BETA CAE Systems S.A.

announces the v15.0.0 release of the

ANSA & µETA pre- & post-processing suite

Introduction

BETA CAE System S.A. announces the release of v15.0.0 of ANSA / µETA pre- and post- processing suite.
New tools and features enhance the capabilities of ANSA / µETA as part of our continuous effort to further empower your CAE working ways through our market-leading pre- and post-processing suite.
The new version of our software raises the bar of effecient CAE processes to even higher levels.
Among the numerous enhancements of this major release the most notable are described below.

Contents

Understanding the Software Release Schedule

The plan

We are committed in delivering improved and enhanced software releases, the soonest possible, in order to meet the requirement of our customers for the continuous improvement of their experience and work. Therefore, we are working in releasing new software versions with code corrections, new software features and enhancements, in regular, frequent intervals.

- A major software version is released every year. The major version v15.0.0 is made available at the beginning of the year.
- First point releases, such as v15.1.0, v15.2.0 and so on, with code corrections but also with additional software features and enhancements are released every three months.
- Second point releases, such as v15.2.1, v15.2.2, mainly with code corrections only upon their parent first point release, are scheduled on a monthly basis.

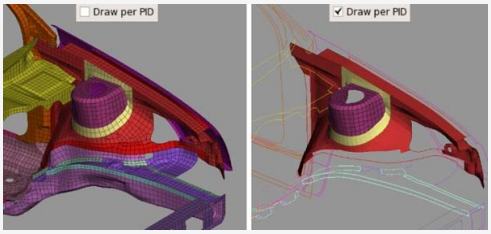
Each software release is accompanied by a detailed description of the introduced corrections and/or additions so that our customers can decide whether it is critical to implement this release in their environment.

This release

This release of v15.0.0 introduces new software tools and features and also code corrections on v14x.

Enhancements in ANSA

General



A full screen view mode has been added offering greater graphics area to preview the models. Properties can now be drawn with different features (shadow, wire, perimeters).

A new tool identifies automatically rib areas of FE elements and then either isolates them or assigns them to a different property id. Additionally, reading and writing compressed (*.gz) files is also now available.

Compare tool

A new option that applies the mesh of a model to the compatible areas of another one, or vice versa, has been added. Additionally, a new script reports differences in CSV format.

Data management

New features in Data Management are greatly facilitating and enhancing the working ways in CAE processes.

ANSA DM becomes fully customizable, utilizing custom data models. The data handled by ANSA DM extend beyond Parts and Includes to higher level entities, with application-specific attributes and data structure. Additional enhancements include the Direct support of the notion of the “sub-system” for both ANSA and include files. Also, the storage, retrieval and general management of “sub-systems”, can now be performed through the Parts Manager and the Includes.

Custom views on the data of the pool become available in the DM Browser to facilitate direct mining of the necessary information at every moment. New global settings to deal with the conflicts of properties, materials, and sets ids during ‘Change Representation’ have been added. The new option ‘Load Representation’ changes parts representation according to the current one and when this is not available the respective batch meshing scenario is loaded from the DM.

Connections and assembly

Introduction of several new FE representations for solid and beam bolt models as well as for spot-welds and seam lines. Also FEMSITE is supported as an external assembler through the Connection Manager.

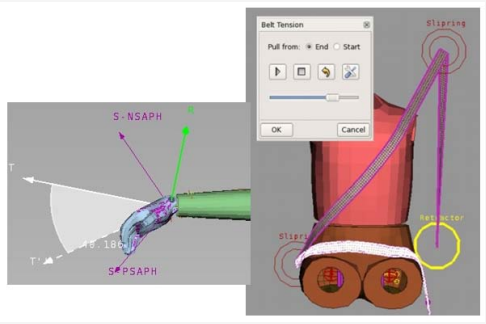
TOPO & Geometry clean up

Enhancements in Middle surface extraction have also been made. Extruded parts with sharp edges can now be automatically treated while a new tool called Welding, extracts the middle surface of separate extruded geometrical volumes and then connects them.

Shell mesh

The CFD generator is now improved and no macro areas remain unmeshed while automated intersections and proximity closure for watertight model preparation is now offered. A new option is now supported to smooth the noised areas of the FE meshes. Also, Minimum and Maximum target element length limits can be set as meshing parameters.

Safety



Through the new Tension function a selected seatbelt component can be tightened by sliding the belt on the body.

The dummy positioning has also been enhanced through contact based positioning and penetration free (soft) angles.

Moreover, several enhancements have been made for the creation of the Protocol curves and for the identification of Target Points for pedestrian analysis.

Laminates

A new, embedded to Laminate tool, Draping tool has been introduced to predict the woven orientations based on rosette start point and a lock shear angle. Also, solid components are now supported for ANSYS, NASTRAN, and Abaqus model set up. Material orientation is now supported for solid elements for ANSYS. The material orientation vector for solid elements is now drawn with the 3-vector system and the visibility is controlled through the Material orientation option in the Presentation Parameters tab.

Kinetics

Numerous enhancements have been made in the Kinetics tool and the Result viewer.

Models can now be output in ADAMS/Solver Dataset (.adm) format. An option to follow the marker during animation has been added and thickness scale of KIN_CONTACTs supports now absolute values which are useful for bodies that consist of solids that do not have a property thickness.

Additional friction types, the Spatial_Isotropic and the Stribeck have been added to the KIN_CONTACTs.

A new function converts the positions and velocities of the bodies after a kinetic simulation run into transformation matrices and initial velocities keywords for a FE model. The Smooth option has been added in the Shape type list of KIN_CONTACTs.

Morphing

Tangency assignment on edges or boxes now works with box selection. A new "Latin Hypercube" algorithm has been added to the Design Of Experiments (DOE) functionality, while the option to clear directories before running and entering direct commands, for the solver or μETA, is now available.

The Fit> To Surfs function now works with polygon elements. Boxes handling has also been improved while a New Middle option for 1D Morph and Cylindrical boxes has been added.

New options are now available to define parameters for the Slide Member and Slide Features functions, and to split one member into many groups to slide each group with different vector. The visibility control item is now supported allowing the control of the visibility at a desired step.The user can now convert Morphing Boxes, Hexa Boxes, and Size Boxes into deck box.

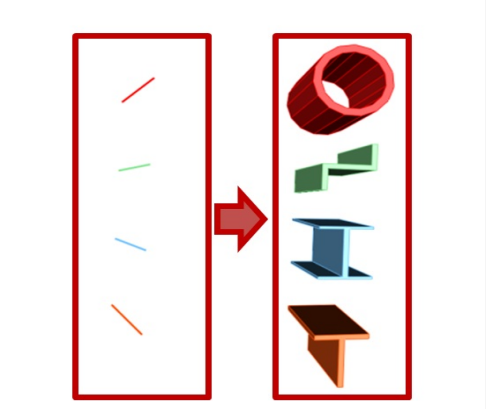
Solver ınterfaces

- Support of LS-DYNA keywords used for setting up Thermal Analysis.
- The PERMAS. COMPONENTs list now supports the option to merge them for PERMAS.
- The export time for FLUENT files of millions of elements has now been significantly reduced.
- Support of numerous new keywords for ANSYS, including for the LOADSTEP Manager.

For more details about the new software features, enhancements and corrections please, refer to the Release Notes document.

Enhancements in μETA

General



The cross section area of Bar and Beam elements is now available in the PIDs list while the visualization of their actual cross section is supported. Transparency can now be applied on specific elements. A new read option has been added for averaging the corner values of an element with the corner values of adjacent elements based on a user-defined threshold angle.

NVH

A new tool, named Modal / FRF Correlation, has been introduced.

It can be used for the correlation of modes to calculate the Modal Assurance Criterion (MAC), the AutoMAC and the Coordinate MAC (COMAC). For correlating frequency responses, it can be used to calculate the FDAC, the AutoFDAC and the FRAC.

Another new tool, named Random Response, has also been made available for the calculation of Random Analysis results by a Frequency Response analysis and a Random Response loadcase. In the Read Results card, the calculation of the summation of Grid Participation Factors and Normalized GPF is now available.

Abaqus results are now supported in the Modal / FRF Correlation tool while, Abaqus complex modal results can now be plotted directly from *.odb files as complex curves.

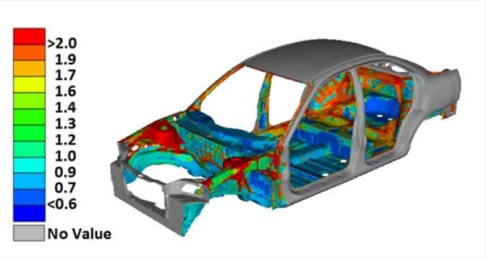
Materials

The keywords for all materials supported by μETA can now be read from ASCII geometry/input files with material properties. Those can be retrieved from the identification options, annotations, Statistics/Mids cards and Material-specific script functions.

No-Value elements

μETA can now handle No-Value elements with a separate color on the scalar fringebar while

new options have been added in the various tools of µETA, (Advanced Filter, Annotations, Focus commands, etc), to handle no-value entities.



U3D & U3DPDF

µETA can now read U3D and export model geometry and results in U3DPDF file format.

Cut Planes

Cut Planes can now be made finite, i.e. cutting model geometry only partially, to help visualize results on large models.

Isofunctions

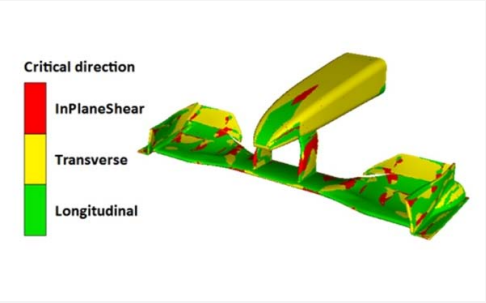
Isofunctions created in different windows can now be synchronized to aid the results' comparison of models.

Femzip

Files compressed with Femzip-L (LS-Dyna), -P (Pamcrash) and -R (Radioss) version 6.95 are supported as well as Femzipped Nastran files of the extension .femzip.op2.

Supported ınterfaces

- ANSYS composite results and failure criteria are now supported through the keywords FC and MPDATA from .cdb files while the Section Forces tool supports now ANSYS results.
- The duration of reading geometry and EnSight results has been improved by 45% compared to previous µETA versions.
- It is now possible to read only selected interior surfaces for FLUENT.
- Thinning results are now supported for reading LS-DYNA results.
- Spotweld connector elements are now supported for MEDINA.
- TETR10 Elements are now supported as T10 elements for PAM-CRASH. Thinning results are now also supported.
- µETA supports reading geometry and results (3D and 2D curves' plotting) for RadTherm.
- µETA supports reading geometry and results from .tec and .plt files. (Tecplot).



For more details about the new software features, enhancements and corrections please, refer to the Release Notes document.

Compatibility

ANSA files saved by all the first and second point releases of a major version are compatible to each other. New major versions can read files saved by previous ones but not vice versa.

The .metadb files saved with µETA version 15.0.0 are compatible and can be opened by earlier versions of µETA.

Download

Where to download from

Customers who are served directly by BETA CAE Systems S.A. may download the new software, examples and documentation from their account on our server. They can access their account through the "user login" link at our web site http://www.beta-cae.gr
Contact us if you miss your account details. The [Public] link will give you access to the public downloads area.
Customers who are served by a local business agent should contact the local support channel for software distribution details.

What to download

All files required for the installation of this version reside in the folder named **"BETA_CAE_Systems_v15.0.0"** and are dated as of **December 30th, 2013.** These files should replace any pre-releases or other files downloaded prior to that date.
The distribution of this version of our pre- and post-processing suite is packaged in one, single, unified installation file, that invokes the respective installer and guides the procedure for the installation of the required components.
For the installation of the software on each platform type, the following files have to be downloaded:

- the .sh installer file residing in the folder with respective platform name, for Linux amd MacOS, 32bit or 64bit or the respective .msi installer file for Windows, 32bit or 64bit, and
- the tutorial example files that reside at the top level of the folder of this distribution.
- In addition to the above, optionally, the µETA Viewer is available to be downloaded for each supported platform.

The Abaqus libraries required for the post-processing of Abaqus .odb files are included in the installation package and can be optionally unpacked.

Previous software releases can be found in the sub-directory called "old" or in a folder named after the product and version number.

Documentation

Updated Documents

- NVH Console

Updated Tutorials

- ANSA: Hexa solid Mesh for Stress analysis

New tutorials

- ANSA: Creating Custom Checks
- ANSA: Meshing and Model setup for Moldex3D
- ANSA: Solid Mesh Assembly
- ANSA: The Basics for CFD

Tutorial files availability

A TUTORIALS folder in the public area has been added, including the tutorial documentation and the necessary demo files, to facilitate the tracking of the new and the updated tutorials. This folder includes the complete package of the tutorials and a package with the updated ones only.