

Summary of New Features

- **New Program File Window**
 - Application programming interface
 - Macro recording, editing, debugging, and playback
- **CATIA V5 Direct Geometry Access**
- **Linear Contact**
- **Spot Weld Elements**
- **New Quad Meshing Option**
- **Graphics Enhancements**
- **Solver Enhancements**

More Information available via the web:

[Femap Home Page](#)

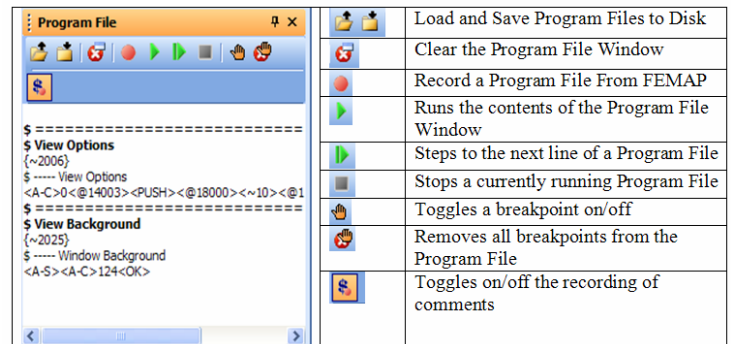
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Integrated BASIC API Programming Environment

The new Program File capability is hosted in its own Femap window and extends beyond the capabilities of Program Files in previous versions of Femap. User-defined macros can now be recorded, edited, debugged, and played back all within the Femap interface. Macros to automate repetitive modeling tasks for example, can now be created in an easy and straightforward manner. Once created, user Macros can be added to any Femap toolbar, providing powerful automation tools that are easy to use and deploy.



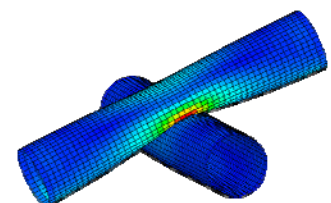
In addition to the macro-driven Program Files, Femap v9.1 adds a full-featured BASIC development environment in a separate window. Directly from Femap's user interface, you can now access the OLE/COM object-oriented FEMAP Application Programming Interface (API) that provides direct access to all Femap objects and functionality. The BASIC engine is fully OLE/COM compliant and can interface with Femap as well as any OLE/COM compliant program such as Word or Excel. Users can create custom programs that automate repetitive tasks, search model or results data, or programs that transfer model information to Word or Excel to create customized reports.

CATIA V5 Direct Geometry Interface

Femap can now access CATIA V5 geometry directly greatly facilitating the import of CATIA V5 CAD data. This capability will appear as an add-on module to the standard product configuration.

Linear Contact

New in v9.1 and NX Nastran 4 is a surface to surface contact capability for models that would otherwise exhibit linear behavior. Contact, previously requiring a nonlinear analysis approach, can now be performed quickly and efficiently within a linear solution for those problems where contact is the only nonlinearity.



Spot Weld Element Support

Spot weld elements used to represent spot weld fasteners in the assembly of sheet metal parts, are now supported by Femap v9.1. The spot weld, with associated properties, is a completely new element type in the Femap element library.

New Quad Meshing Option

A new quad meshing option that ensures the placement of regular well-shaped quadrilateral elements around stress raisers and critical boundaries is now available in Femap 9.1. Typically in such areas, stress gradients are very high, so it is essential that the element mesh contains regular well shaped elements for maximum accuracy and consistency.



Graphics Enhancements

Bitmap Backgrounds

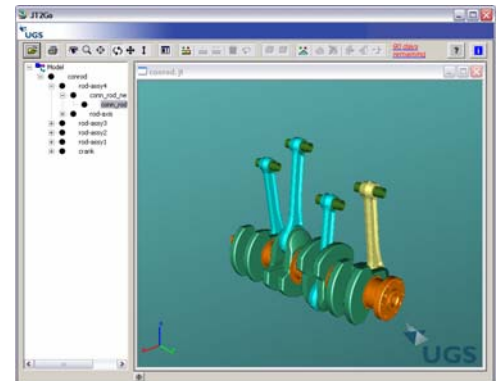
You can now apply an image as the background to the graphics area.

Embedded Logos

You can now embed your company logo to add professionalism to images created for results reports.

JT File Output

Version 9.1 will support output of JT type visualization files.



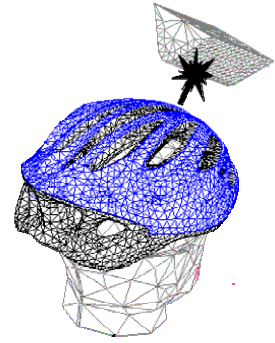
FEMAP with NX Nastran Solver Enhancements

NX Nastran 4 brings many enhancements and improvements that will benefit users of Femap with NX Nastran.

Advanced Nonlinear

The nonlinear material library has been expanded to add more hyperelastic material models, and more nonlinear element models have been added. Also, improved solution algorithms add robustness and increase efficiency of the solution.

A new explicit time integration approach has been added to the Advanced Nonlinear module that allows analysis of short duration, high velocity impact analyses.



Performance Improvements

Extensions to Hierarchic Distributed Memory Parallel (HDMP) solver – Improvements in distributed parallel solutions have greatly increased the performance for large complex models and now support dynamic response analyses. NX Nastran can solve a very large product performance simulation leveraging parallel processing with up to 64 computers. This can translate to major productivity improvements compared to competitive solvers.

Memory management improvement – NX Nastran 4 memory handling has been re-architected, dramatically increasing the amount of RAM that can be accessed to more than a million terabytes. Memory needs are now only limited by hardware systems. This will significantly improve the overall performance of large-solve scenarios and make possible solutions of large models that could not be performed previously.

Lanczos Eigensolver performance improvement – Improvements to the standard Lanczos Eigensolver can enable 15-25% reductions in solution times for large shell element dominant models.

Miscellaneous Solver Enhancements

More accurate thermal load calculations for composite materials are now possible with the addition of composite material temperature dependency.

Curved beam enhancements add ASME boiler and pressure vessel code requirements that are widely used in the nuclear, power generation and chemical industries.

Analysis Program Updates

Femap supports the following solvers:

NX Nastran 4

Abaqus 6.5

MSC.Marc 2005

MSC.Nastran 2005

NEiNastran 8.4

ANSYS 9.0