OPTIMIZE & REVIEW

CATIA PLM Express
CATIA - FEM and Structural Analysis

High product performance and quality improvement

Today, companies need to control their development costs, while especially focusing on the costs of physical prototypes. They also need a solution that combines design and analysis in order to validate and optimize product development.

Overview

CATIA - FEM & Structural Analysis delivers a complete finite element modeling and analysis solution covering a wide range of structural analysis processes. Fully integrated within the CATIA design environment, it promotes seamless product design quality improvement.

Customer Benefits

- 60 % improvement of the product design-analysis cycle time comparing to non integrated design-analysis solutions
- Generative and associative specification-driven solution for a rapid propagation of changes
- Ensures compliancy with company best practices thanks to integrated knowledge capabilities
- Accurate simulation of the product?s mechanical behavior
- Decreases the need for physical prototypes
- Promotes concurrent engineering
- Open to other solvers to address specific needs
- Scalable solution to perform complex computations on large models: up to 25 million degrees of freedom

DS CATIA

Key Capabilities

Single analysis and design environment avoiding errors and duplications
It supports the application of analysis specifications on single parts or part instances within an assembly, including restraints and loads such as force, momentum, displacement, and acceleration

Knowledge-based architecture
Users can capture the knowledge associated with the design analysis and perform optimization. The generative analysis specifications are recognized as knowledge parameters called «sensors», providing measures that can be re-used. Thereby users will be able to set rules, checks, and formulas to use best practices and ensure compliance to corporate standards

Advanced stress, modal and dynamic analysis on any type of part or hybrid assembly
It enables to enlarge the scope of the analysis cases supported within CATIA- Generative Structural Analysis. Performed on a single part or on a hybrid assembly, it computes the static, frequency and buckling analysis including the capability to solve several analysis cases simultaneously as well as combination of them. This optimizes computation times for cases relying on the same restraint

Robust and advanced finite element model components for wireframe, surface and solid meshing
That is very useful to enable accurate refinement of the finite element models, such as Octree mesh, Tetrahedron filler, or Hexahedron meshing. It allows capturing specifications and optimizing the mesh quality according to the solver used. Thanks to the associativity between the design and the mesh, modifications are automatically propagated so to optimize the meshing process

Unique topology simplification to obtain a high quality mesh

Multiple types of connections for meshing of an assembly

Compatible and non compatible meshing support
Depending on customers? methodologies, specialists can create both compatible and non-compatible meshing for assembly joints.
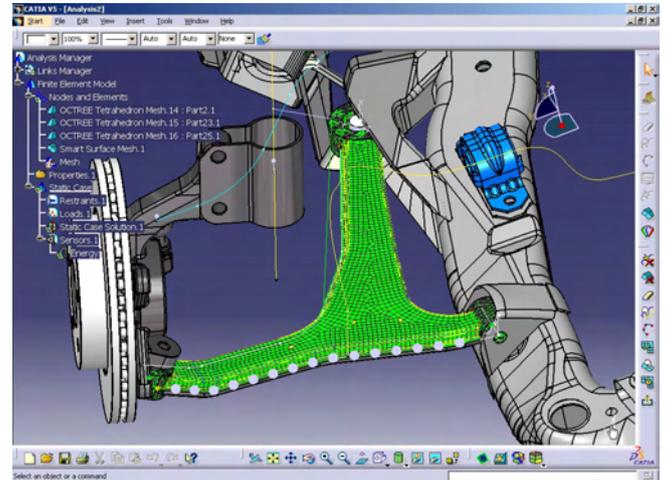
Screen capture of CATIA - FEM and Structural Analysis

Users can then create spot and seam welding either based on non-compatible elements, enabling to adjust weld locations without impacting previously generated meshes, or based on compatible elements required in specific areas such as crash and fatigue analysis. That makes mesh assembly transparent to the user

Pre and post processing analysis package exchange
To foster concurrent engineering, analysis data such as loads and displacements, can be seamlessly transferred from a user to another. That is an important capability used to coordinate tasks for an efficient collaborative work

Ability to perform assembly of analysis
An assembly can be meshed by different users and consolidated by only the responsible of the overall product to perform advanced analysis on the whole assembly. Introducing this new innovative process reduces significantly the time of analyzing large assemblies

Take advantage of the 64-bit platform
Users can perform larger model computations and continue working on other processes while the computation is running, without limiting their activities or productivity

Visit us at www.3ds.com/my-catia-plm-express

DS DASSAULT SYSTEMES

www.3ds.com