

# UTAC accelerates noise and vibration testing with LMS Test.Lab

Leading international test and industrial analysis laboratory selects LMS solution for its advanced engineering capabilities and ease of use



UTAC, a leading company in testing and certification services, deployed LMS Test.Lab in its environmental laboratory for acoustic testing, citing its testing speed, engineering capabilities, precision, and ease of use as key differentiators. UTAC estimates that testing campaigns run with LMS Test.Lab deliver a 30% time gain compared to tests with other tools. Thanks to LMS Test.Lab, UTAC can offer its customers a precise diagnosis of acoustic problems, not only helping customers achieve certification, but also supporting prototype and other development activities. LMS Test.Lab's ease of use and short learning curve allowed UTAC to increase their technicians' testing capacity in a short time, while maintaining test result quality and consistency.

### UTAC: from certification to diagnostic services

UTAC is a leading company in testing and certification services with headquarters in Monthéry, France, and subsidiaries in China and Russia. Worldwide, the company employs 255 test specialists. Renowned for its certification testing on cars, buses and motorcycles, UTAC has expanded into industrial system testing. UTAC is officially designated by several governments to perform tests for vehicle and equipment homologation according to national and international standards. UTAC labs are equipped to perform standardized assessments such as the Euro NCAP crash tests. UTAC's customers include world-leading car manufacturers, such as PSA Peugeot Citroën and Renault, as well as leading equipment suppliers, such as Valeo, Delphi, Bosch, Parrot and Thales.

Next to regulation testing activities, UTAC has a fast-growing testing and



UTAC, a leading company in testing and certification services, deployed LMS Test.Lab in its environmental laboratory for acoustic testing, citing its testing speed, engineering capabilities, precision, and ease of use as key differentiators.

engineering consultancy business. Its specialized laboratories for safety, environment, and electronics conduct tests for product certification preparation as well as supporting product development activities. In its environmental laboratory in Monthéry, UTAC specializes in engine performance characterization, chemical composition analysis, electromagnetic compatibility studies and noise and vibration phenomena diagnosis. To support its growing acoustic engineering business, UTAC utilizes a powerful LMS acoustic engineering solution to efficiently characterize noise and vibration phenomena and pinpoint the sources of excessive noise and vibration levels. This system includes LMS Test.Lab with LMS SCADAS III systems for data acquisition. The LMS Test.Lab software solution set-up includes Acoustics, Signature and Order Analysis, Spectral Analysis, 3rd Octave Analysis and Sound Quality modules.

To start, UTAC counts on LMS Test.Lab Exterior Passby noise for passby noise homologation testing. In addition, UTAC utilizes the LMS Test.Lab solution portfolio for advanced passby noise engineering to efficiently reduce passby levels.

### Gaining time on the test track

For outdoor acoustic testing, the environmental laboratory uses UTAC's test track infrastructure at the Autodrome de Linas-Monthéry. The complex includes a circular speed track, road tracks, acceleration tracks, slopes, a low-grip track, and several surfaces including rough paved, undulating, slot and urban.

"We perform a lot of tests where we combine the noise measurements inside vehicles with noise measurements on the tracks," stated Louis-Ferdinand Pardo, Noise and Vibration Testing Manager at UTAC's environmental laboratory.

**Thanks to LMS Test.Lab, UTAC can offer its customers a precise diagnosis of acoustic problems, not only helping customers achieve certification, but also supporting prototype and other development activities.**



UTAC's vibration and acoustics laboratory is equipped with one of Europe's largest semi-anechoic chambers, which measures 2000 cubic meters. It is equipped with two roller benches for lightweight and heavy-duty vehicles.

**“We estimate that the LMS system allows us to realize a 30% time gain compared to other testing set-ups.”**

Louis-Ferdinand Pardo, Noise and Vibration Testing Manager at UTAC's environmental laboratory.

“These tests are crucial for our lab to understand when and where a noise originates, what its level is, and what should be done to align it with applicable noise regulations or customer demands. With LMS Test.Lab and the mobile LMS SCADAS system, setting up these crucial tests is very straightforward. We run the tests inside the vehicle with the mobile SCADAS on board, run a second system on the track, and align the signals of both measurements through GPS positioning.”

With LMS Test.Lab's on-line capabilities, UTAC test technicians can verify the test results while running the test campaigns on the track. They can check if data sets are complete, match the results against reference curves, and immediately spot instrumentation errors. They can quickly inspect data via color maps and make a quick spectral analysis or frequency cut. With this immediate check, they can see if the test run has succeeded and avoid lengthy processing back in the office. This often reduces required test runs, representing a substantial gain of time and money.

“We estimate that the LMS system allows us to realize a 30% time gain compared to other testing set-ups,” adds Mr. Pardo. “Our test technicians value the ruggedness and autonomy of the LMS

SCADAS system,” continues Mr. Pardo. “The LMS SCADAS Mobile is really plug-and-play. Its size makes it very easy to handle in the confined vehicle space. And there is no need for extra cabling and batteries since it can simply be plugged into the vehicle's cigarette lighter. We can conduct our tests wherever we want – often at our customers' sites hundreds of kilometers from our testing grounds without extra effort or loss of time.”

Not only highly convenient, the workflow-based definitions and testing scenarios found in LMS Test.Lab also saved the team a tremendous amount of time.

“Our engineers prepare the testing scenarios upfront at their desks where they have all the information available regarding the customer and the target vehicle. The actual test can even occur at several customer locations and under varying conditions. The engineer doesn't have to be on-site. An operator can handle it. The workflow-based user interface takes them through every testing step. This increases productivity and eliminates possible errors that can compromise data quality. This way the acoustic engineer who designed the test is in the position to gain full confidence that the test has run exactly as it was designed.”

### **Advanced engineering capabilities support business growth**

Besides the proving grounds for outdoor acoustic tests, UTAC's vibration and acoustics laboratory is equipped with one of Europe's largest semi-anechoic chambers, which measures 2000 cubic meters. It is equipped with two roller benches for lightweight and heavy-duty vehicles.

“In this test cell, we perform measurements on all kinds of vehicle, machinery and equipment according to international norms, such as ISO 3744 and ISO 3745 for sound power measurements and testing procedures, manufacturing standards or other specific demands. For this, we rely on the flexibility and the precision of LMS Test.Lab,” explained Mr. Pardo.

With UTAC's growing engineering business, the semi-anechoic hall is used more and more for diagnostic prototype testing: measuring and diagnosing the noise level of a prototype to see if and how it can attain the desired noise level. The acoustics are measured on the inside and outside of the prototypes, through static or dynamic tests on the roller bench. The UTAC technicians measure



“The LMS SCADAS Mobile is really plug-and-play. Its size makes it very easy to handle in the confined vehicle space. And there is no need for extra cabling and batteries since it can simply be plugged into the vehicle’s cigarette lighter.”

FRF (Frequency Response Functions) and perform spectral analyses.

“The objective of our prototype testing is to determine the source of the noise problem, and determine a solution to eliminate or reduce it. To support this, we require an advanced acoustic testing solution with a maximum of engineering capabilities. LMS Test.Lab allows us, for example, to analyze the spectral content of measurements and determine the dominant frequencies, which help pinpoint the noise origin. We will then selectively mask parts of the noise-emitting source, apply various isolating materials to parts of the prototype, and test how this influences the spectral content of the noise,” explained Mr. Pardo.

UTAC’s vibration and acoustics laboratory also relies on LMS Test.Lab to perform precise rattle noise tests. Rattle noise, caused by vibrating

components and connectors, are a major source of undesired noise. In the laboratory, UTAC tests prototypes on a shaker and determines when rattle occurs, where it originates, how loud it is, and if it exceeds the reference noise levels. UTAC then partners with its customers to find appropriate solutions for rattle noise problems.

### Testing and communication efficiency

Regarding LMS Test.Lab’s ease-of-use and accessibility, Mr. Pardo commented: “What we found very attractive about LMS Test.Lab is how straightforward it is to learn and use. LMS Test.Lab is user-friendly and intuitive, so we can easily teach our technicians to learn and use the product. In a short time, we were able to develop a great amount of experience and proficiency in acoustic testing and diagnosis. As a result,

UTAC is now able to offer its existing customers more services, and we can attract new customers and increase our acoustic engineering business.”

Mr. Pardo also stressed that the data acquired through LMS Test.Lab is easy to manage and share with customers – a major plus for a services company such as UTAC. “Active pictures, for example, are really practical, since they allow UTAC to share test data with its customers, who may not have LMS Test.Lab. Customers can perform their own data analysis in Microsoft Excel, looking at it from all possible angles, or display and share the graphs in Microsoft Powerpoint. This facilitates smooth communication between project teams and accelerates key decision stages where multiple parties have to interpret results and discuss solutions.” ■



**LMS INTERNATIONAL**

Researchpark Z1, Interleuvenlaan 68  
B-3001 Leuven [Belgium]  
T +32 16 384 200 | F +32 16 384 350  
info@lmsintl.com | www.lmsintl.com

**Worldwide**

For the address of your local representative, please  
visit [www.lmsintl.com/lmsworldwide](http://www.lmsintl.com/lmsworldwide)

LMS is an engineering innovation partner for companies in the automotive, aerospace and other advanced manufacturing industries. With approximately 30 years of experience, LMS helps customers get better products to market faster and turn superior process efficiency into key competitive advantages.

With a unique combination of 1D and 3D simulation software, testing systems and engineering services, LMS tunes into mission critical engineering attributes, ranging from system dynamics, structural integrity and sound quality to durability, safety and power consumption. With multi-domain solutions for thermal, fluid dynamics, electrical and mechanical system behavior, LMS can address the complex engineering challenges associated with intelligent system design.

Thanks to our technology and dedicated people, LMS has become the partner of choice of more than 5,000 leading manufacturing companies worldwide. LMS is certified to ISO9001:2000 quality standards and operates through a network of subsidiaries and representatives in key locations around the world. For more information on LMS, visit [www.lmsintl.com](http://www.lmsintl.com).



LMS International, LMS Test Lab, LMS Virtual Lab, LMS Test Xpress, LMS Imagine.Lab AMESim, LMS FALANCS, LMS SYNOISE, LMS DADS, LMS TecManager, LMS CADA-X, LMS Test.Lab Mobile, LMS PolyMAX, LMS SCADAS III, LMS SCADAS Mobile, LMS SCADAS Recorder, LMS TecWare, LMS TWR, LMS Gateway and LMS OPTIMUS are registered trademarks of LMS International. All other trademarks acknowledged.