ATA news

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Coming Soon: Rotorcraft Blade Aeroelasticity in STAR-CCM+ 2206

DETAILS INSIDE

Femap Symposia Roundup and Future Plans

The Spring 2022 Femap Symposia have come and gone, and ATA Engineering is thankful to have had the opportunity to present at the Huntsville event and host in San Diego at our corporate headquarters. Feature presentations included an overview of the new capabilities in recent Femap releases (learn more on Page 3) and deep dives into the new meshing workflows and kinematic joints introduced in Femap 2022.1. In addition, ATA gave a presentation on Python application programming interfaces (APIs) and highlighted two advanced applications of the Femap API: Liftship and Vibrata. The events concluded with the ever-popular Femap Developer Roundtable discussions.

If you were unable to attend any of the events this spring, we have good news! Based on the turnout and positive feedback, ATA and Siemens are in the early planning stages for another Femap Symposium this fall in Denver, Colorado, likely in mid-September. We'll make an announcement when more details are available, and we hope to see you there!

inside:

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Coming Soon: Rotorcraft Blade Aeroelasticity in STAR-CCM+ 2206

Applications such as helicopters, advanced mobile vehicles, and wind turbines heavily rely on accurate prediction of complex interactions between aerodynamic forces and structural responses of their rotating blades. The state of the art in the rotorcraft industry is to utilize computational fluid dynamics (CFD) methods coupled with computational structural dynamics (CSD) codes to predict performance, rotor loads, and vibration. Siemens' upcoming release of STAR-CCM+ 2206, the successor to version 2022.1, will be the first to offer a fully automated high-fidelity rotor-blade aeroelasticity workflow with rotor CFD/CSD coupling.

The rotorcraft blade aeroelasticity capability in Simcenter STAR-CCM+ provides file-based co-simulation with rotorcraft industry-standard finite-element-based multibody structural dynamics tools such as RCAS, FLIGHTLAB, CAMRAD II, and Dymore. In this workflow, STAR-CCM+ computes the aerodynamic forces and moments on the blade based on the elastic blade deformation and rotor trim provided by the structural dynamics solver. In turn, the structural dynamics solver computes the new blade deformations under the new aerodynamic loading, and the co-simulation iterates until the overall system is converged for both the structure and flow.

Learn more about this exciting capability in the upcoming STAR-CCM+ 2206 release from the Simcenter Blog.

Calendar of Events

UPCOMING TRAINING CLASSES

ATA provides comprehensive training in the use of Femap, Simcenter 3D (formerly NX CAE), and Simcenter Nastran (formerly NX Nastran). Upcoming training classes are shown below. Please visit our website to sign up for these classes or request a custom class.

In-person classes have now resumed.

FEMAP

AUG 02 **Introduction to Femap**

TBA **Advanced Femap**

SIMCENTER NASTRAN WITH FEMAP

JUL 18 **Multi-Step Nonlinear with Solutions 401 and 402 with Femap for Pre/Post**

AUG 09 **Introduction to Finite Element Analysis with Femap for Pre/Post**

SEP 20 **Introduction to Dynamic Analysis with Femap for Pre/Post**

OCT 04 **Advanced Dynamic Analysis with Femap for Pre/Post**

SIMCENTER NASTRAN WITH SIMCENTER 3D

JUL 18 **Multi-Step Nonlinear with Solutions 401 and 402 with Simcenter 3D for Pre/Post**

AUG 09 **Introduction to Finite Element Analysis with Simcenter 3D for Pre/Post**

SEP 13 **Response Dynamics**

SEP 20 **Introduction to Dynamic Analysis with Simcenter 3D for Pre/Post**

OCT 04 **Advanced Dynamic Analysis with Simcenter 3D for Pre/Post**

WEBINARS

JUN 30 **System Simulation for Optimization of Heavy Equipment Design**

This live webinar will highlight how system simulation with Simcenter Amesim empowers your team to understand and optimize new design concepts at any point in the design cycle.

ATA also provides a host of free training resources including tutorials, videos, and whitepapers.

Tips and Tricks

NASTRAN: MODACC, 1 PARAMETER FOR ENFORCED DISPLACEMENT SIMULATION WITH SEISMIC MASS

When performing an enforced motion simulation using Nastran modal frequency response (SOL III), there are two approaches that are widely used: the SPCD approach and the seismic mass approach. Generally these two approaches agree well with one another. However, if the local flexibility of the SUPORTi degrees of freedom (DOFs) is not accounted for, the seismic mass approach may diverge from the SPCD approach and provide incorrect response output in the vicinity of the enforced motion degree of freedom.

Fortunately, there is a Nastran parameter than can correct for this effect. When PARAM,MODACC,I is used in conjunction with SUPORTi entries defined at the seismic mass DOFs, the local flexibility at the SUPORTi DOFs is automatically corrected for in Nastran, yielding responses that are in excellent agreement with the SPCD approach.

FEMAP: MESH CONTROL EXPLORER

Femap's Mesh Control Explorer, introduced recently with the release of version 2021.1, offers users a convenient way to specify mesh propagation options, visualize surfaces with assigned meshing approaches or linked for solid meshing, and determine whether curves are or can be paired during mesh sizing. Users can also quickly create imprints where curves and surfaces intersect.

Learn more and see the Mesh Control Explorer in action in this short video. In addition, the Femap documentation goes into great detail describing the various options and capabilities available in the Mesh Control Explorer.

New Resources

Organizing Your Models with Femap Groups

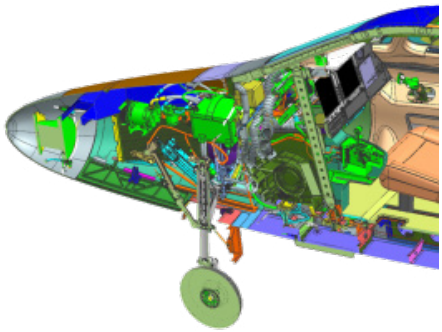
Femap's group functionality allows the user to segment models into smaller, more manageable, discrete pieces. This webinar gives an overview of best practices for using groups within Femap and highlights a number of useful APIs.

Multiphysics Simulation of Medical Devices for FDA Compliance

This webinar highlights how product developers can leverage advanced modeling and simulation to reduce costs, accelerate the regulatory approval process, and improve patient outcomes.

Engineering for Electromagnetic Compatibility in Aerospace and Defense Electronics

Simcenter 3D High-Frequency Electromagnetics is used for studying and mitigating concerns for electromagnetic interference and compatibility (EMI/EMC), radar integration, antenna and antenna array design, transmitters, receivers, and much more. This webinar briefly explains low-frequency vs. high-frequency electromagnetics and the kinds of systems where EMI/EMC concerns are most important. Different analysis means and methods are described, followed by a demonstration of EMC analysis for a UAV, including its wiring harness.



Recent News

Siemens Releases Femap 2022.2

Femap 2022.2 is now available and is packed with new features and enhancements. This release is the first to be compatible with Xcelerator Share, Siemens' next-generation cloud-based collaboration solution, which enables users to instantly, securely, and easily collaborate with colleagues, partners, and customers. Also with this release, the Model, Layup menu has been replaced with the Model, Laminates menu, which offers enhanced functionality to streamline the creation and editing of complex composite layups, and the MultiLayup Editor tool allows users to edit multiple layups while their compositions are shown side by side. Support for Nastran element monitor points and aeroelastic dynamic frequency, transient, and random response solutions has been added, and Femap Neutral Output files offer a more efficient way to import and attach results or share results and optionally mesh entities with others.

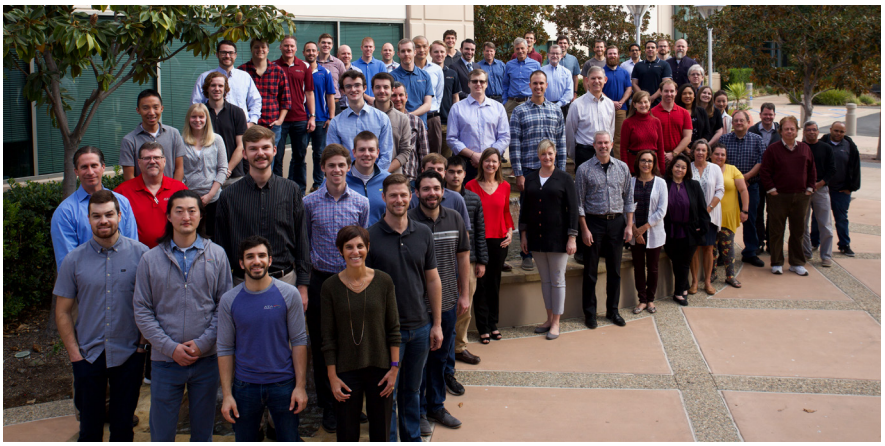
ATA has compiled a YouTube playlist that highlights these exciting new features, and the Femap team released a launch premier video with additional details and demonstrations.

Siemens Releases NX 2206 Series

Siemens has just released NX 2206, the successor to the NX 2007 series of releases. Highlights include new feature templates, enhancements to Sketch and Algorithmic Modeling, and more. See what's new with the NX Design blog, and set your reminder now to join the Siemens team for the launch premier on Tuesday, June 21, at 11:00 a.m. ET.

ATA Engineering Releases IMAT v7.9.0

IMAT and IMAT4XL v7.9.0 include a number of minor new features, including a new example function *component_meff_mass* that computes the modal effective mass for portions of a FEM. Support is added for Abaqus 2022, and there are a number of enhancements to *readnas*, including the ability to import 64-bit OP2 results. Learn more here.



Why choose **ATA?**

ATA Engineering is a nationwide provider of innovative, high-value, test- and analysis-driven mechanical engineering design solutions.

With more than four decades of experience working with our customers to solve the most challenging design, test, and analysis problems, we have gained a reputation for excellence in the engineering community.

Our work on a wide range of products across a broad spread of industries has been recognized with numerous technical and service awards for excellence. This expertise and support is a key part of the added value we offer to all customers who purchase Siemens products from us, whether you are an independent contractor or a large engineering team. To provide best-in-class support to our VAR software customers, we have established a formal hotline system that provides on-demand support to resolve technical issues encountered by our customers in their implementation of the tools.

The hotline is staffed by experienced engineers, all of whom use these applications on a regular basis. ATA is also the Siemens preferred training provider and official developer of courseware for all Simcenter Nastran training.

ATA Technical Support

Need technical assistance? Call our hotline staffed by engineers at **877-282-4223**, or visit us online. Even if you're not a current ATA customer, try us out for free.

Free Software Trials

Contact us for more information about free trials/demos of Femap and Simcenter Nastran, NX CAD and CAM, Simcenter 3D, Simcenter STAR-CCM+, Teamcenter, and Solid Edge.

Featured Instructor

Tim Palmer, Ph.D.

Dr. Palmer is a senior project engineer at ATA's headquarters in San Diego, with expertise in fluid dynamic and thermal analysis, particularly the areas of turbomachinery, propulsion, and power generation/energy systems. In his nearly 8 years with ATA, Dr. Palmer has supported commercial and government customers in industries including aerospace, military, marine, themed entertainment, and industrial manufacturing, and he has participated in a number of ATA's small business innovation research projects. He frequently performs computational fluid dynamics and conjugate heat transfer simulations of aerospace and mechanical systems and components to aid in analysis-driven design projects.

As a dedicated support engineer for ATA's STAR-CCM+ customers over the past 4 years, Dr. Palmer has assisted with support inquiries from general mechanical and aerospace applications to specialized problems for turbomachinery and marine applications.

Dr. Palmer received his bachelor's degree in mechanical and aerospace engineering from the University of California San Diego and earned his master's degree and Ph.D. in mechanical engineering, with focuses in turbomachinery and nuclear energy, at the Massachusetts Institute of Technology.

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ATA Engineering, Inc., is recognized as a Smart Expert Partner with validated expertise in Femap, Simcenter 3D, and STAR-CCM+.

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