

## MSC.Software Releases MD Nastran 2010

**Comprehensive nonlinear, expanded physics, multimodel optimization and breakthrough performance**

SANTA ANA, CA--(Marketwire – July 26, 2010) - MSC.Software, the leader in [multidiscipline simulation](#) solutions that accelerate product innovation, today announced that **MD Nastran 2010** is released and ready for download.

With this release, engineers can rely on MD Nastran for problems they couldn't before – such as advanced nonlinear analysis, bi-directional thermo-mechanical coupling and expanded physics simulations including co-simulation with CFD codes, and multi-model optimizations, with ground-breaking solver performance improvements!

[MD Nastran](#) enables and encourages analysts to expand beyond the traditional isolated discipline analysis to simulate more real world behaviors with a single solver.

### **Comprehensive Nonlinear – Superior Linear and Nonlinear Analysis in a Single FE Solver**

This release of MD Nastran delivers robust [nonlinear capabilities](#) allowing engineers to use a single FE solver for advanced linear and nonlinear simulations. Benefits to users include:

- Automatic Bolt Analysis – easier and more accurate assembly modeling through better control of preload and improved results with continuous contact.
- Contact Enhancements – more accurate contact stresses and better stress continuity with segment-to-segment algorithm, and improved [thermal analysis](#) results with thermal contact for true contact or near contact between dissimilar meshes.
- Thermal-Mechanical Analysis – improved accuracy through thermal-mechanical coupling, helping users solve new classes of problems involving heat generation due to mechanical work loss, including brake pad heating, road-tire contact and manufacturing operations.
- Nonlinear Adaptive Time Stepping – reduced run times and easier setup with new time stepping scheme.

*“We are looking forward to using a single model in MD Nastran 2010 for both our linear and nonlinear car body analysis needs in our next vehicle program,”* said Helene Detable, Specialist in Mechanics, PSA Peugeot Citroen.

**Expanded Physics to Simulate Real World Design Behaviors**

This release of MD Nastran expands the range of physics that engineers can model, providing more accurate representations of design behaviors and helping accelerate product innovation.

Enhancements and new capabilities in this release include:

- Advanced Thermal Capabilities with RC Network Solver – Benefit from industry leading thermal capabilities of MSC SINDA from within MD Nastran for accurate thermal results
- Co-simulation with CFD – obtain more accurate structural and fluid analysis results through co-simulation of MD Nastran with 3<sup>rd</sup> party of CFD codes
- Explicit and FSI Enhancements - DMP for Explicit FSI Applications provides the fastest explicit simulation solver on market
- NVH and Dynamics Enhancements – better integration with test data now available with new capabilities to include test based FRF parts to the FRF and FBA functionality

### **Multi-Model Optimization – Combine Multiple Models in Single Optimization Run**

MD Nastran 2010 provides the exciting capability of [Multi-Model Optimization](#) to enable users to perform design optimization when the design conditions are produced by two or more MD Nastran design models. This gives engineers ability to optimize designs by considering all disciplines in single optimization run rather than merging separate run augmenting the value of MD Nastran as a multidisciplinary solver.

### **Performance & Robustness**

Several new computational tools and procedures implemented for linear and nonlinear contact analyses result in improved performance raising user productivity.

- The Pardiso and MUMPS solvers for parallel and multithreaded processing implemented for Linux and Windows machines enables users take full advantage of their multi-core systems without added cost.
- Distributed memory parallel (DMP) solvers are also introduced into MD Nastran nonlinear solutions enabling users to solve larger models in less time.
- UMFPACK solver implemented for complex Lanczos eigen value extraction for improved efficiency. For example, a model of approximately 190,000 DOF resulted in 50% speed up for extraction of 100 complex eigen values.
- DMP support extended to include multi-material FSI problems resulting in dramatic performance improvements for this class of problems. For example, a landmine blast model with about 1 million elements, shows a speed up of 250% on a 4-CPU Linux8664 system, while it shows nearly 900% speed up with 32-cores.

*“This new release of MD Nastran takes a giant leap forward in the area of cutting edge simulation capabilities for robust nonlinear and coupled physics analyses,”* said Sanjay Choudhry, VP Product & Release Management at MSC.Software. *“Together with huge improvements in the parallel direct*

*solver scalability and performance, MD Nastran 2010 now offers a unified environment for both linear and nonlinear analysis of both parts as well as large, complex systems. This is expected to result in improved accuracy and huge productivity gains for customers doing both types of analyses routinely. Support in SimXpert 2010 adds a new dimension to the ease-of-use of these capabilities. Continued major enhancements in MD Nastran's traditional areas of strength of noise & vibration and optimization will provide significant value to our Aerospace and Automotive customers."*

For more information about new features in MD Nastran 2010, listen to the **On-Demand webinar** at <http://www.mscsoftware.com/events/Webcasts/MDNastran/WhatsNew2010/>

### **About MSC.Software**

MSC.Software is a global leader of multidiscipline simulation solutions that help companies improve quality, save time and reduce costs associated with designing and testing manufactured products. MSC.Software works with thousands of companies worldwide to develop better products faster with simulation technology, software, and services. MSC.Software employs 1,000 people in 23 countries. For additional information about MSC.Software's products and services, please visit [www.mscsoftware.com](http://www.mscsoftware.com).

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