

Seating Systems

DEP MeshWorks as a rapid model building and assembly tool for Seating Systems

With integrated modeling in DEP MeshWorks it is possible to build crash and NVH model in sync for seating systems. MeshWorks can be used to model seat system for durability. MeshWorks has special hex meshing tools and tetra mesh tools for capturing complex seat foams. Dummy positioning, foam compression tools and belt routing are all available in MeshWorks. Mesh Parameterization comes in handy to optimize seat systems for automotive or aerospace application.



Work Flow – Driven by MeshWorks

Challenge faced to study what if scenarios quickly.

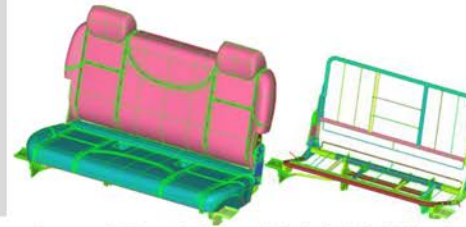
- Creating high quality mesh model for seat foam is always an important expectation from CAE team be it for Crash or Comfort or both besides the batch mesh for sheet metal parts and trims. Setting up load cases that include dummy positioning, belt routing and foam compression should be available under one canvas. Extensive model parameterization options required that can help balance performance with mass reduction and comfort.

Solution

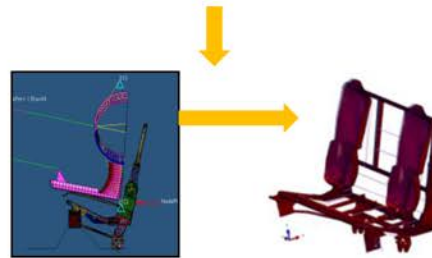
- MeshWorks has best in class batch meshing tools to build seat structure model. MeshWorks hex mesh and tetra mesh tools are well suited for developing mesh models for seat foams. MeshWorks has required model assembly and contact definition options to set up a solver ready input deck be it quasi static simulation or non linear static simulation. MeshWorks also have comprehensive model checker to check model fully before submitting to solver. Dummy positioning, foam compression and belt routing options help model set up under one canvas with option to automate the process. Extensive mesh parameterization that goes beyond shape, gage and material helps in seat system performance optimization.

Value

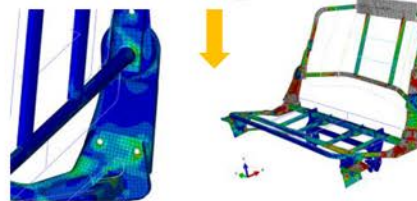
- MeshWorks comprehensively brings mesh modeling tools, model assembly tools, seat system specific tools and extensive model parameterization options besides post processor under one canvas. This makes it efficient to set up multi solver attribute model quite easily thanks to integrated modelers in MeshWorks. Parametric modeler in MeshWorks helps in seat system optimization considering diverse set of parameters. With such state of the art tools collection MeshWorks accelerates virtual validation and saves 30% time.



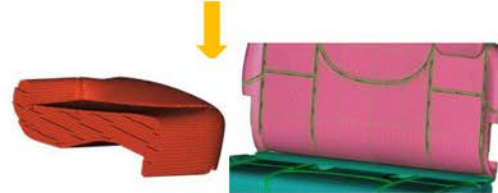
Import CAD and Create Mesh in MeshWorks



Mesh updated to new design using Mesh Re use option along with dependencies



Durability and NVH model created from one CAD database simultaneously under integrated modeling. It saves 50 % time.



Hex or Tetra meshing for seat foam for Crash and Comfort Studies

Complete Pre & Post Processor

- Comprehensive FE/CFD pre & post processor with powerful tools for CAD clean-up, meshing (shell, tetra, hexa, hybrid etc.), highly automated model assembly and results processing.
- Complex FE/CFD can be generated 30% faster and with better quality than other competitor products.

Customized Engineering Process Automation

- Customer CAE processes can be rapidly automated using a fast Record>Create-GUI>Plumb>Publish process.
- 2X to 10X time reduction can be expected for processes that are repeatable.

CAD & CAE Morphing Technology

- Reduces Finite Element (FE) & Computational Fluid Dynamics (CFD) model building time by 50% to 80%.
- Generated morphed CAD models representing optimized designs very rapidly and form the main link between CAE & Design teams.

Parametric CAE Technology

- Rapidly converts FE & CFD models to intelligent parametric CAE models, enabling fast design iterations & Design of Experiment (DoE) studies.
- Most comprehensive parametrization engine addressing several categories of parameters such as shape, gage, material, spot welds, seam welds, adhesives, design features, etc.

Multi-Disciplinary Optimization (MDO)

- Enables Multi-Disciplinary Optimization to meet design targets, minimize product weight, and minimize manufacturing cost using parametric CAE models.

