Software

Vibrata™ | A Comprehensive Toolkit for Advanced Modal Dynamic Analysis

Vibrata

Overview

What it is:

Vibrata is a comprehensive structural dynamics application that utilizes Femap® and optionally MATLAB® to predict stress, deflection, and other responses to transient, harmonic, random, and response spectrum excitation and makes it easy to define, solve, and display results for both simple and advanced dynamics problems.

How it works:

Vibrata uses the results of a finite element normal modes analysis to compute forced dynamic responses in the modal domain and lets you review the physical responses graphically for fast, efficient analyses. It uses its own database to store the normal and constraint mode inputs to the solvers, and Femap to store, view, and interact with the finite element model and results data. Vibrata natively supports both MSC and NX/Simcenter Nastran, and it is particularly suited to use with NX/Simcenter Nastran®. In addition, Vibrata can use data from any solver whose results can be exported to Output2 format.

How it can help you:

Vibrata's unique features offer an outstanding combination of capability and versatility beyond what can be done directly within Femap or Nastran to quickly set up, solve, understand, and iterate on your design to fix dynamics problems. A thoughtfully devised graphical user interface lets you focus on the engineering physics rather than data input and management issues, while customization capabilities keep you in control of your process. Vibrata also boosts your productivity by streamlining repetitive tasks.

Visualization That Enlightens

Look at the numbers in a whole new way. Vibrata gives you visualization, animation, and interactivity options to simplify even the most complex analysis tasks.

➤ Develop a clearer picture with multiple visualization options. Vibrata lets you recover physical responses at any or all physical DOFs as XY functions or field contours.

➤ Get instant feedback with interactivity options, screen-pick nodes and elements for load application and data recovery, and interactively select data to plot or animate.

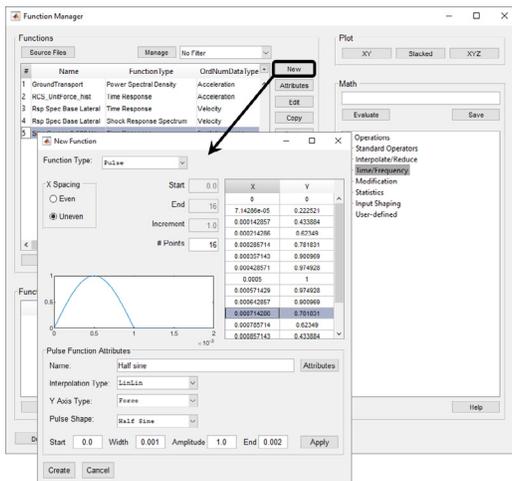➤ Gain valuable insights with animations of input mode shapes and response field data.
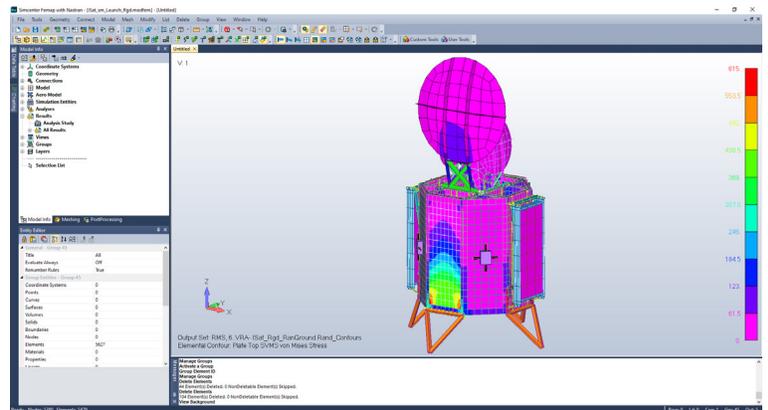
➤ Contour plots and animations help to visualize and comprehend results.
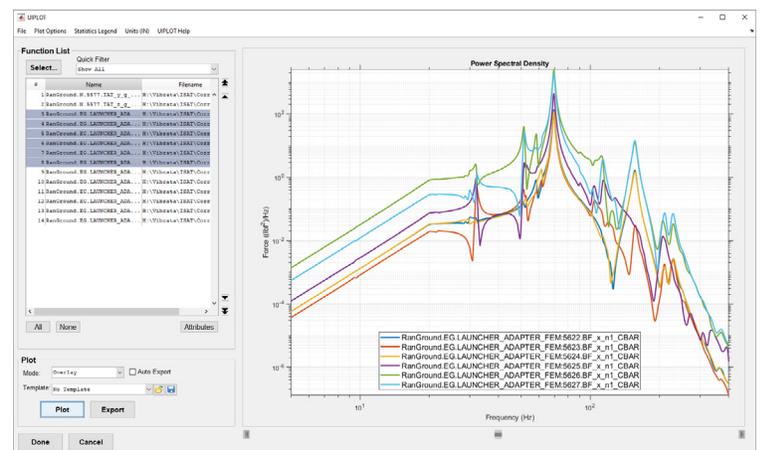
➤ Advanced XY plotting capabilities allow full interrogation of quantitative data.

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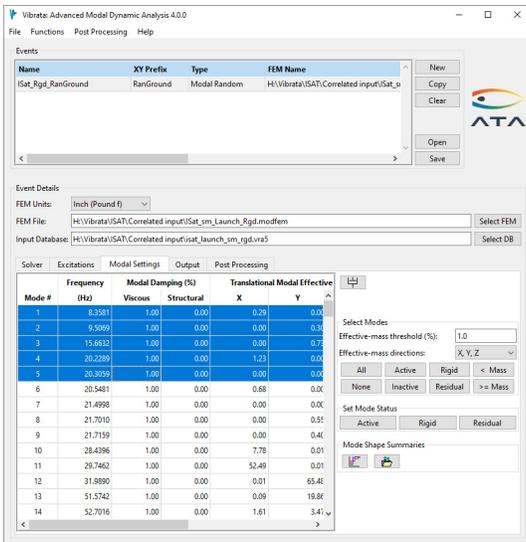
➤ All event information is displayed in a clear and easy-to-use interface.

➤ Vibrata's function manager provides a powerful interface for creating excitation functions and performing extensive math operations on functions.

Supported Platforms

Vibrata™ v4.0 is supported on the Windows 10 platform. Vibrata requires Femap v11.3.x through 2021.2.x. Vibrata needs the MATLAB MCR run-time libraries to run without a MATLAB license. To run custom solvers, Vibrata needs MATLAB and supports versions R2018b through R2021b. Vibrata is compatible with MSC.Nastran v2001 or later and all versions of Siemens NX/Simcenter Nastran. Some Vibrata features may require a DMAP license if you are running NX Nastran 7 or earlier.

About ATA

ATA Engineering has more than forty years of experience in structural dynamics analysis and testing and is a world leader in test-analysis correlation and model updating. For more information, please visit www.ata-e.com.

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Tools That Work the Way That's Best for You

You already have your own way of working. Vibrata's robust and powerful tools help you get the structural dynamics answers you need, all within a versatile infrastructure that you can readily adapt to your specific requirements. Keep doing what works for you—only faster and more easily.

➤ Create, modify, and manipulate input functions with Vibrata's Function Manager, a robust and comprehensive interface allowing you to create and perform sophisticated mathematical operations on your inputs before using them for your analysis.

➤ Get more accurate stress results with fewer modes. Vibrata takes full advantage of residual vectors and constraint modes from your eigensolution.

➤ Choose the tools that best suit your needs. If Vibrata's highly capable built-in solvers don't do exactly what you want, you can customize them or even create your own and incorporate them into Vibrata's standard user interface. With solvers written in the MATLAB language, customization is easier than you might expect. You will need a MATLAB installation for this capability.

➤ Use the built-in trilinear spring capability to model displacement limiting, spring stiffening, or stiffness removal, or customize the transient solver with your own nonlinear model. (You will need a MATLAB installation to use your own nonlinear model.)

➤ Simplify comparisons of finite element models to physical structures during operational testing. Vibrata lets you share excitation and response function data between test and analysis.

Processes That Increase Productivity

➤ Tedious rummaging and repetitive tasks can get between you and the real work you do. Vibrata gives you crucial tools to save time, effort, and resources.

➤ Don't waste time repeating calculations. Vibrata stores the modal domain responses and reuses them for any later physical response requests. If you review your initial requested responses and decide you need more, just ask for them.

➤ Speed up design iterations by reusing prior event definitions. Vibrata's event definition files are text files that are simple to modify so you can respond to design changes without completely rebuilding your event definitions for each new analysis. You can even generate new event files completely outside of Vibrata, which makes it easy to generate them in an automated fashion.

➤ Increase efficiency during trade studies by running multiple solutions sequentially with no user interaction with Vibrata's convenient batch mode.

➤ Save time and conserve memory by computing RMS quantities for random analysis directly, without computing response PSDs.

➤ Further customize your analysis by developing and automatically applying your own custom postprocessing after solving an event. (You will need a MATLAB installation for this capability.)

How Do I Learn More?

Visit our website to learn more about Vibrata:
http://www.ata-e.com/software/ata-software

Can I Get a Free Trial?

Experience all the benefits of Vibrata with a free 30-day trial license:
http://www.ata-e.com/trial-software-request