Laboratoire Vibrations Acoustique of INSA-Lyon Relies on Actran to Develop Acoustic Methods

Newly developed simulation methods and technologies to handle complex systems and numerical experiments

NEWPORT BEACH, CA--(Business Wire – November 20, 2014) – MSC Software Corporation, a global leader in helping product manufacturers to advance their engineering methods with simulation software and services, today announced that Laboratoire Vibrations Acoustique (LVA) of INSA-Lyon, one of the top universities of Science and Technology in Europe, has selected MSC Software's Actran acoustic analysis software to develop innovative acoustic methods at the laboratory.

The Laboratoire Vibrations Acoustique (LVA) was created in the 1970's to build bridges between research domains such as structural dynamics and acoustics. Today, LVA applies computational modeling and simulation to several research topics to develop innovative methods that are first applied to academic problems, and then on realistic systems in order to demonstrate their applicability within industrial processes.

Acoustic source identification and inverse methods are typical domains where new simulation processes benefit the methods development initiatives at LVA. In acoustics, inverse methods cover a wide field of applications, which all rely on the same concept: identifying the inputs of a linear system by observing the outputs. However, the term of identification methods encompasses goals as different as source localization in wide acoustic spaces, source field reconstruction on academic or complex geometries, noise source identification in enclosed sound fields, and source separation or source ranking. A unique method to treat all of these applications does not exist but several specialized methods have been developed over the decades. LVA develops new methods to reconstruct velocity field of a complex structure by measuring noise emitted by the source. For example, an oil pan radiates noise because of its vibration. By measuring the radiated noise on a virtual box surrounding the oil pan, the method developed at LVA allows the reconstruction of the velocity and pressure fields with higher accuracy.

"Actran has played an important role during our methods development process," said Nicolas Totaro, Assistant Professor at LVA of INSA-Lyon. "First, Actran provides input data representing the system, which is needed to apply the method: the modal bases of the virtual cavity in terms of both acoustic pressure and particle velocity. These data are crucial and make the application of the method possible. Second, Actran can be used for numerical experiments that are useful to define limits and capabilities of the developed method. The present method is intrinsically experimental, but Actran will replace, in a first validation step, time consuming experiments even if measurements in real conditions are always necessary. All the conclusions made by means of Actran have been confirmed by measurements."

"The acoustic performance of products becomes increasingly crucial in various industries not only due to compliance with regulatory requirements around noise reduction, but also the need to create pleasant sounds and improve sound quality," said Ze Zhou, Product Marketing Manager from FFT. "LVA of INSA-Lyon is dedicated to research which will help

manufacturers to improve acoustic performance. We are pleased to help researchers through our acoustic simulation solution, Actran, and to contribute to the development of innovative methods".

About LVA – INSA-Lyon

Located on the premises of the Science and Technological Park of la Doua in Villeurbanne, INSA Lyon is ranked among the top universities of Science and Technology in Europe, pluridisciplinary and international, at the heart of the European Higher Education Area. Over a 5 year curriculum, it trains humanist multi-competent engineers who are both innovative and entrepreneurial. It graduates over 950 engineers each year in 12 fields of specialization.

The Laboratoire Vibrations Acoustique is composed by 40 people, including 15 permanent faculty members and more than 25 PhD students. Its research interests are: (i) the study of noise and vibration phenomena, (ii) non-destructive evaluation and monitoring of structures, (iii) the location and identification of sources and (iv) acoustic and vibration perception. Members of LVA have published more than 100 papers in the last four years in renowned international scientific journals. LVA is involved in many industrial contracts and public European projects and is a member of the Labex CeLyA of Université de Lyon, operated by the French National Research Agency (ANR-10-LABX-0060/ ANR-11-IDEX-0007).

About MSC Software

MSC Software is one of the ten original software companies and a global leader in helping product manufacturers to advance their engineering methods with simulation software and services. As a trusted partner, MSC Software helps companies improve quality, save time, and reduce costs associated with design and test of manufactured products. Academic institutions, researchers, and students employ MSC's technology to expand individual knowledge as well as expand the horizon of simulation. MSC Software employs 1,100 professionals in 20 countries. For additional information about MSC Software's products and services, please visit: www.mscsoftware.com

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