

Transmission Systems

DEP MeshWorks as a rapid model building and assembly tool for transmission systems

DEP
MeshWorks

Application sheet

MeshWorks enables both parametric and non parametric based engine structural optimization processes. Integrated modeling and associative modeling tools in MeshWorks drastically cut model building time for users.

Challenge faced to study what if scenarios quickly.

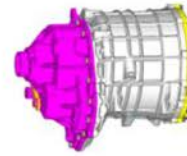
- Mesh modeling and assembly are no doubt critical and fast pacing them through automation is always welcome. Studying what if scenario also needs to be considered and accelerated. Mesh model reuse and bi directional connectivity between CAE and CAD would greatly help as well.

Solution

- MeshWorks has state of the art modeling and model assembly tools besides a unique easy to use automation methodology. The acceleration to what if scenario study is done by parametric FE modeling technique in MeshWorks. Parametric FE modeling helps create design enablers without any waiting or need for CAD. MeshWorks has wide variety of FE parameterization options that helps analyze various cumulative effects of design enablers. Paired with DoE, parametric model accelerates what if scenario / design exploration. As important part of IPAAM module in MeshWorks. Both mesh model re use and bi directional connectivity between CAD and CAE model provides time savings to complete product development cycle.

Value

- Mesh model reuse is a great way to update existing model to represent the new design. This is very useful for transmission housing as it updates mesh and all the downstream dependencies. Parametric FE modeling helps users study what if scenarios without waiting for CAD. Design performance enablers like ribs, fillet radius are created as parameters. Paired with DoE parametric FE model beyond shape parameters accelerate design exploration **without waiting for CAD** and has positive impact in accelerating product development. Savings to user from this transformative process is in excess of 30 percent of product development time.

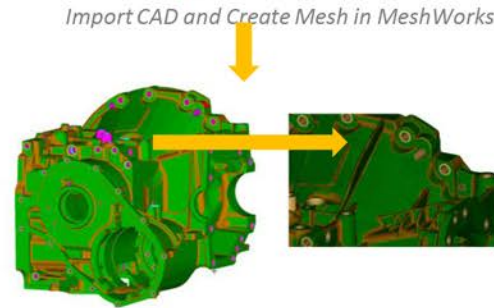


CAD Clean up , meshing, model reuse and assembly for geared systems

Parameterization of Mesh Models and solving mesh models

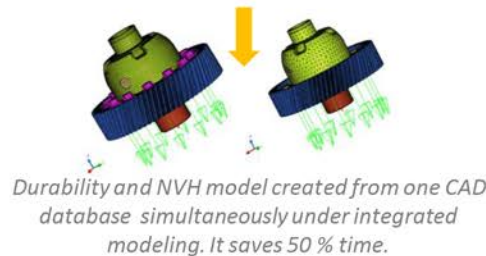
Post process and use Hot Spot Extractor for design changes

Work Flow – Driven by MeshWorks

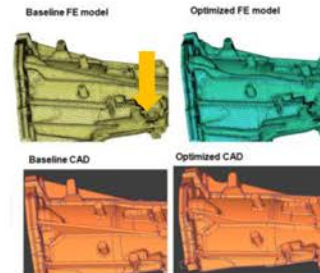


Import CAD and Create Mesh in MeshWorks

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.



Bi directional CAD/CAE connectivity enabling to get CAD from optimization output

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.

PRE/POST PROCESSING
MULTI-DISCIPLINARY OPTIMIZATION
PROCESS AUTOMATION
CAE/CAD MORPHING
CAE PARAMETRIZATION

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