

solidThinking Inspire

2017.1 Release Notes

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Inspire 2017.1

New Features and Enhancements

- **Gauge Optimization:** The new gauge optimization feature allows you to optimize the thickness of surface parts. Gauge optimization can be run by itself, or at the same time as topography optimization.
- **Static Load Extraction from Motion Analysis:** Motion analysis results for a part can now 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.
- **Component Forces:** You can now define forces, torques, and g-Loads in terms of their x, y, z components.
- **Fastener Optimization:** When optimizing fasteners, you can now constrain the axial and shear forces using the optimization properties in the Property Editor.
- **Inertia Relief:** The new inertia relief feature is used to analyze unsupported systems that are not fully grounded, such as airplanes and satellites.
- **2.5D Section Creation:** The new 2.5D section creation feature allows you to extract sketch curves from optimized results.
- **PolyNURBS Split:** The new PolyNURBS Split tool allows you to trim individual cage faces.
- **Structural Entity Enhancements:** Structures such as forces, supports, masses, etc. now animate alongside your analysis results. They are also maintained when their hierarchy is changed in the model browser.
- **Minimum Gap:** The new Min Gap property allows you to define the minimum distance between structural members for topology optimization in the Property Editor.
- **Resizable Plots:** The default plot size is now larger and can be resized using <Ctrl>+, <Ctrl>- and <Ctrl>0 to increase, decrease, and reset the plot size.
- **Casting Add-On:** The new casting add-on includes tools that are used to run a casting feasibility analysis based on product geometry.
- **Workflow Help:** Most tools on the ribbon now include text prompts beneath the tool or guide bar that explain what to do next. Click the workflow help once to expand the text, which provides additional hints and keyboard shortcuts.

Known Issues

- Pressure loads are not supported during motion analysis. [IM-598]

- Load extraction for transient motion simulations is not supported, but you are not prevented or warned when doing so.
- Incomplete motion support for midsurfaced parts. [IM-594, IM-983]
- Mirrored instances are not supported in Inspire Motion due to left-handed coordinate system. [IM-700, IM-881, IM-839]
- Instanced (or mirrored) part position may 'jump' on first frame of solution. [IM-881, IM-313]
- The Casting add-on cannot be used with imported STL parts.

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Motion

- **Motion ribbon:** The tools on the new Motion ribbon can be used to easily mechanize your model and perform a motion analysis.
- **Ground Parts:** The new Ground tool allows you to designate one or more parts that are considered to be ground and therefore immovable during motion analysis.
- **Rigid Groups:** The new Rigid Groups tool allows you to group a collection of parts together so they are treated as one rigid body for the purposes of motion analysis. This allows for efficiencies when building up motion models.
- **Joints:** The enhanced Joints tool allows you to connect parts together based on neighboring parts and designate whether they should be locked, active, or free. It also includes a greater variety of joint types that can be created (hinge, cylindrical, translational, ball and socket, planar) and finds more locations where joints can be placed (spherical, cylindrical, planar, and multi-planar pairs).
- **Motors:** The new Motors tool allows you to drive parts in a rotational manner and define angle, speed, or acceleration with built-in profile functions. The Use Controller option helps you to better diagnose situations where mechanical lock-up or motor stalling may occur.
- **Actuators:** The new Actuators tool allows you to drive parts in a translational manner and define displacement, speed, or acceleration with built-in profile functions. The Connected Parts option automatically finds connected part pairs that can be actuated.
- **Springs:** The new Springs tools allow you to create coil springs and torsion springs between parts. Movement of the spring-dampers can be visualized during analysis and review of the motion results.
- **Gravity:** The new Gravity tool allows you to visualize the direction of gravity in your model and reorient it using the Move tool.
- **Run Motion Analysis:** You can run a motion analysis using the Quick Run button on the Analyze icon to view instant feedback on how your model moves during motion analysis. Use the Run Settings to define whether to run a static or transient analysis and to define other run parameters.
- **Review Motion Results:** Motion analysis results can be played back for review. Results like forces, displacement, velocities, etc., can be plotted in a chart by clicking on an entity or selecting it from the Model Browser. A context menu on the chart allows you to export to .csv format.

Geometry

- **Partitions:** The new Partition tool can be used to divide a part into design and non–design regions by selecting a hole, pocket, or face to offset.

Structure

- **Bead Patterns:** Bead patterns have been moved out of the Property Editor and are now a tool on the Structure ribbon. The visualization has been changed to make it clearer where the bead boundaries are.
- **Grounded Fasteners and Joints:** When defining connections, you can now create grounded bolts, grounded screws, grounded pins and grounded sliding pins that act as supports in load cases.
- **Fastener Optimization:** When optimizing using grounded fasteners or cylindrical supports, you can now constrain the axial and shear forces using the optimization properties in the Property Editor.
- **Connection Stiffness:** You can now enable connection stiffness in the Property Editor, which allows for better approximation of axial and shear stiffness in grounded fasteners, grounded joints, and cylindrical supports.
- **Joints:** The enhanced Joints tool includes a greater variety of joint types that can be created (hinge, cylindrical, translational, ball and socket, planar) and finds more locations where joints can be placed (spherical, cylindrical, planar, and multi-planar pairs).
- **Part-to-Part Contacts:** Contacts can now be defined between surfaces or manually created between parts.

Resolved Issues

- Fixed a crash found while removing holes in geometry.
- Corrected an issue where contacts were not detected after midsurfacing parts.
- Fixed optimization error that caused models to fail.
- Resolved a safety factor bug some users faced while minimizing mass.
- Resolved an issue with stored views creating blank images.
- Fixed an issue on Mac where selecting the default run options wasn't restoring properly.
- Push/Pull line now follows the mouse direction.
- Improved the contact finding algorithms.
- Bolt pretension can now be used without adding external loads.
- Fixed an issue in temperatures.
- Enhanced the scaling of mesh models for PolyNURBS wrapping.
- Fixed an issue with sorting by mass in the model browser.

Known Issues

- Switching model units during motion analysis is unsupported. [IM-382]
- Mirrored instances are not supported in Inspire Motion due to left-handed coordinate system. [IM-700, IM-881]