

 **RELEASE NOTES**

Altair[®] Inspire[™] 2022.3 and 2022.3.1

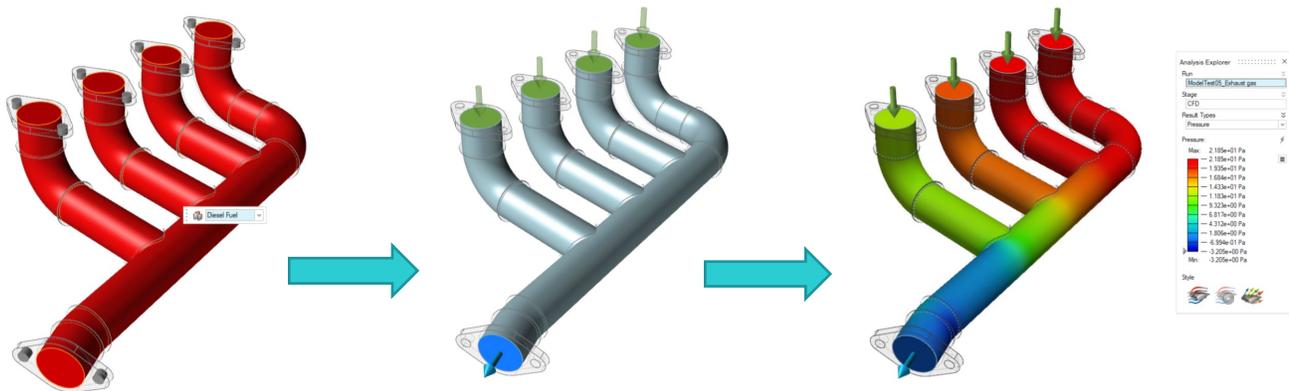
New Features and Enhancements 2022.3

Fluids

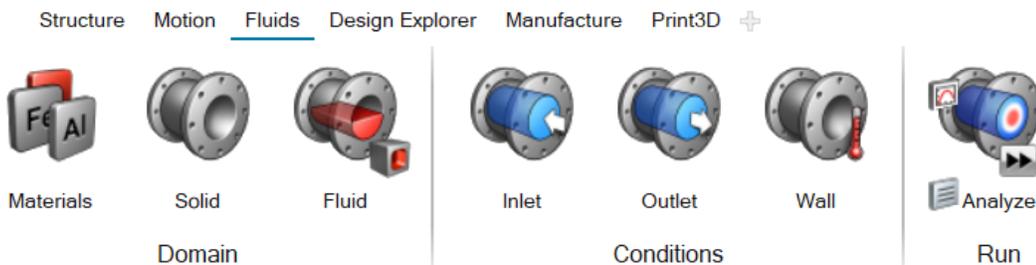
New Inspire Fluids Ribbon

You can now prepare and run a computational fluid dynamics simulation in Inspire. Inspire Fluids enables you to:

- Create materials, assign materials to parts, and organize them into libraries.
- Define the solid and fluid domains for the fluids simulation.
- Include at least one inlet and one outlet and define the fluid and thermal boundary conditions.
- Run and review the results of a fluids analysis.



The following tools are available:



- **Materials:** Assign materials to parts. You can also create and import materials and material libraries.
- **Solid Domain:** Designate one or more parts as the solid domain. You can skip creating a solid if only fluids will be simulated.
- **Designate Fluid Domain:** Identify an existing solid body as a fluid domain.
- **Create Fluid Domain:** Select the parts that will be used to create the fluid domain.
- **Inlet:** Identify one or more inlet surfaces and define the flow conditions.
- **Outlet:** Identify one or more outlet surfaces and define the pressure.
- **Wall:** Configure the thermal boundary conditions by defining a fixed temperature, convection, or heat flux condition.
- **Show Fluids Results:** Show the results of a fluids simulation in the Analysis Explorer.

Platforms Added

Linux

Inspire is now supported on Linux, except for the Design Explorer tab (download the hotfix to get Linux support for Design Explorer), Print3D tab, and the Porosity check on the Manufacturing tab.

- SUSE Linux Enterprise Server 15 SP3
- Red Hat Enterprise Linux 8.4/Oracle Linux 8.4 or newer

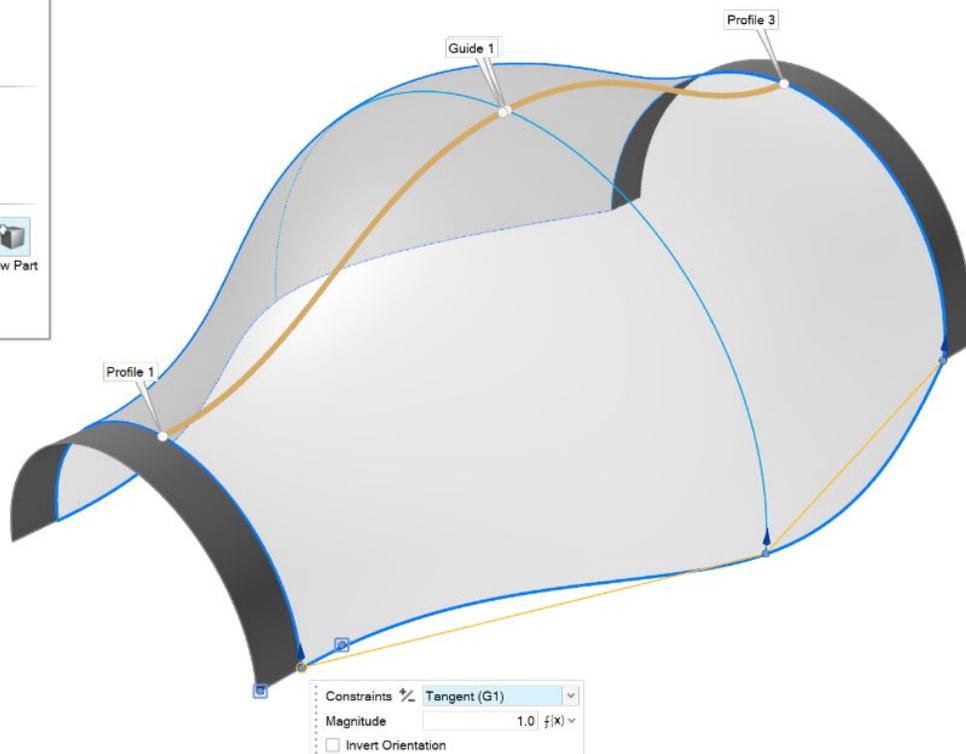
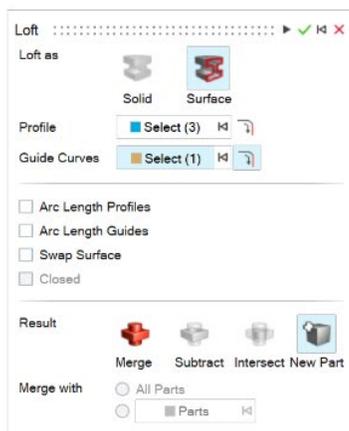
Windows 11

- Windows 11 x86_64

Geometry

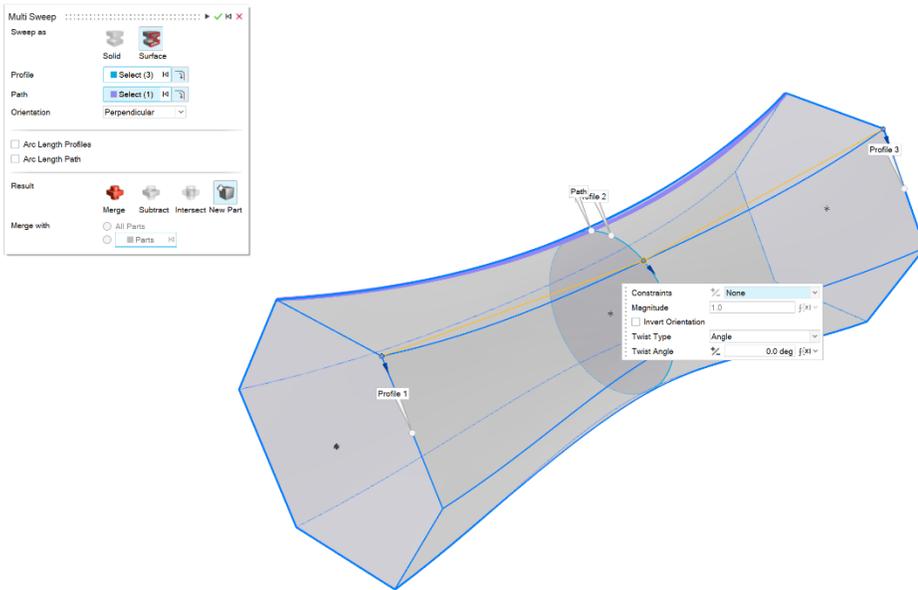
New Loft Tool

- You can now create a solid loft or a lofted surface from profiles and guide curves and specify continuity (positional, tangent, or curvature).



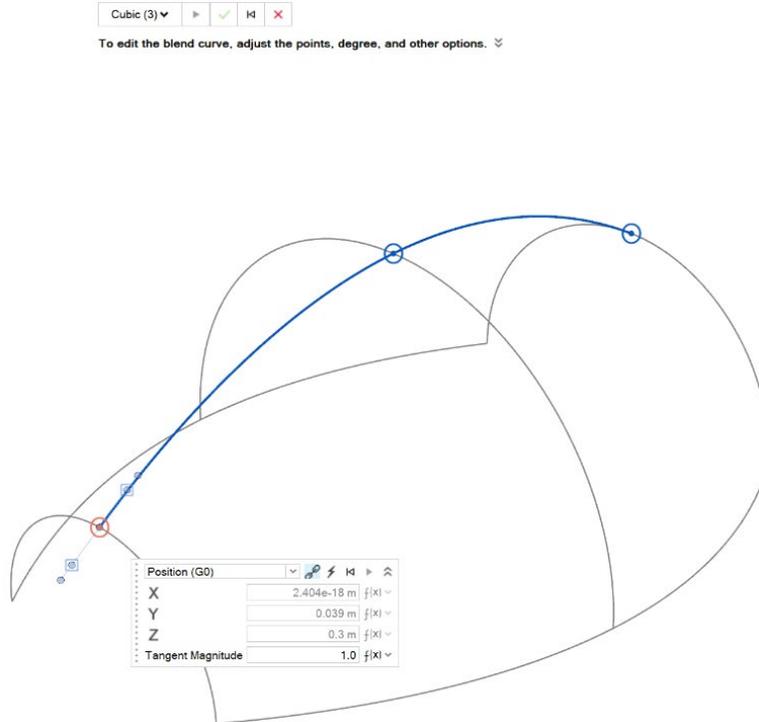
New Multi Sweep Tool

- You can now create sweep multiple profiles along a path to create a solid or surface. For each profile, you can specify a twist value.



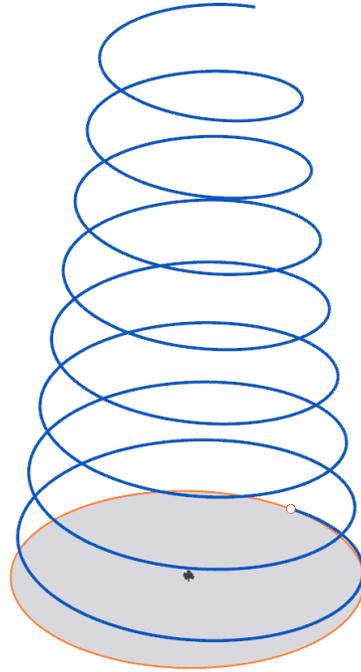
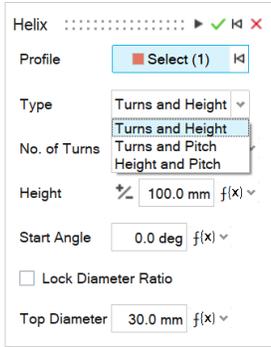
New Blend Curve Tool

- You can now create a free-form curve that blends into one or more existing curves, surfaces, or edges.



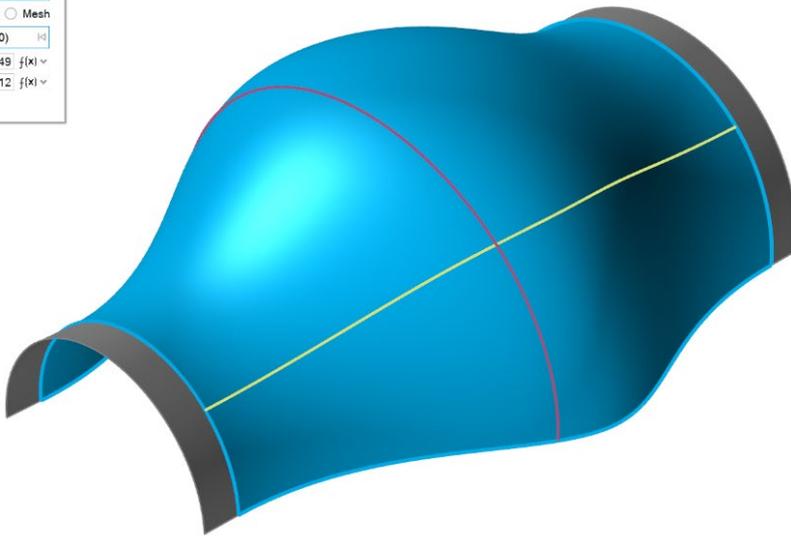
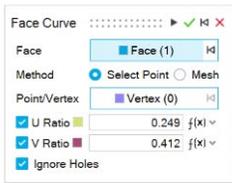
New Helix Curve Tool

- You can now create a helix (or a spiral if the top and bottom radii are different).



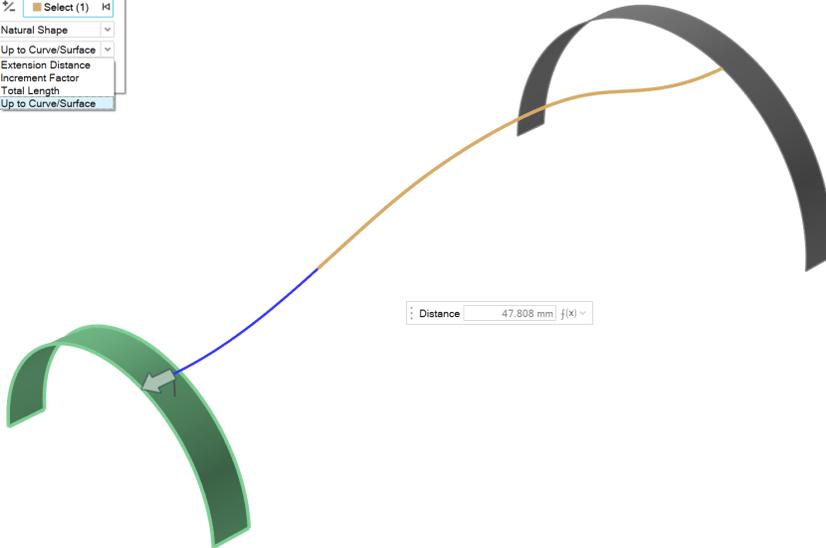
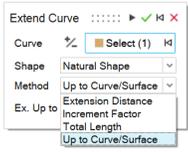
New Face Curve Tool

- You can now extract curves from a face in the U or V direction. This is useful for creating trim curves that run along a face.



New Extend Curve Tool

- You can now extend a 3D curve or a wire body. You can modify the shape of the extension (linear, soft, reflective, natural, or arc) and the extension distance. You can extend the curve up to a surface or another curve.

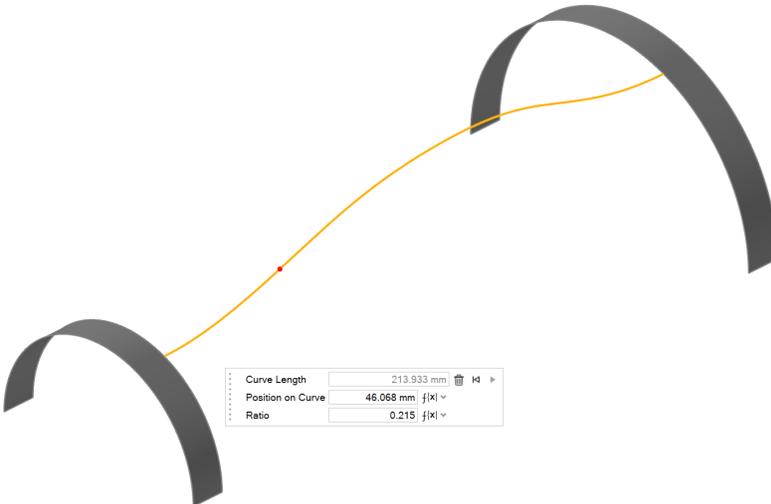


New Divide Curve Tool

- You can now divide a curve or a wire body into several independent curves, by clicking the curve or entering a value for the position of the division point.



Select a division point to reposition, insert new division points or reselect a new curve.



Ability to Define the Number of Planes

- With the Reference Planes tool, you can now specify the number of planes for an “Offset” and a plane “At an Angle.”



Sketching

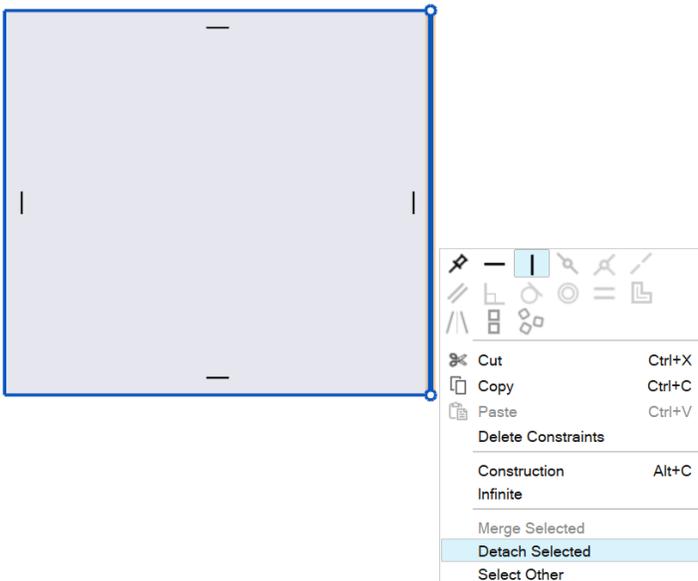
Modify Dimensions of a Sketch

- From the context menu, you can now modify the dimensions of a sketch without entering Edit mode and see the model update in real time.



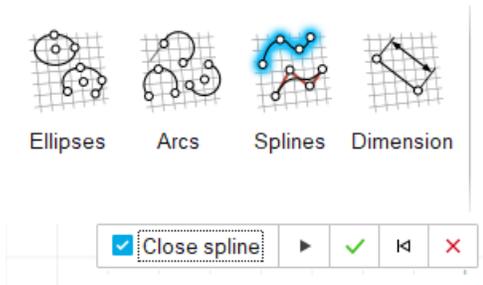
Detach Entities

- You can now detach (unmerge) sketch entities that share vertices.



Ability to Close Spline

- You can now close a spline and make it a periodic curve.



Icons For Underdefined, Overconstrained, and Fully Defined Sketches

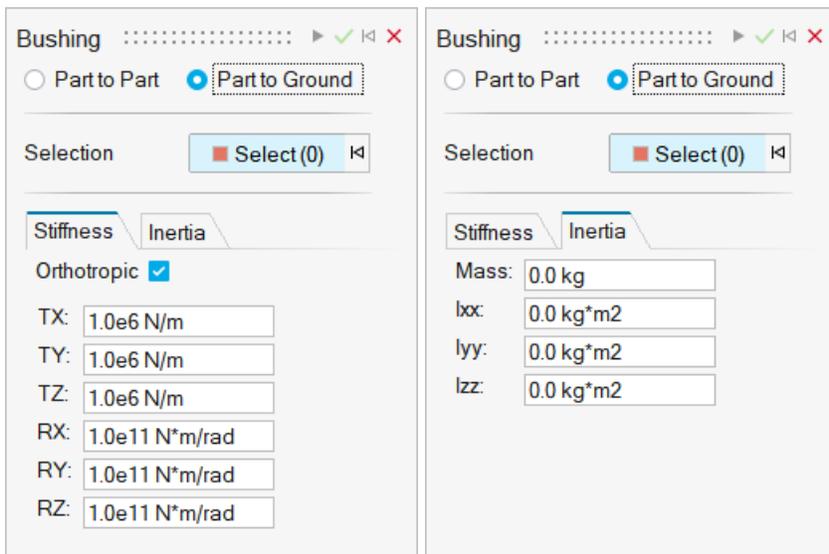
- There are now icons in the Model Browser to indicate if the sketch is underdefined, overconstrained, or fully defined.

- Underdefined
- Fully Defined
- Overconstrained

Structures

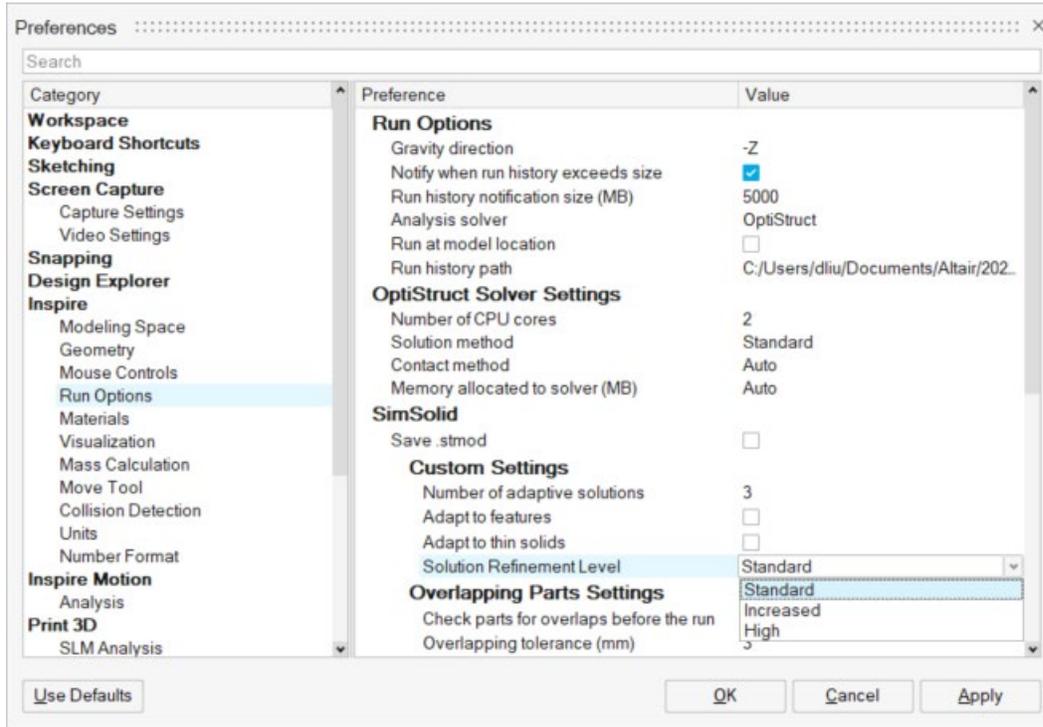
Updated Bushings Tool

- You can now add grounded bushings to your assembly, apply orthotropic or isotropic stiffness, and define the bushing's mass and moments of inertia. Bushings are now available in a motion analysis. When you edit bushings from under Motion, you will see Stiffness, Damping, and Preload options.



SimSolid Solution Refinement Level

- You can now modify the solution refinement level for the solver from the Run Options preferences.



Friction For Sliding and Separating Contacts

- Sliding and separating contacts now have frictional values.

Name	Type	Part Pair Group	Part 1	Part 2	Gap tolerance	Penetration tolerance	Found gap (+) or penetration (-)	Resolution	# of points	Frictional Value
Contact 19	Sliding	Group 8	bolt_2	Shock Housing	0.001 m	0.001 m	0.0 m	Low	48	0.4
Contact 20	Bonded	Group 9	bolt_1	Intermediate Link	0.001 m	0.001 m	-7.404e-5 m	Low	133	NA
Contact 21	Bonded	Group 10	bolt_1	Main Bracket	0.001 m	0.001 m	-1.379e-5 m	Low	57	NA
Contact 22	Bonded	Group 10	bolt_1	Main Bracket	0.001 m	0.001 m	-1.379e-5 m	Low	57	NA
Contact 23	Bonded	Group 10	bolt_1	Main Bracket	0.001 m	0.001 m	0.0 m	Low	48	NA
Contact 24	Bonded	Group 10	bolt_1	Main Bracket	0.001 m	0.001 m	0.0 m	Low	48	NA
Contact 25	Bonded	Group 11	Torque Link 2	Torque Link1	0.001 m	0.001 m	-3.942e-4 m	Low	49	NA
Contact 26	Bonded	Group 12	Torque Link 2	Shock Piston	0.001 m	0.001 m	0.0 m	Low	46	NA
Contact 27	Bonded	Group 12	Torque Link 2	Shock Piston	0.001 m	0.001 m	0.0 m	Low	49	NA
Contact 28	Bonded	Group 13	Torque Link1	Shock Housing	0.001 m	0.001 m	0.0 m	Low	48	NA
Contact 29	Bonded	Group 13	Torque Link1	Shock Housing	0.001 m	0.001 m	0.0 m	Low	45	NA
Contact 30	Bonded	Group 14	Wheel Rim	Tire	0.001 m	0.001 m	-2.066e-8 m	Low	91	NA
Contact 31	Bonded	Group 14	Wheel Rim	Tire	0.001 m	0.001 m	-3.672e-8 m	Low	94	NA
Contact 32	Bonded	Group 15	Wheel Rim	Shock Piston	0.001 m	0.001 m	-0.001 m	Low	96	NA
Contact 33	Bonded	Group 16	Tire	Wheel Rim	0.001 m	0.001 m	-1.452e-8 m	Low	123	NA
Contact 34	Bonded	Group 16	Tire	Wheel Rim	0.001 m	0.001 m	-2.819e-8 m	Low	118	NA
Contact 35	Bonded	Group 17	Wheel Rim	Shock Piston	0.001 m	0.001 m	-0.001 m	Low	96	NA
Contact 36	Bonded	Group 18	Shock Piston	Shock Housing	0.001 m	0.001 m	-0.001 m	Low	572	NA
Contact 37	Bonded	Group 19	Shock Piston	Shock Housing	0.001 m	0.001 m	4.725e-4 m	Low	25	NA

Scale Imported STL

- You can now scale the STL at import.

Design Explorer

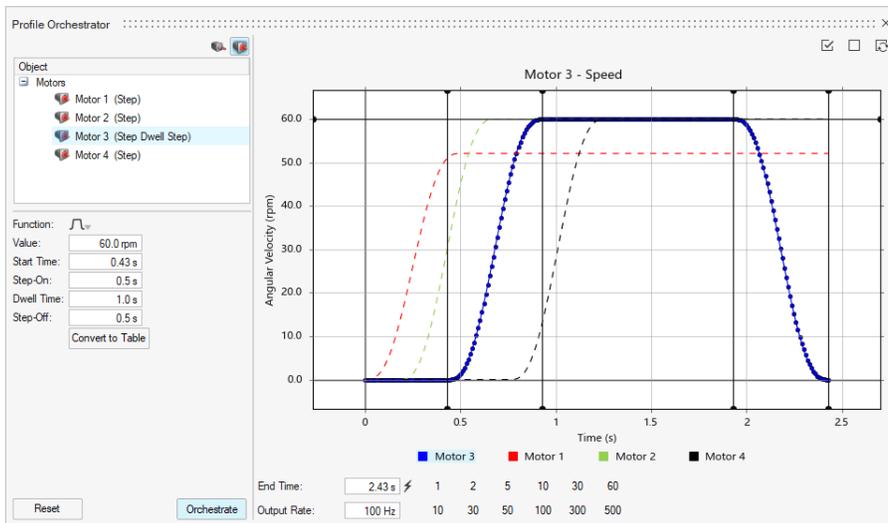
Faster Runs

- The run performance time has been reduced.

Motion

Profile Orchestrator

- You can now simultaneously construct and edit time-based input curve profiles for motors and actuators in one environment. The Profile Orchestrator is an extension of the Profile Editor that allows all inputs to be viewed on the same plot as well as adjusted and synchronized with each other for input events that occur at different times.



Run History (for Motion)

- You can now assign a Name and a Description to an analysis, and load run history into the Plot Manager. This allows you to compare results between previous and current runs.

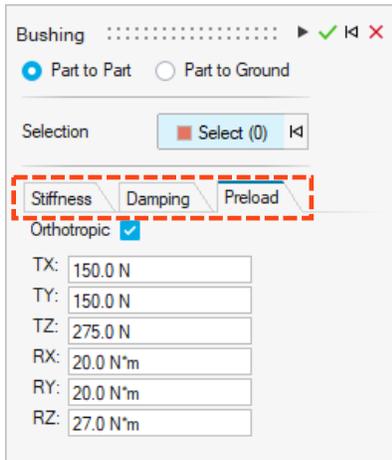
Contact Mesh Preview

- All motion contacts utilize a skin mesh for the contact algorithm. You can now view the skin mesh for parts involved in motion contact definitions to check that mesh sizes for part pairs are appropriate. If necessary, the mesh can be adjusted. This new feature is directly tied to the Autocalculate Resolution setting, which is found in the Property Editor when you select a part.



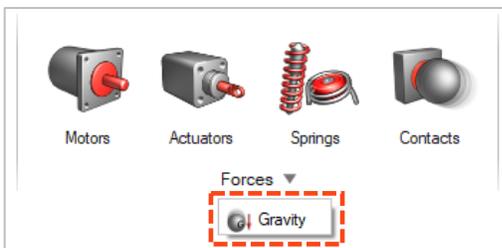
Bushings

- Bushings are now available in a motion analysis. Bushings are flexible connectors with six degrees of freedom that can be used to represent physical bushings or another connection type with flexible characteristics. Bushings can be created from under the Structures or Motion ribbon, but depending on which context is being used different properties will be available. For example, when you edit bushings from under Structures, you will see Stiffness and Inertia options. When you edit bushings from under Motion, you will see Stiffness, Damping, and Preload options.



Gravity Icon Relocation

- The icon for Gravity has moved to the Forces dropdown menu.



Export .csv Files to Run History Folder

- .csv plot files saved from callout plots, pop-out plots, or the Plot Manager are now saved to the Motion Run History folder specified under Motion Preferences.

Auto-Load Flex Body Simulation Results when Entering Flex Body Review

- When you enter the Review Flexible Body Results context, the results will auto-load before the Analysis Explorer context is fully loaded.

No Auto-Creation of Flex Body Part Instances

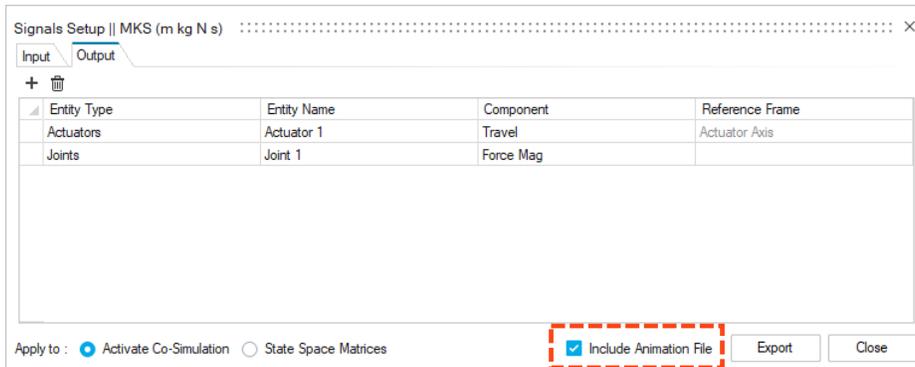
- Previously, when you created a flexible body of a part that belonged to other instances, all instances were made flexible. Now, instances are not made flexible unless you designate them as Flexible for Motion.

No Auto-Fit when Reviewing Interference Detection Results

- Previously, when you selected an interference instance to review, the model window would automatically fit the view to the extent of the selected interfering part pair. You now have the option to enable or disable Auto Fit for selected interfering part pairs.

Include Animation File with Activate Co-Simulation

- Enable the Include Animation File option with the Activate Co-Sim export file to produce an animation file (.h3d) after the Activate Co-Simulation is complete. The animation of the co-simulation results can be reviewed in HyperView or HyperView Player.



No Auto-Fit when Reviewing Interference Detection Results

- Previously, when you selected an interference instance to review, the model window would automatically fit the view to the extent of the selected interfering part pair. You now have the option to enable or disable Auto Fit for selected interfering part pairs.

Print3D

SLM Process

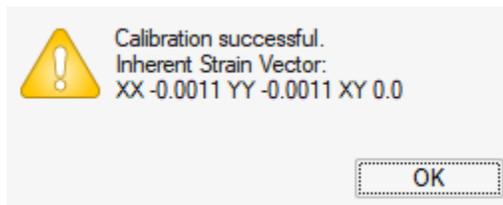
Compensated Geometry

The Compensated Geometry tool is accessible after you have run a compensation analysis on the part. The compensation analysis calculates an initial pre-deformation configuration for the original shape such that it compensates for the contraction that occurs during printing and warpage stages. Use the Compensated Geometry tool to export the compensated part for printing.



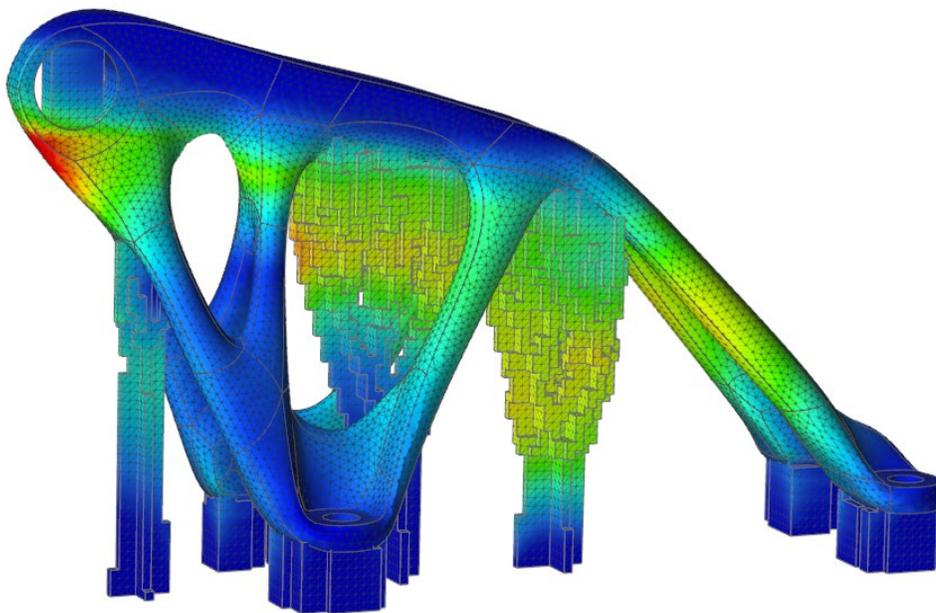
Show Calibration Results

The Calibrate Material tool now shows the material's inherent strain vector after calibration.



Upcoming Feature: Body-Fitted Tetrahedra

This new calculation strategy uses tetrahedral mesh for the part and voxel mesh for any supports. This improves visualization of results and reduces calculation time. To access this feature, select File → Preferences → Workspace and enable the Upcoming Features option.



Binder-Sinter Process

Check Stability

You can use the Check Stability tool to do a quick preliminary analysis of the part's stability as it rests on the oven base.



Part Lifting

Binder sinter now supports the calculation of deformations and stresses considering the part's surfaces in contact with the oven base. This will allow a more realistic simulation of the part lifting from the base during sintering.

Python API

Geometry

- Added Loft capabilities. Now you can create a solid loft or a lofted surface from profiles and guide curves.
- Added Multi Sweep capabilities. Now you can sweep multiple profiles along a path to create a solid or surface.
- Added Helix Curve capabilities. Now you can create a helix (or a spiral if the top and bottom radii are different).
- Added Divide Curve capabilities. Now you can divide a curve or a wire body into several independent curves, by entering a value for the position of the division point.
- Added an option in the reference plane capabilities to specify the number of planes with the “offset” and “plane at an angle” methods.

Sketching

- Added an API for Pattern. Now you can create a linear or circular pattern of sketch entities.
- Added an API to translate or rotate sketch entities.
- Added an API to export sketch into a Python file.

Structures

- Added an API for bushing enhancements.
- Added an API to perform OptiStruct analysis and optimization in parallel.
- Added the solution refinement option to the SimSolid analysis.
- Added an API for mesh control. Now you can assign an element size to parts or faces.
- Added an API to control the animation of results in the graphical user interface.
- Added an API for formatting results.

Enhancements

- Increased the import boundary condition search tolerance to 0.5mm and added a preference option under Units [IN-29779]
- Enhanced the geometric Pattern tool API with the “copiesToSkip” option. Now you can exclude the copies from the pattern.
- Enhanced the geometric Sweep tool API with the “guideScale” option. Now you can provide the guide curve to refine the swept shape.
- Enhanced the geometric Push/Pull API with the “resultType” option. Now you can add, remove, replace, or create a new part.
- Enhanced the geometric Sweep tool API with the twist reverse direction option. Now you can reverse the direction of twists.
- Enhanced the geometric Linear Pattern tool API with the reverse direction option. Now you can reverse the linear pattern’s direction.
- Enhanced the geometric Circular Pattern tool API with the axis reverse direction option. Now you can reverse the circular pattern’s direction.
- Enhanced the Pattern Along Path tool API with the path reverse option.
- Added custom spring rates for supports [IN-15921]
- Added job submission in bat script [IN-18363]
- Added the ability to set format options for results [IN-26985]
- Added control of animation through API [IN-27142]
- Improved connection radius handling for flex bodies [IN-29618]

Resolved Issues

- Fixed an issue with the orientView API [IN-29889]
- Fixed an issue with the lattice constraints option in the Lattice Optimization API [IN-30125]
- Fixed an issue with thickness constraints in the topology optimization API [IN-30049]
- Restricted the creation of alternatives in the optimization import results API [IN-29621]
- Fixed Force value for fastener optimization [IN-30229]
- Fixed remote job submission issue when multiple Inspire products are installed [IN-30086]
- Fixed crash issues [IN-30072, IN-29938, IN-26471, IN-28631, IN-29688]
- Fixed API for thickness in topology optimization [IN-30049]
- Fixed a SimSolid facet error [IN-29968]
- Fixed Sketch view change when entering a tool [IN-29883]
- Fixed Parasolid file failing upon import Linux [IN-29826]
- Fixed fastener optimization [IN-29793]
- Fixed STP degenerated geometry file import [IN29662]
- Fixed a bug with the Fillet tool [IN-29548]
- Fixed spotwelds not being redisplayed [IN-29488]

- Fixed animation with local coordinate systems [IN-28999]
- Fixed Creo Direct Parasolid Japanese characters [IN-28839]
- Fixed grounded fastener axial results [IN-27224]
- Fixed joint contacts after rollback [IN-26552]
- Fixed Catia V5 file import [IN-26330]
- Fixed issue with defining contacts as output Channels [IM-4588]
- Fixed issue where vectors continue to animate when Animate While Solving is off [IM-4651]
- Fixed Motion Analysis with Flex Bodies not running with the Japanese GUI [IM-4623]
- Fixed incorrect animation on mouse move or model rotation in flex body results review [IM-4410]
- Fixed Initial Condition microdialog not in sync with Property Editor values and undo/redo not working [IM-4526]
- Fixed Visible option in Property Editor that remained checked even when set to off for entities [IM-4558]
- Fixed Flexible For Motion attribute that remained on even though it was switched off [IM-4647]
- Fixed Measure on flex part that prevented loading of flex CMS review [IM-4659]
- Fixed Support of multi-threading contact results on Linux [IM-2473]

Known Issues

- Lattice optimization API – stress constraints are not honored [IN-30342]
- Outdated licensing library in 2022_12918_RC1 [IN-27484]
- Meshing error [IN-27339]
- Pre-highlighting issues in results post-processing [IN-24980]
- PDM does not work on Linux [IN-30500]
- Linear Animation shows incorrect animation scale after solved using MMKS Model units [IM-4658]
- Stress and Strain results of flex body are not shown in Compare Results table [IM-4377]
- Grounded Pin not re-displayed upon exiting Flexbody results review [IM-4553]
- Flexible joint rates missing from Joints table [IM-4595]
- When exporting signals for an Activate co-simulation, Joint output results for Psi, Theta, and Phi are incorrect [IM-4694]
- Joint microdialog shows duplicate joints [IM-4693]

Online Help

Public Online Help

- You can now view the latest online help without signing into your Altair One account.

New Features and Enhancements 2022.3.1

Enhancements

Design Explorer is now supported on Linux.

- SUSE Linux Enterprise Server 15 SP3
- Red Hat Enterprise Linux 8.4/Oracle Linux 8.4 or newer

Resolved Issues

- Fixed issue with incorrectly using mass override [IM-4683]
- Fixed issue where a component could not be plotted if already used on another plot [IM-4676]
- Fixed issue where a .csv file exported from the Run History does not contain the x and y labels [IM-4682]
- Fixed issue where the motion plot was not matching the Activate signal for plots of psi, theta and phi [IM-4694]
- Fixed issue where joint names were appearing in the joint micro dialog dropdown menu [IM-4693]
- Fixed issue where exiting out of a Rigid Group part selection caused a crash [IM-4691]
- Added an option in Review Flexible Body Results to create a stress, strain or deformation plot from defined callouts [IM-4668]
- Fixed issue where Auto Calculate Rates for joints was not updating immediately when model total mass changed [IM-4714]
- Fixed an issue where connectors and masses were causing an error when attached to flexible bodies IM-4733]
- Fixed an issue with State Dependent inputs using torsion spring angular displacement because the variable component was not returning a value. [IM-4738]
- Fixed an issue where fluid analyses did not show results when using translated versions of Inspire [ICFD-507]
- Fixed an issue where the solver wasn't writing inlet streamline seed points with multiple fluid domains in model [ICFD-452]
- Fixed an issue where Inspire displayed an error if a user's device did not have NVIDIA GPU [ICFD-457]
- Fixed a crash that occurred while editing the rotate option [IN-30679]
- Fixed an OptiStruct error with optimization constraints on fastener forces [IN-30669]
- Fixed a licensing error where borrowing an Inspire Form license from Altair One was getting the extra feature "HWInspireOSSolver" [IN-30692]
- Fixed normal modes showing zero values for the model with supports [IN-30831]
- Fixed boundary conditions that were lost during reconstruction of CAD [IN-31131]

Known Issues

- Outdated licensing library [IN-274840]

- Meshing errors with large assemblies [IN-27339]
- Pre-highlighting issues in result post-processing [IN-24980]
- Picking of reaction forces on supports is not always working [IN-31013]
- Boolean combine fails on .stl files [IN-25633]
- Incorrect highlighting of fillet construction history features [IN-29629]
- Flex body stress results are six orders of magnitude lower when solving a flex body analysis using any model unit type except MKS and CGS [IM-4735]

Learn More About Inspire

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

In-Application User Assistance

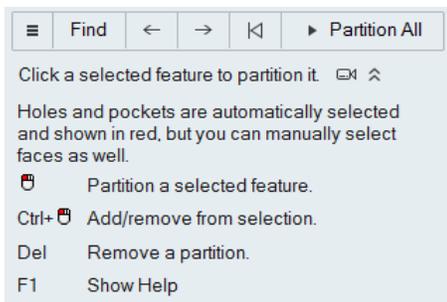
Inspire provides two types of user assistance. **Enhanced tooltips** appear when you hover over icons and other features. They describe what the tool does.



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

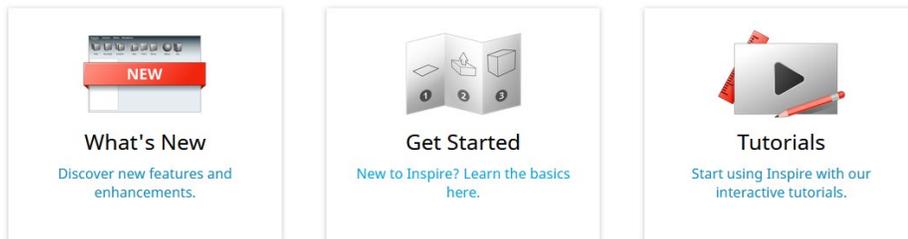


Click to view additional tips and shortcuts. Some tools also include a video .

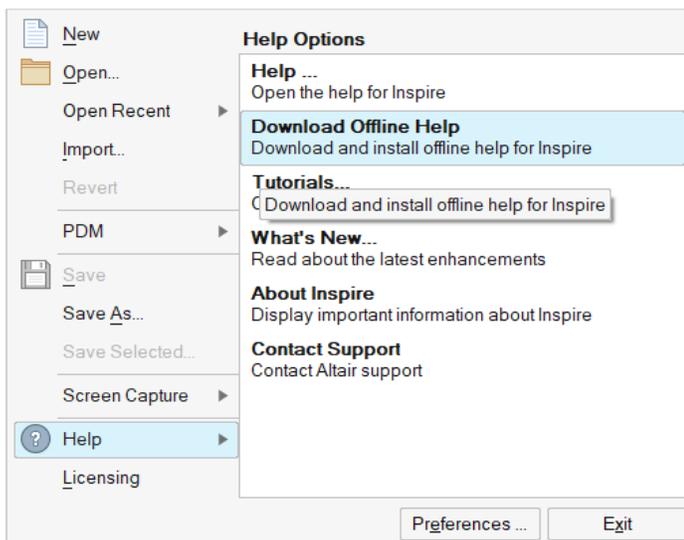


Online and Offline Help

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.