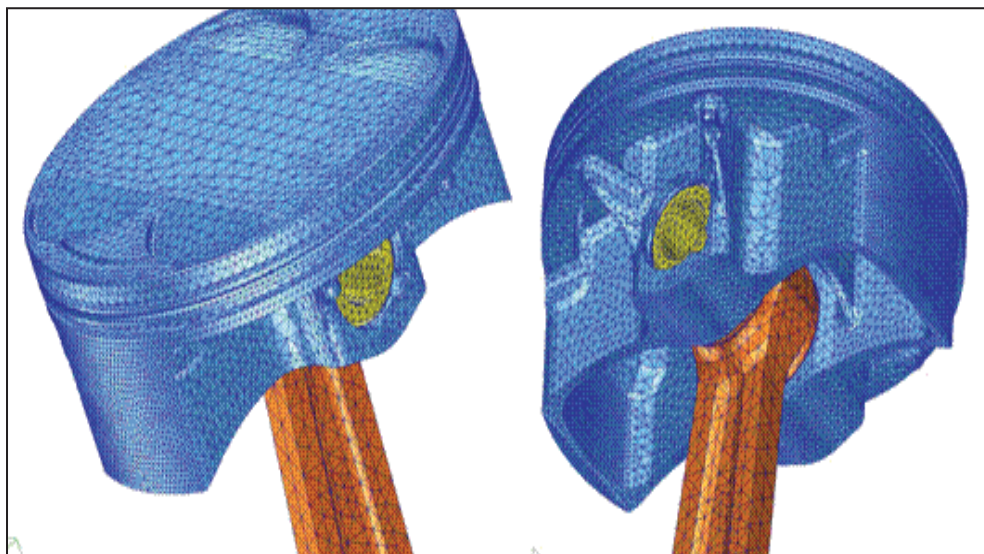


FEA

The Power of MSC Nastran and Patran in an Integrated Environment



Overview

MSC FEA is a package of advanced simulation products for the analysis of components. MSC FEA cost effectively brings together the advanced finite element analysis capabilities of MSC Nastran™ and the leading CAE modeler, Patran® in an integrated environment. Together, they allow the user to perform a wide variety of structural, thermal, and optimization analyses.

MSC FEA can be applied to solve a wide-range of problems across a variety of industries including aerospace, automotive, and general machinery. FEA allows the analysis and solution of engineering problems, from the simple to very complex.

MSC FEA enables companies to create analytical geometry models or leverage existing investment in design tools by providing unparalleled integration with computer-aided design systems. A comprehensive set of finite element analysis modeling tools are available to create finite element meshes and to apply a variety of element properties, material properties, and loads and boundary conditions allowing various configurations to be evaluated. Access and visualization of your analysis results is simple and straightforward permitting both design and analysis engineers to collaborate early in the product design phase.

Capabilities

- Model Preprocessing
 - Comprehensive CAD integration allowing model import from all of the major CAD packages
 - Comprehensive meshing algorithms for automatic creation of quality meshes
 - Variety of methods for applying element properties, constraints, loads, and more
- Engineering Analysis
 - Robust structural analysis capabilities involving several engineering disciplines including linear statics, normal modes, frequency response, heat transfer, and more
 - Sparse and Iterative matrix solvers for fast and accurate solutions
 - Powerful Design Optimization capabilities for developing robust designs
 - Ability to create flexible body definitions for integration with Adams Multi-Body Simulation
- Results Postprocessing
 - Advanced visualization techniques to gain complete insight of product performance
- Open Architecture
 - Customization of the graphical user interface and analysis process

Benefits

- Reduce the time required to develop high-quality engineering analysis models, increase productivity, and reduce risk with proven simulation tools
- Achieve tighter collaboration between design and analysis engineers through comprehensive CAD system data integration allowing model import from all of the major CAD packages
- Improve designs by understanding how they function in operating environments
- Gain access to the power of integrated computer-aided engineering at an affordable bundle price

Preprocessing using Patran

MSC FEA allows access to all the powerful preprocessing capabilities of Patran including optional access to geometry from several CAD systems. Key Patran Features include:

- Standard Geometry Access from
 - Parasolid
 - STEP 203 and 209
 - IGES
 - VDA
 - I-DEAS
- Parametric Modeling Capabilities
- Wireframe and Solid Geometry Creation and Modification
- 2D and 3D Finite Element Automatic Mesh Generation and Editing
- Advanced Surface Meshing
- Comprehensive Element Library
- Beam Tools
- Random Analysis User Interface
- Element Property Creation and Edit
- Material Property Creation and Edit
- Load and Boundary Creation and Edit
- MSC Nastran Contact Definitions
- Model Visualization and Verification

Analysis Capabilities

MSC FEA provides a full range of engineering analysis capabilities using the imbedded MSC Nastran solver including:

- Basic Structural Analysis
 - Static Stress
 - Normal Modes
 - Linear Buckling
- Advanced Analysis
 - Static and Transient Heat Transfer
 - Dynamics
 - Frequency / Harmonic Response
 - Static and Transient Nonlinear
 - Design Optimization
 - Adams Integration
 - MSC Nastran Rotor Dynamics

Postprocessing Using Patran

MSC FEA provides a full range of capabilities for visualization and interpretation of analysis results available in Patran including:

- Results Access
 - All MSC Nastran Results Files
- Results Visualization
 - Deformation / Contour
 - Vector / Tensor
 - Data History / Animation
 - Results Templates

MSC FEA Package Optional Modules

- CAD Access
 - ACIS
 - Pro/ENGINEER
 - Unigraphics NX
 - CATDirect_V4
 - CATDirect_V5
- Productivity Tools
 - CAE Solid Modeling
 - Laminate Modeler

Licensing Options

MSC FEA is offered as a node-locked or networked license.

New for MSC FEA 2007 r1

- General Enhancements
- Interactive Viewport
- Bolt Modeling
- Spectrums and Ranges
- Memory Management
- MSC Nastran Preference
- Optimization (SOL 200)
- Multi-Discipline
- Topology
- Dynamic Solutions
- Superelements
- Out-of-Phase Loading
- Random Vibration
- Heat Transfer Solutions

Please see the MSC FEA 2007 r1 Release Guide for more information on these new capabilities.

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