

# NX Design Simulation Wizards: Quickly evaluate stress and vibration

## NX CAE

### Benefits

- Obtain quick feedback on design performance with a guided process that works for non-expert CAE users
- Leverage and extend simulation work by sharing models and results with CAE analysts using NX Design Simulation and NX Advanced Simulation packages

### Summary

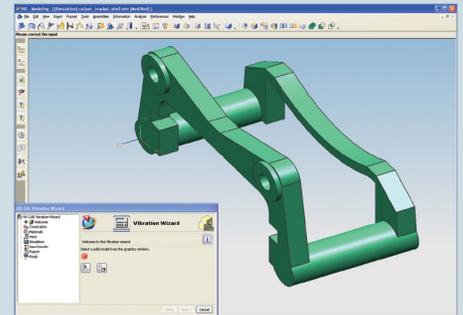
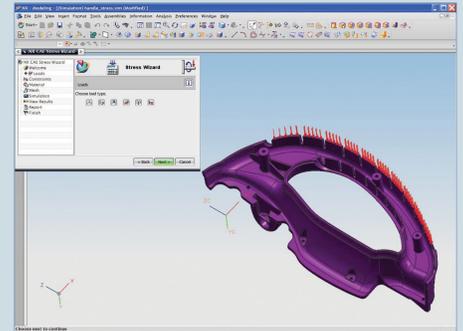
NX™ Design Simulation Wizards software for stress and vibration analyses are included with the core NX Design and NX Simulation packages. They enable designers to simulate the ability of solid components to withstand a wide variety of loading conditions and avoid undesirable vibration modes. Evaluating the structural and vibration performance of single body component parts is easy to do. To perform a simulation, designers drag and drop the Stress wizard or Vibration wizard icon directly onto their NX part and the wizard then guides them through the entire analysis process including the generation of a report.

### Basic functionality

With the NX Design Simulation wizards, design engineers are guided through basic analysis processes. For each solid body component, users are prompted to assign a material specification, constrain the part, apply a load, automatically mesh the 3D geometry, and run the analysis using NX Nastran® software. With the NX Stress Wizard, users can review the structural performance image to ensure that the yield strength (with safety factor) of the material is not exceeded. With the NX Vibration Wizard, users can explore the displacement shapes at fundamental frequencies of the component. With NX Simulation Process Studio, advanced users can easily extend these capabilities and build entirely new wizards that leverage company standards and industry best practices.

### Stress/vibration simulation

In order for any simulation to be effective it also needs to be quick and easy. NX Stress and Vibration wizards are designed to be fast and simple to use



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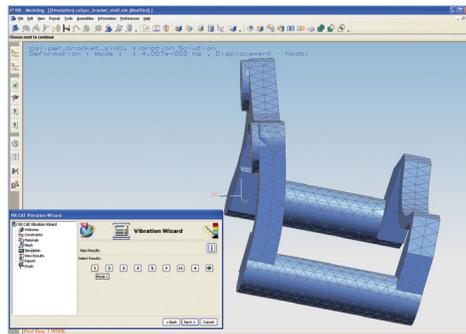
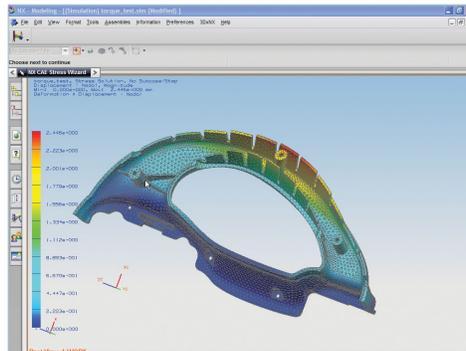
even for novice CAE users, thus bringing a new set of simulation possibilities to all users of the NX digital product development suite.

Developed with non-expert CAE users in mind, the wizards provide a perfect complement to NX Design Simulation and NX Advanced Simulation applications. Clear and concise guidance is provided throughout the process up to and including the creation of a web-based report. Simulations are directly available for more complex analysis and checking. This enables designers to benefit from the experience of advanced analysts, while ensuring that work does not need to be repeated and can be leveraged and extended throughout the organization.

To ensure confidence in results, accuracy of the solution is a prime consideration. With this in mind, these solutions are fully error checked and under control of the user. Meshing is automatic and completely adaptive to even the most complex model geometry. Furthermore, simulation confidence levels are graphically presented to the users, as part of the project report.

Designers launch the wizards from the Modeling application and work with the modeling part. When the chosen wizard is complete, the files remain loaded in the

NX session so that the user can extend or review the work using either the Design Simulation or Advanced Simulation applications.



Leveraging the same solver and analysis technology has far reaching cost benefits throughout your organization as solution times are minimized by the use of NX Nastran, one of the world's most capable and robust solvers.

Results display has been standardized using customizable templates to enable strength wizard users to rapidly review displacements, stresses, structural performance and answer quality. Vibration wizard users are able to view and animate the first five flexible mode shapes.

Printable simulation reports are available to distribute results as quickly and as easily as possible. Stress reports can include a wide variety of data and images such as model, displacement, stress, structural performance and answer quality. Vibration reports include the model and each of five modal displacement plots.

The Stress and Vibration wizards extend the accessibility of CAE solutions to designers and other users who traditionally have not used simulation technologies. NX Design Simulation Wizards, along with the NX Design Simulation and NX Advanced Simulation packages, represent a complete range of solutions that meet the needs of multiple users in the product development process while allowing each to share, leverage, and extend the work done by others.

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