

MSC Software Announces the All New Marc

All-new user interface with powerful features for nonlinear contact, fracture mechanics, composites, and electromagnetic simulations

SANTA ANA, CA--(Marketwire – October 3rd, 2011) – MSC Software Corporation, the leader in multidiscipline simulation solutions that accelerate product innovation, today announced the [All New Marc](#). The new 2011 release of Marc is easier, smarter, and faster; enabling engineers new to nonlinear analysis achieve faster productivity, while providing a host of new features that longtime Marc users are extremely excited about.

Easier User Interface and Model Setup

Marc's all-new user interface combined with improved CAD interoperability and meshing features makes it easier for engineers to create Finite Element Analysis (FEA) models and quickly learn the software program. The new product is designed to provide users with an intuitive interface that improves users experience through:

- Easier model navigation
- Easy to use menu organization
- Native CAD import and faster, improved meshing
- Easily Customizable

Instant benefits are delivered to both new and current users including increased productivity, shorter learning curves and faster FEA model setup. Customers new to nonlinear FEA will be delighted with how easy it is to set up contact problems in Marc compared to other nonlinear products.

“We run models of heavy machine parts and assemblies that require large meshes. The improved meshing capabilities and performance enhancements are excellent and will help us improve our throughput,” said Mike Smith, Director, PJH Engineering Solutions Ltd.

Smarter Contact Setup and Analysis

The All New Marc enables smarter setup of nonlinear contact problems including expanded segment-to-segment contact for large deformation analysis, along with other contact enhancements. The segment-to-segment method provides smoother contact stresses and has been enhanced to support directional friction, improving accuracy for engineers.

For multi-physics analyses like heat transfer and electrostatics, the 2011 release enables engineers to utilize a “perfect” glue approach for thermal or other type of contact between bodies. In coupled multi-physics analyses, the “perfect” glue condition can be selected on a pass-by-pass basis. For example, in a coupled thermal/mechanical analysis, it may be desirable to have touching conditions in the mechanical pass (so relative sliding is still possible), but glued conditions in the thermal pass simulating perfect heat conduction in the contact area.

Smarter Fracture Mechanics and Composites Analysis

The Marc 2011 release has several improvements for fracture mechanics and crack propagation including enhanced Virtual Crack Closure Technique (VCCT) and newly implemented Lorenzi method. Crack propagation has been improved both with respect to the physics of the crack motion, and also with respect to flexibility of usage.

In addition to the previous crack propagation methods based on remeshing, constraint release and splitting along element edges, this release offers a new method based on a cut through the element and is available for shells, 2D and axisymmetric elements. In addition, crack bifurcation capability is also implemented which enables engineers to analyze the effects of reinforcing members such as struts and spars on crack growth.

From a composites analysis standpoint, the 2011 release allows engineers to achieve a more accurate prediction of failure through a new Strain Invariant Failure Technique (SIFT), which is based upon the introduction of an amplified strain and examination of the invariants of these amplified strains. Composites simulations result in a massive amount of data, especially when there are a large number of plies in the material. To facilitate the evaluation of the results, new post codes have been added which will result in the maximum and/or minimum quantities through the thickness to be placed on the post file.

Several new electromagnetic tetrahedral and triangular elements are also available in this release for performing both harmonic and transient electromagnetic simulations. These elements may also be used in induction heating simulations. This makes it easier to work with complex geometry and meshes.

Faster Nonlinear Simulations

Marc 2011 offers enhanced solvers for parallel processing that enable faster simulations and significant improvements in computational performance. Out-of-core implementation of Pardiso solver has been shown to perform nearly as well as in-core solver. This would help engineers run larger models and take advantage of high performance processing at no additional cost.

“A much better, faster and more efficient solver, especially for larger deformation nonlinear analysis,” said Kris Venkatesan, Design Engineer, DTR VMS, Ltd. “Another significant step forward.”

To watch a video about the All New Marc 2011, please visit <http://www.mscsoftware.com/Products/CAE-Tools/Marc.aspx>

To register for the upcoming October 18th “What’s New in Marc 2011” webcast, please visit <http://pages.mscsoftware.com/WhatsNewinMarc2011.html>

The Marc 2011 release will be available for customers to download later in October.

About MSC Software

MSC Software is [one of the ten original software companies](#) and the leader in multidiscipline simulation. As a trusted partner, MSC Software helps companies improve quality, save time and reduce costs associated with design and test of manufactured products. Academic institutions, researchers, and students employ MSC technology to expand individual knowledge as well as expand the horizon of simulation. MSC Software employs over 1,000 professionals in 20 countries. For additional information about MSC Software’s products and services, please visit: www.mscsoftware.com.

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