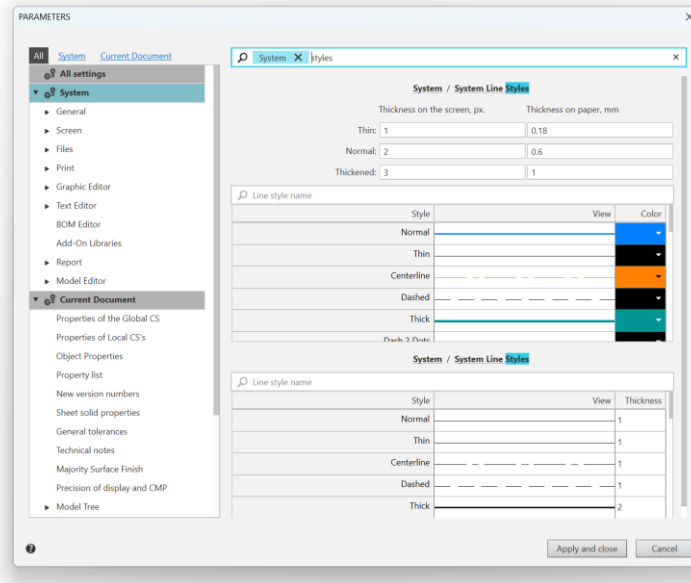
KOMPAS-3D v24

What's new?


INTERFACE
KOMPAS-3D v24

Updated “Parameters” Dialog

- ✓ **All settings**
- ✓ **Search of settings**



The system and current document **settings dialog box** (accessible via Settings — Options...) has been improved:

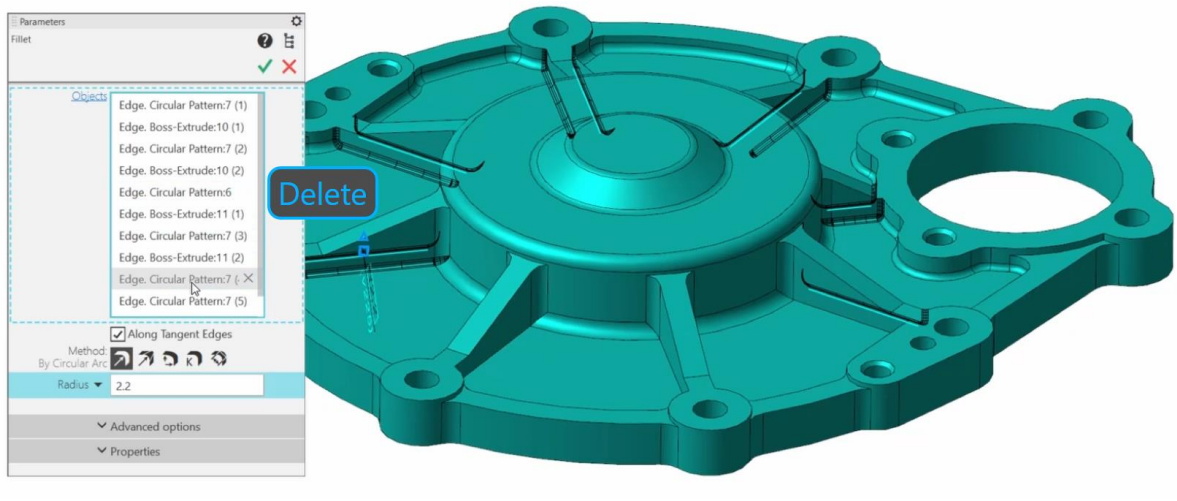
• All editable settings are now consolidated in a general scrollable list. The user can select a section and view only the settings in that section and its subsections. In earlier versions, to access a specific setting, the user had to select a tab, and then a section and subsection on it.

• The dialog box now has a search bar to search for section and setting (options, list items, etc.) names.

• For some settings, the controls have been modified. For example, a group of options has been replaced with a list. Some settings have been moved to other sections for a more logical arrangement, but the sections remain generally the same as before.

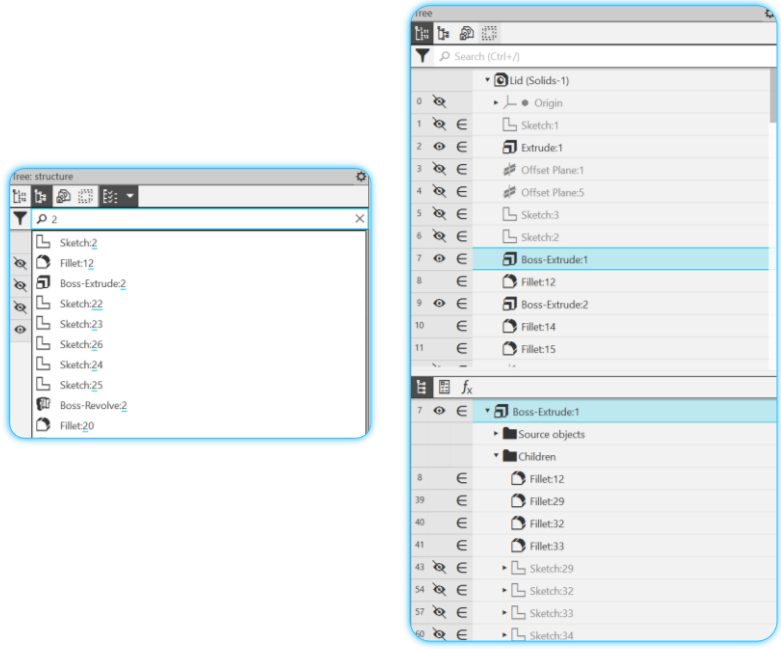
• General interface settings are now available in the dialog box. These include colors, language, icon size, keyboard settings, tab positions, and Remember Last Command. Previously, these settings were available only by clicking the Interface Settings button menu in the KOMPAS-3D window header.

Removing Items Using the Delete key



Now you can press <Delete> to remove rows in lists and tables on the Settings panel and the Product Structure panel.

Ordinal Numbers in the Tree



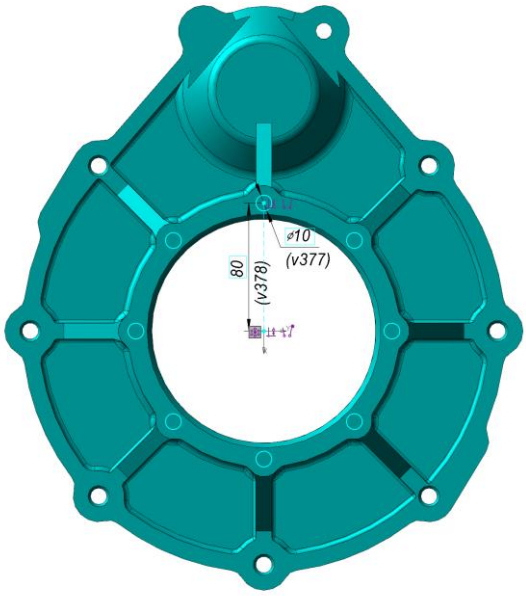
Sequential numbers of operations can now be displayed in the Design Tree. The operation numbers are also displayed when viewing object relationships, can be an operation in the Design Tree, and are reported by the Object Information command.

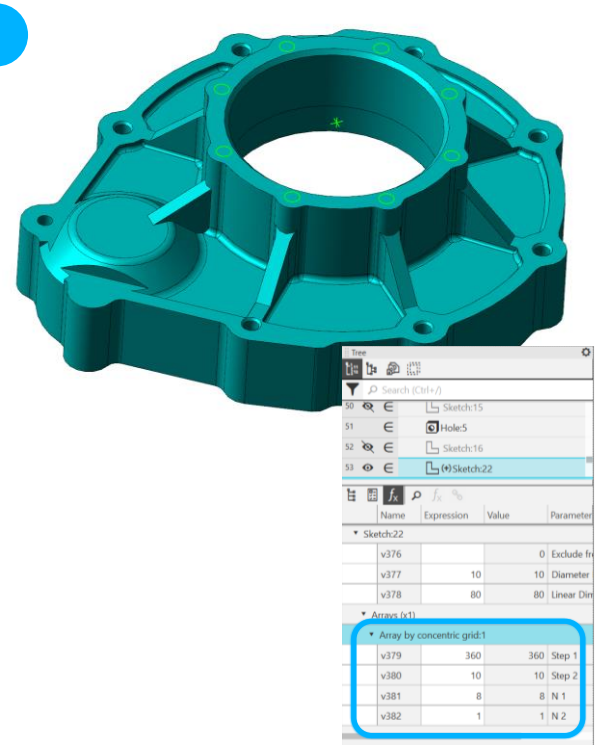
Operations are numbered in the order of their appearance in the history tree. Once an operation is added/deleted/moved, the affected operations are renumbered.

Core functionality = the main product components:

- 3D modeling module
- 2D editor (KOMPAS-Graphic)
- BOM module
- Text editor

A Parametric Array of Graphic Objects

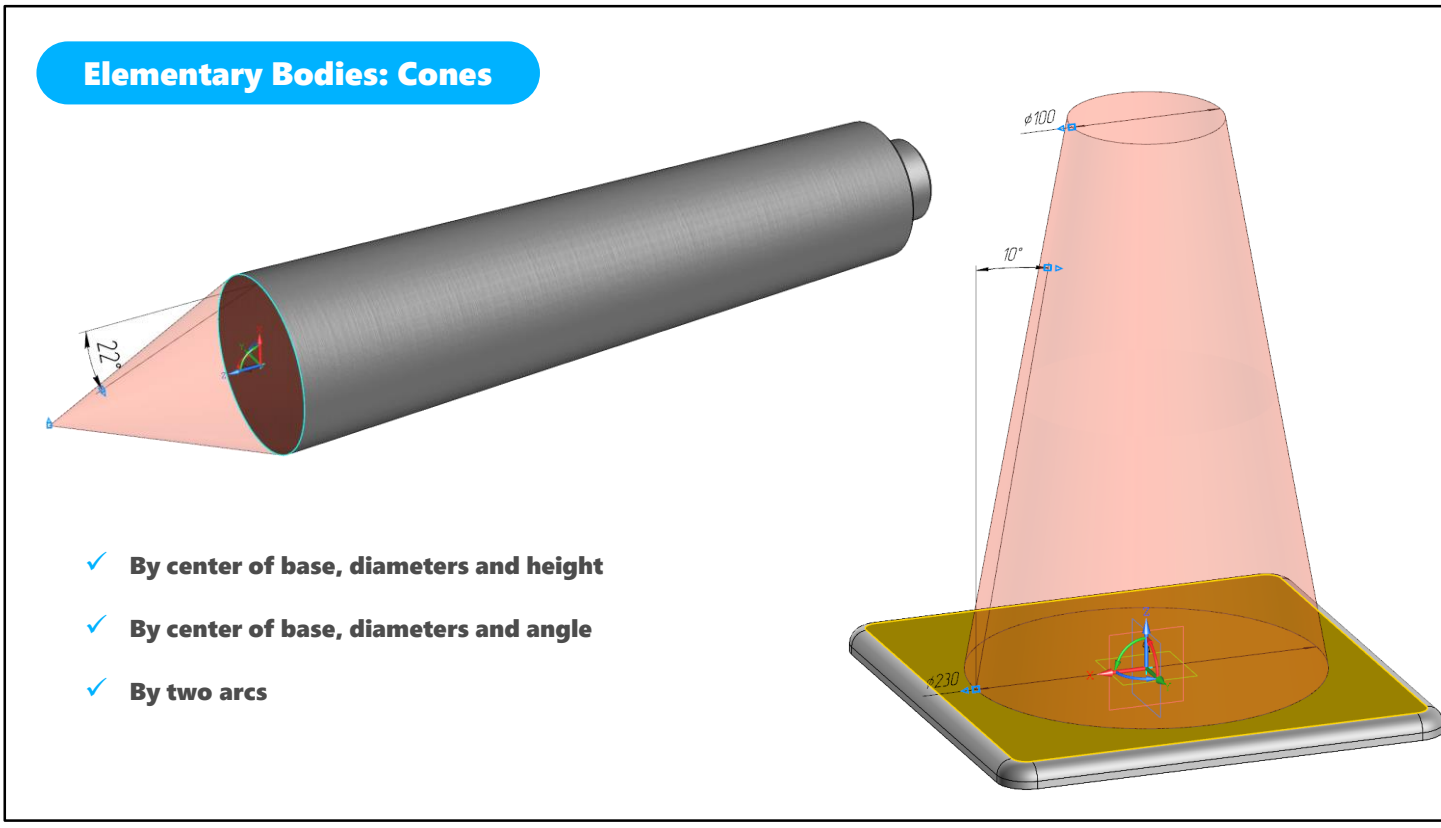




Changes to the functionality

1. **Arrays of graphic objects** are now supported. An array is a group of object instances arranged in a certain way. The user controls the number and position of the instances; some instances can be excluded from the array. You can also add control dimensions to an array to modify it. An array can be exploded, i.e., the relationships between its instances are removed, and each instance becomes an independent object.
The following types of arrays are supported:
- Grid array,
- Polar array.

Arrays are displayed in the Document Tree as a dedicated group named Arrays.
Arrays are also available in 3D model sketches.

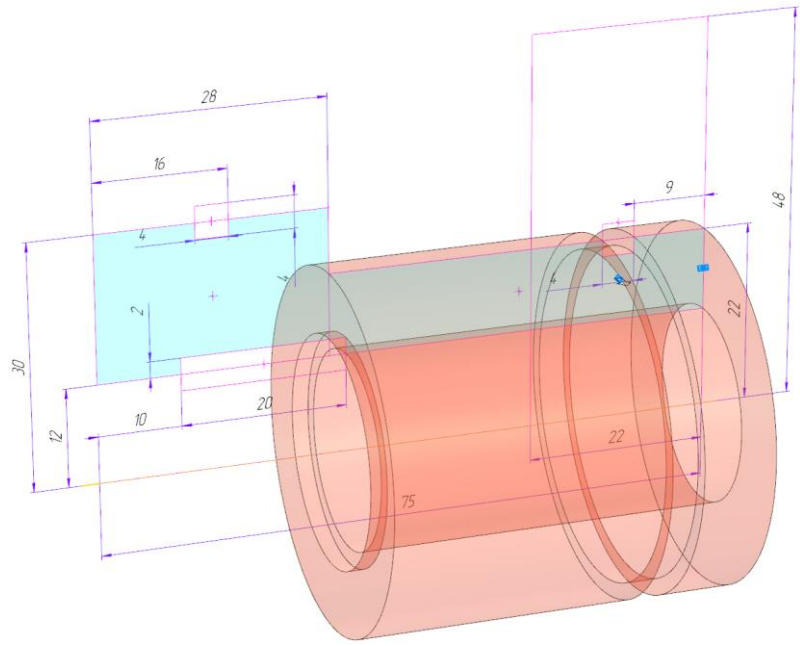


2. New commands to construct a right circular **cone** solid:

- Cone from the base center, diameters, and height
- Cone from the base center, diameters, and taper angle
- Cone from two arcs.

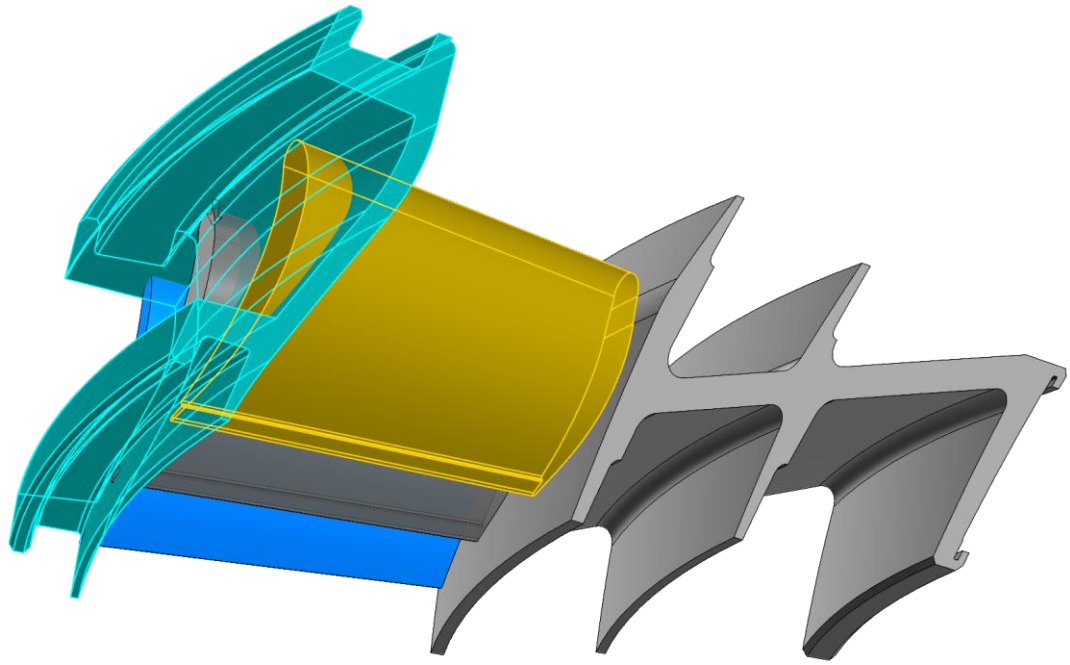
Selecting Multiple Areas as a Base Section

- ✓ **Revolution Element**
- ✓ **Revolution Surface**
- ✓ **Extrusion Surface**

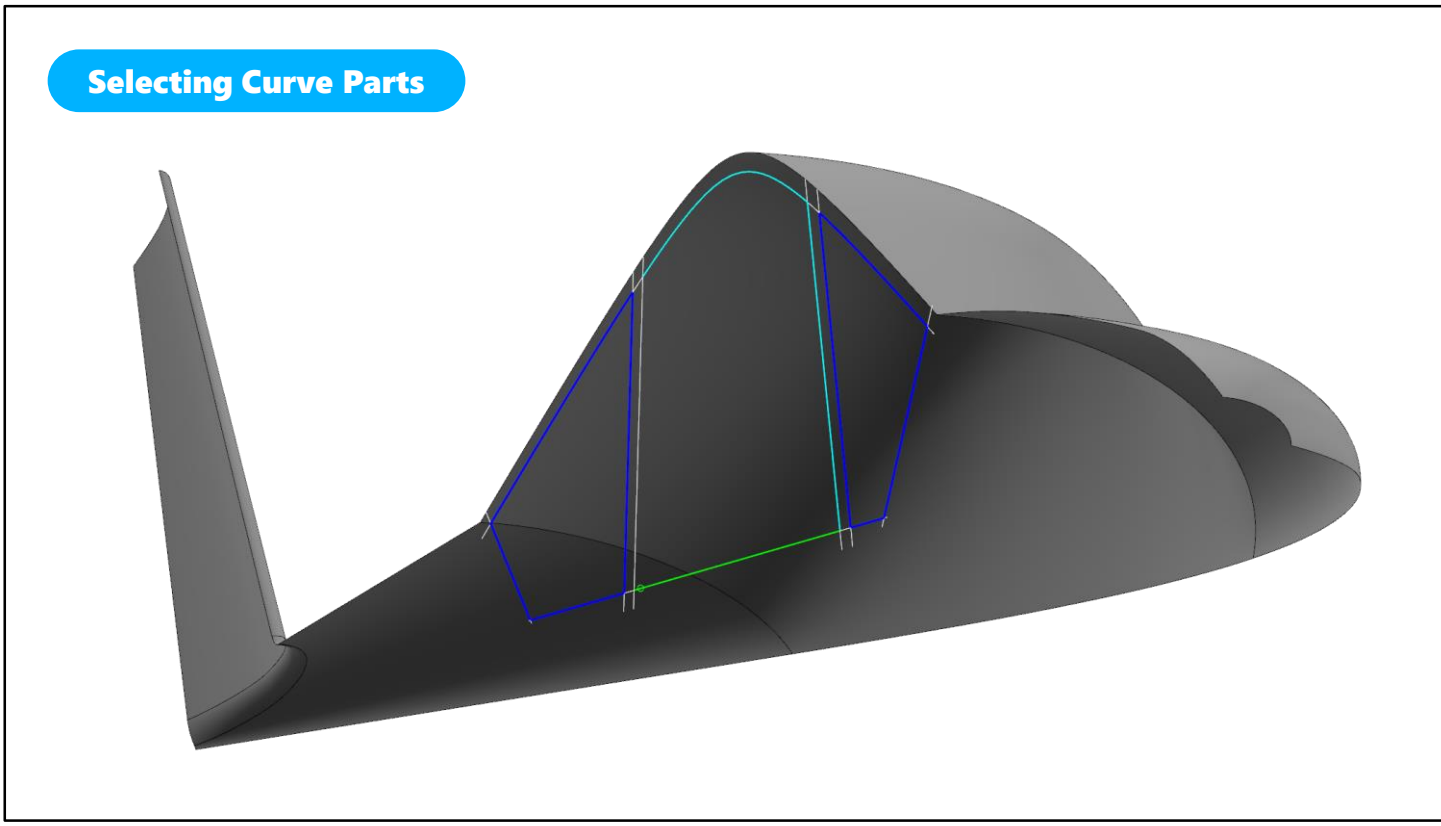


3. Multiple objects can now be selected as the cross-section in the **Body of Rotation**, **Surface of Rotation**, and **Surface of Extrusion** commands.

Sectioning of a Model by Body, Surface, or Surfaces Set



4. The **Section** command can now use a body, surface, a set of connected body/surface faces, or a set of disconnected but adjacent faces as the cutting object.



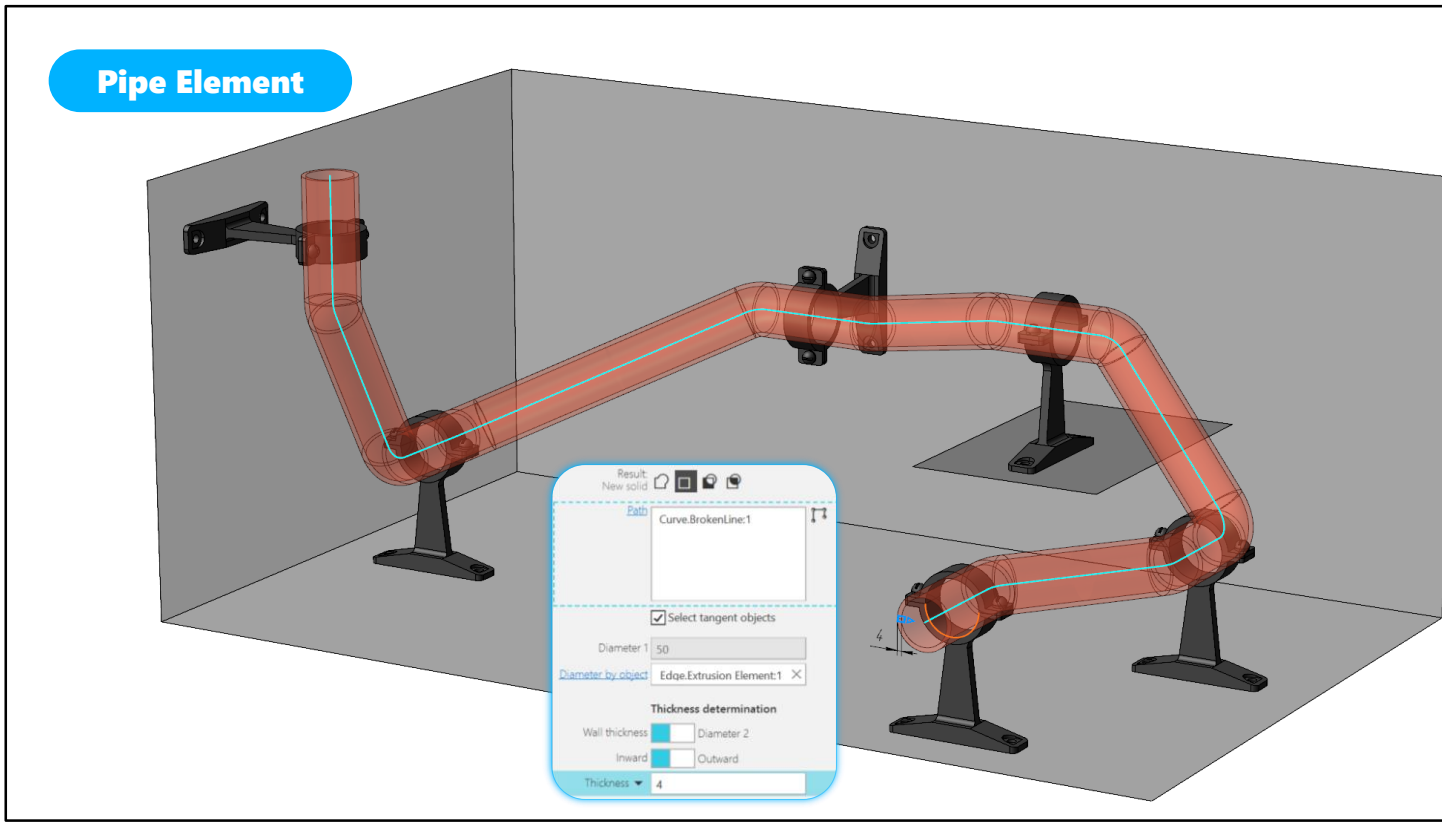
Wireframe and surface modeling

The Quick Access bar now has new controls to select curve segments:

1. The **Select Curve Segments** button switches the curve selection mode between entire curves and curve segments formed where a curve intersects other curves. The button is displayed on the Quick Access bar when the following objects are selected:

- contour, equidistant line
- sweep body/surface
- conical section surface; ruled surface except for constructed from two surfaces
- point on a curve
- sketch as it is placed on the path.

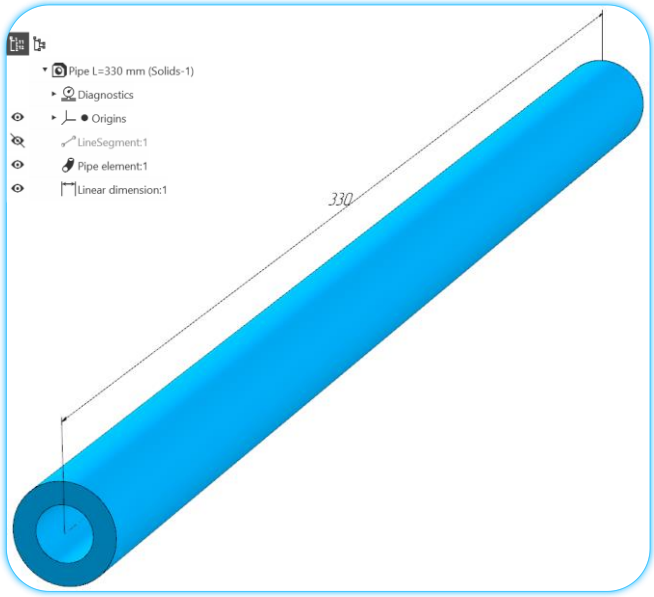
2. Selection options for curves that form a non-branching chain: Single: each curve is selected individually; Connected: the entire chain is selected. The new droplist is displayed on the Quick Access bar when the Contour command is activated. It replaces the Non-branching nodes selection mode droplist.

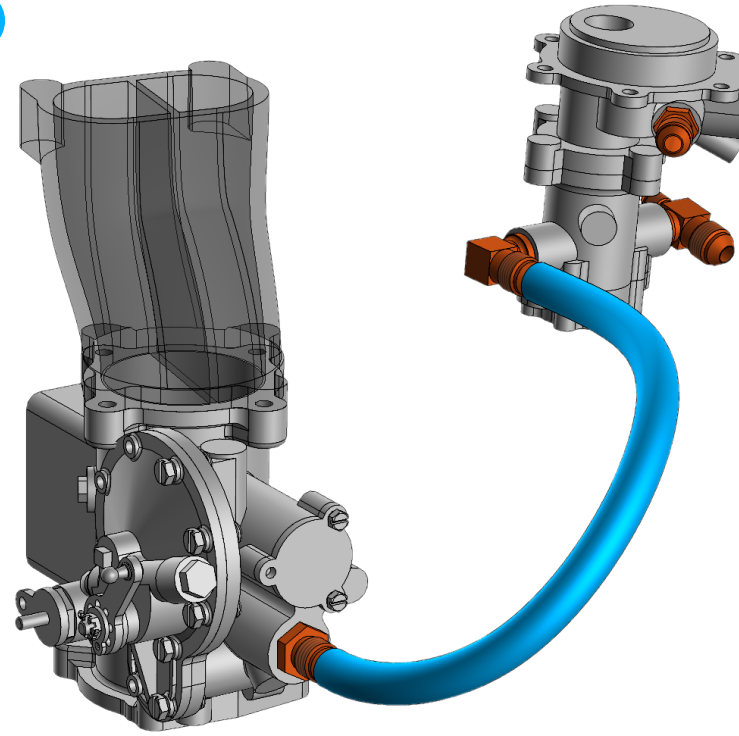


A new way to construct a body

There are two new commands: **Pipe** and **Sweep Pipe Cut**. These are sweep along path commands that automatically generate the cross-section as a circle of a specified diameter. The path is user-defined. The pipe can be solid or thin-walled. For thin-walled pipes, the user specifies either the wall thickness or the smaller diameter.

Deforming Assembly Components



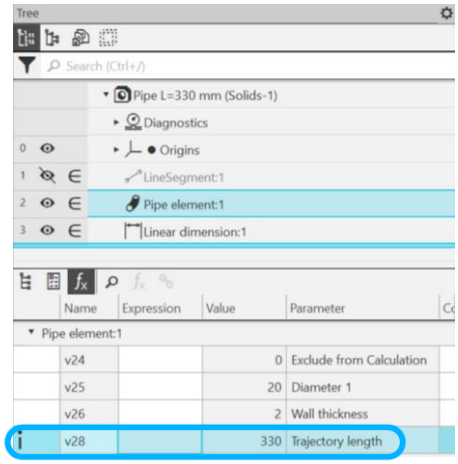


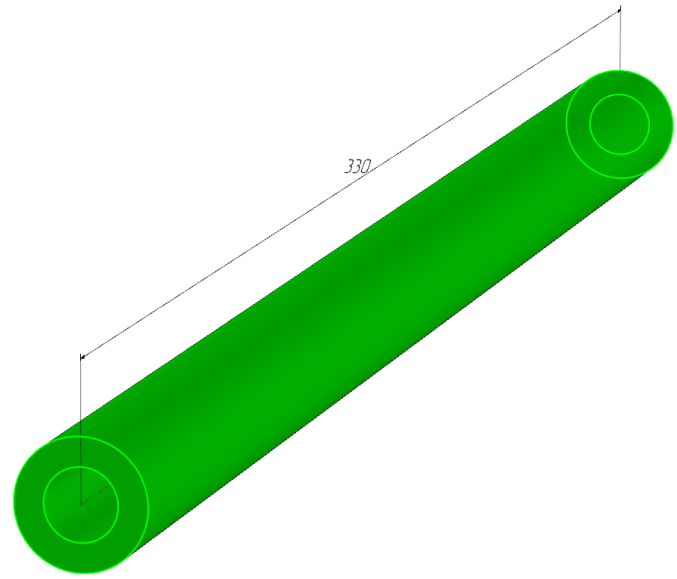
Now you can modify the component shapes to fit the assembly without modifying the source files. With the **Deformation** operation, you can edit the operations within the component (extrusion, rotation, loft, sweep, and some curve operations) by replacing their reference objects with new ones available in the assembly or in other components. For splines and polylines, you can edit the coordinates of the vertices. Numerical properties of other operations are read-only.

The parameters and result of the component deformation are stored in the assembly only: the component source file and its instances in other assemblies are not changed.

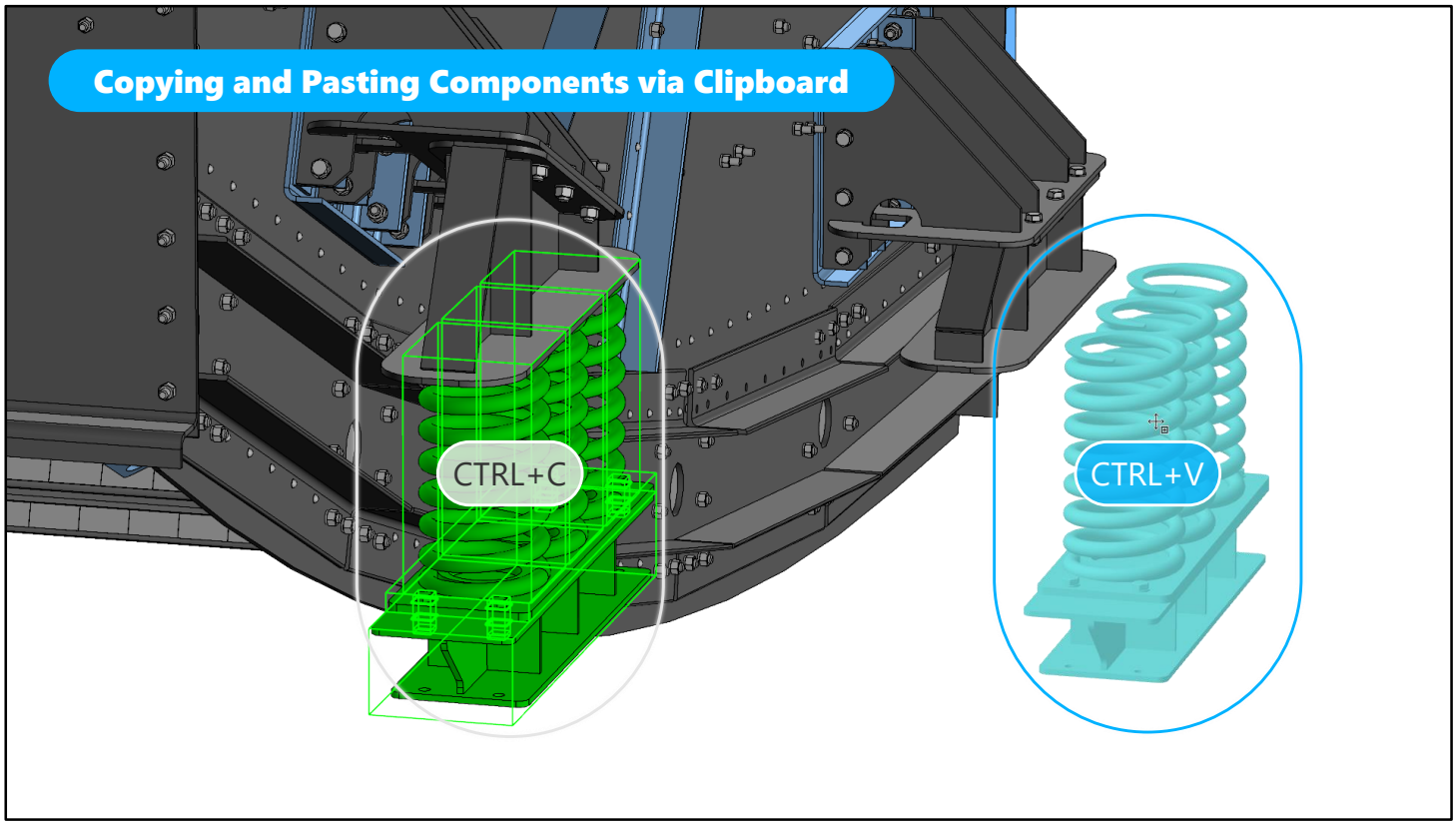
A new method to calculate mass and moments of inertia of assembly components: from the mass of the source component. In this case, the mass of the component is always taken from its source file, while the center of mass and moments of inertia are calculated from the actual geometry (or specified manually). This method applies automatically to components modified with the Deformation operation.

The Length Variable of Element by Path



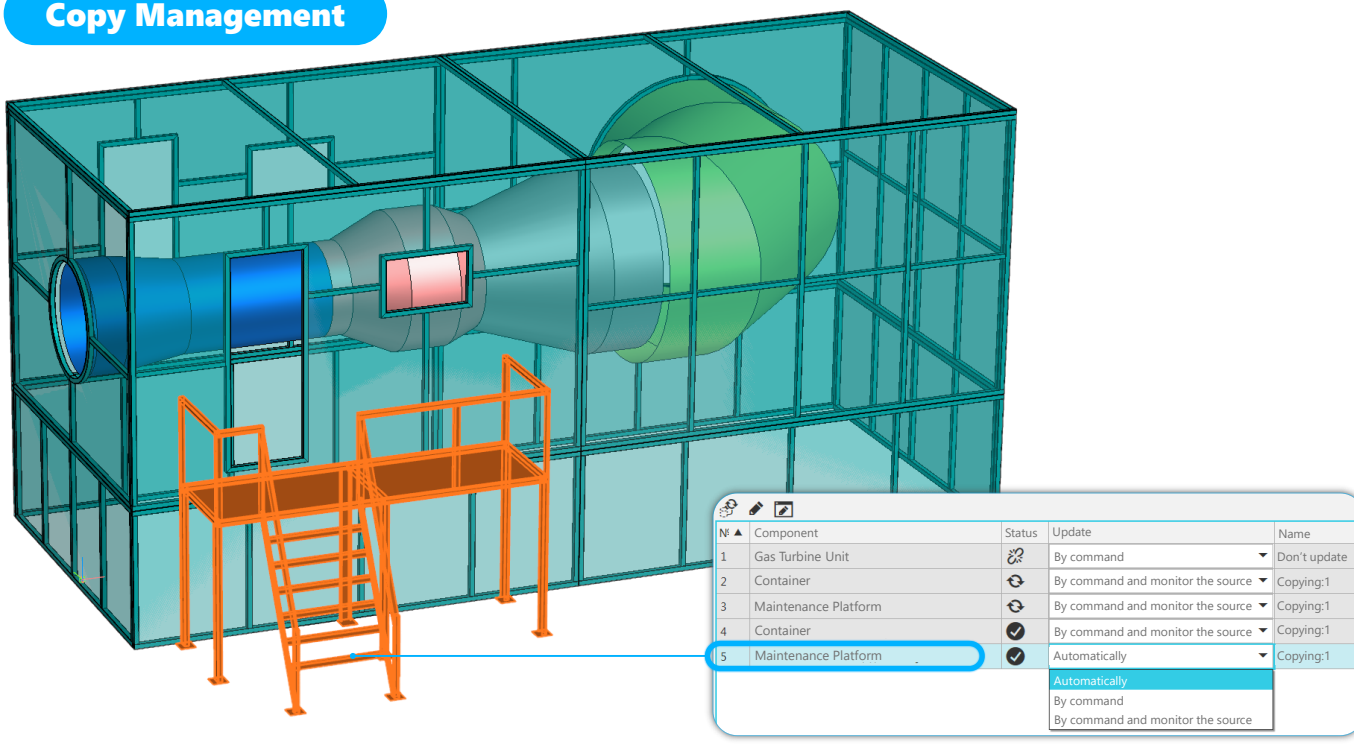


A new read-only **path length variable** is now available for the Sweep, Sweep Surface, and Pipe elements.

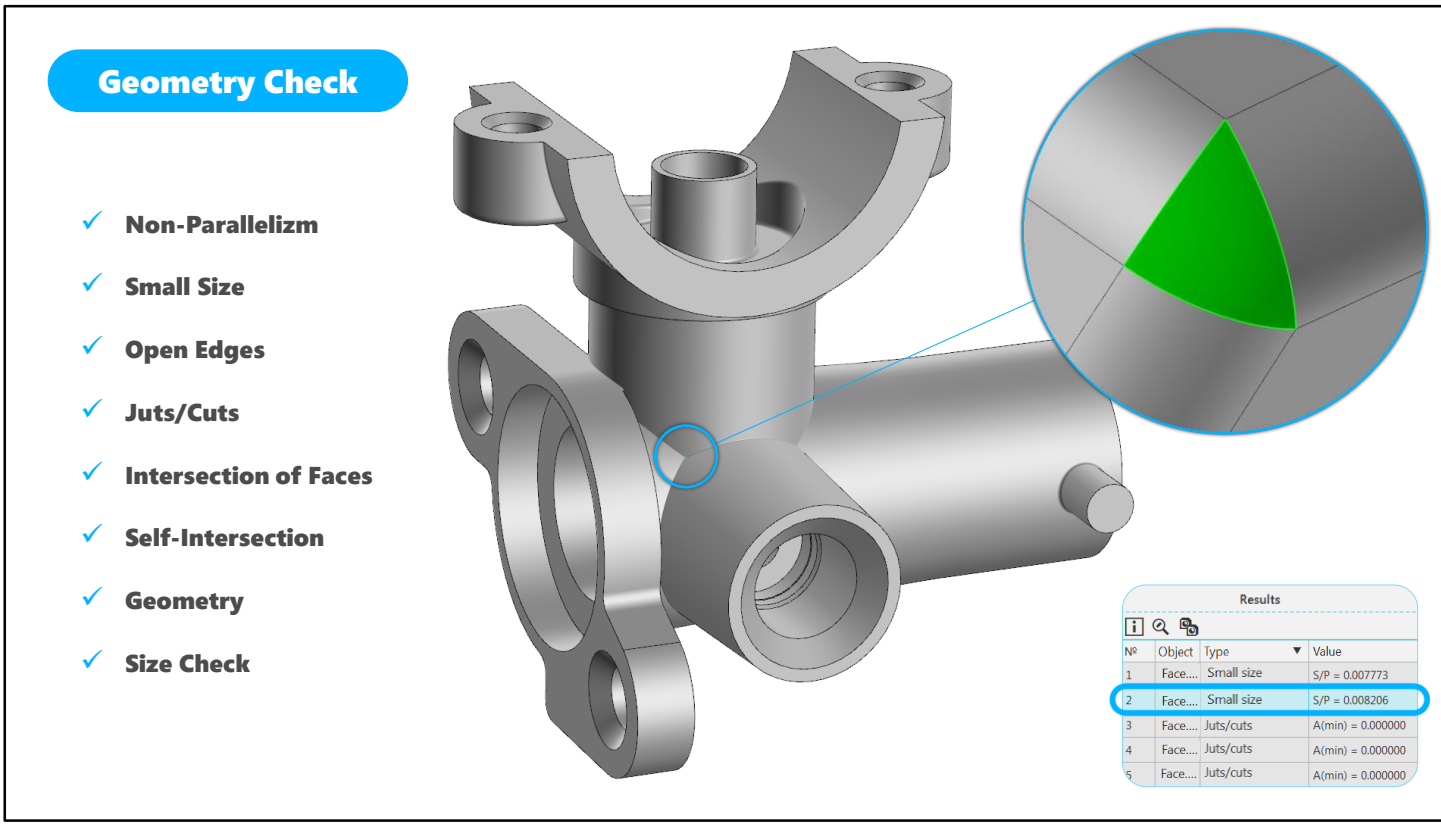


Components can now be **copied to the clipboard** and then pasted into the same or another model, even when a component is edited within the assembly. Any component at any nesting level can be copied; components are pasted to the top level. You can preserve the constraints between the components being copied and between them and the coordinate system of the containing model.

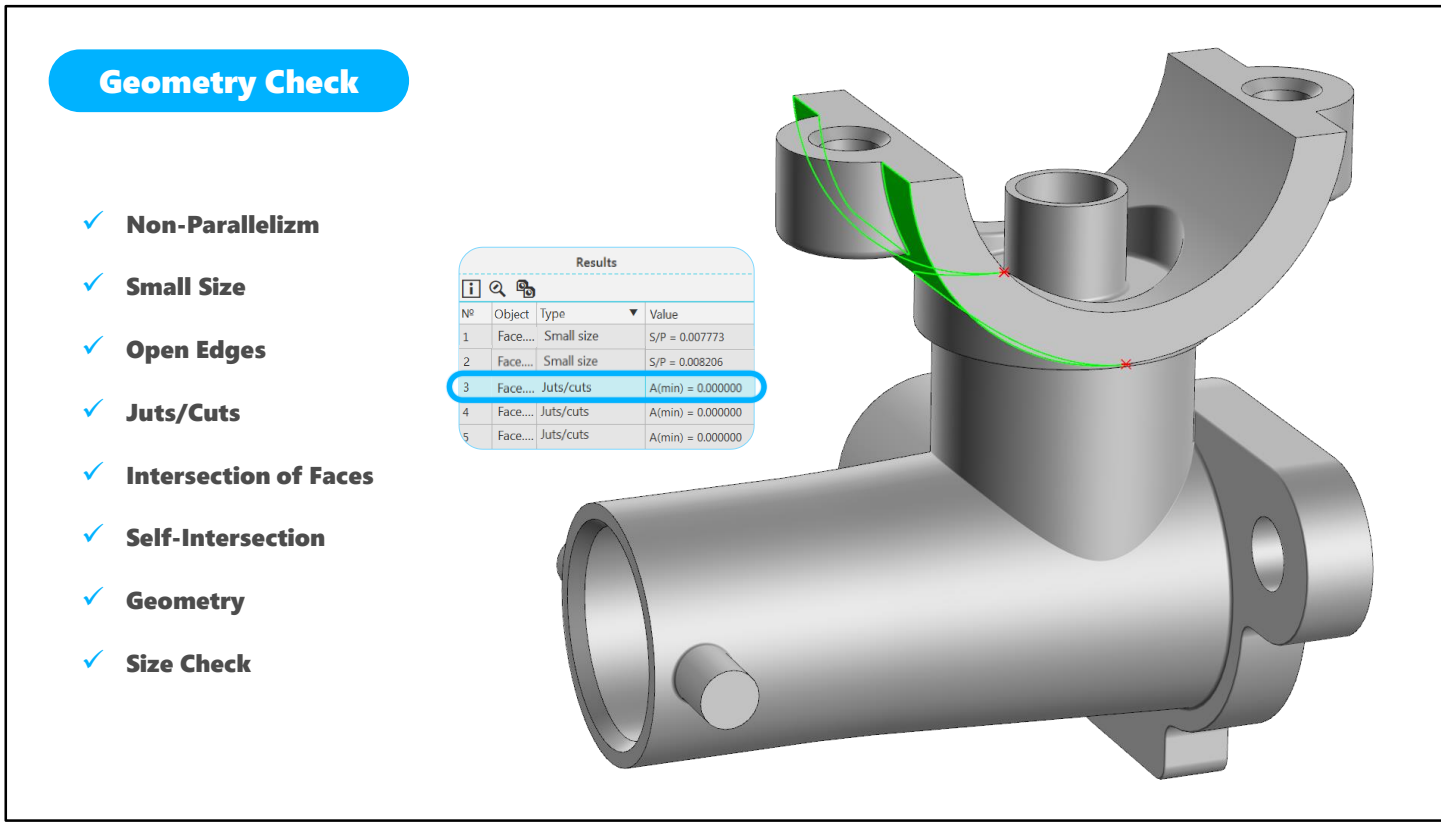
Copy Management



There is a new **Copy Management** command. This command finds copy operations in the top-level model and its components down to a specified level, or in selected components only. For each such operation, its current status is displayed, and you can edit the parameters. For example, you can enable source change tracking or update all or selected copy operations. You can also edit any copy operation.



The new **Validate Geometry** command checks bodies, surfaces, and faces for geometric integrity. It applies to selected objects or all objects within an assembly/component.

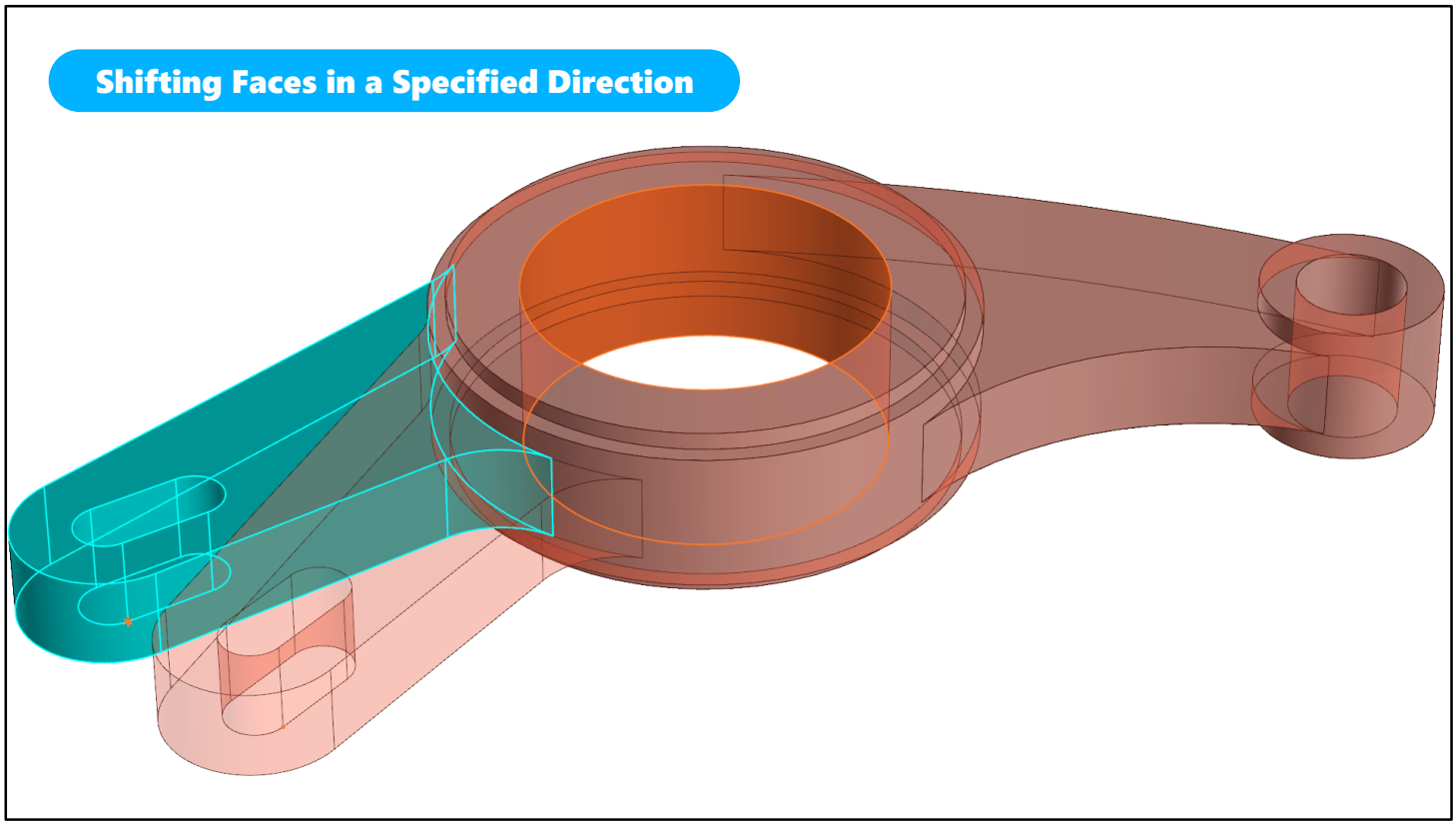


It performs the following checks:

- Edge orientation check: Detects edges that form an angle with the selected coordinate system axes smaller than the specified value.
- Small-sized features: Detects objects smaller than a specified size.
- Open edges: Detects open edges and overlapping open edges of the same body/surface/face.
- Bosses/cutouts: Detects edges with the taper angle smaller than the specified value.
- Face Intersection: Detects faces that penetrate or overlap other faces without a defined edge between them.
- Self-intersection: Detects self-intersecting faces and face boundaries.
- Geometric accuracy: Detects deviations in the positions of vertices and edges (the acceptable deviation from their exact positions is user-defined).
- Bounding box fit: Detects objects outside a bounding box of specified dimensions with its center at the origin of the absolute coordinate system.

The user can exclude skeleton geometry, standard models, or hidden objects from the checks.


DIRECT MODELING
KOMPAS-3D v24

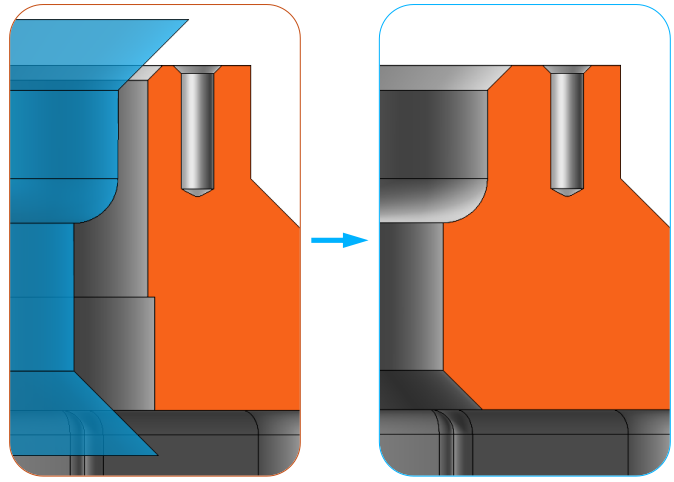


Direct Modeling

An important point for users switching to KOMPAS-3D from other products or who work with imported models frequently.

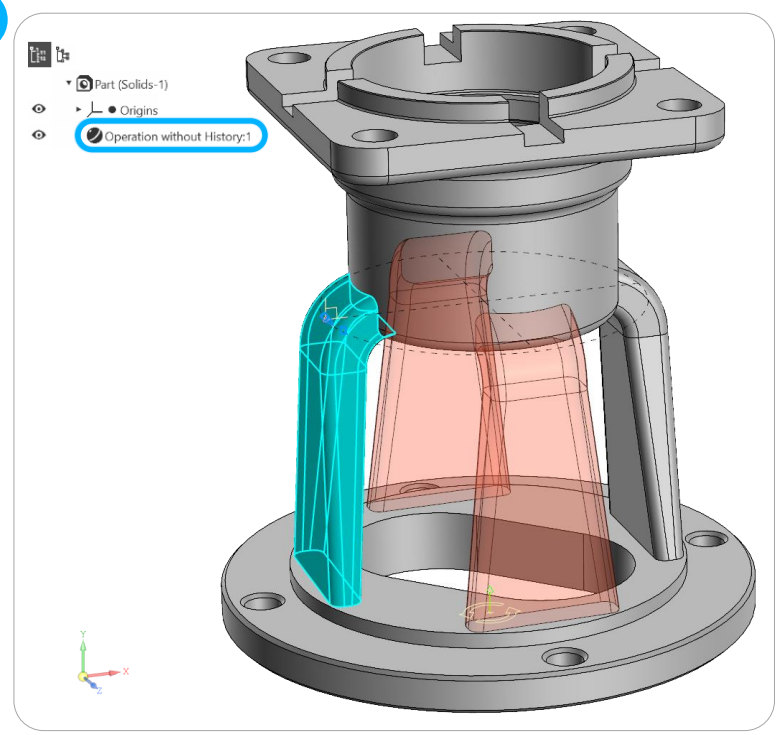
There is a new direct modeling command: **Reposition Faces**. It **shifts** the selected faces in a specified direction by a certain distance, or **rotates** them around a specified axis by a certain angle.

Replacing One Group of Faces with Another



The **Replace Faces** command has been improved. Now it can replace a group of faces with another group of faces. The replacing group must be a set of adjacent faces. This requirement does not apply to the group being replaced.

Creating an Array of Faces

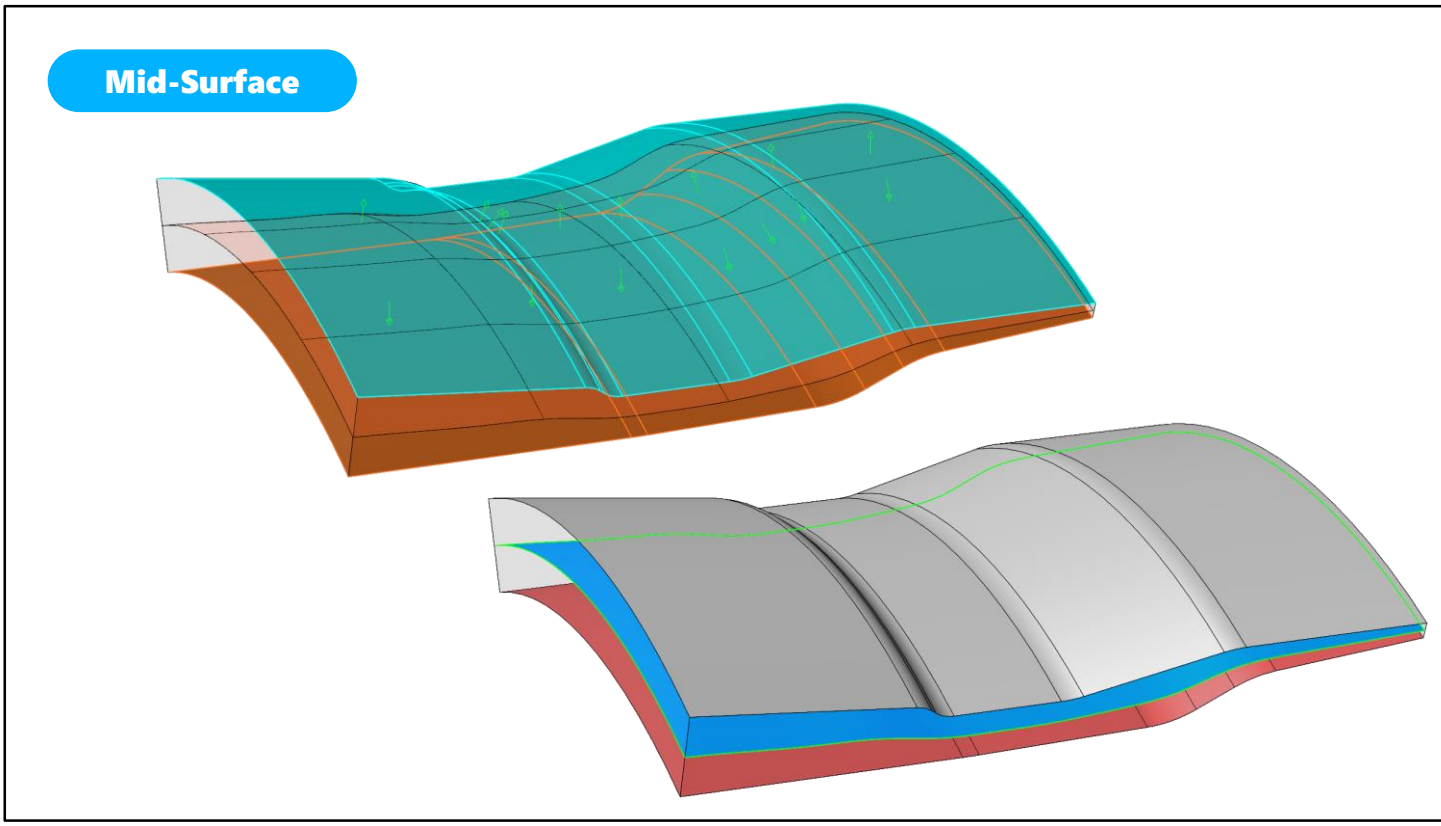


The array commands now support **faces** as array elements and can make copies of faces. You can specify one or more adjacent faces of the same body/surface.

Faces can be copied to create an array in a history-free (e.g., imported) model. This function applies to history-based models as well.

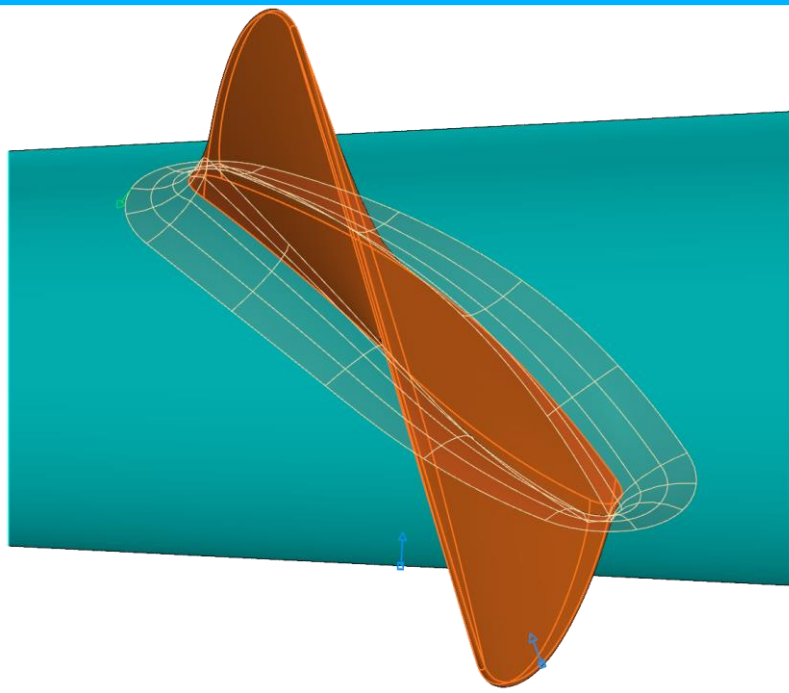
WIREFRAME AND SURFACES

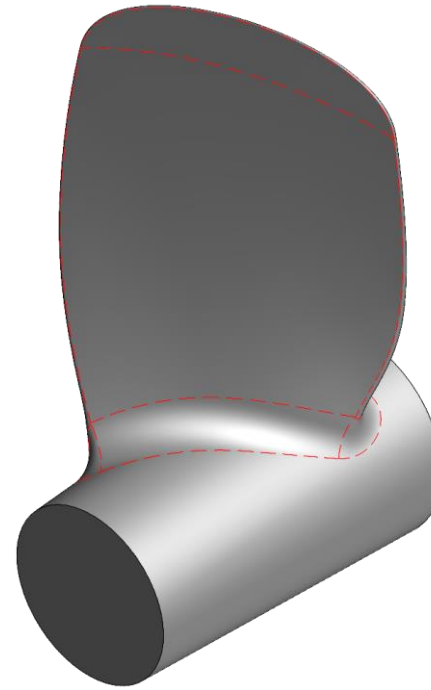
KOMPAS-3D v24



The new **Mid-Surface** command creates a surface equidistant from two specified surfaces.

Rounding Surface Using the “Ball Rolling” Method



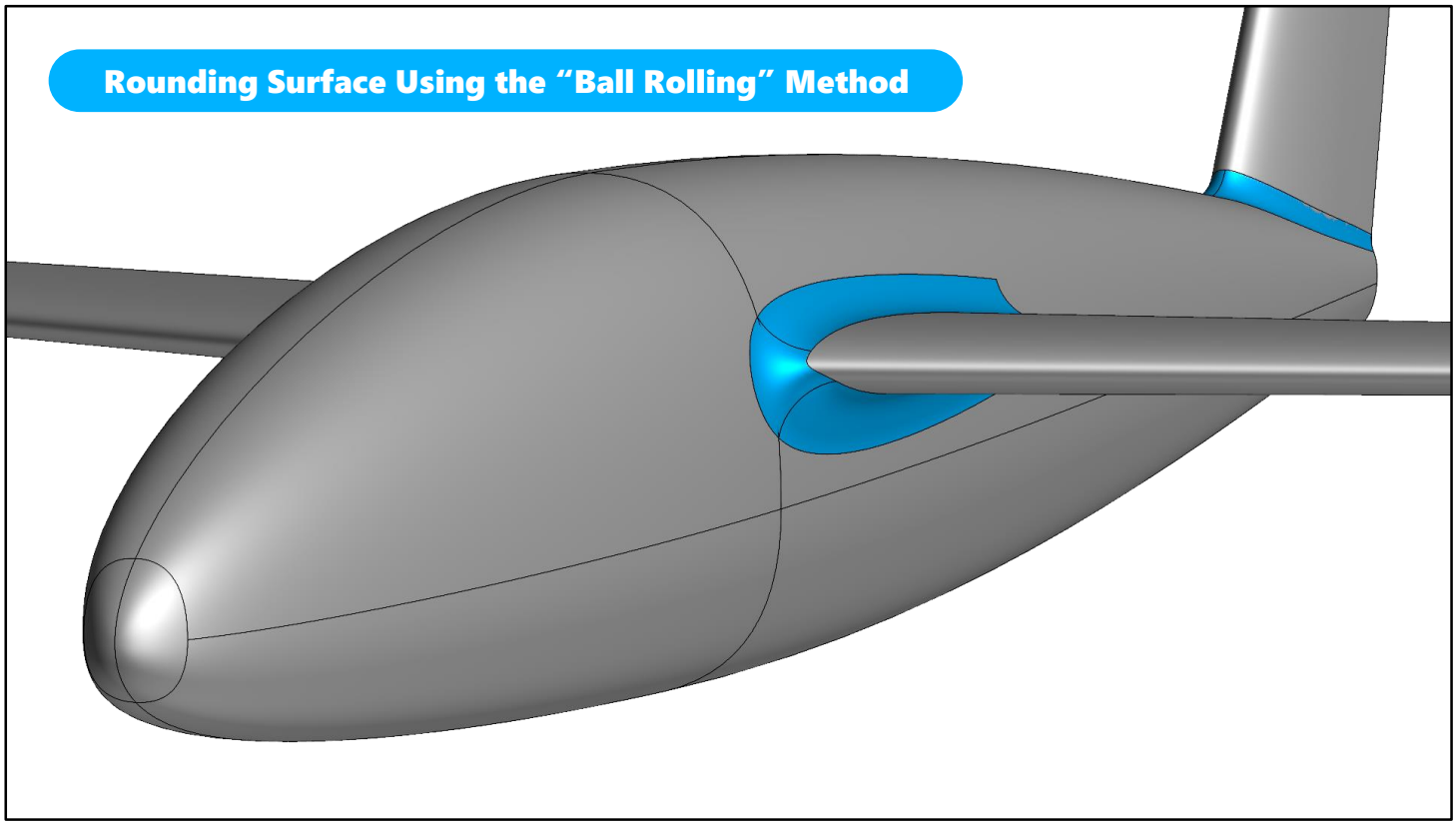


The **Fillet** command has been enhanced:

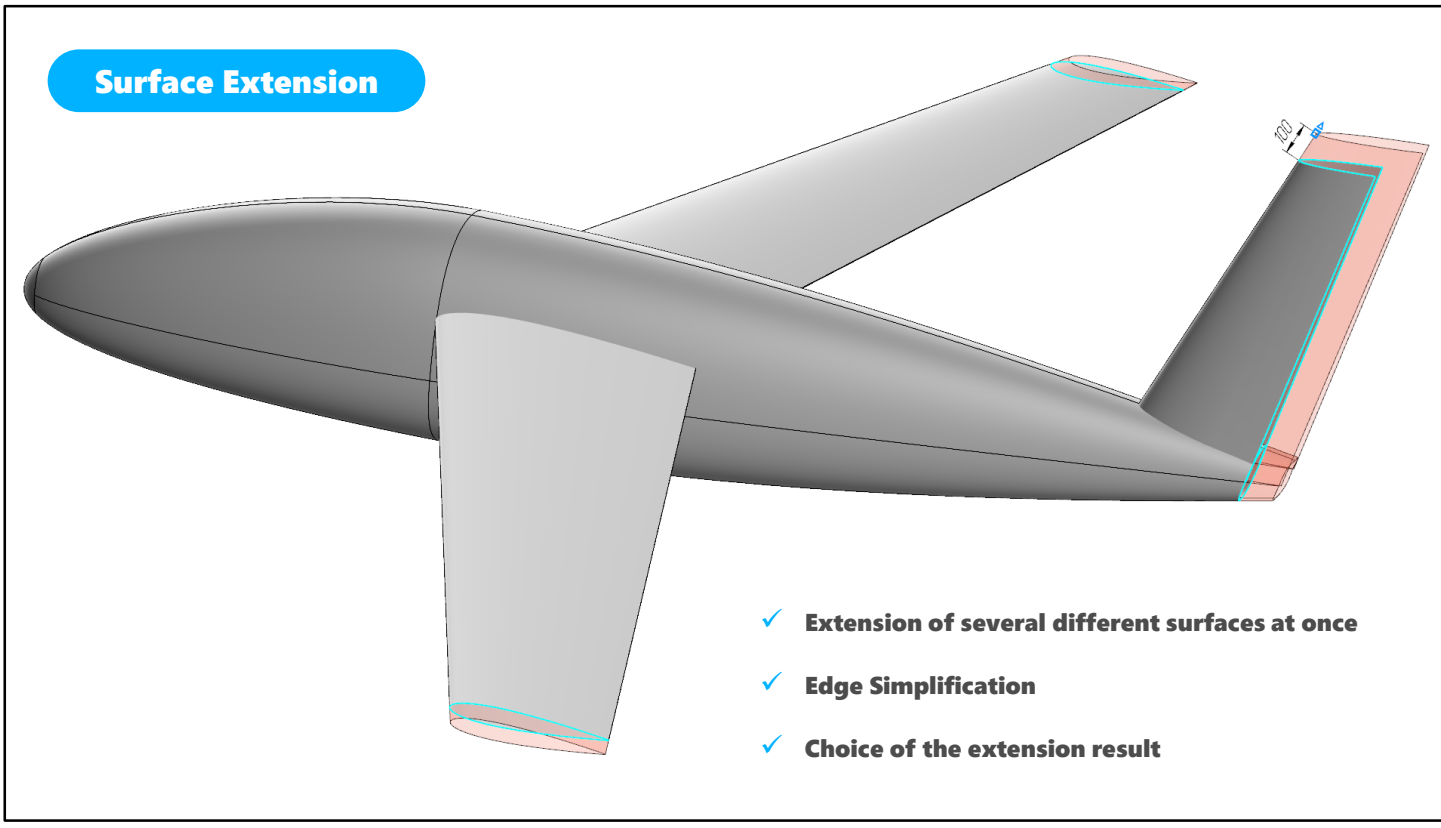
• A new option does not require a path: only the surfaces to be filleted are specified. In this case, the fillet surface is generated by rolling a ball of constant radius between the surfaces to be filleted; the surface boundaries are the points where the ball contacts the original surfaces.

• The result of the operation is now selectable:

- ✓ the fillet surface and unchanged original faces
- ✓ the fillet surface and original faces truncated along the fillet surface boundaries
- ✓ the original faces are truncated and stitched with the fillet surface into a single surface.



Another **fillet surface** example



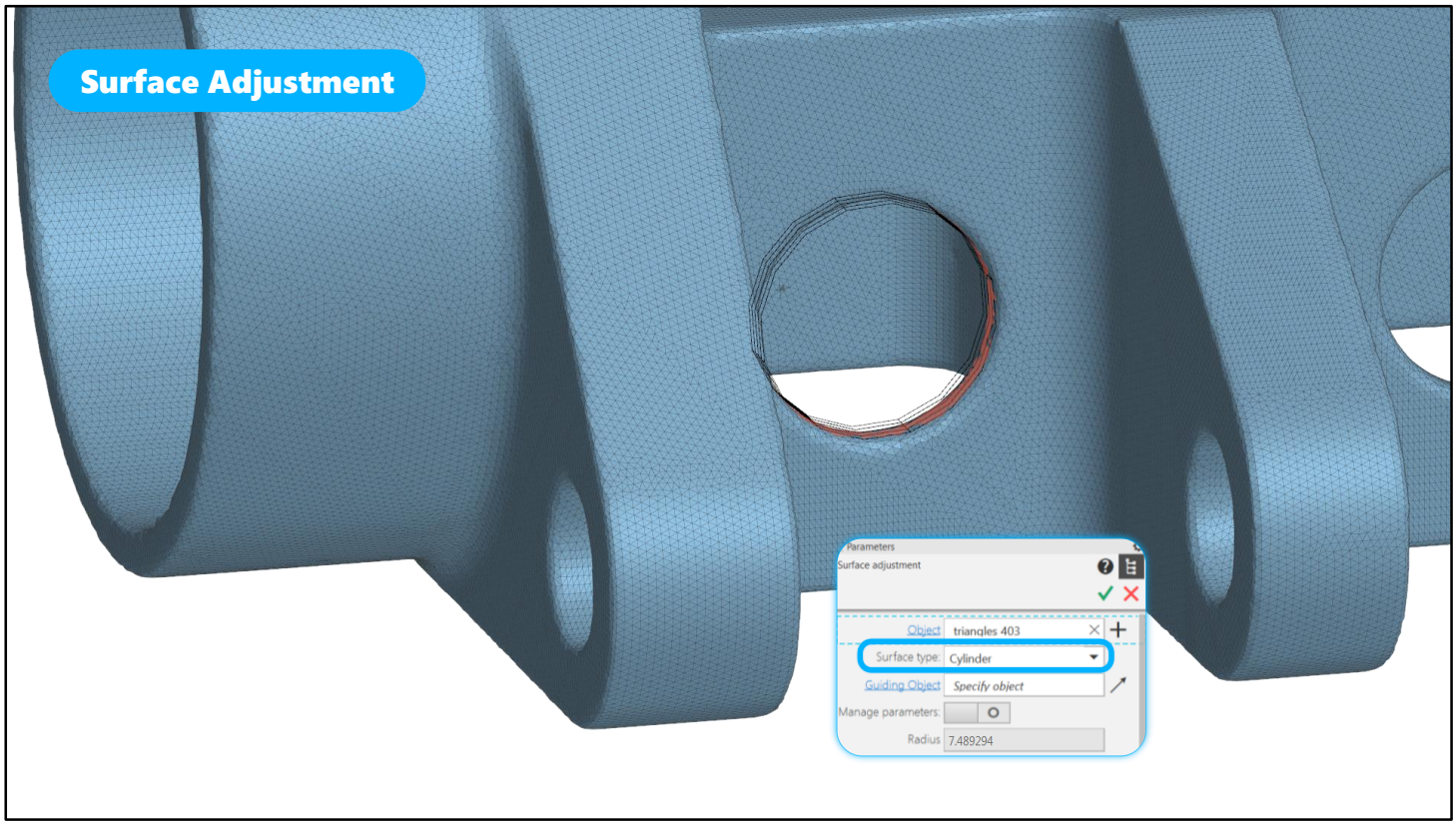
The **Extend Surface** command has been enhanced:

• Now several different surfaces can be extended with a single command.

• The edge can be approximated (simplified) to increase the extension length when it is limited by the degeneration of the equidistant edge of the original surface or because the equidistant edge no longer intersects with the extensions of the side edges. A simplified edge is not an exact equidistant edge of the original surface (i.e., the user-defined extension is not guaranteed at every point).

• It is now possible to select the result of the extension, i.e., to specify whether the new surface section should be a new surface or stitched to the original one. When a new surface is created, you can specify a non-open edge and select which of its adjacent faces to extend.


REVERSE ENGINEERING
KOMPAS-3D v24

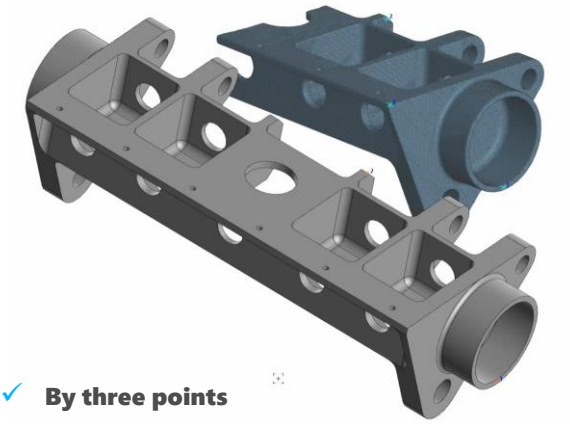


Reverse Engineering

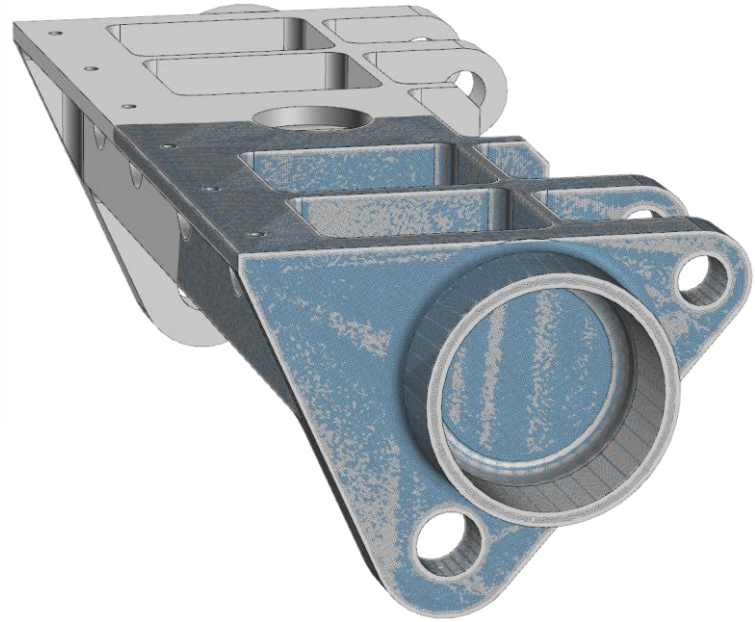
A key area for anyone who works with 3D scans or is engaged in **import substitution** projects.

The **Surface Adjustment** command now features automatic surface type detection from the selected polygons. If necessary, the auto-detection result can be corrected manually by selecting the right surface type from the list.

Matching a Polygonal Object to a Solid or Surface

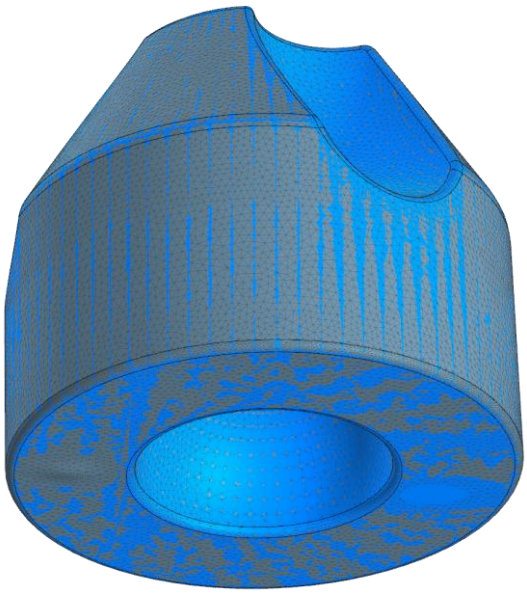


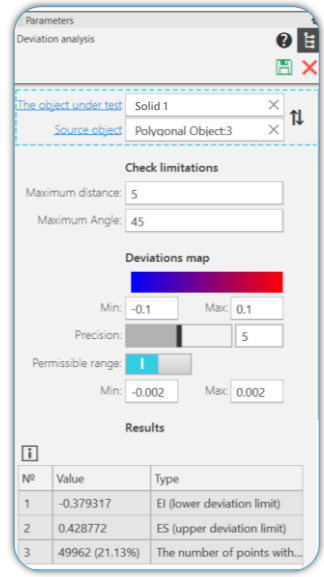
- ✓ **By three points**
- ✓ **By view direction and point**
- ✓ **By inertial characteristics**

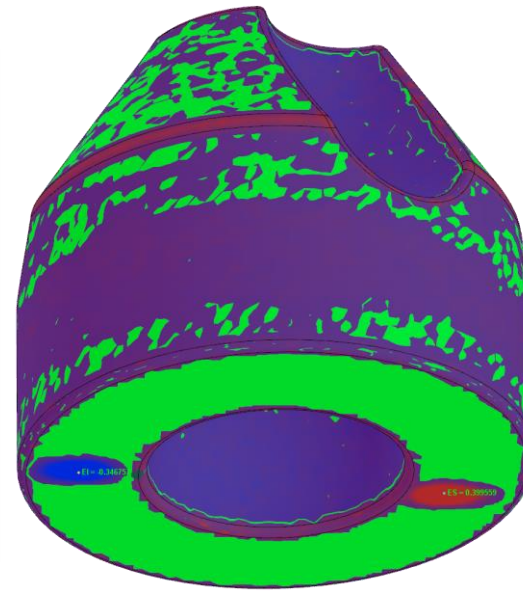


The New **Align** command aligns a polygonal object with a body, surface, or other polygonal object in the same model. As a result, the polygonal object is repositioned to minimize the deviation between it and the second object.

Deviation Analysis







Improvements to the **Deviation Analysis** command:

- Deviations are now measured not only between a body/surface and a polygonal object, but also between two bodies/surfaces/polygonal objects in various combinations.
- A measurement accuracy is now configurable. This setting specifies the number of points at which deviations between objects are measured.
- New features: acceptable deviation ranges; highlighted areas where deviations do not exceed the range; if the range is specified, the table displays the number of points within the range.
- Once the settings are completed, the user runs the analysis. There is a progress bar in the lower right corner of the screen. The analysis can be interrupted if required (previously, the analysis launched automatically after object selection, and could not be interrupted).
- As you move the mouse pointer over the color map, the deviation at the point under the pointer is displayed next to it.
- The selected length unit of measurement applies not only to measurement results, but to other length variables (maximum distance and range limits).
- The extreme deviation points have been renamed from “L_min” and “L_max” to “EI” and “ES,” respectively.


WHAT'S ELSE
KOMPAS-3D v24

More in 3D

- ✓ **Standard part as a blank**
- ✓ **Reading and writing Calc format without LibreOffice installation**
- ✓ **Picking through overlapping objects**
- ✓ **“Edit in Window” for local parts**
- ✓ **Reordering configurations and variants at the same level**
- ✓ **Improvements to the “Model Family” command**

Other 3D Improvements

A standard component added to a part can now be converted into a base part. The resulting base part is represented on the part drawing and in the BOM for the assembly containing the part with the base part. A standard component converted to a base part can be edited with the Standard Components Library tools.

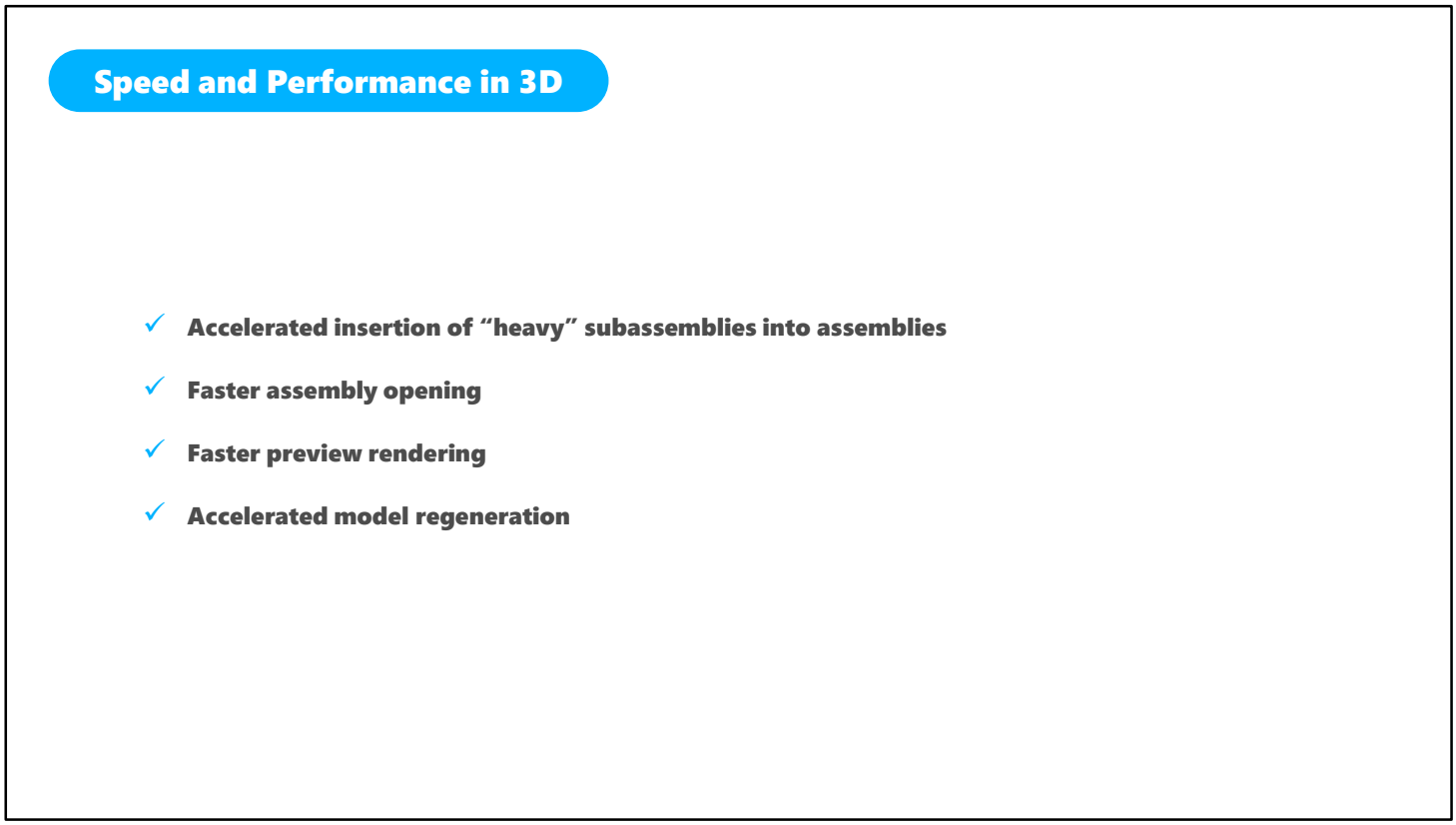
To read and write the Calc format (*.ods) (used for versions, families, curves, points, surfaces, arrays, etc.), it is no longer required to have OpenOffice or LibreOffice installed on your workstation.

The Iterate Over Objects command has been improved: now it can select entire composite objects such as sketches, multi-segment curves, surfaces, solids, and components. The iteration over objects is now available in a separate model window.

In-place editing is now available for virtual parts. With this, you can control, for example, the optical properties of individual objects.

Model versions and variants derived from the same parent version and located on the same level can be reordered in the tree by dragging with the mouse.

Improved Model Family command. A template of a model family table can now be created: the user selects the properties and variables to be included in the table, specifies the table file, opens the file in the table editor, and fills the table in. The resulting table column captions match the names of the properties and variables, as this is a requirement. Previously, a model family table could be created only manually, which led to possible errors in column captions.



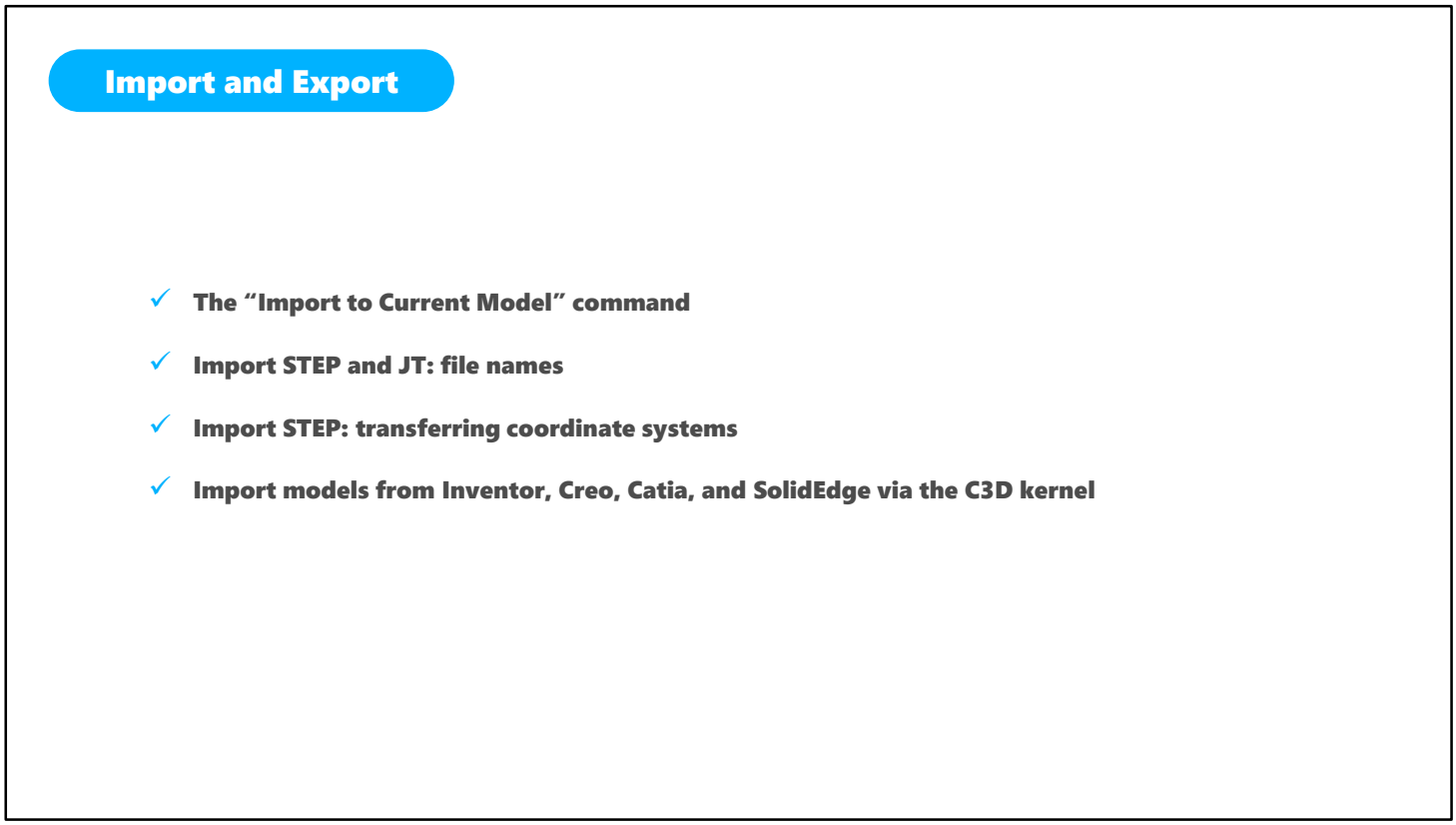
Better 3D Performance

You can now select how to load a component before inserting it into the assembly. This accelerates the addition of heavy subassemblies: you can select the Empty load option and then place them by specifying their coordinates.

The load options improve the KOMPAS-3D performance: reduced time and RAM usage when opening an assembly with the second and subsequent level components that are loaded as Empty.

The KOMPAS-3D performance with phantom rendering in large assemblies has been significantly improved.

We have optimized the data structure in the models that contain operations based on the same object, such as multiple points on a single surface. The optimization has accelerated model rebuilds and reduced the file sizes for such models.



Import/Export

1. There is a new command: Import into Current Model. It imports 3D objects from CAD-neutral (STEP, JT, IGES, ACIS, etc.) and proprietary formats (UGS/NX, ProE/Creo, SolidWorks, etc.) into the current model. For formats that require configuration, the current settings apply; they can be changed if necessary.

2. For the JT format, the BOM Section property is now read and saved. It works with objects from the standard BOM sections (Documents, Systems, Assembly Units, Parts, etc.)

3. When assemblies are imported from STEP and JT formats, the component filenames are generated according to the default file name settings in KOMPAS-3D.

4. When a STEP format file is imported, coordinate systems and object names are also imported.

The C3D kernel converters now directly read 3D models created in Inventor, Creo, Catia, and SolidEdge.

- **Development, support, and maintenance for Windows 7 and 8 is discontinued**
- **No changes to hardware requirements**

The development, support, and maintenance of ASCON products released in 2025 for the outdated Windows 7, 8, and 8.1 operating systems will be discontinued. This applies to KOMPAS-3D and its applications, Version v24 and above.

A native Linux version of KOMPAS-3D. The main components (core functionality) will be available in v24. More components (applications) will come soon. Focus on three Russian operating systems: Astra Linux SE, Alt Workstation, and RED OS (for versions, please refer to the slide).

The hardware requirements for Windows in version 24 are the same as those for version 23.

Thank you for your attention!