ALTAIR
ONLY FORWARD

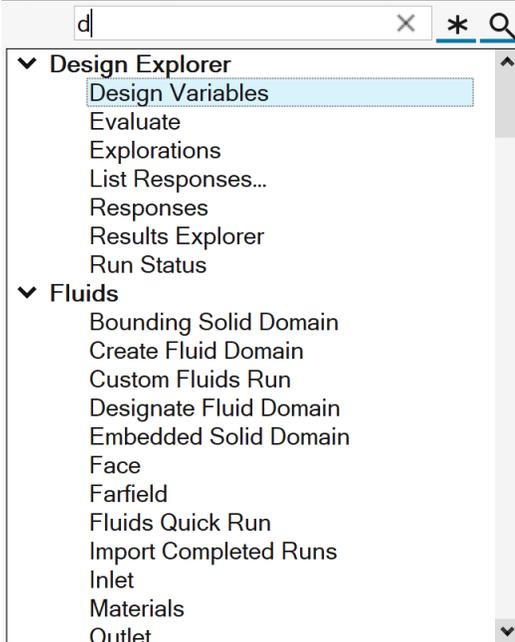**RELEASE NOTES**

Altair® Inspire™ 2024

New Features and Enhancements 2024

General

Search Tool

This new tool allows you to find and open the tools that are available from the ribbons. To enable the Search tool, press **Ctrl+F** or click
🔍 in the top-right corner of the application. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/tool_search_t.htm

Improved Variable Manager

- Units can now be calculated as part of the expression:
    - Hundreds of unit types are supported.
    - Derived units result from the combination of the base units (e.g., Kg*m/s^2 will result in Newtons).
- Additional functions and constants are available:
    - Trigonometric and inverse trigonometric functions
    - Hyperbolic and inverse hyperbolic functions
- Autocomplete is now available when you type a variable name.

    For more information, see the help:
    https://2024.help.altair.com/2024/inspire/en_us/topics/shared/parametric/variables/variables_c.htm#variables_t

Improved Move Tool

We've added translation and rotation options and augmented the existing Free Move workflow. Now moves can be variable driven and are better supported in the Construction History. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/shared/home/move_tool_st_r.htm
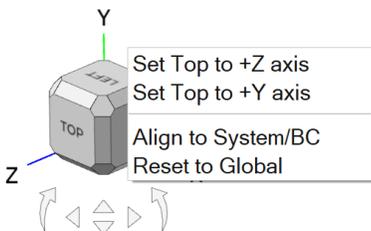
Improved View Cube

New right-click options provide shortcuts to orient the Top face to common CAD defaults:
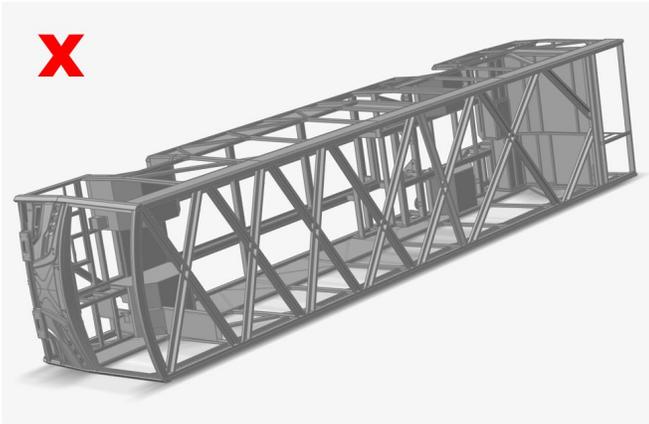
- Set Top to +Z

- Set Top to +Y

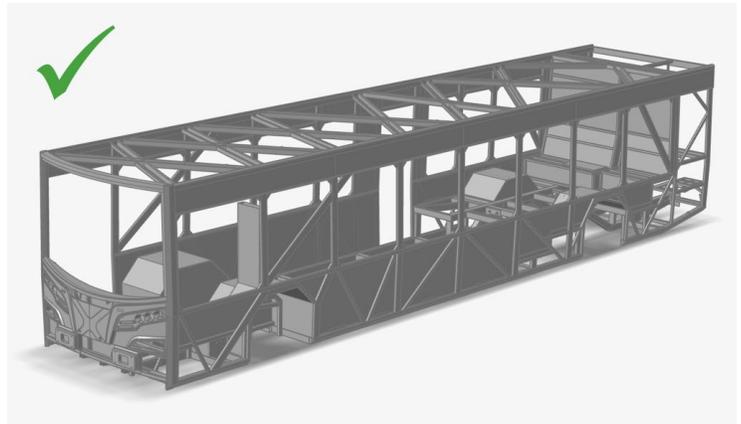Note: Ground shadows will always be oriented on the Bottom face.

For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/shared/unity_basics/view_rotate_st_c.htm#view_rotate_cube_st_t
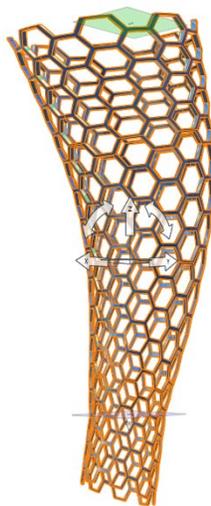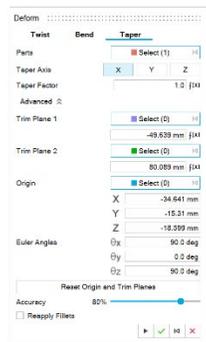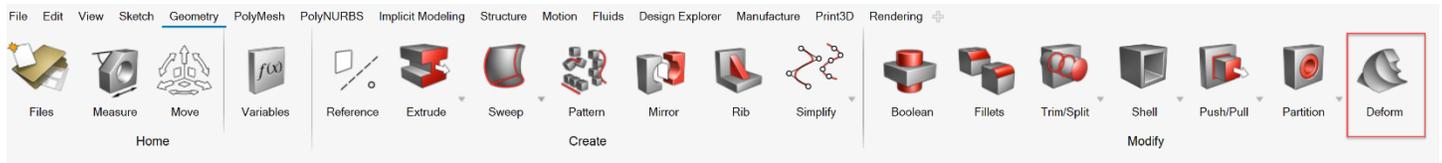
Top Face/shadow incorrect

Top Face/shadow correct

Geometry

Deform Tool

This new tool allows you to twist, bend, or taper parts within a specified region (deformation zone). For more information, see the help:
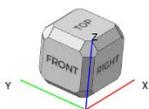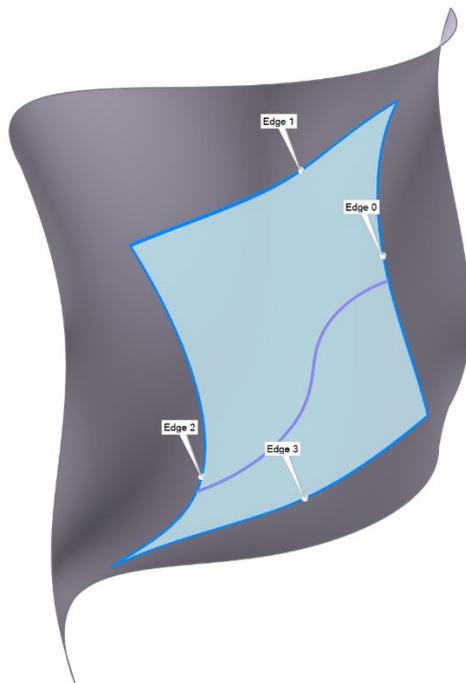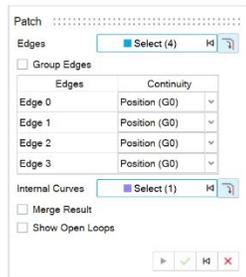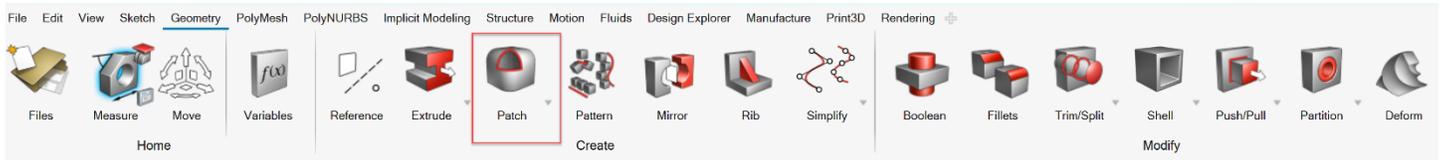
https://2024.help.altair.com/2024/inspire/en_us/topics/shared/geometry/deform_c.htm

New Patch Tool

This new tool allows you to fill in missing surfaces. You can group edges and then define continuity for the edge group. Or you can set continuity per edge. You can also select internal curves for a better patch surface. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/shared/geometry/patch_t.htm

Old Patch Tool Renamed Close Holes

The old Patch tool has been renamed Close Holes. For more information, see the help:
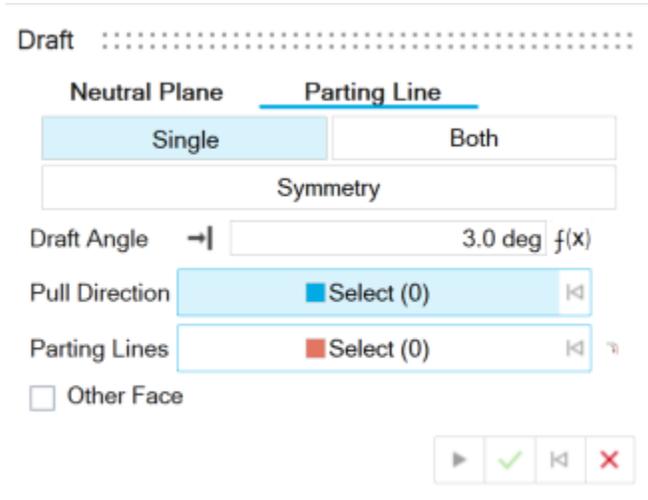
https://2024.help.altair.com/2024/inspire/en_us/topics/shared/geometry/patch_st_t.htm

Improved Draft Tool

A Parting Line tab was added to the Draft tool. This allows you to select one or more lines where the draft would start. For more information, see the help:
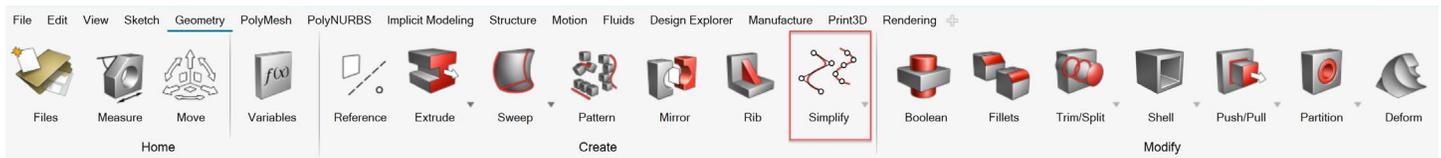
https://2024.help.altair.com/2024/inspire/en_us/topics/shared/geometry/draft_t.htm

Simplify Curves Tool

This new tool allows you to simplify one or more curves by changing the number of control points, joining multiple curves, or by applying an arc length parametrization. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/shared/geometry/simplify_curves_t.htm

Delete Faces Tool

This new tool allows you to delete faces from solid or sheet parts. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/shared/geometry/patch_remove_surfaces_t.htm

Import Reader and Geometry Repair Tools

The new import reader for CATIA and STEP models is more robust, resolving issues that were present in earlier versions of Inspire. An automated repair tool has been added to heal geometry errors that persist after import. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/shared/unity_basics/geometry_import_st_t.htm
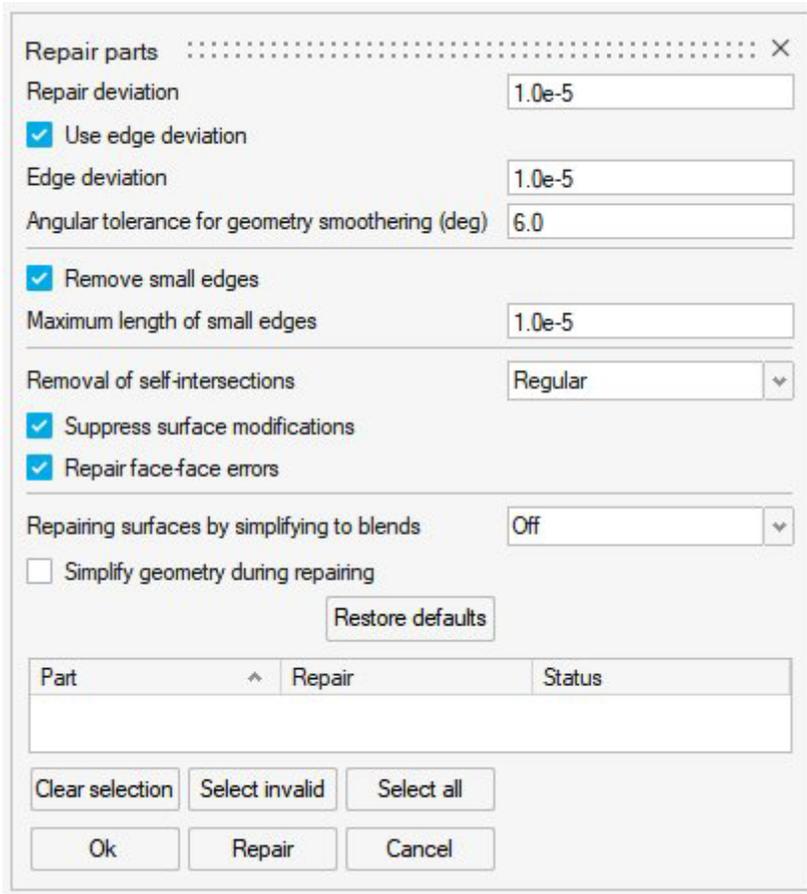
Implicit Modeling

**Stochastic Lattice Tool**

This new tool allows you to fill an implicit body with a stochastic lattice, which is constructed from randomly placed points that are connected by beams. Points and edges can be generated by using a variety of methods and edited using user-defined filters. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/implicit/stochastic_t.htm
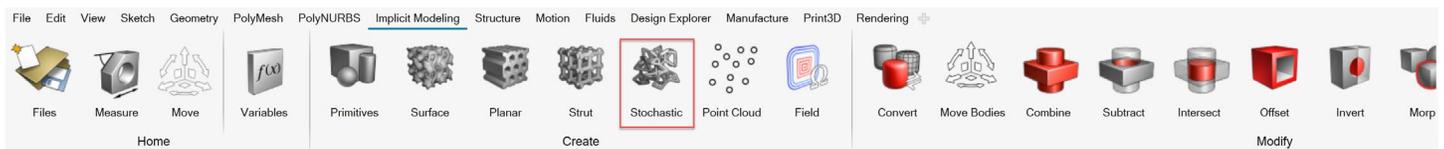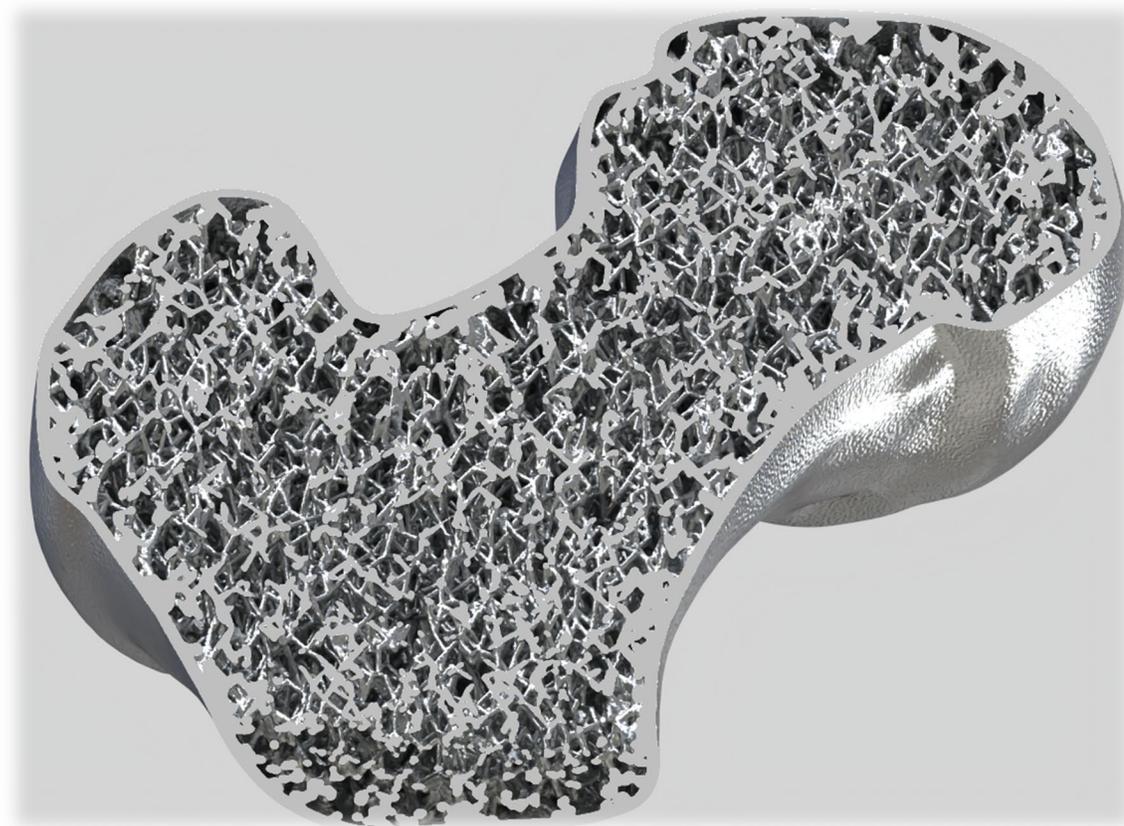
New Implicit Primitives

In addition to cuboids, cylinders, and spheres, you can now create toruses, cones, pipes, capsules, and pellets using the Primitives tool. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/implicit/primitive_t.htm

Remap Tool

This new tool allows you to select a body and remap its field into a signed distance field. Since some implicit operations can break signed distance fields (e.g., Booleans), the remap function recalculates distances to a known surface. This is useful if "broken" signed distance fields are used downstream and need accurate distance values (e.g., shelling). Remap can be used to create surface lattices with exact wall thickness. For more information, see the help:
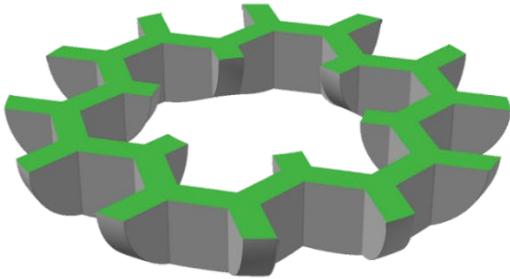
https://2024.help.altair.com/2024/inspire/en_us/topics/implicit/remap_t.htm
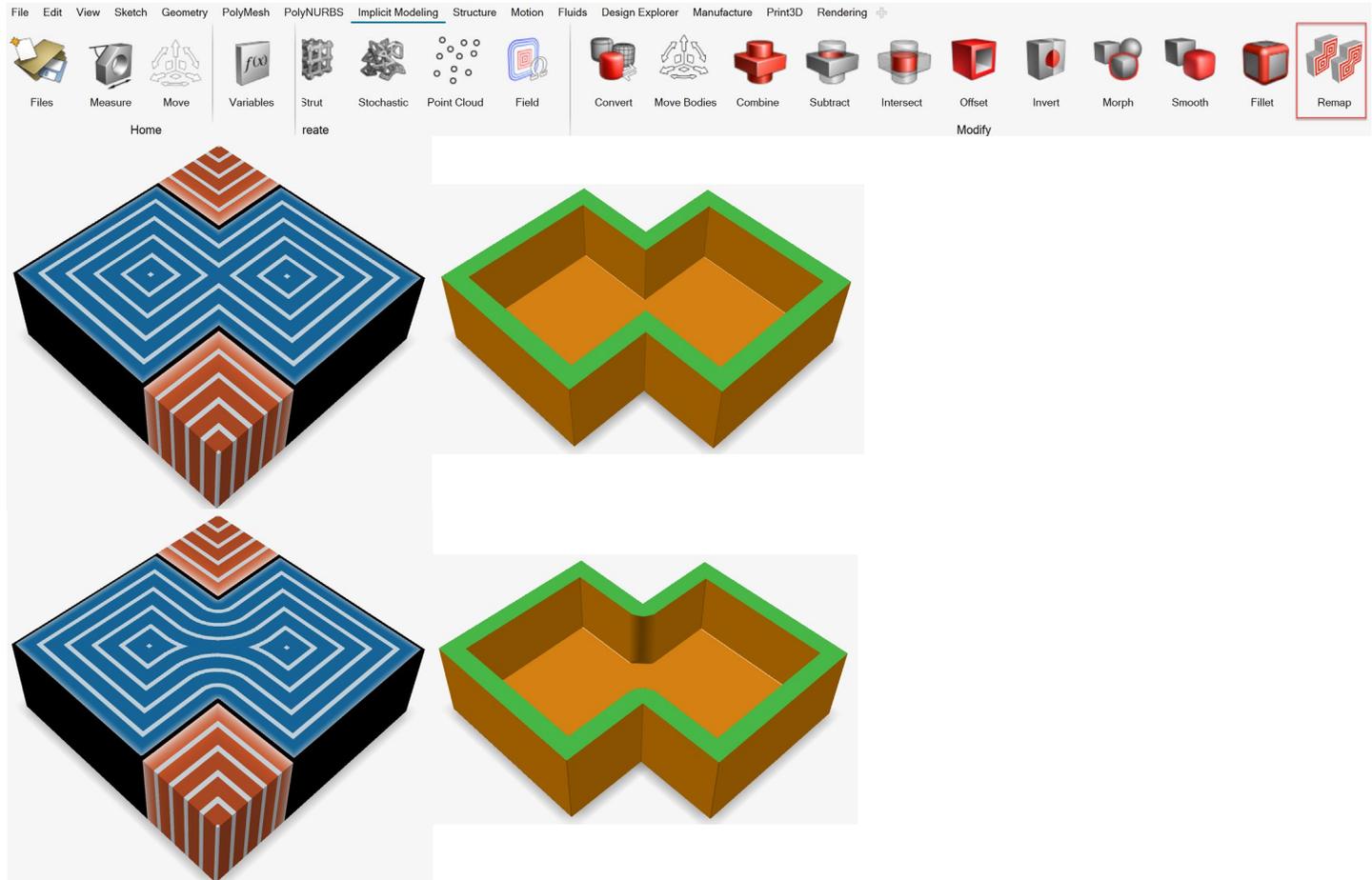
View Field

A new view mode is available when editing an implicit part. The **View Field** option switches between regular coloring of implicit bodies and coloring based on the scalar values generated by the Implicit function. Contours and gradients can be enabled and customized to better visualize the field values. This mode can be enabled in any Implicit context.

https://2024.help.altair.com/2024/inspire/en_us/topics/implicit/view_field_r.htm

Rendering

Depth of Field

This new parameter on the Camera tab of the Rendering Editor allows you to adjust the camera focal point and the distance of the focal area. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/studio/unity_basics/camera_c.htm#task_cd1_3sn_3fb

Emitter Material

Use this new material type to add geometry-based lighting to your scene. Define the color, power unit (simple Watts or Lumens), and which side of the object to emit from. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/studio/rendering/mat_simple_create_t.htm#emitter_params_r

Glass/Gems Material

Use this new refractive glass material type to create solid glass objects, glass vessels containing liquid, and gemstones. Presets include common glass and gem materials such as diamond and quartz. You can adjust parameters such as index of refraction, absorption color, absorption distance, and Abbe number. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/studio/renderingmat_simple_create_t.htm#task_cvs_trd_ydb

Structure

Seam Welds Tool

This new tool allows you to connect parts along a continuous edge or line. Choose between Auto and Manual methods. Auto allows a quick analysis of assemblies with seam welds, while Manual allows you to accurately capture connections through welding and parameterize the weld for optimization. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/inspire/structure/seam_welds_c.htm
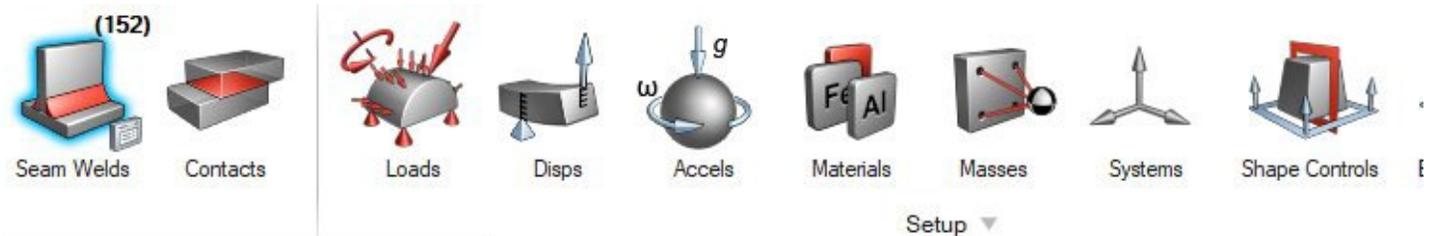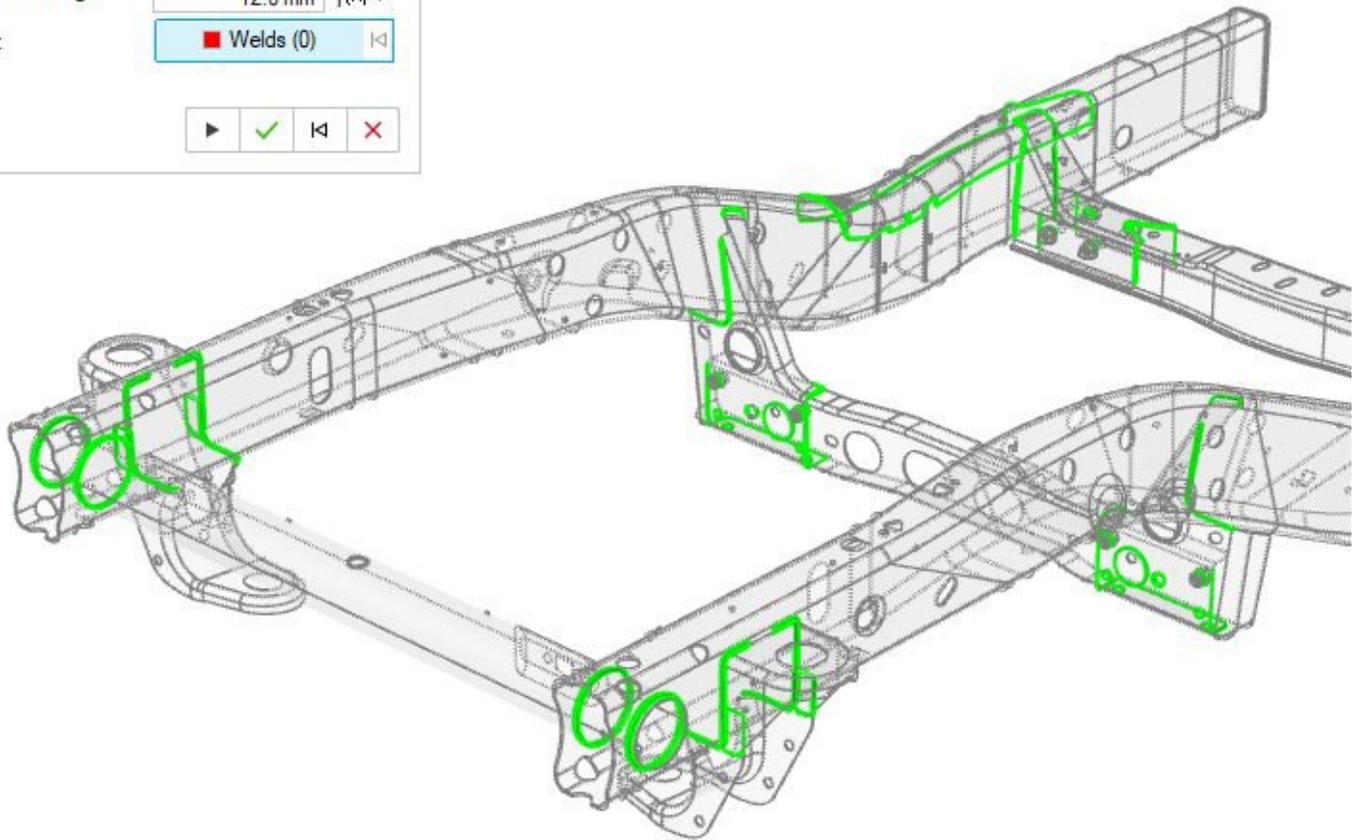
Improved Report Tool

- Inspire Motion and Fluids reports can now be generated immediately following an analysis
- Setup tab categorizes entity types
- Option to include images in report
- Option to automatically open the report upon creation
- Table of contents
- Fast and easy way to create and share summary documents of models and corresponding results

For more information, see the help:
Fluids: https://2024.help.altair.com/2024/inspire/en_us/topics/inspire/structure/report_c-3.htm
Motion: https://2024.help.altair.com/2024/inspire/en_us/topics/inspire/structure/report_c-2.htm
Structure: https://2024.help.altair.com/2024/inspire/en_us/topics/inspire/structure/report_c-1.htm
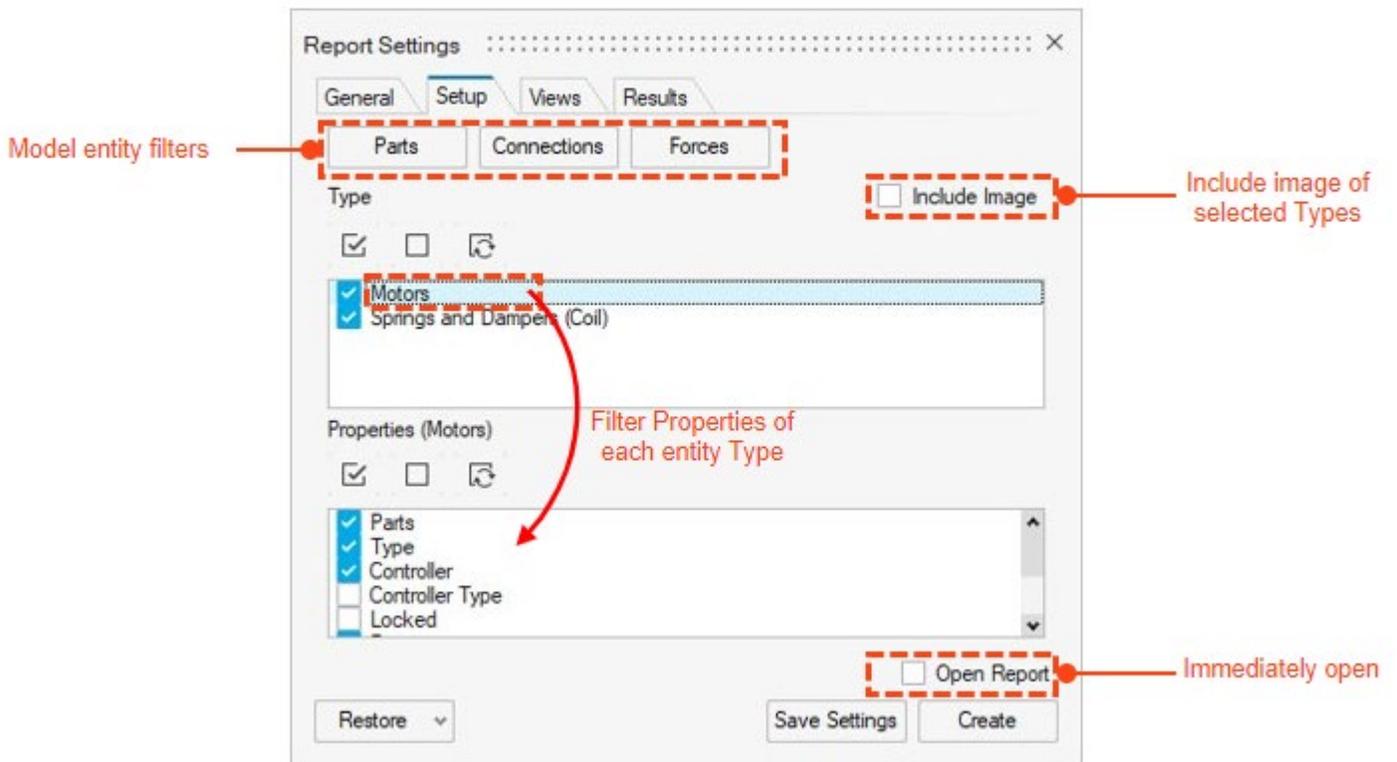
Inspire Fluids - Reports

Quick and easy personalized reports

Inspire Motion - Reports

Example Motion report pages

Fluids

Far Field Boundary Condition

You can now simulate fluid flowing past a part in an unconstrained environment with the Far Field boundary condition.

For more information, see the help:
https://2024.help.altair.com/2024/inspire/en_us/topics/cfd/far_field_t.htm
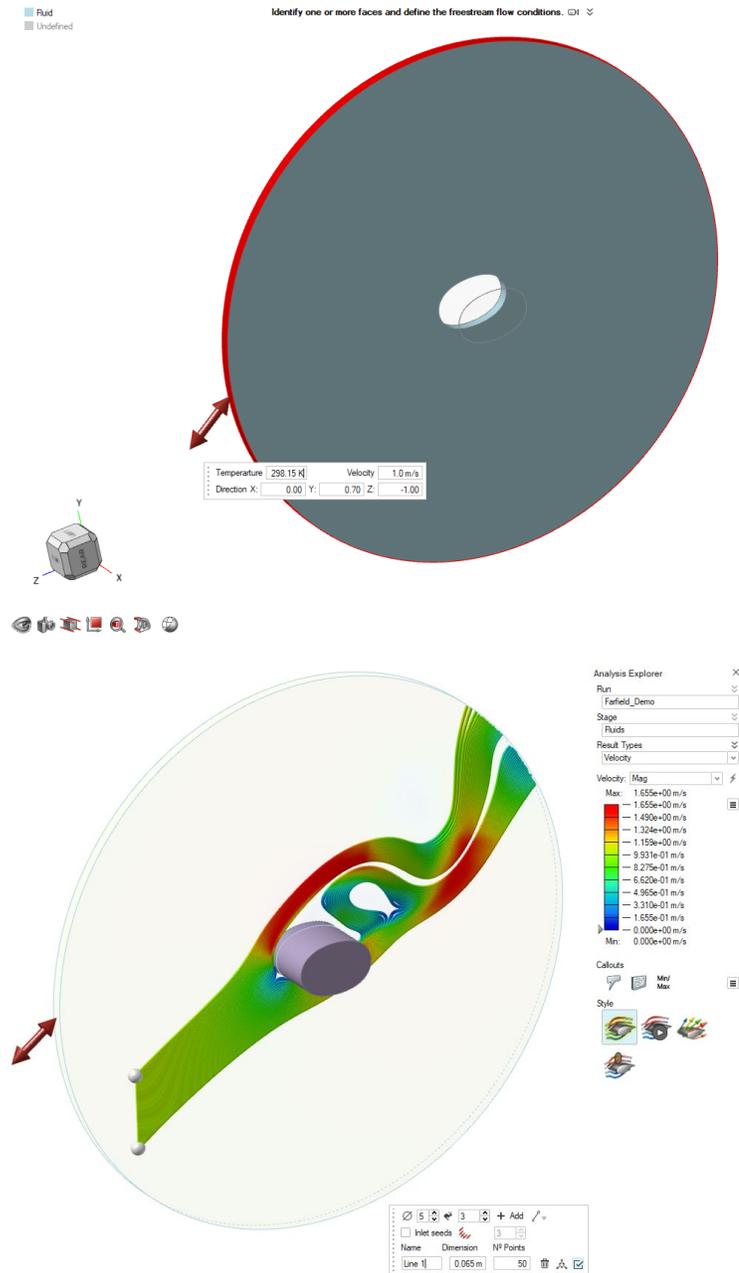
Outlet Boundary Condition

You can now select from Gauge Pressure, Average Velocity, and Volumetric Flow Rate when defining the Outlet Boundary Condition.

For more information, see the help:
https://2024.help.altair.com/2024/inspire/en_us/topics/cfd/outlet_t.htm
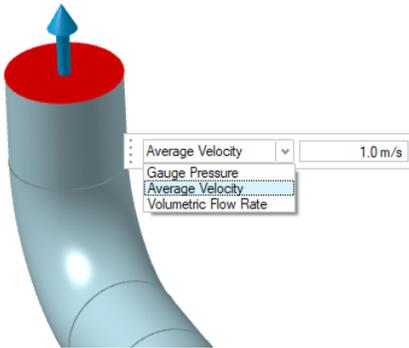
Symmetry

When running a custom fluids analysis, you can now save calculation time by selecting Use Symmetry in the Run Fluids Analysis window.

For more information, see the help:
https://2024.help.altair.com/2024/inspire/en_us/topics/cfd/run_cfd_analysis_t.htm
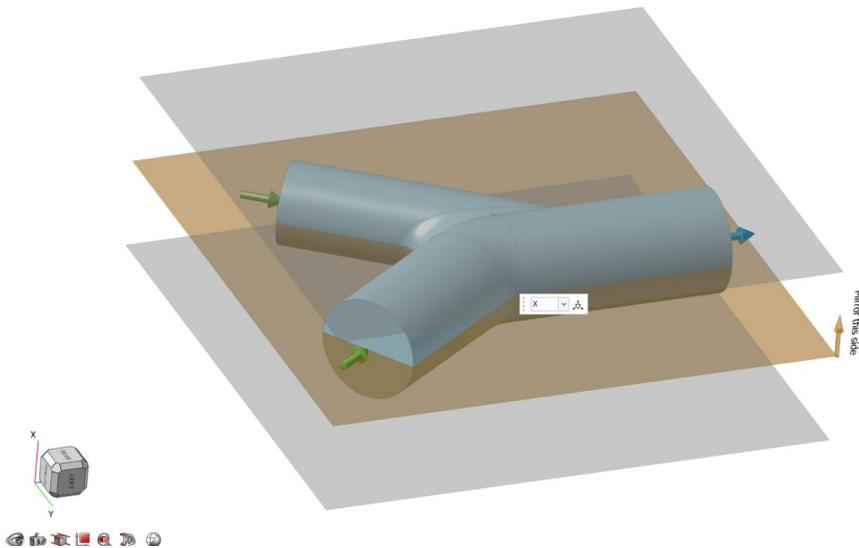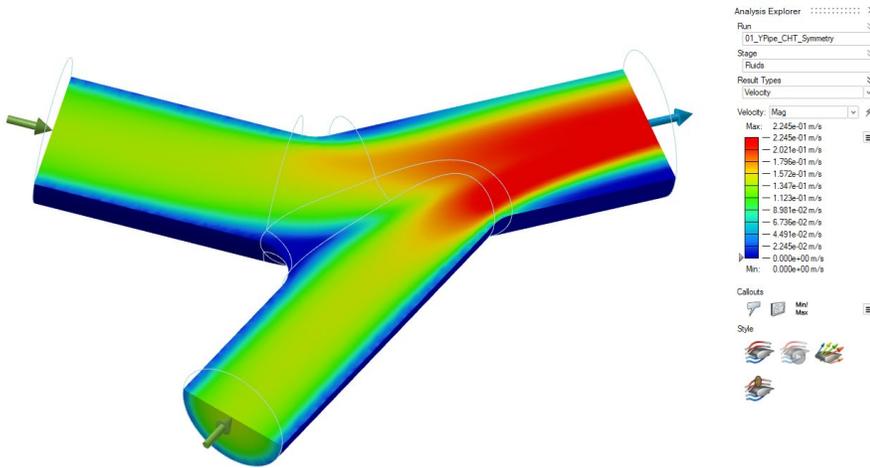
Callout Options

You can now create callouts to show data from points of interest in a Fluids analysis.

For more information, see the help:
https://2024.help.altair.com/2024/inspire/en_us/topics/cfd/show_cfd_analysis_results_t.htm

Integration Sections

In the Analysis Explorer, you can now visualize average velocity, pressure and temperature through a section of the fluid domain.

For more information, see the help:
https://2024.help.altair.com/2024/inspire/en_us/topics/cfd/show_cfd_analysis_results_t.htm

Report Tool

You can now generate a Fluids analysis report as a .pdf or a .pptx file.

For more information, see the help:
https://2024.help.altair.com/2024/inspire/en_us/topics/inspire/structure/report_c-2.htm

Sketching

Tan/Tan and Perp/Perp Inferences

When you sketch a line between two circles, the Tan/Tan and Perp/Perp inferences help you make the line tangent or perpendicular to both circles. For more information, see the help:
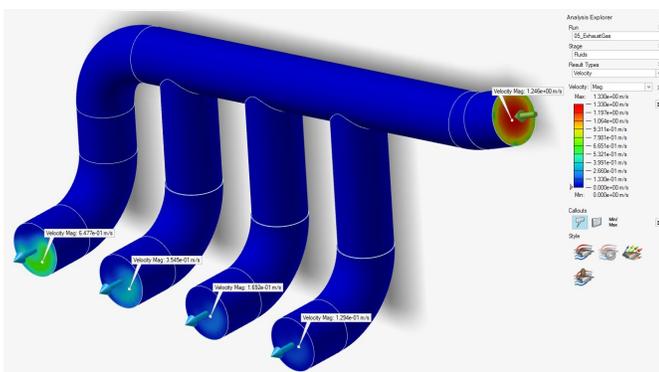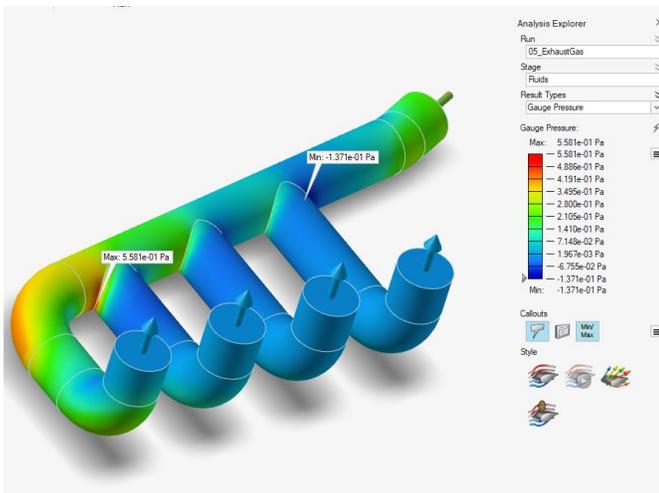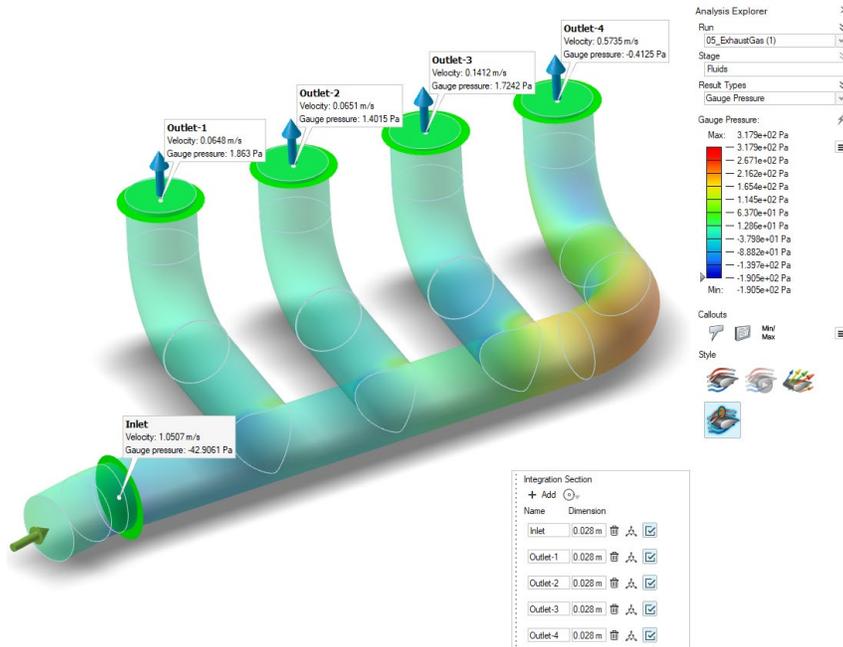
https://2024.help.altair.com/2024/inspire/en_us/topics/shared/unity_basics/move_snaps_st_c.htm
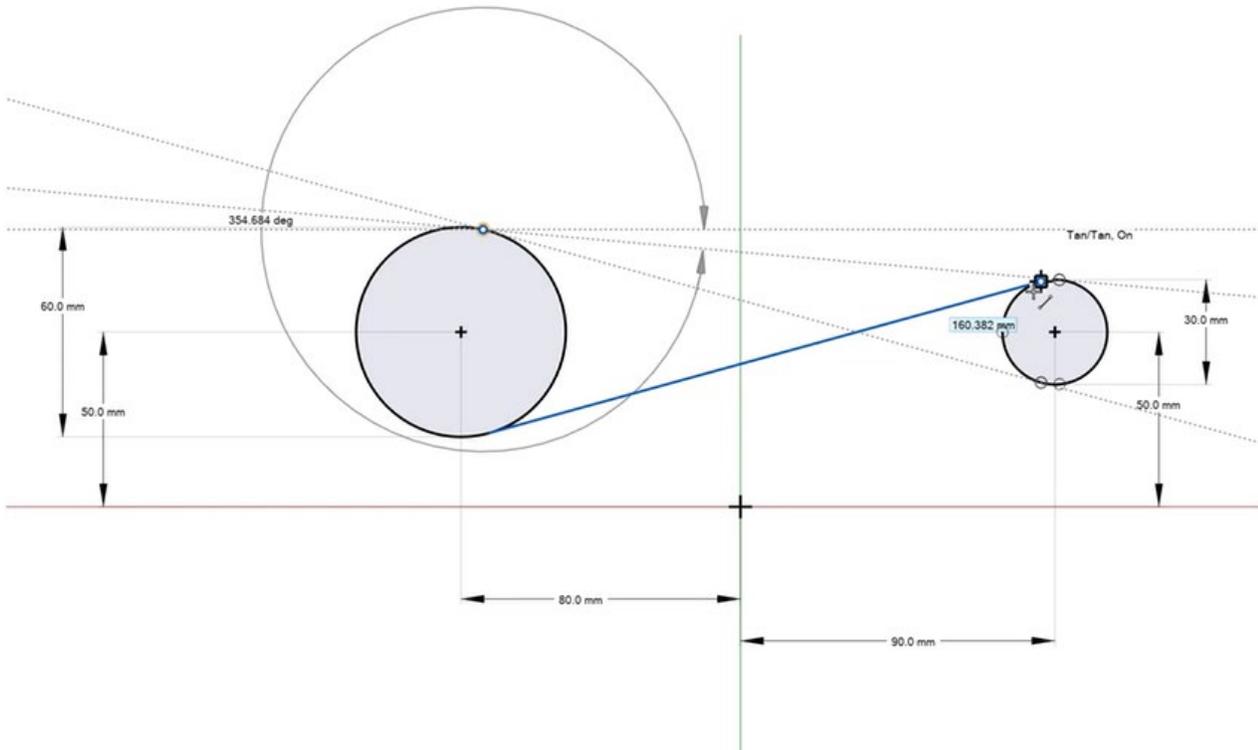
Spline: New Degree Option

A new option was added to the Spline guide bar, allowing you to define the degree of control point splines and splines through points. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/shared/parametric/sketching/splines_c.htm
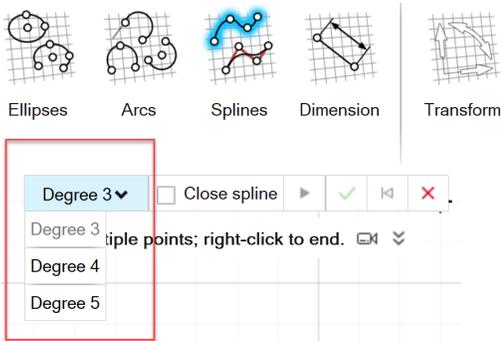
DWG/DXF Export

This new tool allows you to export a sketch as a .dxf or .dwg file. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/shared/parametric/sketching/dwg_dxf_export_t.htm

Improved Selection of Coincident Sketch Entities

Now when you hover over coincident sketch entities such as vertices, a badge appears next to the cursor and a tooltip appears.

This indicates that you can hold down the left mouse button to access the coincident picking menu, from which you can select the desired sketch entity.
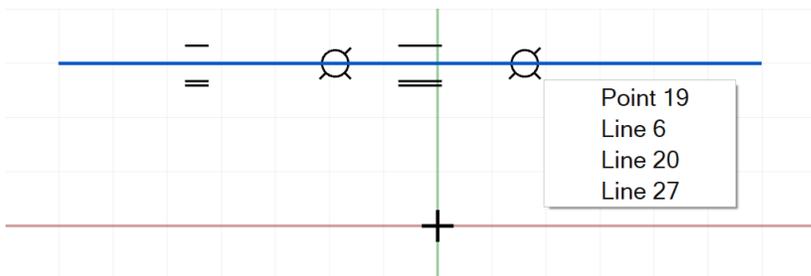
For more information, see the help:

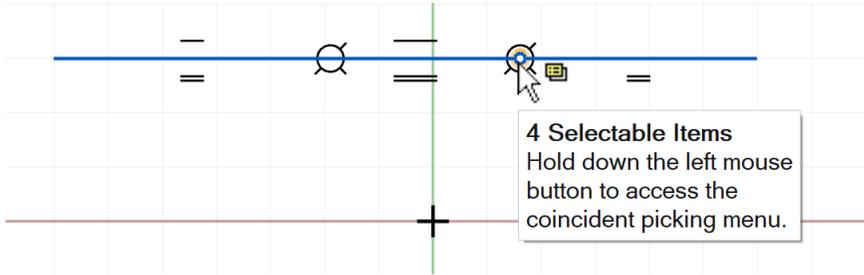https://2024.help.altair.com/2024/inspire/en_us/topics/shared/parametric/sketching/coincident_select_t.htm

PolyNURBS

Improved PolyNURBS Shell Tool

The Shell tool has been renamed to Shell & Offset, allowing you to not only offset the vertices of PolyNURBS part bodies, but now optionally shell the bodies by connecting the copied offsets. Essentially, you can inflate or deflate a PolyNURBS part to make it thicker or thinner. For more information, see the help:

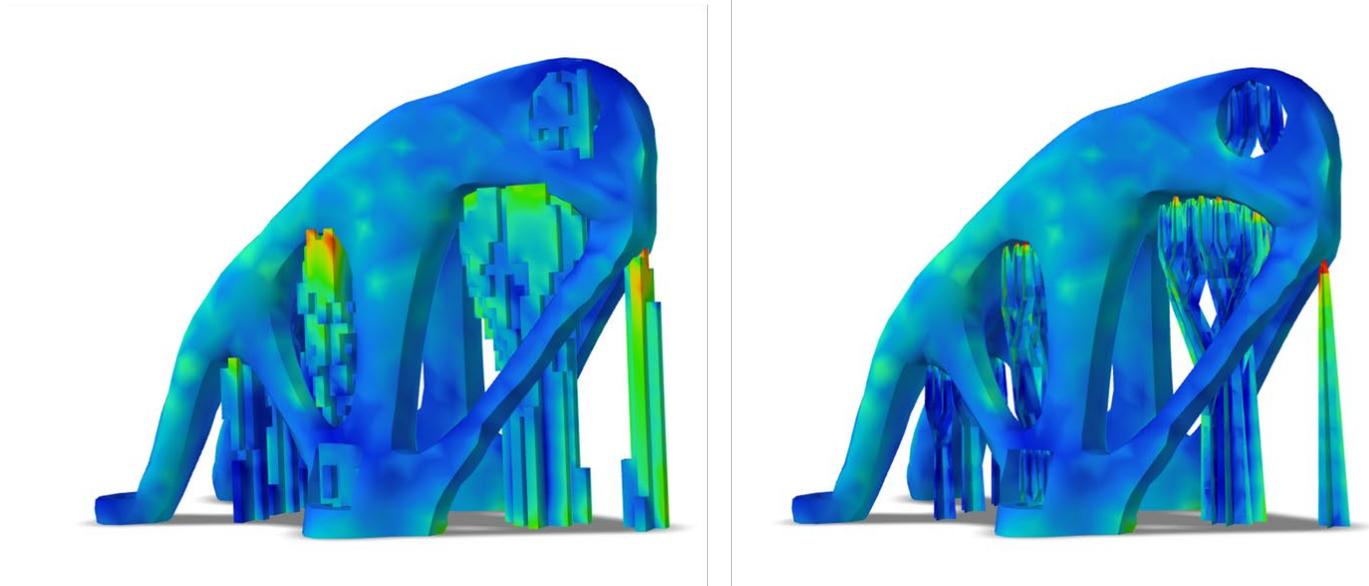https://2024.help.altair.com/2024/inspire/en_us/topics/shared/geometry/polynurbs_shell_t.htm

Print3D

Shell Supports

When running an SLM analysis using tetrahedral elements, Inspire can now present supports with a shell mesh instead of voxels.

Voxelized supports on left; shell mesh on right

Activate this feature in Preferences > Print3D > SLM Analysis > Support Options > Use new support formulation.

Motion

Mesh Control for Flexible Bodies

You can now add mesh control to flexible bodies to help improve flex body stress convergence without adding elements in unnecessary areas. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/inspire/structure/mesh_controls_c-2.htm
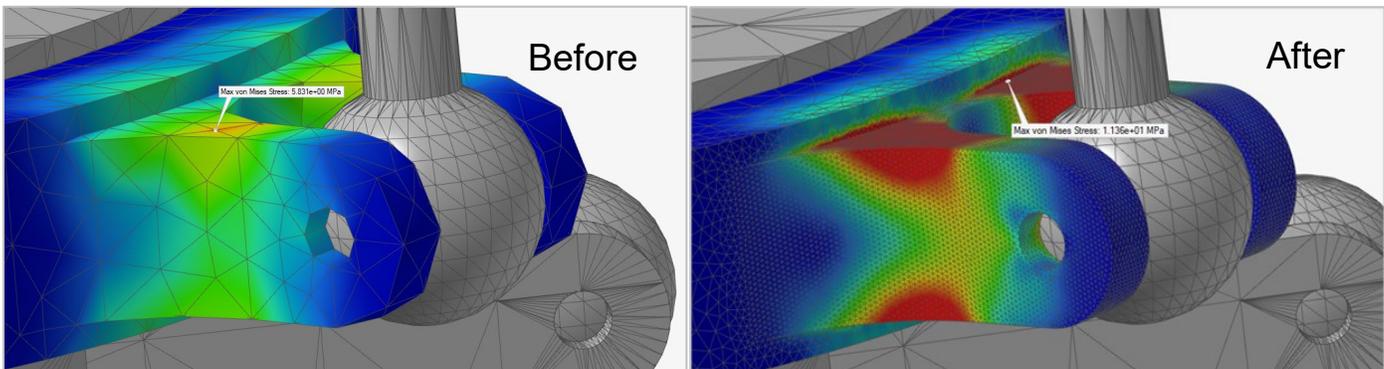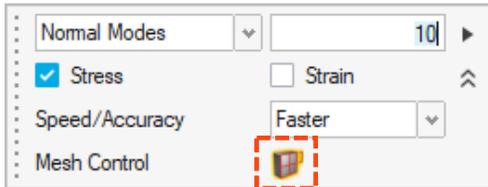
New Outputs for Flexible Bodies

You can now view principal stress and principal strain results after running a flex body analysis, providing a more detailed assessment of flex body stress. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/inspire/motion/review_flexible_body_results_t.htm

Report Tool

You can now generate a Motion analysis report as a .pdf or a .pptx file. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/inspire/structure/report_c-2.htm

Variable Manager
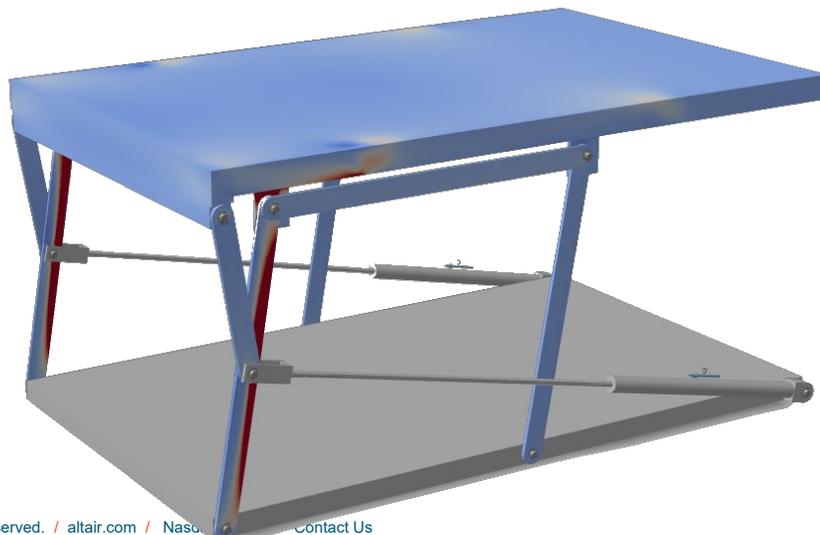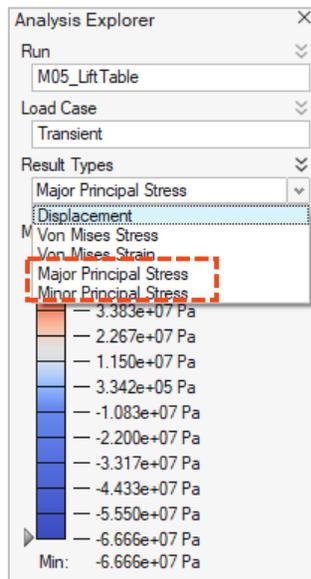
Variables can now be assigned to various Motion properties. For more information, see the help:

https://2024.help.altair.com/2024/inspire/en_us/topics/shared/parametric/variables/variables_c.htm#variables_t

Python API

Geometry
- Added new Patch capabilities
- Added new Delete Faces capabilities
- Added parting line capabilities to the Draft tool
- Improved the NURBS Curve tool to accept a geometric reference point
- Improved the Helix Curve tool to set the height and start angle
- Improved the Rib tool
- Added variable support to the Chamfer tool to create parametric chamfers flawlessly

Implicit Modeling
- Added implicit primitive shapes such as Torus, Cone, Pipe, and Capsule
- Added Remap capabilities to select a body and remap its field into a signed distance field
- Added Implicit vector math functions such as AddVector, Create2D, Create3D, Create4D, Distance, Dot, Cross, Length, Normalize, Scale, and Element to easily create angle- and gradient-based fields
- Added the new Implicit math function atan2
- Added Stochastic Lattice capabilities to fill an implicit body with a stochastic lattice. This gives you the ability to create and filter beams and use custom equations for field-based filtering.
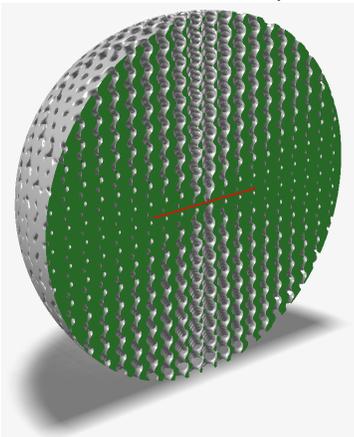
Structure
- Added options to the rotate system
- Added options to associate a system to boundary conditions

Enhancements

- Added drag handles for the Helix tool to specify the Height and Start Angle [INSPIRE-33437]
- The Helix tool now supports the selection of circular edges and imprints for creation [INSPIRE-33436]
- The Loft tool now supports continuity for guide curves [INSPIRE-32840]
- Added a right-click context menu option to create a new sketch on the global planes and user-created reference planes [INSPIRE-29653].

Resolved Issues

- Fixed an issue with the Boolean Combine not working with patterned copies when the target is the source [INSPIRE-27601]
- Fixed incorrect import of CORD2R bulk data [INSPIRE-41353]
- Fixed variable values not updating in the model [INSPIRE-33466]
- Fixed Inspire crash when opening 2022.3 models [INSPIRE-33435]
- Fixed an issue with Min/Max labels not displaying for stress or strain while reviewing flexible body results [INSPIRE-41350]
- Fixed an issue where flexible bodies were shown in the Topology Explorer, regardless of what was selected [INSPIRE-41872]
- Fixed Inspire crash when turning on/off the Hide/Show Elements option while reviewing flex body modes and then clicking the Flexible Body Results ribbon icon [INSPIRE-41975]
- Fixed an issue where a motor/actuator's input profile didn't match its output profile for certain configurations, such as when the simulation End Time is much smaller than the Duration of the input [INSPIRE-35960]
- Fixed an issue where the Power output for motors and actuators was scaled by a factor of 1000 when using MMKS Model units [INSPIRE-36020]

Known Issues

- Incorrect import of SolidWorks parts [INSPIRE-41531]
- Wrong sketch created for the sketch regions [INSPIRE-29622]
- Modifying edge fillets leads to selection of additional edges [INSPIRE-27932]
- Linux Only: Analysis run fails for a large model when the memory is set to Auto in Preferences [INSPIRE-41592]
- The Connector filter in the Topology Explorer is not working [INSPIRE-35724]
- Different contacts found near bolts [INSPIRE-42691]
- Cannot rename the shape alternative and original part from the Model Browser [INSPIRE-42713]
- Cannot drag a circle that was created with its center at the origin after deleting the coincident constraint [INSPIRE-42796]
- In Print 3D Binder Sinter context, shrinkage and compensation analysis are not working when designated live setters are present in the model. [INSPIRE-42830]

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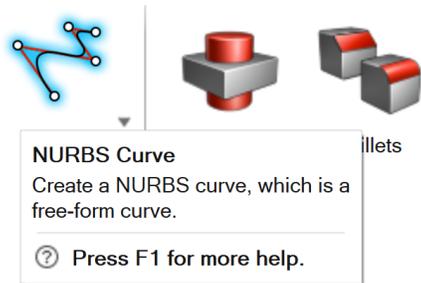
Workflow help appears when you select a tool that opens a guide panel, guide bar, or microdialog. The text prompts you what to do next.
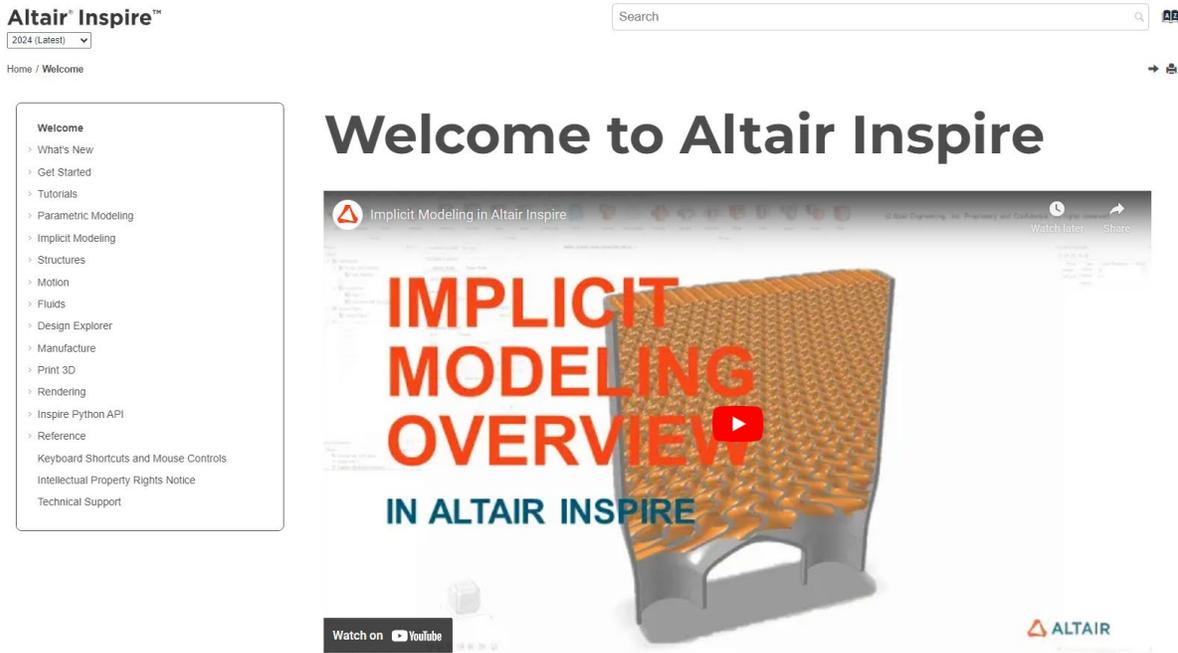

Click ⌄ to view additional tips and shortcuts. Some tools also include a video ⌐◁ .

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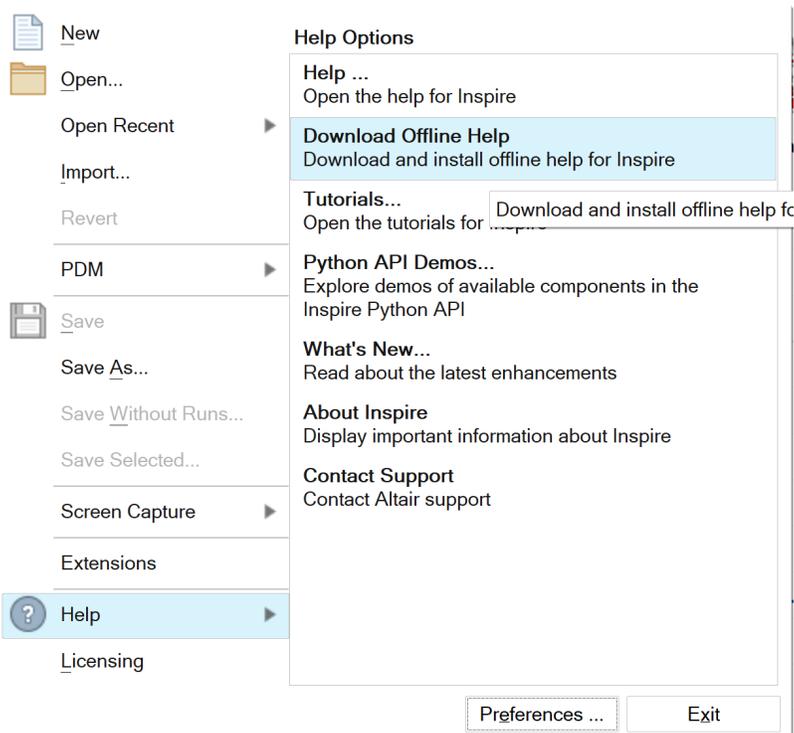
Press **F1** or select **File > Help > Help** to view the online help.

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.