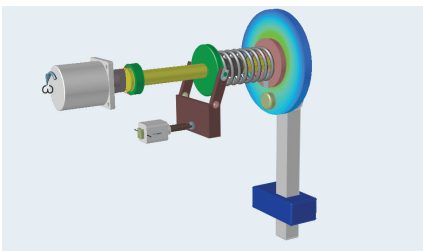


Product Highlights

- Topology, topography, gauge and lattice optimization
- Linear static and normal modes analysis
- Design for manufacturing with integrated shape controls
- Dynamic simulated motion analysis
- Quick feasibility check for manufacturing
- Highly intuitive user interface



Analysis and Optimization using loads generated by Assembly Level Motion Simulation



Lattice Optimization

Using industry leading Altair OptiStruct® technology, solidThinking® Inspire enhances traditional structural simulations by allowing engineers to check if a design will support the required loads. Inspire enhances this process by generating a new material layout within a package space using the loads as an input.

Benefits

Design Smarter

Easily perform “what if scenarios” with Inspire and modify package space, connections, load conditions and shape controls. Reviewing the resulting concepts often reveals valuable loading insights.

Design Lighter

Achieve greater cost savings as a result of reduced material and shipping costs with lighter designs. Inspire makes efficient use of material, only placing it where required to satisfy structural performance requirements.

Design Faster

Accelerate design cycles when you generate concepts that meet structural performance requirements at the beginning. Benefit from significant time savings over the traditional approach of design, validate, redesign to meet structural requirements.

Capabilities

Geometry Creation and Simplification

Create, modify, and de-feature solid models

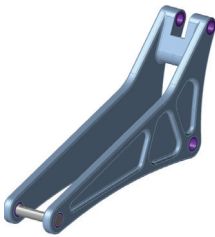
- Sketch Tools – Build or modify parts by sketching lines, rectangles, circles, and arcs.
- Trim/Break – Cut and remove sketch curves at the point of intersection.
- Push/Pull – Extrude flat or cylindrical faces to create solid parts or holes, modify dimensions.
- Defeature - Remove imprints, rounds, fillets, holes, and pockets, or plug holes and pockets, or create patches and bridges.

Optimization Options

Inspire offers a number of optimization options:

- Topology Optimization – Optimize the material layout within a user’s given design space based on loading conditions.
- Lattice Optimization – Visualize optimization results in 3D and export them to .STL format.

- Topography Optimization – Generate beads on the design space to stiffen the structure and maximize model frequency.
- Gauge optimization – Optimize thickness of a user’s design space for surface geometry. Combine Topography and Gauge Optimization to run both simultaneously.
- Optimization Objectives – Choose to maximize stiffness or minimize mass when running an optimization.
- Stress Constraints - A global stress constraint can be applied to limit the maximum stress in the model during optimization.
- Displacement Constraints – Displacement constraints can be applied to a model to limit deflections in desired locations and directions.
- Frequency Constraints – Help control the frequency at which an optimized part vibrates.



Sketch or Import a Part/Assembly



Defeature the Part



Assign Materials and Loads



Generate Ideal Shape



Confirm Performance (optional)



Refine Concept in CAD

Manufacturing and Shape Controls

Generate design concepts that are not only structurally efficient but also manufacturable using Inspire's shape controls:

- Symmetry Planes – Forces asymmetric design spaces to generate symmetric optimized shapes.
- Cyclic Repetition – Creates cyclically repeating shapes like propellers or wheels.
- Draw Directions – Generates shapes that can be easily molded or stamped by applying single or split draw directions.
- Extrusion Shape Control – Generates constant cross-section topologies in a specified direction.
- Bead Pattern – Helps meet specific design requirements such as stiffness when running a topography optimization on a surface.
- Overhang Shape Control – Generates constant cross-section topologies in a specified direction.

Interactive Results Visualization

Explore optimized shapes plus analyze results and motion simulation using a simple slider to add or remove material. Users can decide which features are important and

then pick the concept design best suited to their needs. Users can quickly compare various results to correct design decisions.

Assembly Configuration

Multiple assembly configurations can be created. These configurations can then be used to evaluate various design scenarios and the resulting concepts.

Motion Analysis

The motion tool allows users to mechanize their models and investigate system motion to predict loads for moving parts.

Motion analysis results for a part can be extracted for use in structural (FE) analysis and optimization. Peak loads will be automatically extracted from the motion simulation and used in analysis and optimization runs.

Manufacturing Feasibility Analysis

When designing metal parts that are casted or stamped, it is important to consider manufacturability early in the design phase. By using casting simulation in the concept phase, users can understand shrinkage percentage, temperature evolution, solid fraction and solidification times for the given geometry. With stamping feasibility analysis, users can view thinning percentage, formability and thickness results for the given geometry.

Part Instances

Parent-Child Instances – Individual parts can be copied and pasted as an instance. Whenever one is updated, the other is automatically updated as well. Instancing information can also be imported from CAD files.

Pattern Repetition – When a design space is repeated multiple times in a model using part instances, Inspire will automatically apply pattern repetition to the design spaces so they generate identical shapes.

Geometry Import

- ACIS
- Catia (V4 & V5)
- IGES
- JT
- Parasolid
- Pro/E
- SolidWorks
- STEP
- STL

Geometry Export

- IGES
- Parasolid
- STEP
- STL
- Lattice STL

Multiple Language Formats

- Chinese
- English
- French
- German
- Italian
- Japanese
- Korean
- Portuguese
- Spanish

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