constantly accelerating world, the impact on the environment is an increasing concern. The ACOEM Group is committed to sustainable development and helping companies and public authorities reduce their environmental impact, proposing products and services aimed at:

preventing and controlling environmental pollution (air, noise and vibration)

increasing the productivity and reliability of industrial machines

contributing to the design of effective, noiseless and robust products

protecting people, sites and vehicles in military theatres of operation.

Throughout the world, ACOEM's 650 employees innovate in the measurement, analysis and control of environmental parameters, through the brands 01dB, ECOTECH, ONEPROD, FIXTURLASER, MEAX and METRAVIB.

