BETA
SIMULATION SOLUTIONS

ANSA

**The advanced CAE
pre-processing software
for complete model build up**

ANSA
PRE PROCESSOR

"ANSA has proven to be robust and efficient, and enabled us to reach our targets"

ANSA is an advanced multidisciplinary CAE pre- processing tool that provides all the necessary functionality for full-model build up, from CAD data to ready-to-run solver input files, in a single integrated environment.

ANSA is the users' preference due to its wide range of features and tools that meet their needs. The list of productive and versatile features is long and the alternative tasks and processes that can be completed using them are countless. The data management capabilities and the large number of supported solvers and disciplines enable unique multivariant and multidisciplinary modeling implementations.

Benefits

- Efficient data handling for intricate model structures
- Fast and high quality modeling of complex geometries
- Capability to interoperate between models built for different solvers
- Highly automated processes and model set-up tools in a single environment
- Reduced user-dependent error-prone operations
- Complete capability for building a common model as a basis for modeling for different disciplines
- Significant modeling time reduction and quality increase
- Short learning curve

Choose like a leading expert

Take advantage of the most complete solution for full multivariant model build up.

Quality, automation, performance, multidisciplinary nature, and abundance in features, tools, and automation capabilities, all in a single environment.

Unleash your modeling expertise and drive the evolution of your products

ANSA lets you boost your productivity and benefit from the highest level of quality and technology for your modeling processes. Eliminate tedious tasks and development cycles driving the evolution of your products forward, taking a leap ahead of your competition

Achieve your goals

ANSA has been developed for more than 30 years by putting our clients and their needs at the center of its development.
Its tools portfolio has been tested and developed to enable the best in each industry to meet their goals. This is why ANSA has become the users' preference starting years ago in the auto-motive industry and expanding to numerous other industries' front runners.

Boost productivity

ANSA will help you avoid tedious tasks, and speed up the evolution of your products, as it is develo-ped to offer effective and appli-cable solutions to model easily, achieve automation, avoid double work, and reduce drastically the required time to handle your data. You will be able to complete all your modeling tasks in a single unified environment. ANSA, also stands out for its unmatched performance in handling huge models.

Increase quality

With ANSA you will reduce the error-prone user-dependent op-erations to the minimum, and with its outstanding portfolio of solu-tions, all designed to offer top quality results, you will feed the numerous supported solvers with flawless ready-to-run files.

Complete your modeling in a single environment and put your data to work achieving seamless modularization

Create, from CAD data, ready-to-run solver input files, in a single integrated environment, and bridge design and analysis effortlessly. Organise your models in a central and comprehensive workspace, while maintaining one and only one database for multivariant - multidisciplinary models.

Environment

All software features are accommodated in an integrated environment, with highly customizable GUI. The software is available for all contemporary popular operating systems with multi-core CPU usage. The accelerated graphics, the rapid confirmations and function access, the GUI customization options, the model browsing and list handling, the filtering and modification operations and the integrated search engine constitute a user friendly environment that ensures outstanding performance and productivity.

From PDM to CAE

The PDM to CAE process lies on the boundary between design and analysis. ANSA offers 'out-of-the-box' (hard coded) support of the product structure formats exported from all major PDM systems including PLMXML format (exported from Team-Center, VisMockup and Sma-ragd), ISO STEP AP242 (developed by ProSTEP), FATXML, STEP xml, and VPM (ENOVIA). With ANSA, generating the CAE model becomes an effortless and error-free task for even non-expert users. You can easily create the CAE structure from the CAD structure, extract the CAD meta data for the FE-model preparation, and ensure the reuse of data whenever required. This is achieved through an interface to the PDM systems and an inte-grated Data Management system. After reading the files, their contents are displayed in the "Product Tree Editor", which is the main workspace for the processing of the model, before importing it into the pre-processor.

Multivariant model data handling with the ANSA 150% model

With ANSA you will be able to handle multiple variants and prepare models for analyses, avoiding processing the same parts and tasks more than once. In the center of this integrated methodology lies the Model Comparison tool. The tool makes possible the full-scale comparison of two models by superimposing the compared models in the graphic area, and producing a detailed index of their differences. You can then handle easily the differences in geometry, connections, solver-specific definitions as well as in various attributes of entities. Through the Compare tool, the Mutual exclusive parts, the Common Parts, and the Shifted parts are identified to create the different configurations for each variant to form the ANSA 150% model. By defining the different configurations for each variant it is possible to handle and move from one variant to the other with only one click. This ANSA 150% file acts as a repository and carries the information for Parts hierarchy, the Corresponding Geometries and attributes, the Material info per part, and the connectivity info, making it possible to maintain one and only one source file instead of multiple ones.

Model data organization

ANSA also offers a complete platform for simulation modeling data management. It discretizes the CAE data into 5 distinct categories: The Parts & Connections, the Subsystems that correspond to the different subassemblies of the models, the Simulation Models which contain all the data that com-pose the model, the loadcases for the simulations, and the final ready-to-run files. All the above are collectively processed through another central workspace called the "Model Browser".

Stimulating collaboration

Through ANSA you will be able to maximize the level of cooperation of your global teams. The BETA web interface allows engineers to broadcast their screens via a web browser and share their work. The Remote Desktop Interface offers full broadcasting capabilities, as well as interaction with ANSA functionality on a workstation by several users, operating also from a web browser. The Sketch tool extends collaboration further by allowing you to point out areas of interest on the model and communicate your ideas by adding notes in the form of annotations.

Master your data

Reduce data managing and processing time to the minimum, and synchronize your CAE model evolution with the design evolution.

Streamline data exchanges between engineering teams and keep your data clean, organized, and up to date.

Employ all the modeling tools you need and eliminate tedious tasks through automation

ANSA offers an abundance of tools and capabilities even for the most demanding CAE tasks. The list of productive, automated, and versatile features is long and the alternative tasks and processes to be completed using them are countless.

Geometry input and clean-up

CAD neutral file formats, definitions and model structure data in CATIA v4, CATIA v5, NX, Pro/ENGINEER, SolidWorks, Inventor, JT, and other formats can be converted into ANSA files using the available high performing translators. A wide range of geometry healing functions, delivers geometry ready to be meshed.

Meshing

The resulting shell and volume elements models easily meet the meshing requirements and quality criterial in less than 75% of the time needed by other software. Geometric entities are easily handled and manipulated by numerous automated integrated tools. With ANSA you will generate perfect meshes with the aid of propriety shell meshing algorithms, high performance and quality volume meshing, state-of-the-art boundary layers elements deployment, Hexahedral dominant meshing, Acoustic cavity mesher, Wrapping tool, and numerous other mesh handling functions.

Exploit the Batch meshing manager of ANSA, a powerful tool for versatile and controllable meshing with shell, or volume elements. The Batch meshing manager is completely integrated into ANSA and it is capable of operating through a GUI as well as non-GUI process mode.

ANSA also, allows for a fully automated extraction of middle surfaces meshes for stamped, cast parts, and sheet welded structures of any complexity. Without the need for user intervention, starting from the solid description.

Assembly

Powered with fully comprehensive parts and welding management tools, ANSA accommodates parts assembly, with alternative node dependent or independent connections types, for various disciplines. Interfaces to numerous connections data file formats allow the completion of a single stage assembly. New concepts have also been introduced, including model hierarchy input, multiple part instances handling, parts comparison replacement and update as well as special joining type creation.

Solver decks and model integrity

Pre-processing completion is achieved through the uniquely interoperable pre-processing decks that allow direct model modification between solvers. ANSA is multidisciplinary by design and allows you to simultaneously handle models for Crash, Durability, NVH analysis etc., supporting all entities required by the latest versions of solvers. Replicating the integrity and correctness checks performed by the solvers, ANSA reports potential modeling flaws and proceeds to model auto correction actions.

Automation

Access the ANSA core functionality and model data through scripting and perform custom operations in an automated way. The scripting interface is an Application Programming Interface (API), an extension of the Python programming language. The Task Manager is an integrated workflow manager that includes all individual tasks of a simulation model development. Built up the order of modeling actions and predetermine all parameters.

Advanced tools portfolio

The core modeling functionality is enhanced with the aid of analysis specific tools. ANSA offers numerous tools, such as those for impactors positioning, seatbelt fastening, positioning of test dummies, multibody dynamics, tools that facilitate the modeling of parts made of composite materials. The Morphing tool will meet your requirements for fast model modifications, performing changes on FE or Geometry models. Other advanced tools would include those for Cross Section analysis, Volume traps, and Fuel tank analysis.

Create ready-to-run multidisciplinary models

Complete your work for any discipline, and any major solver through the uniquely interoperable pre-processing decks.

BETA
SIMULATION SOLUTIONS

physics on screen

www.beta-cae.com