

 **RELEASE NOTES**

Altair[®] Inspire[™] 2022.1 and 2022.1.1

New Features and Enhancements 2022.1

General

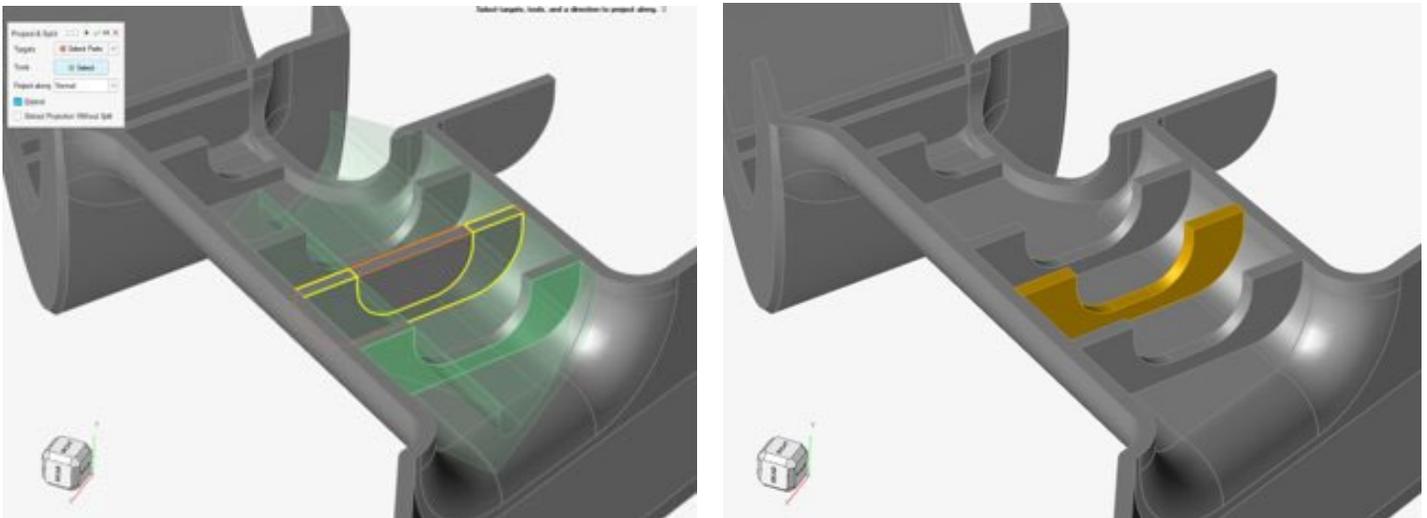
UI Designer

The new UI Designer toolkit provides an easy drag-drop method to create graphical user interface designs without manual coding. The intuitive workflow lets you assemble a GUI design with predefined objects, preview and modify the design, then save the design as a Python code skeleton that you can further develop.

Geometry

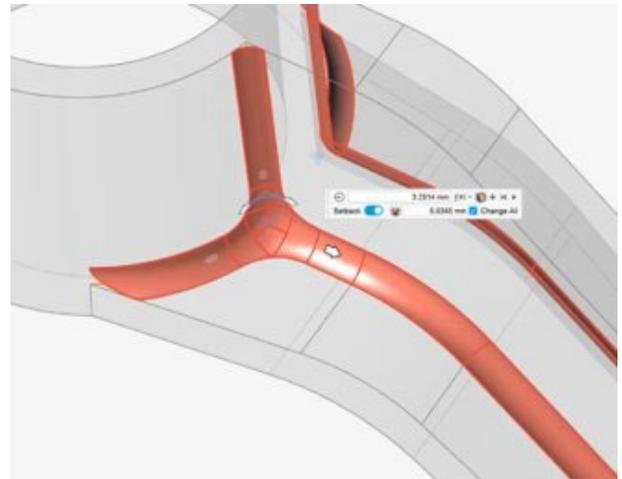
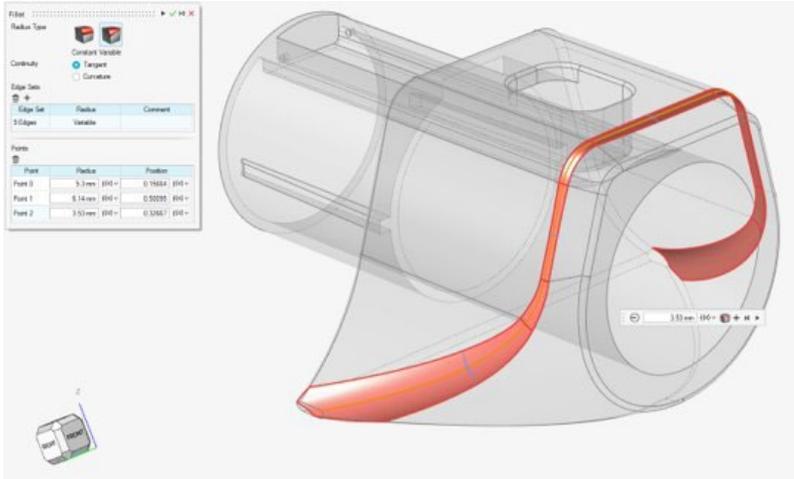
Project & Split

- Project a surface or sketch along a specified direction to split a surface or solid part.
- Project normal, XYZ, vector, or shortest distance
- Give users the ability to build geometry using projected surfaces from other parts of your model



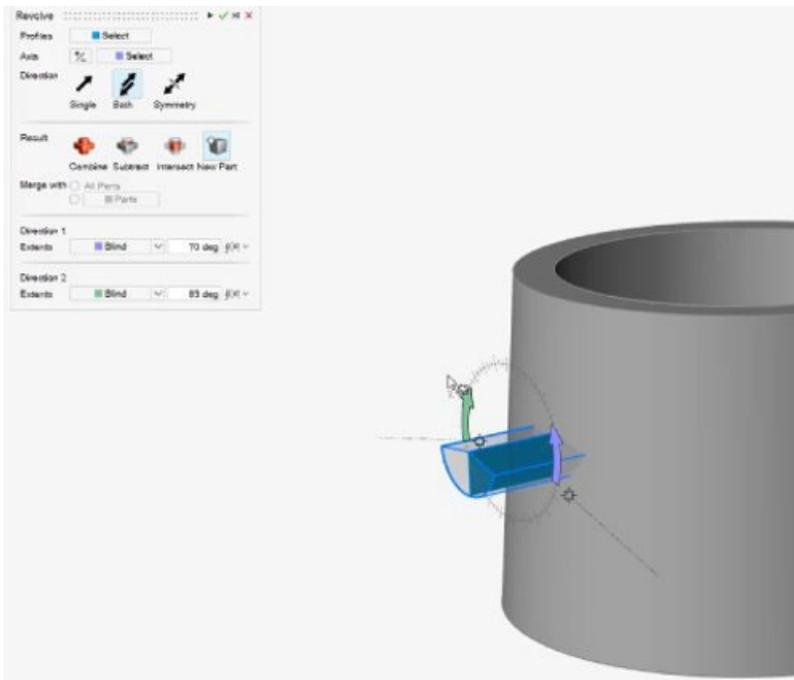
Variable Fillet Radius

- Apply variable radius values across a single or connected edges
- Adjust fillet radius by dragging the handle anywhere along the fillet edge
- Control multiple fillets in a single fillet operation
- Adjust fillet setback where fillets merge at corners
- More control over the fillet dimensions along individual fillets
- Specify Tangent (G1) or Curvature (G2) Continuity



Revolve

- Revolve sketches or surfaces to create tools or parts
- A standard, yet invaluable, tool used to build parts

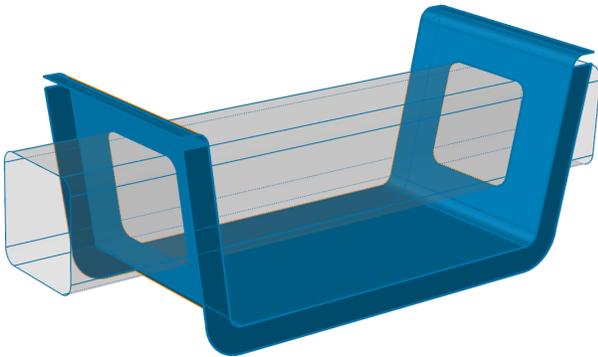


Intersect Tool Face Grouping

- Face grouping is now supported in Intersect Tool
- Faster picking and better user experience



Based on the option you chose in the hamburger menu, select one or more groups of faces to keep or remove in the intersection.



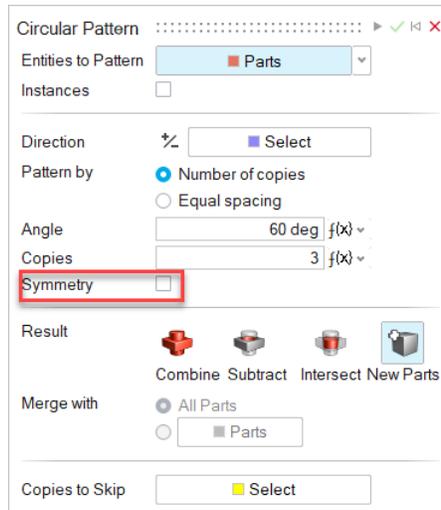
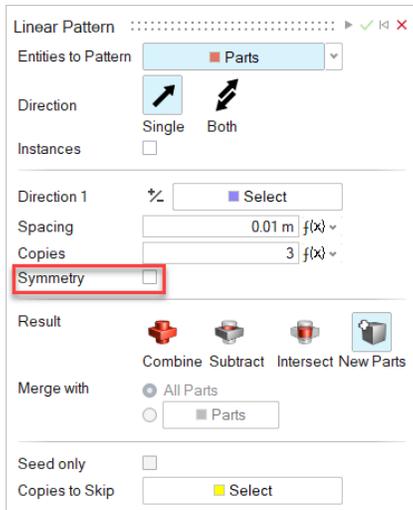
Reference Plane – New Reverse Normal Option

The Reference Plane tool now has a new microdialog option that allows you to reverse the direction of the reference plane's normal.



Symmetry Option for Linear and Circular Pattern

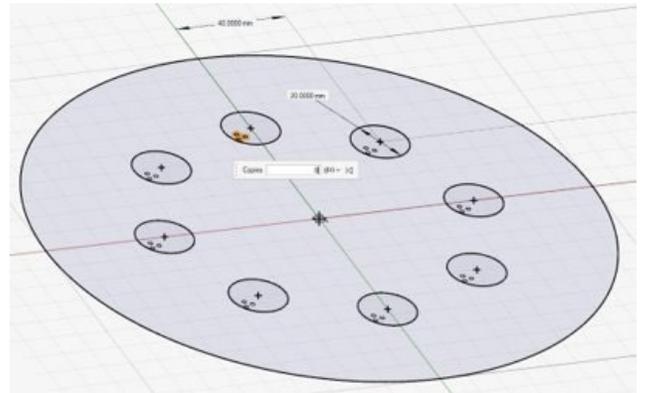
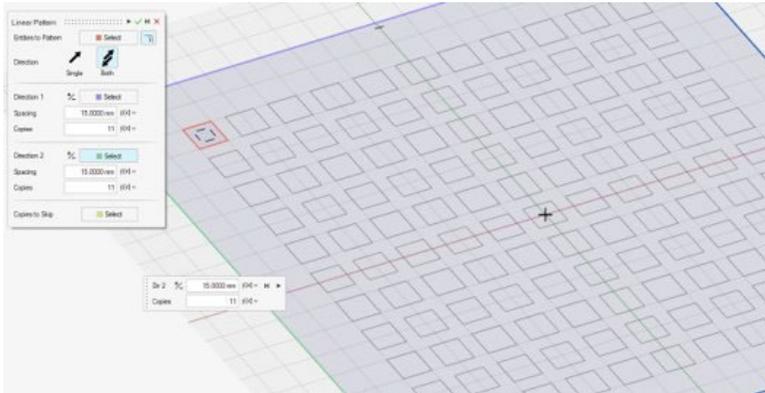
A new Symmetry option has been added to the guide panel of the Linear and Circular Pattern tools, allowing you to pattern symmetrically along direction 1/2 (Linear Pattern) or along the selected axis (Circular Pattern).



Sketching

Linear and Circular Sketch Pattern

- Create linear and circular patterns from sketch entities
- Edit the pattern's spacing and copies during or after pattern creation
- Create a pattern of sketch entities in both circular and linear directions to produce more complex sketches.



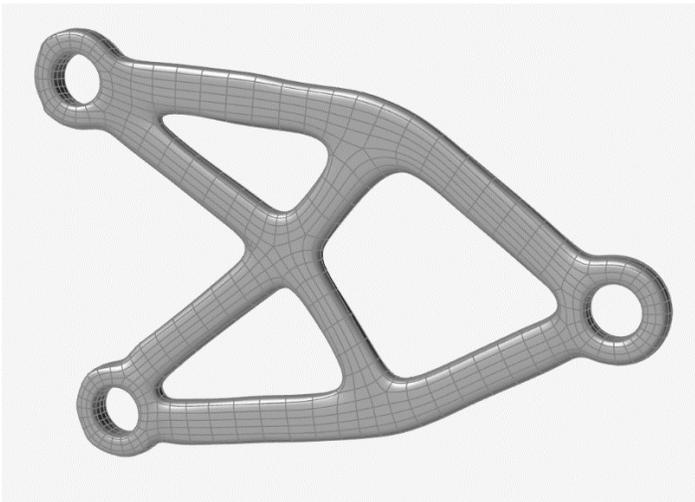
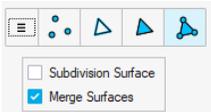
Isolate Sketch Entities

When you right-click a sketch entity in the modeling window or Model Browser, you can now select Isolate from the context menu.

PolyNURBS

Merge Surfaces

You can now merge PolyNURBS surfaces.



No merge



Merge

Structures

Sliding with Separation Moved to Contacts Tool

Contact types are now controlled from within the Contacts Tool. If you are using the SimSolid solver, you can now mix separating and sliding contacts in an analysis.

Frequency Response Optimization in Design Explorer

You can now run Design Explorer with a frequency response for both solvers.

Load/Update Model Variables Based on Exploration Runs

- From the Design Explorer Results table, you can now right-click on the row and load/update the variables from that run to the current model

	Rib_1	Rib_2	Rib_3	Rib_4	Angle	Inner_T	R1	Buckling_1	Buckling_1_obj	Condition	Best Iteration
Nom	50.8 mm	203.2 mm	371.5 mm	530.2 mm	60 deg	3.175 mm	3 mm	2.259	--	--	--
Run 1	50.8 mm	203.2 mm	371.5 mm	530.2 mm	60 deg	3.175 mm	3 mm	2.259	2.259	Feasible	None
Run 2	52.02 mm	188.6 mm	301.7	617.6 mm	71.35 d	3.633 mm	3.399 mm	0.03239	0.03239	Feasible	None
Run 3	42.62 mm	242.8	319.6 mm	624.5	68.02 deg	2.616 mm	3.027 mm	0.02663	0.02663	Feasible	None
Run 4	58.23 mm	169.3 mm	377.3 mm	634.7	53.82 deg	2.578	3.202 mm	0.02605	0.02605	Feasible	None
Run 5	50.8 mm	203.2 mm	379 mm	519.8 mm	60 deg	3.175 mm	2.96 mm	2.208	2.208	Feasible	None
Run 6	49.51 mm	210.9 mm	401.2 mm	480 mm	57.42 deg	3.439 mm	2.803 mm	2.162	2.162	Feasible	None
Run 7	50.8 mm	203.2 mm	361.5 mm	514.8 mm	58.25 deg	3.07 mm	3.06 mm	2.479	2.479	Feasible	None
Run 8	49.29 mm	214.5 mm	354.9 mm	503.9				2.544	2.544	Feasible	Optimal
Run 9	50.85 mm	207.2 mm	344.9 mm	519.3				2.35	2.35	Feasible	None
Run 10	49.84 mm	208.5 mm	343.9 mm	480				2.289	2.289	Feasible	None

- Duplicate explorations
- Duplicate responses
- Min/Max DV bounds checker

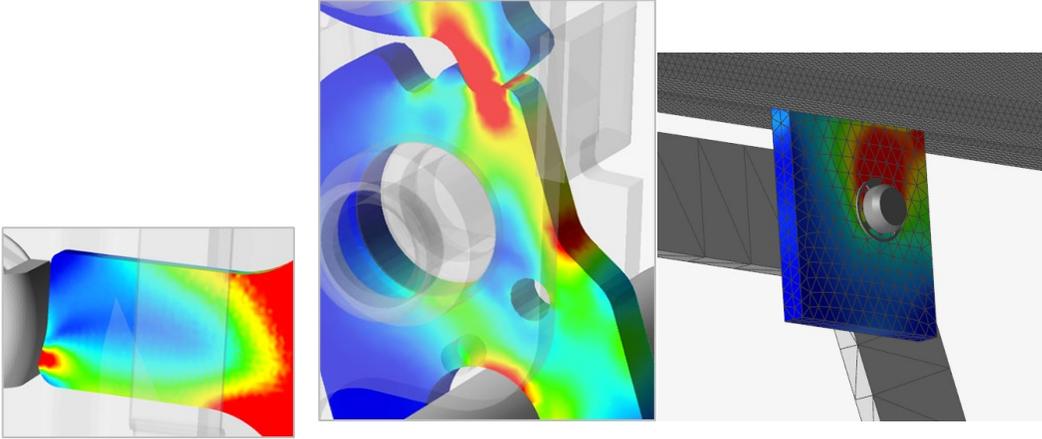
Prevent this!

- Key in values in Trade Off panel
- A handful of minor usability enhancements (including default optimization naming, response callout locations, DV preview resetting)

Motion

Flexible Body Contact

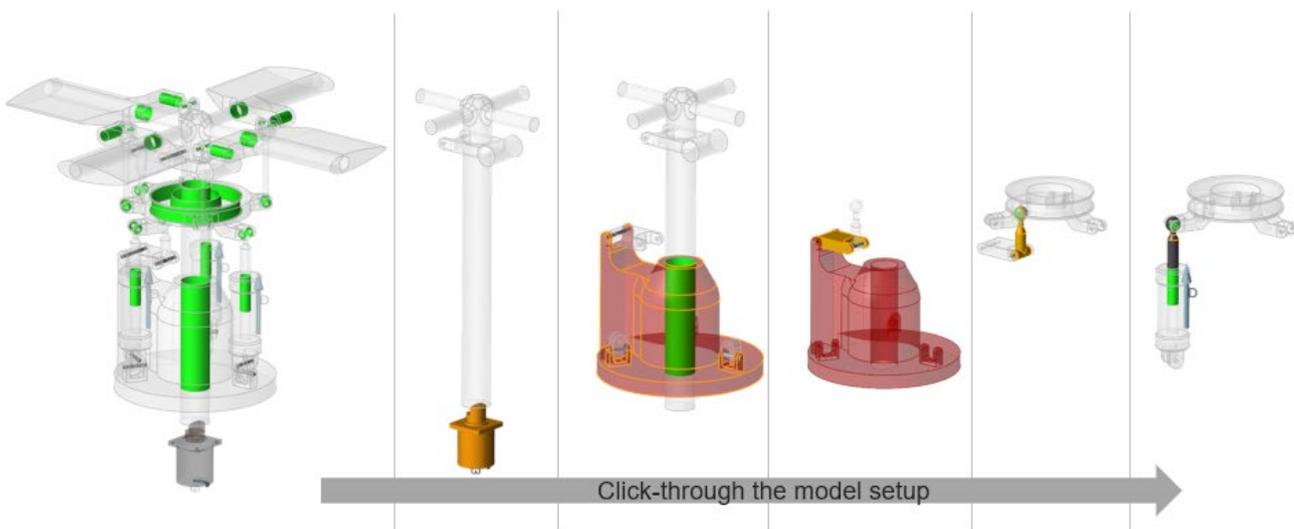
Users can now model contacts between rigid-to-flexible and flexible-to-flexible parts to capture more accurate representations of deformation and stress behavior of flexible bodies.



In addition to providing basic flex contact capability, two additional unique processes are included for enhancing the behavior of flexible bodies: **Flex Contact+** involves a process to account for flex body deformation involving loads generated from general part-to-part contact. This method is useful when the flex part has at least one contact defined on it, and it is desired to capture a higher result accuracy of stress/strain at the contact interface. **FlexContact+ for Joints** involves a process to account for flex body deformation involving loads occurring around the joint region. This method is useful for when there are one or more joints connected to the flex body that are defined by geometric features, and it is desired to capture a higher result accuracy of stress/strain near the joint. Both methods may be used together.

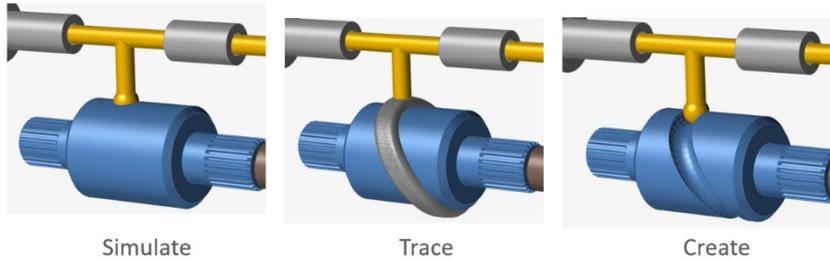
Topology Explorer

A separate Topology context has been added where users can view and edit model entities and connections by simply clicking on objects. This allows for faster and easier model debugging and understanding of connections.



Part Trace

Users can create new parts or perform geometry operations such as add and subtract, from the trace of another part. Slider controls allow the shape to be previewed before committing to creating geometry. Built-in geometry operations allow for quick and easy creation of geometric features from the trace.



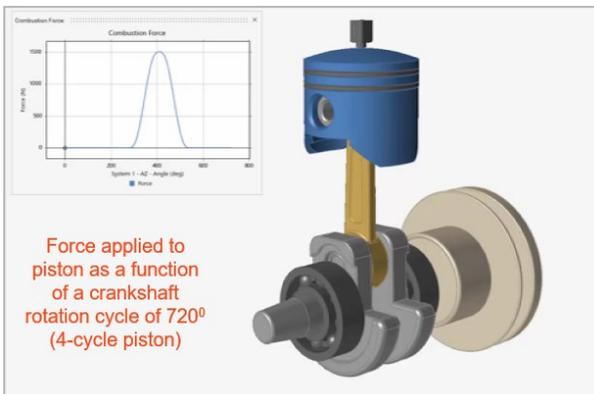
Simulate

Trace

Create

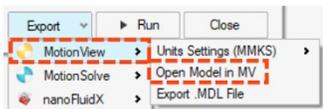
Expanded Support of State Dependent Inputs

Beginning in Inspire version 2022, inputs can be assigned to motors and actuators that are dependent on the state of other model objects including motors, actuators, systems, and linear and angular measures. For this release, spring dampers and joints have been added as supported variable objects. Example input types are displacement as a function of joint rotation or torque as a function of joint speed.



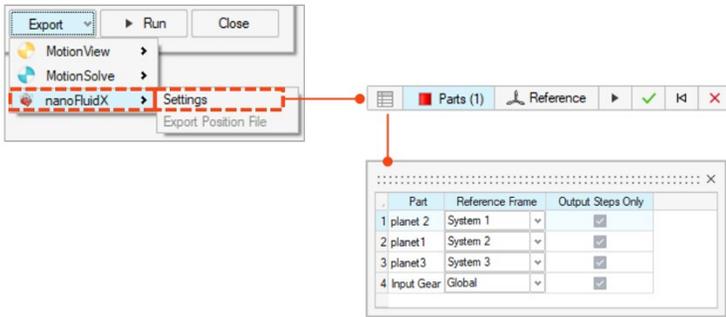
Open IM Model in MotionView (Previously an Experimental Feature)

MotionView can now be launched directly from Inspire Motion (normal token licensing applies).



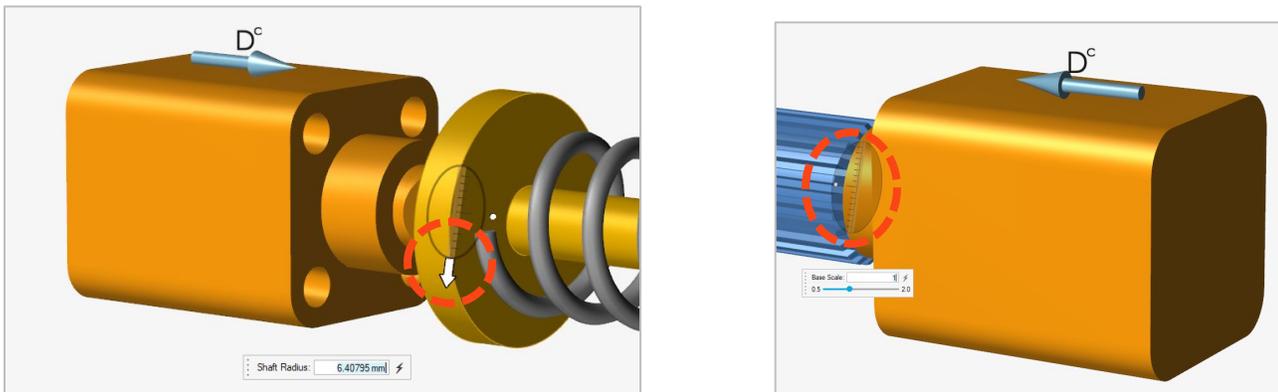
Export to nanoFluidX (Previously an Experimental Feature)

nanoFluidX users can now export motion model part displacements to nFx for fluid analysis involving non-uniform rotations and unique reference frames. (New) Designate a System as a custom reference frame for one or more parts.



Graphics Sizing for Motors and Actuators

Easily scale the size of motor and actuator graphics using draggable sliders.

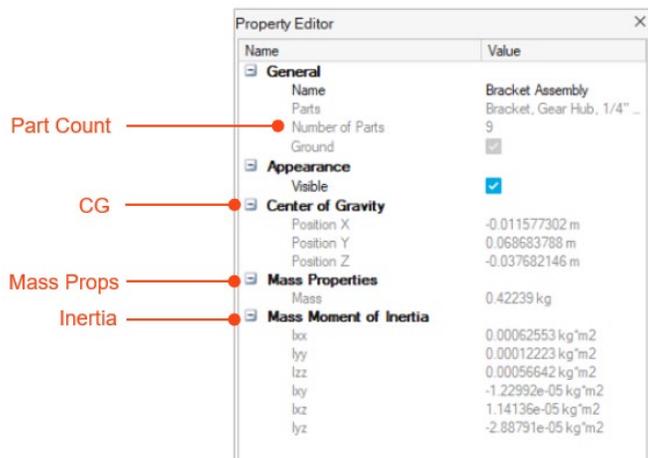


Plot Zooming

Quickly zoom to a desired region on a plot using a box window-select to check data points and/or compare multiple plot data.

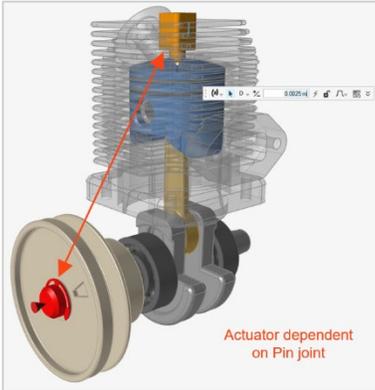
Rigid Group Properties

Users can quickly and easily view properties for Rigid Groups using the Property Editor or Rigid Groups table editor.



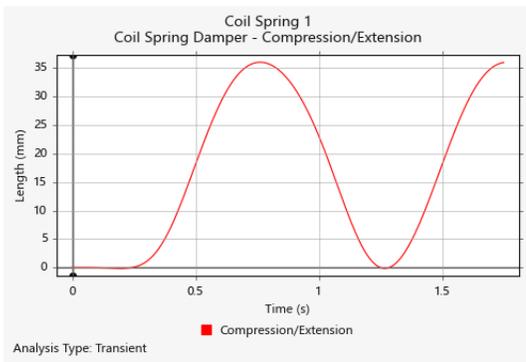
Variable Object Highlighting

When selecting the variable component object while defining a state dependent inputs, the red highlighting makes a clear distinguishment between which entity is the input and which is the variable entity (monitored output component)



New Spring Damper Output

When plotting results for a spring damper, there is a new Compression/Extension plot option, which shows the entity displacement relative to its start position.



Print3D

Green Part tool

You can now export a green part.

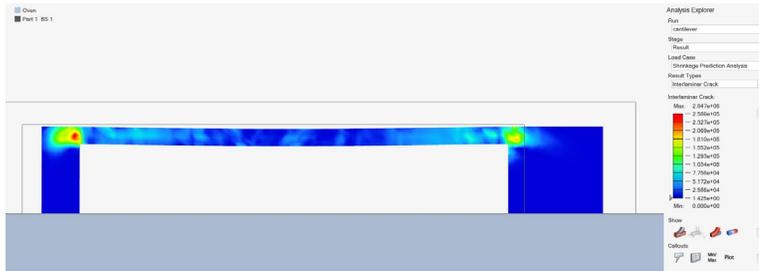


After a compensation analysis, Inspire Print3D can compute the Green Part that needs to be printed in order to produce the desired shape after sintering.

Cracking Prediction

You can now enable a cracking analysis when performing a binder-sinter analysis and predict new results such as:

- Interlaminar Crack
- Intralaminar Crack
- Layer Orientation

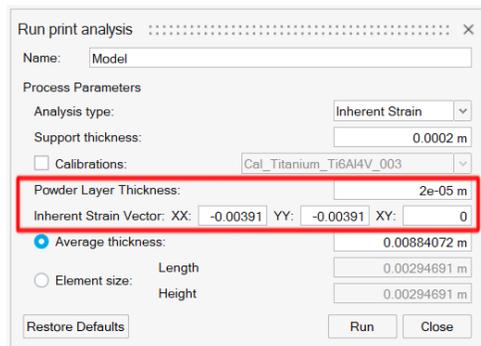


Improved Auto Contact

Inspire will now end the simulation and inform you when the part deforms enough to unexpectedly contact itself or the oven base.

Mapping for SLM/Inherent Strain

You can now use either data from a calibration or your own custom data when running an inherent strain analysis.



Python API

Geometry

- Added Project & Split support. You can project tools onto targets in a specified direction and split the targets.
- Added edit capabilities on geometric construction features. You can modify the CF definitions.
- Enhanced the Simplify tools with Find Options capabilities. You can find and remove rounds, fillets, chamfers, and holes.
- Enhanced the Pattern tool with a Symmetry option. You can create circular and linear patterns with symmetry.
- Enhanced the Reference Planes tool with a Reverse Normal option. You can reverse the default normal of a plane.
- Added Revolve capabilities. Now you have more options (direction, result type, etc.) to play with.
- Added basic edge Fillet capabilities. You can create fillets with tangent continuity.

PolyNURBS

- The fitSynthesis method is now supported in batch mode and enhanced with symmetry parameters. You can fit PolyNURBS on an optimized shape in batch mode and you can maintain symmetry on the fitted PolyNURBS using the symmetry argument.
- Mirror, Bridge, and Sharpen methods are now supported. You can modify PolyNURBS parts using these API calls.
- The Move capability on PolyNURBS faces and edges are supported.

Structure

- Added Contact with Separation for SimSolid and moved it from the run dialog for OptiStruct
- The reanalyze operation is now supported. You can perform a re-analysis on an optimized shape.
- Enhanced the updateContacts method to support SimSolid. You can update the contacts based on the parameters of the contact.
- Added support to modify the boundary condition's features. You can alter the features associated with boundary conditions.
- Added results querying capabilities on the lattice and shape optimization runs.
- Enhanced the creation of boundary conditions. You can add the boundary condition to the load case during the creation of the BC.
- Enhanced saveCurrentResultSnapshot request. You can control the background and size of the result snapshot.
- Added a method to enable callouts on the results explorer.
- Added an option to get the analysis or optimization run status.

Motion

- Analyze and Optimize part with motion loads are supported. You can perform a structural analysis/optimization with motion loads.

Resolved Issues

- Fixed an issue where reference planes created with the midplane option are not rendered correctly on GUI [IN-27512]
- Fixed an issue where feature point is considered for torque creation [IN-28287]
- Fixed spotweld csv to contain part names [IN-28102]
- Fixed callout creation through API [IN-28038]
- Added arguments for snapshot API [IN-28037]

Known Issues

- CATIA mouse rotation issue [IN-27903]
- Meshing errors with large assemblies [IN-27339]
- Instance parts have multiple results drawn on them [IN-26846]
- HM binaries are realizing the pressure in the wrong direction [IN-26590]
- Error: No Load Cases Have Been Applied to the Selected Parts [IN-28623]
- Variable Manager and units conflict cause variable expressions wrongly calculated [IN-28807]

New Features and Enhancements 2022.1.1

Resolved Issues

- Fixed crash with corrupt file [IN-28854]
- Fixed crash with connection type of joint [IN-28699]
- Fixed remote job submission with SUSE 15 [IN-28670]
- Fixed inserting row in the load case table [IN-28664]
- Fixed the Revolve highlighting of the selected axis [IN-28663]
- Fixed Revolve changing the part name [IN-28661]
- Fixed Revolve not retaining the part after Cancel [IN-28651]
- Fixed Revolve flipping the preview upon dragging in negative direction [IN-28638]
- Fixed the vertex selection within Revolve [IN-28635]
- Fixed Revolve preview when switching to Both directions [IN-28634]
- Fixed crash performing sketch pattern [IN-28616]
- Fixed warning on the Reference Axis upon correcting the axis [IN-28567]
- Fixed crash in slice [IN-27661]
- Fixed issue with shading of parts in flex body review [IM-4309]
- Fixed issue with ground part model browser icon under Dark Theme [IM-4404]
- Fixed issue with flex body model browser icon [IM-4419]
- Fixed issue with parts unconfiguring themselves using Find Initial Intersections [IM-4424]
- Added new files to minimize false positives detected by antivirus programs

Known Issues

- Installation fails with Windows 11; workaround to add environment variable [IN-28876]
- CATIA mouse rotation issue [IN-27903]
- Meshing errors with large assemblies [IN-27339]
- Instance parts have multiple results drawn on them [IN-26846]
- HM binaries are realizing the pressure in the wrong direction [IN-26590]
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Learn More About Inspire

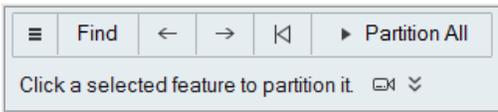
You can learn more about new and existing features in Inspire using the following resources:

In-Application User Assistance

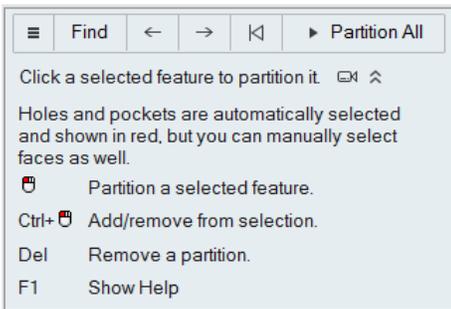
Inspire provides two types of user assistance. **Enhanced tooltips** appear when you hover over icons and other features. They describe what the tool does.



Workflow help appears when you select a tool that opens a guide bar or microdialog. The text prompts you what to do next.

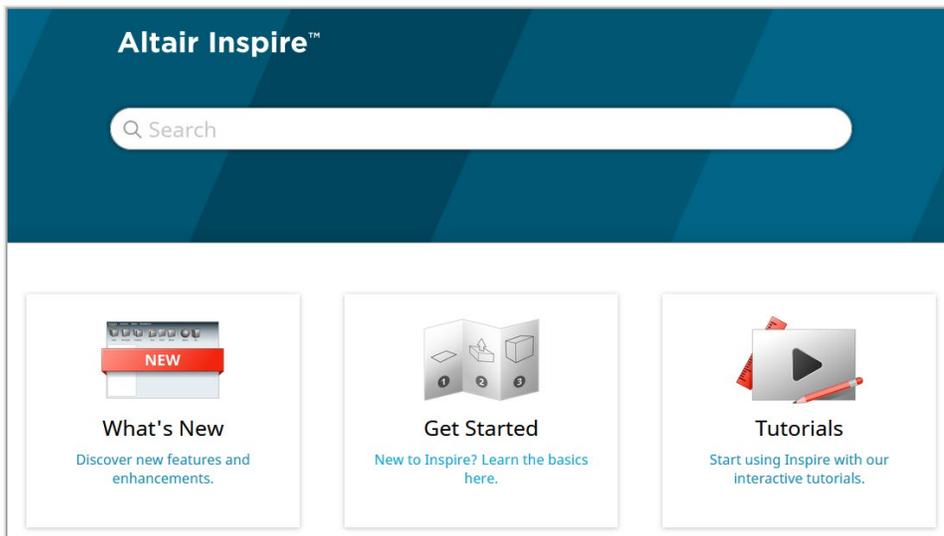


Click to view additional tips and shortcuts. Some tools also include a video .

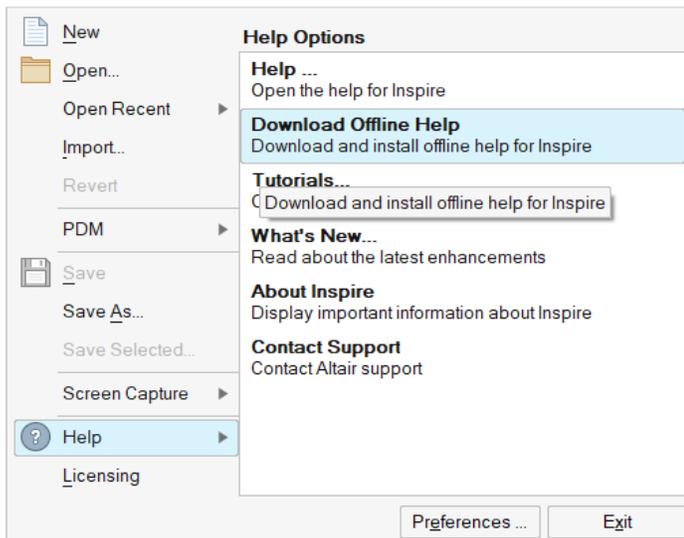


Online and Offline Help

Press **F1** or select **File > Help > Help** to view the online help.



You can download an offline version by selecting **File > Help > Download Offline Help**. An internet connection is required to download.



Supported Languages

The language for the user interface and online help can be changed in the Preferences under Workspace > Language. User interface text is available in English, Chinese, French, German, Italian, Japanese, Korean, Portuguese, and Spanish.

The online and offline help is available in English at the time of release, and in Chinese, Japanese, and Korean generally 1 to 2 months after release. If a language is selected in the Preferences that is supported for the user interface text but not for the help, the English help is shown. Similarly, if an unsupported language is selected in the Download Offline Help dialog, the English offline help will be downloaded instead.