



Autodesk® Nastran® In-CAD

The Challenge

- ▶ Ensure designs meet government, oil and customer standards
- ▶ End outsourcing of FEA work
- ▶ Reduce rework of parts that are oversized or fail under loading



MENTO

Design, build and manufacture superior equipment for the aggregate, concrete, recycle and asphalt industries.



Why Autodesk Nastran In-CAD

- ▶ Embedded solution with Autodesk Inventor
- ▶ Consistent look and feel of easy to learn interface
- ▶ Idealize geometry for bolted connections



MENTO

Design, build and manufacture superior equipment for the aggregate, concrete, recycle and asphalt industries.



Results

- ▶ More effective overall workflow with embedded products
- ▶ Quickly finished several products in less time due to less physical testing



MENTO

Design, build and manufacture superior equipment for the aggregate, concrete, recycle and asphalt industries.

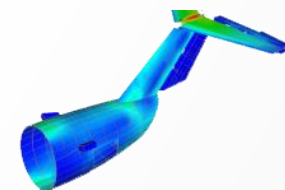


The Challenge

- ▶ Lightweight components to improve fuel consumption
- ▶ Reduce analysis cycle time



Cessna Aircraft – a revolution in
business aviation

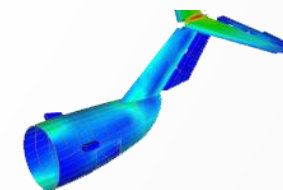


Why Autodesk Nastran

- ▶ Tension-only quad elements for model simplification
- ▶ Complete access to legacy data
- ▶ Superior technical support



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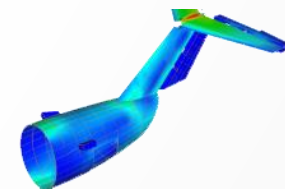


Results

- ▶ Eliminated redundant models and repetitive work functions
- ▶ Reduced analysis cycle time with model idealization

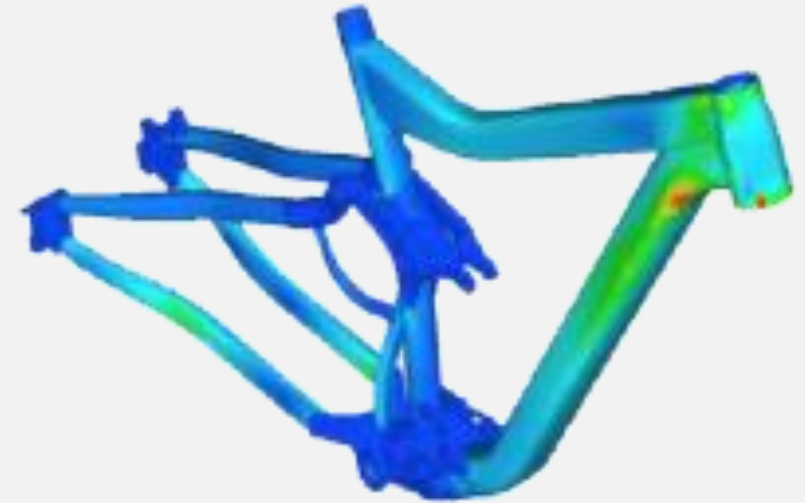


Cessna Aircraft – a revolution in
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The Challenge

- ▶ Optimize the stiffness and ride characteristics of the bike
- ▶ Minimize weight of frame and wheels

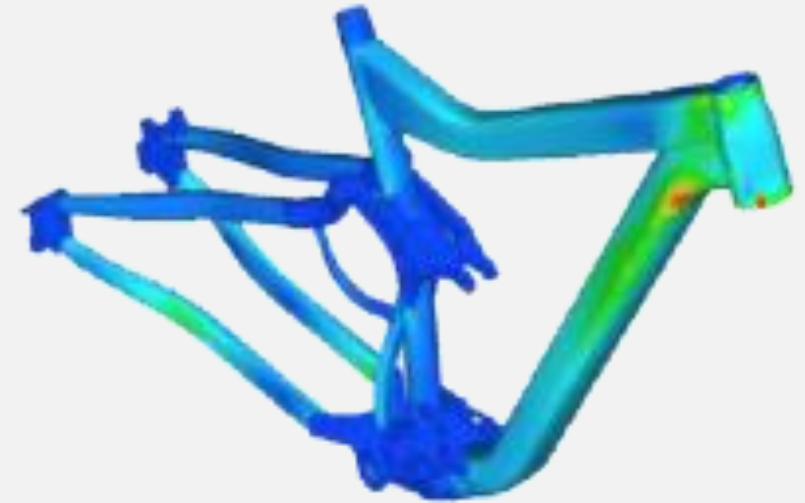


“100% commitment to a wheel size we believe in, to impeccable designs & exquisite ride quality.”



Why Autodesk Nastran

- ▶ Proven history and versatility of Nastran
- ▶ Ability for API programming
- ▶ All necessary analysis types in one package

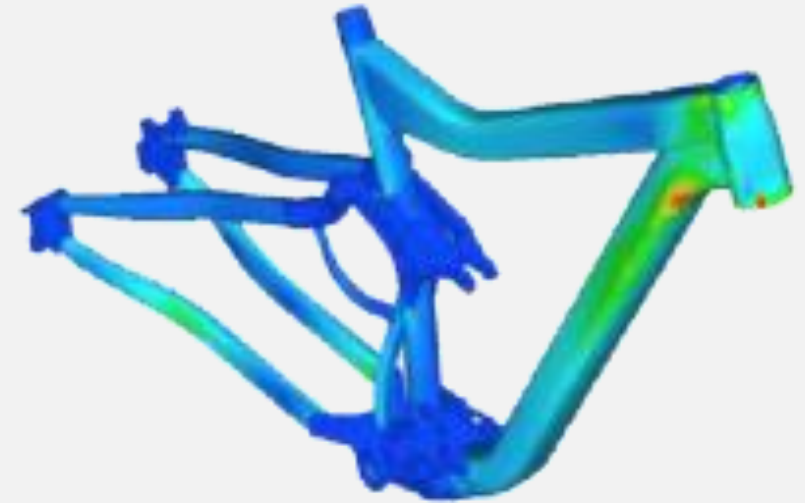


“100% commitment to a wheel size we believe in, to impeccable designs & exquisite ride quality.”



Results

- ▶ Each new bike has optimized stiffness
- ▶ Reduced weight by shaving grams off of each component

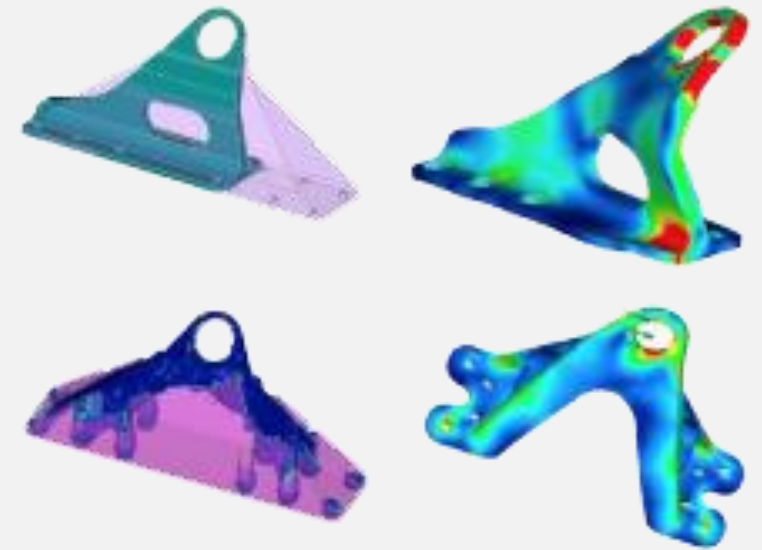


“100% commitment to a wheel size we believe in, to impeccable designs & exquisite ride quality.”



The Challenge

- ▶ Reduce weight of aircraft cabin brackets
- ▶ Test various materials for lightweighting and cost savings

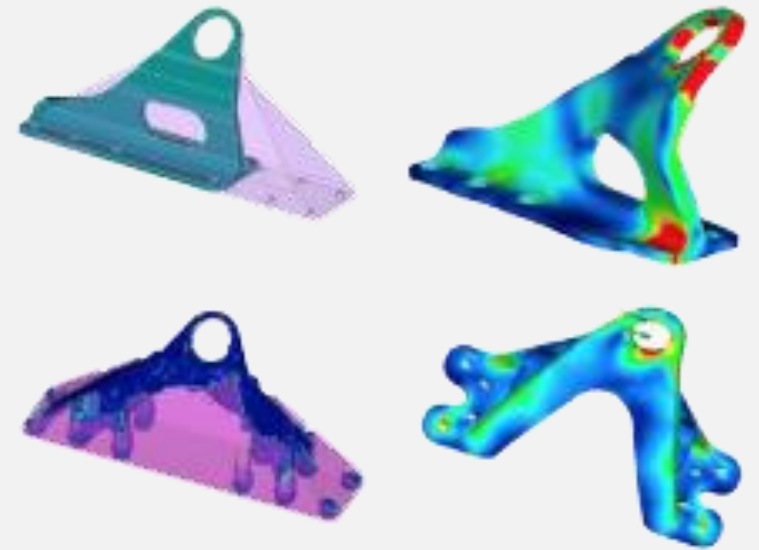


Smithson Engineering uses innovative techniques to weave practical physics into stronger and lighter products.



Why Autodesk Nastran

- ▶ Advanced nonlinear and composite testing
- ▶ Easily analyse various design setups with minimal rework

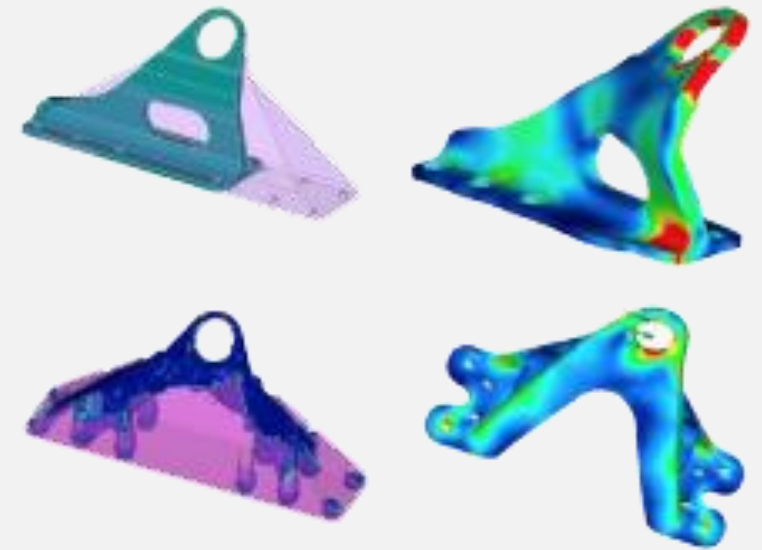


Smithson Engineering uses innovative techniques to weave practical physics into stronger and lighter products.



Results

- ▶ Reduced weight by 50% using a new design and different materials
- ▶ Cost savings of 400k on 200 sets of brackets

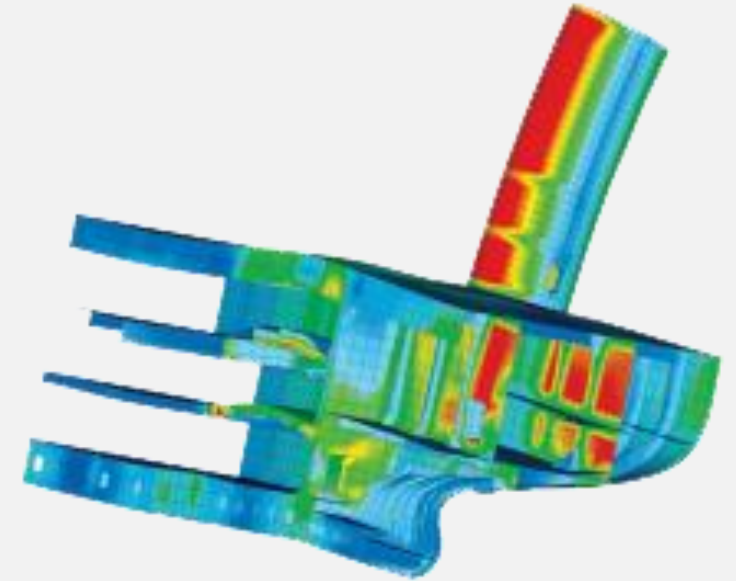


Smithson Engineering uses innovative techniques to weave practical physics into stronger and lighter products.



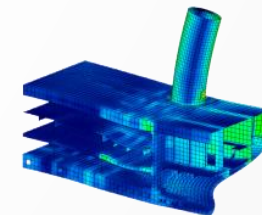
The Challenge

- ▶ Provide an efficient foundation without disrupting vessel arrangement
- ▶ Minimize the size of the structure
- ▶ Reduce the design time



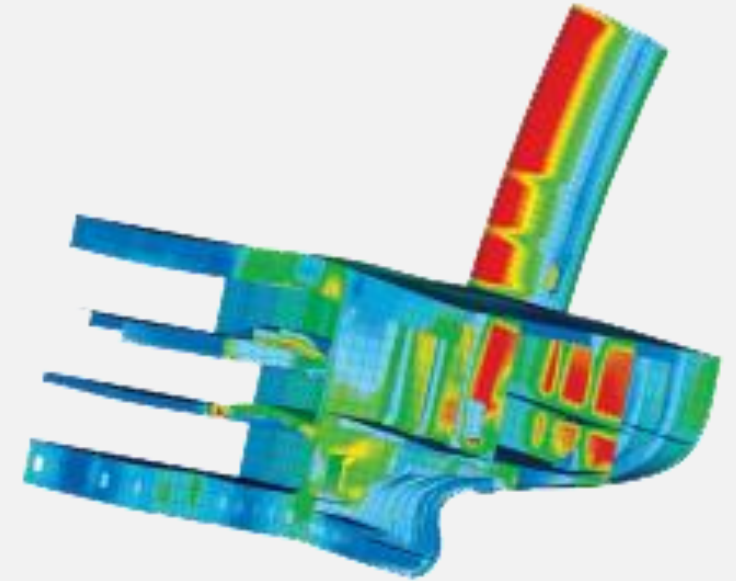
stx Canada/US Marine

STXM specializes in the development of advanced technology and its application to vessel designs for both commercial and military vessels.



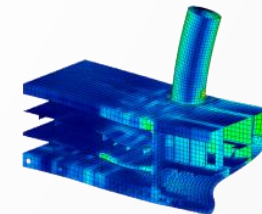
Why Autodesk Nastran

- ▶ Easy analysis of thin walled structures
- ▶ Stress and buckling analyses without rework



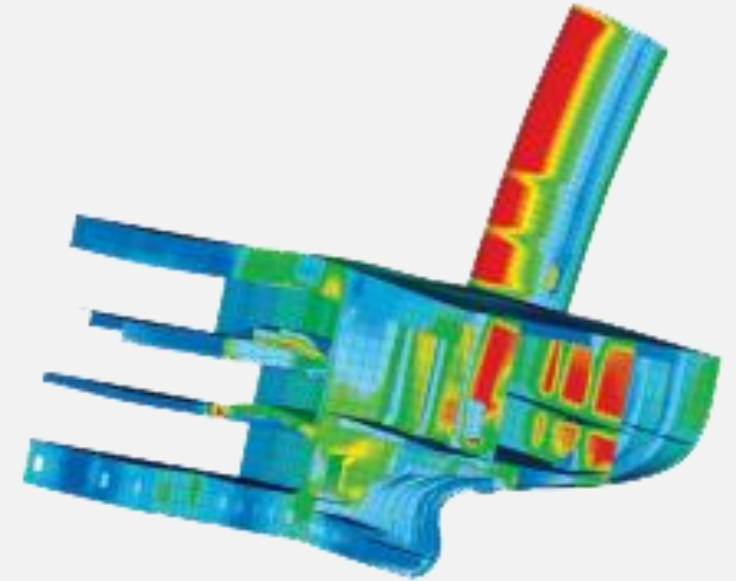
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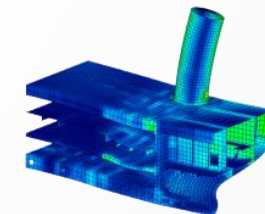
Results

- ▶ Minimized size of the crane structure
- ▶ Significantly reduced structure size, saving on manufacturing costs and time



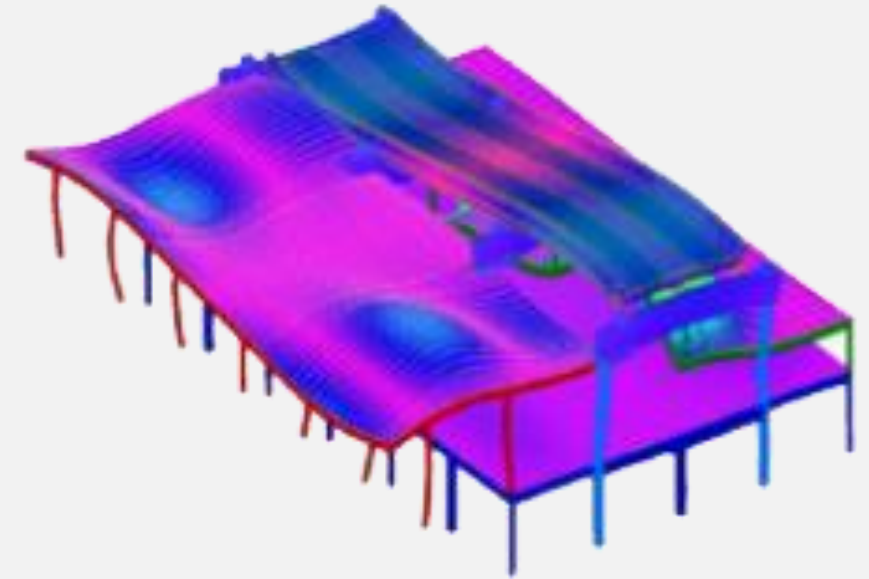
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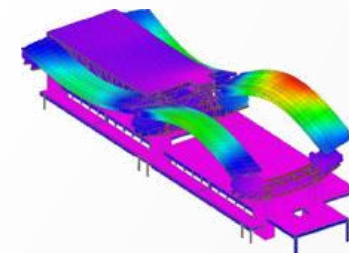


The Challenge

- ▶ Optimize design for vibrations of an automated people mover in a major airport
- ▶ Ensure that the movement of the APM doesn't disturb travelers

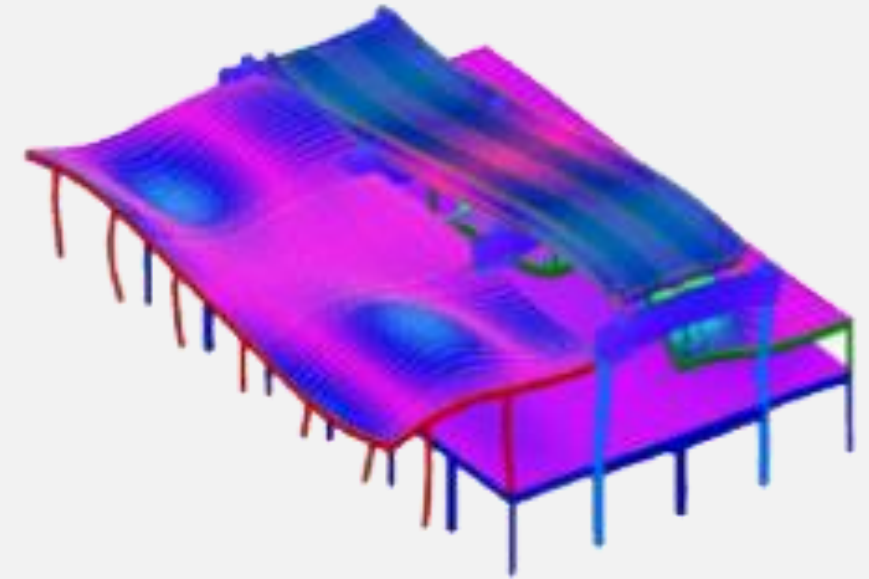


Wilson Ihrig & Associates has more than four decades of experience in all aspects of acoustics and noise and vibration control.

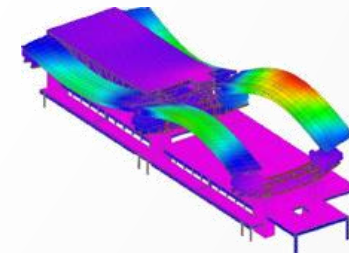


Why Autodesk Nastran

- ▶ Confidence that comes with the Nastran name and history
- ▶ Benchmarked analysis work matched previous testing results

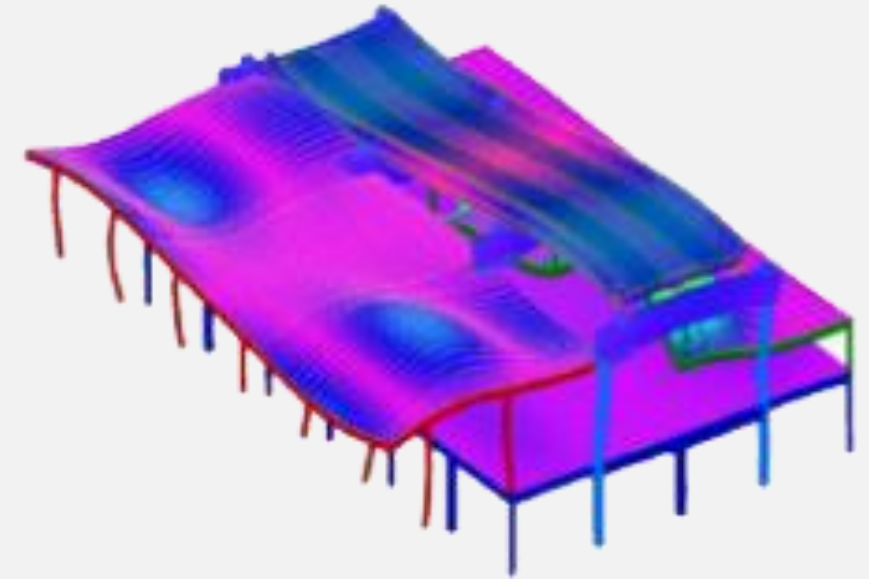


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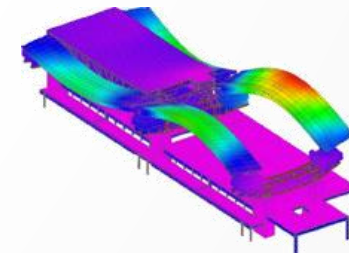


Results

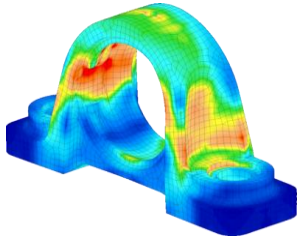
- ▶ Determined that vibration isolation was required for the new structure
- ▶ Avoided costly mistakes in manufacturing and design with upfront analysis



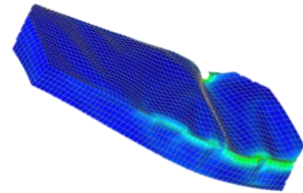
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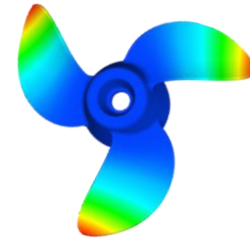
Linear Statics



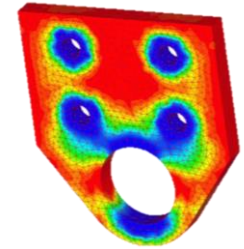
Buckling



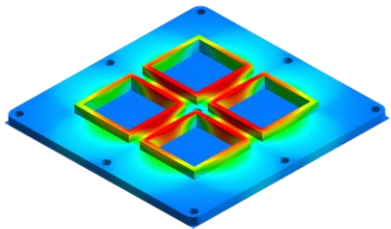
Normal Modes



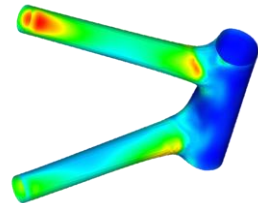
Prestress Static and
Normal Modes



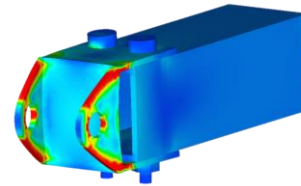
Linear Steady State
Heat Transfer



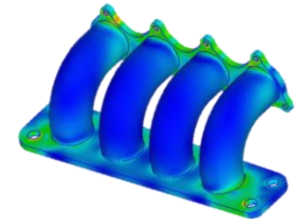
Composites



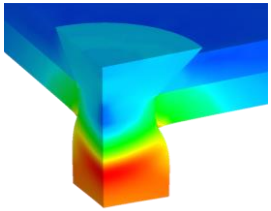
Assembly Modeling
with Contact



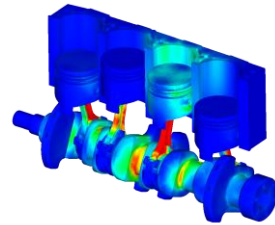
Thermal Stress



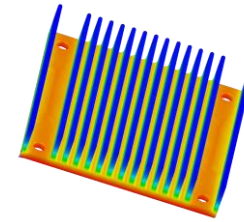
Nonlinear Statics



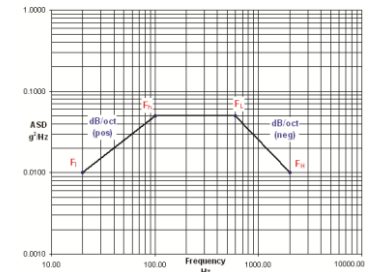
Nonlinear Transient Heat Transfer



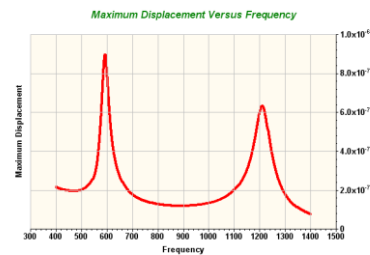
Nonlinear Steady State Heat Transfer



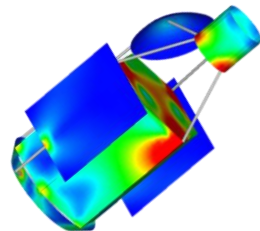
Random Response



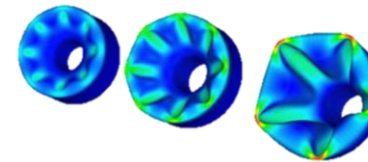
Frequency Response



Linear and Nonlinear Transient Response



Advanced Nonlinear and Hyperelastic Materials



Automated Impact Analysis (AIA) and Drop Test

