

μETA Post Toolbars

Introduction

The modern CAE processes require the use of software that can assist in meeting strict deadlines and offer increased level of automation. Moreover, the CAE processes often call for analyses that involve a big number of different runs. As a result, the processing of these runs and the generation of complete reports can become significant time consuming tasks.

Automation Capabilities in μETA

μETA covers the above requirements through an array of advanced automation capabilities which include:

- BETA scripts,
- μETA session files
- User Toolbars

BETA scripts are text codes based on the C programming language which allow for unparalleled model data gathering and process automation.

μETA session files are text files. They are a sequence of μETA-commands that can be parameterized and executed silently to perform repetitive and time-consuming

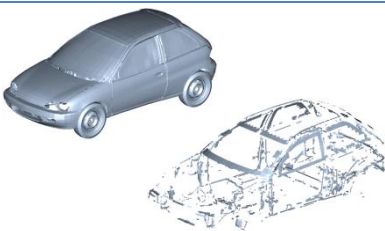
processes without manual intervention.

User toolbars are custom graphical user interfaces created within μETA using the dedicated Toolbar Designer. Taking advantage of the automation capabilities of both BETA scripts and μETA sessions, user toolbars can be created as discipline and process-specific to contain only the necessary functions. Additionally, they can be shared between different work-teams.

μETA post toolbars

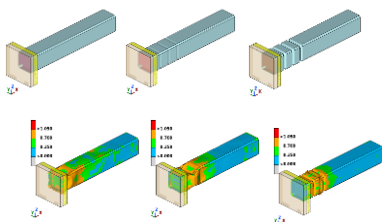
Available with every μETA Post installation, the following discipline-specific toolbars aid the analyst to complete tasks, from loading data to report generation, with minimal user-interaction.

Collision-Penetration Check



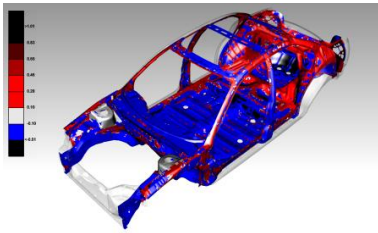
- Calculation and visualization of penetrating areas between different models or within the same model
- Penetration on element intersections or on property-thickness level
- Automatic creation of separate penetrating element groups for each state

Optimizer Setup



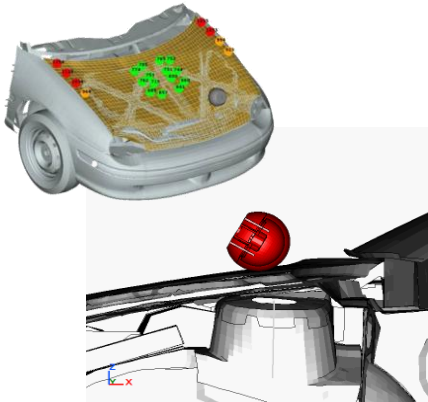
- Helps to integrate μETA in optimization loops
- Successful integration to the LS-Opt, Optimus and ModeFrontier codes
- All necessary settings within a single interface, making it easy for inexperienced users to quickly set-up the process
- Design responses and histories can be output in a standard format file

Topometry Optimization



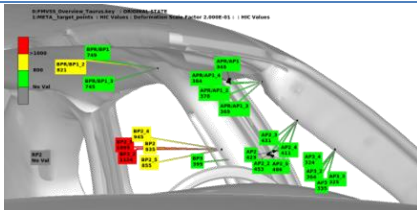
- Dedicated interface for loading and post-processing of Topometry Optimization analysis results
- Automatically calculates the relative optimized thickness and generates States of optimized results
- Outputs optimization thickness for further processed in ANSA

Pedestrian



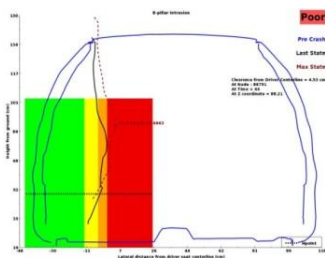
- Headform, legform and upper leg testing
- Custom settings for plots, videos and criteria limits
- User-defined and default fringebars (EuroNCAP grid colors, etc.)
- Overview through annotations and mapping of values on the model
- Videos of model clipped by planes or of model sections
- EuroNCAP score calculation
- Automatic pptx/html report creation even in batch mode
- Use of pptx master slide and custom slide layouts

FMVSS_201U



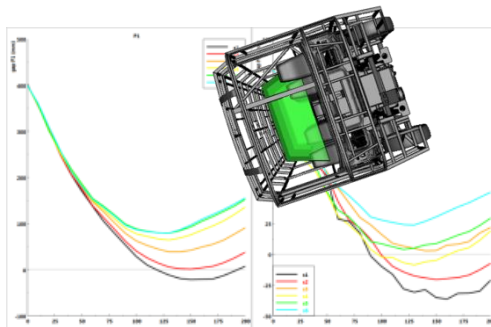
- Automatic creation of pptx report
- 2d plots with HIC value / acceleration to intrusion
- Video animation of the impact

IIHS



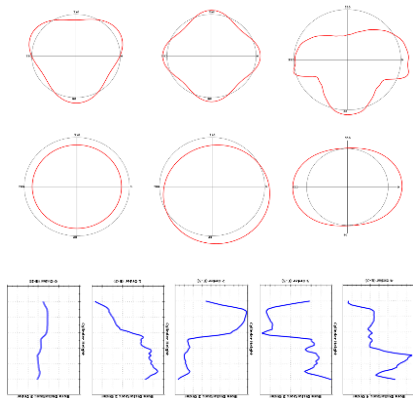
- Front Impact : measurement of intrusion into occupant compartment
- Side Impact : measurement of intrusion into occupant compartment around the B-pillar
- Roof Impact : strength-to-weight ratio plot

Bus Rollover



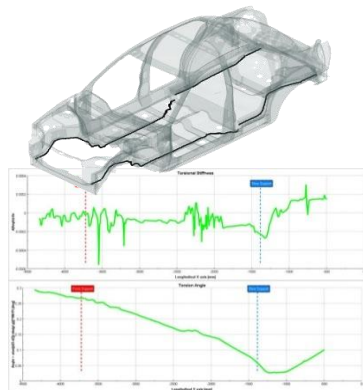
- Calculations according to regulation ECE R66
- Easy definition of the sections where the intrusion will be measured
- Automatic calculation of the intrusion in the survival space at each section

Bore Distortion Analysis



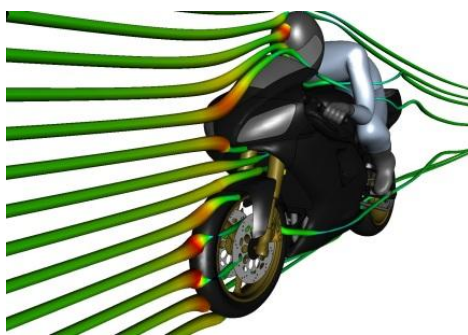
- Calculation of bore deformation Fourier orders
- Easy definition of the bore under investigation
- Direct creation of cylindrical coordinate systems from the dedicated toolbar
- 2D plots of bore deformation orders vs bore length

Stiffness Calculator



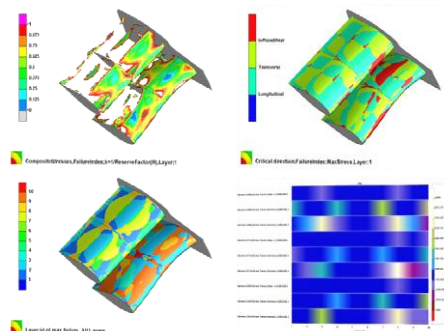
- Calculation and plotting of stiffness along a path of nodes
- Numerical and graphical calculation of Torsion Angle and Torsional Stiffness

CFD Post



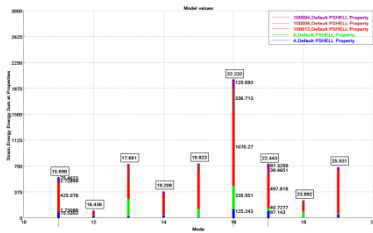
- All CFD post-processing requirements within a single interface
- Supported results for Fluent, OpenFOAM and StarCCM+
- Visualization of pressure (scalar) and velocity (vector plot) results simultaneously
- Result-specific fringe coloring of the model
- Drag and Lift calculation with a single click
- 2D plotting of Cd and Cl against time

Composite Post



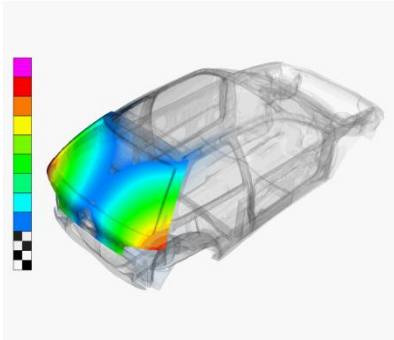
- Calculation of Failure criteria, Reserve Factor and Effort (Tsai-Wu, Puck, etc)
- Identification of the layer with the max failure
- Identification of critical directions
- Hiding of failed elements
- Plot of stress tensor results through thickness
- Re-evaluation of failure criteria after modifying material properties

Eigenmodes Bar Chart



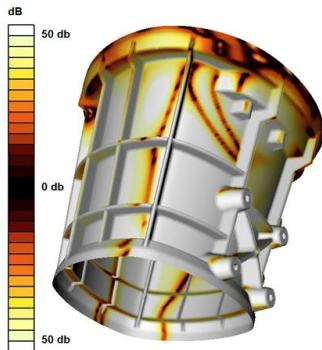
- Energy Sum / Percent at Properties in Bar Chart form
- Effortless loading of the results and creation of plots
- Overview of strain energy distribution in properties in a range of modes

Identify Global-Local Modes



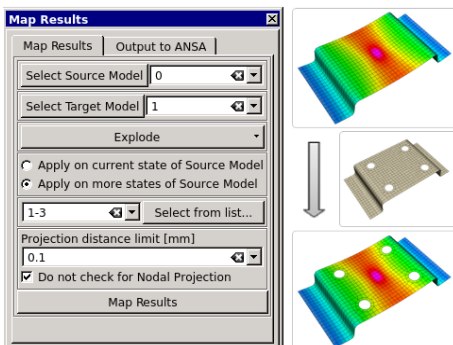
- Identify the Eigenmodes of a model as Global or Local
- Automatic generation of report containing animations for each Eigenmode type

Equivalent Radiated Power (ERP)



- Load several analysis-specific result sets in one step through the purpose-built interface
- Calculation of Equivalent Radiated Power results on element, part or model level using Displacements, Velocities or Accelerations calculated from Nastran or Abaqus
- Results visualized as new result labels

Map Results



- Interactively map results from one model to another
- The mapped results appear as a new result set