

KEY FEATURES

- > All ACTRAN Acoustics features (see dedicated flyer)
- > Poro-elastic element library based on the Biot theory for modeling bulk reacting materials
- > Full element library for modeling visco-elastic structures (solids, shells, beams)
- > Piezo-electric element libraries for modeling active structures
- > Visco-thermal elements for modeling thin air layers or thin tubes
- > Composite elements library for modeling complex multilayered composite structure
- > Advanced random vibro-acoustic features including diffuse sound field, turbulent boundary layer and rain-on-the-roof excitation models
- > Solution using physical or modal coordinates
- > Full support of non-congruent meshes
- > Direct, iterative and parallel solvers for very fast CPU times
- > Unique fast FRF synthesis solver
- > Computation of stress levels
- > Output of global and per material energy quantities
- > Compatible with other ACTRAN modules for aero-vibro-acoustic simulations
- > Integration in ACTRAN VI



Product overview

A complete, robust, reliable, productive and high performing vibro-acoustic CAE module

ACTRAN VibroAcoustics is the most complete vibro-acoustic simulation software currently available on the market.

Built on top of ACTRAN Acoustics and relying on Free Field Technologies' powerful finite and infinite element library, ACTRAN VibroAcoustics provides a rich library of elements, materials, boundary conditions, solution schemes and solvers and is used by the most demanding engineers, researchers and teachers to solve challenging vibro-acoustics design problems.

To build the structural model in ACTRAN you can rely on its rich material library. Indeed, ACTRAN features not only conventional materials for acoustic or visco-elastic media but also more specific models for porous or incompressible media, composite materials or active components (including piezo-electric ceramics). All material types can be combined in a single model to achieve the most realistic results.

A modal basis may also be imported from most structural FEA codes and be used as a representation of the structural model.

Your vibro-acoustic model may be submitted to the most realistic working conditions by combining acoustic, dynamic and kinematic boundary conditions, as well as more physical excitations like diffuse sound field and turbulent boundary layer.

ACTRAN AeroAcoustics and VibroAcoustics can be combined: modeling complex aero-vibro-acoustics problems has now become reality!

The available solution schemes include coupled or uncoupled models in physical and modal coordinates, in frequency or time domain. The very efficient linear equation solvers and the parallel processing capabilities make ACTRAN the solution of choice for solving industrial-size problems in design optimization processes.

Target applications

- > **Automotive:** noise related problems from powertrains, intakes, exhausts, passenger compartment, trim, seats, hoses, tires, windows and windshields, audio, HVAC.
- > **Aerospace:** sound transmission through cockpit and fuselage, noise propagation in air distribution system, response to TBL excitation, random dynamic response of rocket payload at take-off.
- > **Consumer goods:** telephones, headsets, loudspeakers, hearing aid devices, disk drives, washing machines, refrigerators, cameras.
- > **Defense:** underwater acoustics, sonars.

ACTRAN VibroAcoustics

THE ACTRAN SOFTWARE SUITE

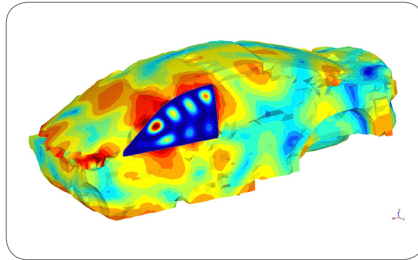
ACTRAN is the most complete acoustic, vibro-acoustic and aero-acoustic CAE software suite. Under a common technological umbrella provided by the finite and infinite element method, ACTRAN provides a rich library of elements, material properties, boundary conditions, solution schemes and solvers. ACTRAN is a high performance, high productivity, high accuracy modeling environment suiting the needs of the most demanding engineers, researchers and teachers and empowering them with the tool they need for solving the most challenging acoustic problems.

FREE FIELD TECHNOLOGIES

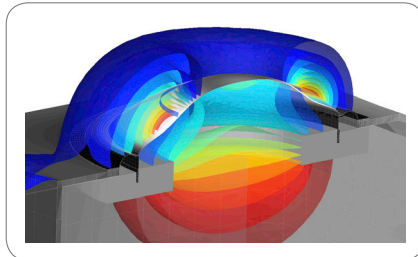
Free Field Technologies develops, maintains, supports and sells the ACTRAN acoustic CAE software suite. The company also provides related support, technology transfer, engineering, technical support, training and customization services.

FFT operates from its headquarters in Mont-Saint-Guibert (Belgium) and from local offices in Toulouse (France) and Tokyo (Japan). ACTRAN is distributed worldwide by a dense network of partners; please contact us for details of your nearest partner.

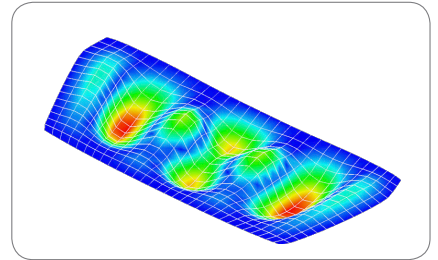
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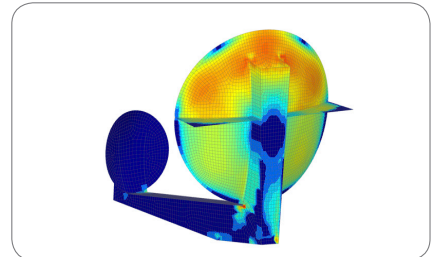
Vibro-acoustic model based on a modal approach and coupling a sidewindow and the inner acoustic cavity of the vehicle.



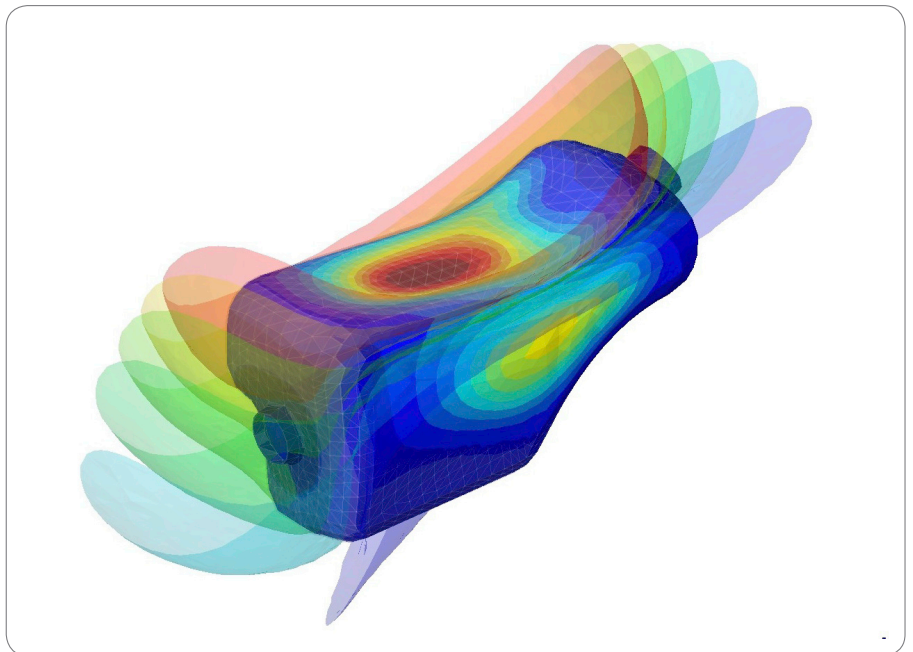
Sound generated by a loudspeaker.



Vibration levels of a multi-layered windshield, involving two layers of glass and one layer of visco-elastic PVB material.



Stress level on an antenna model loaded by a diffuse field. A modal approach has been used.



This muffler model includes an inner and outer acoustic model coupled by a flexible structure.

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