

# What's new in Solid Edge ST4?

Design better.

## Benefits

- Advanced machine design capabilities accelerate time to market
- Expanded capabilities improve supply chain collaboration
- Simulation enhancements optimize sheet metal design
- World class drafting continue to reduce engineering costs
- Productivity improvements further enhance user experience

## Summary

Solid Edge® ST4 software continues to lead the industry by helping machine designers to develop better products faster. This latest Solid Edge release enables manufacturers to design better with synchronous technology, collaborate more effectively with suppliers and customers, validate sheet metal designs faster and reduce documentation costs through world-class drafting.



## Advanced machine design modeling

Many new capabilities leverage synchronous technology for advanced machine design. Solid Edge sets the standard for accelerated design, faster revisions, and superior 2D and 3D re-use.

## More realistic designs with the default display (upgraded graphics)

Designers will notice a much richer display in Solid Edge ST4 right out of the box. Photorealistic rendering is still offered (and enhanced), but Solid Edge

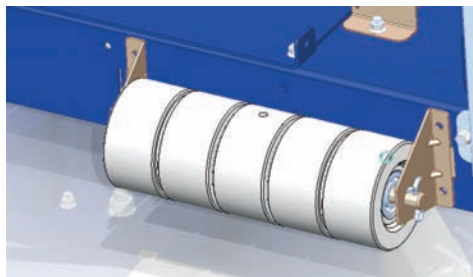
# SOLID EDGE

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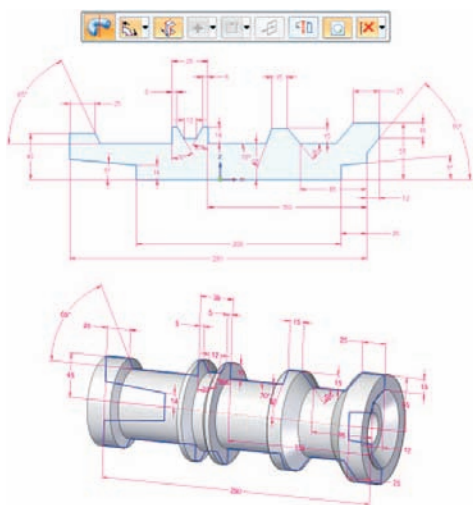
# SIEMENS

## What's new in Solid Edge ST4?

now supports reflections and a virtual mirrored floor with casted shadows. Model edge display is more subtle, giving a more realistic look. A new auto-sharpen option simplifies control over edge quality by enabling users to easily specify quality controls that range from low for higher performance to high for superb quality.

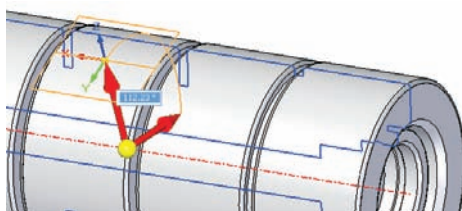


**Faster revolved feature modeling (easier shaft design)** Shafts are common parts in machinery and equipment. New synchronous technology capabilities facilitate faster creation and editing of revolved features. The general workflow for the revolved command has been simplified so that the steering wheel can be used to drag the rotation from any convenient axis. Handy options give easy access to finite, symmetric or a full 360° revolved extent. For precise and immediate editing, Live Sections are created automatically, transferring dimensions defined in 2D to the editable Live Section on the 3D model.



### Improved hole placement on cylinders

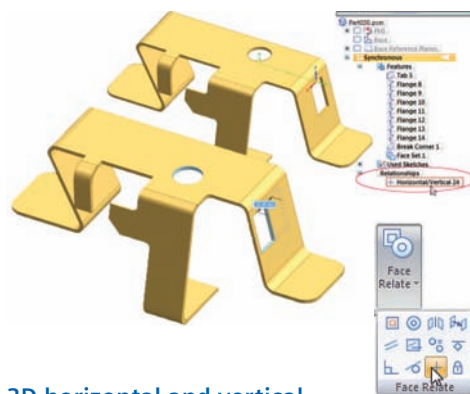
Placing holes on shafts is now a snap. The Hole command lets designers dynamically drag holes around on the surface of a cylinder, similar to a dynamic tangent creation. Key point snapping or dimensions can be used for precise placement control.



### Define design intent better with more 3D part relationships

New 3D relationships similar to those found in 2D give designers and engineers greater speed and flexibility in capturing and managing design intent on completed or imported models.

**3D offset relationship** This relationship is handy for creating and maintaining clearances between faces such as slots, guides or clearance cutouts. Designers do not have to plan out design steps, as edits can be made to either face preserving the offset. Any offsets defined during 2D profiles creation will transfer to the 3D model.



### 3D horizontal and vertical relationships

These 3D model relationships can be used to create and preserve horizontal and vertical conditions between faces or to align key points. This relationship can also be used to "center" faces. Horizontal or vertical relationships applied to 2D sketches are transferred to the 3D model.

**Relate command enhancements** The Relate commands found in Part, Sheet Metal and Assembly are dedicated commands now found on the Ribbon Toolbar. In addition, a unique QuickBar is available for each relationship type, making it much easier to apply 3D model relationships when defining design intent.

### Key point display and processing

"Glyphs" that appear next to the cursor to infer accurate key point selection are now black with a white border making them more prominent; they are also visible at all times during selection. A new "3D locate" has also

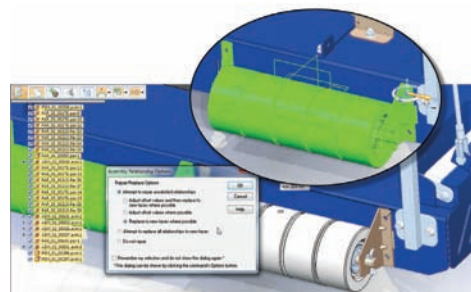


been added for selecting edges and center-points of cylinders that intersect with cones, taurus, spheres and splined faces.

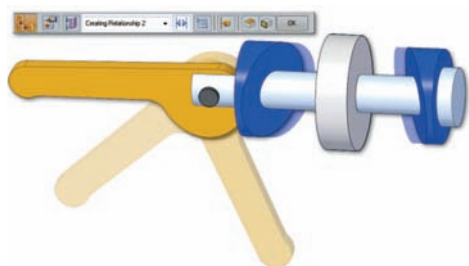
### Define assembly intent better with new 3D relationships

Solid Edge ST4 also includes new assembly relationships that help designers build assemblies faster, while preserving design intent during edits or animations.

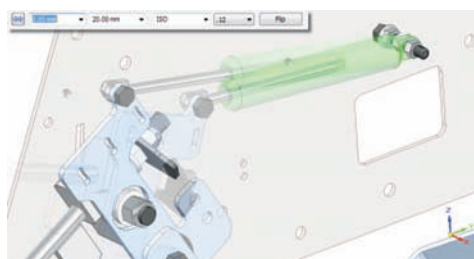
**Steering Wheel enhancements** While moving parts or sub-assemblies, new capabilities inside the Steering Wheel provide options to automatically create assembly relationships on newly created parts during a copy/move or copy/rotate operation.



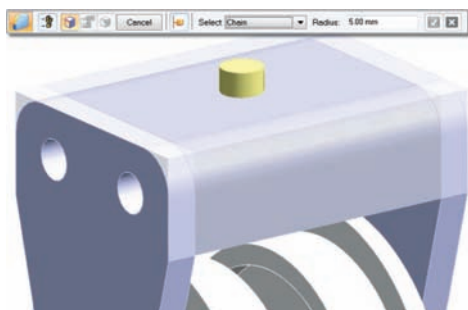
**Center-plane relationship** This relationship simplifies centering parts while maintaining this centered location as adjacent parts are edited, moved or animated. Users can define how parts are centered by using key-points, faces, edges axis or planes.



**Range offset value** You can leverage this feature to establish a range limit on assembly mates and control a separation distance. This is helpful in limiting motion when collisions are not available to define the range.

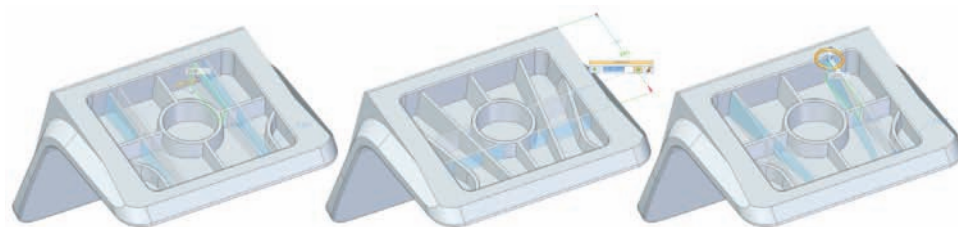


**New assembly features** Another useful enhancement lets designers apply rounds and chamfers to multiple parts simultaneously at the assembly level. Like drilling a hole through multiple parts to ensure fit and position, this new capability lets users round or chamfer edges, guaranteeing an exact match between parts.



### Additional design capabilities

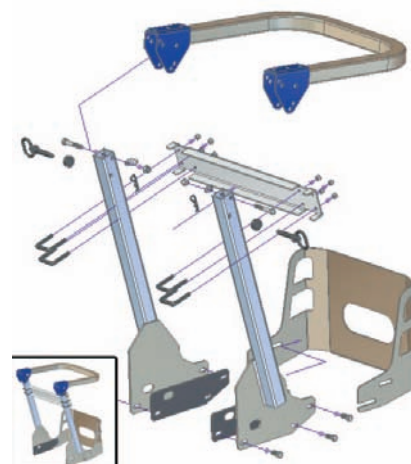
**Synchronous ribs and webs** You can use the Web Network command to add synchronous-based features in Solid Edge. Feature creation is sketch based but edits are applied directly to the completed 3D feature. For modifications, users simply drag any face of the web; only the affected 3D geometry regenerates while preserving any tangent conditions. For precise control, 3D driving dimensions can be placed to the centers of webs.



**Editing performance** Faster editing performance is facilitated for complex or specialty synchronous parts that contain many concentric cylinders, have many locked dimensions or have many coplanar axes.

**Improved fastener systems** You can bolt parts together faster and easier with improved fastener systems. You can choose

fasteners based on material or grade, as well as size filtering and save your favorite stack settings. You can also leverage the new symmetric relationship for slots, a new flip option for reorientation and balloon an entire stack of fasteners on drawings from a single leader line.



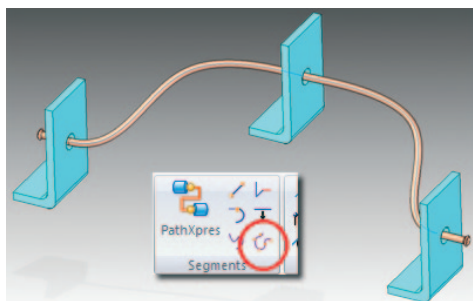
**Exploded views** User-defined flow lines let you describe exploded views more accurately and with more freedom, subsequently enabling you to document in 2D. Flow line elements can be split, deleted or dragged along any principal axis; they are ideal for displaying in-use drawing views independent of actual exploded events.



## Process-specific applications

**XpresRoute** XpresRoute now includes key-point curve to better define 3D paths and provide a live update. Dynamic feedback is facilitated when dragging frames, pipes, tubes and assembly features.

In addition, more standard parts are provided, while usability improvements to standard parts, frame components and piping library increase productivity.



**Photorealistic rendering** Improved materials mapping and more realistic scenes and lights facilitate better “first shot” results through photorealistic rendering, which is perfect for customer presentations.



**Solid Edge newsgroup** The Solid Edge newsgroup (see the following URL) is a great source for technical support across all product offerings, enabling users to ask questions, as well as to both solicit and offer advice:

<http://bbsnotes.ugs.com/vbulletin/forumdisplay.php?f=7>

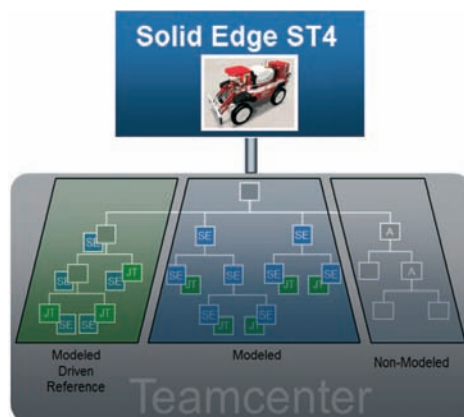
Siemens PLM Software now enables you to more easily access this newsgroup directly from the start menu without a Webkey. We also have provided a built-in language translator so you can review or make posts in your local language.

**Speeding assembly design with free catalog parts** To help designers speed assembly design, a third-party offering of free catalog parts powered by Cadenas is now available. This on-line catalog with hundreds of supplier parts from manufacturers around the world provides OEM components including valves, u-joints and actuators in native Solid Edge format. This catalog compliments our existing Solid Edge Standard Parts, which include nuts, bolts, washers and other fasteners.



**Expanded collaboration** Solid Edge ST4 is the first mainstream CAD system to fully leverage the mature lightweight JT™ format for improved assembly design, as well as enhanced third-party translators that read popular 3D CAD formats directly into SolidEdge. Designers can leverage both of these capabilities to collaborate better with customers and suppliers.

**Multi-CAD design with JT** Designers using CAD data from multiple sources can now directly leverage automatically created JT files stored under Teamcenter® software or Teamcenter Express. You can

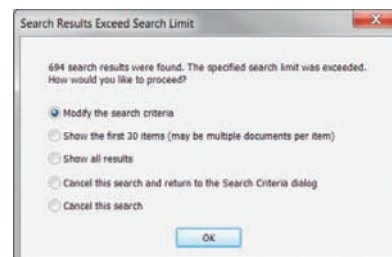


simply drag and drop JT files into a Solid Edge assembly from the Parts Library with no additional files being created. JT files are rich with geometric data, which facilitates inter-part referencing for accurate assembly design. If changes are made to the original CAD data, the Solid Edge assembly is automatically updated.

**Multi-CAD design with neutral files** When designers need to re-use data from a neutral file (such as a STEP file) or a file appearing in the kernel format (such as the Parasolid® software format), a simple drag and drop from the Parts Library adds the model to a Solid Edge assembly. When managed with Teamcenter, automatic assignment of filenames and item numbers is supported so that new data is managed consistently with the user’s company standards.

**Drive Teamcenter Express item numbers from Solid Edge** During assembly design, users can define the component item numbers to identify parts in 3D or on the drawing. Now with ST4, these item numbers can be used to control item numbers in Teamcenter. Users can specify item numbers in either application; future changes are fully synchronized between Teamcenter and Solid Edge. For cross section-derived components such as piping and frame components, the length of the component is now used to determine uniqueness for item numbering.

**Improved control of searches with Teamcenter Express** Users now have more options to manage large amounts of data returned in response to their search requests. These options include the ability to show a subset of the data, modify the search criteria, restart the search or cancel the search completely if a large number of results are initially returned.



### Directly read more CAD formats

Improvements have been made to help designers read 2D AutoCAD files, as well as 3D data from SolidWorks and Autodesk Inventor, including:

- *AutoCAD-related improvements.* Drawings, including multiline text, are now retained, and block and geometry origins are more accurately maintained.
- *SolidWorks-related improvements.* An enhanced translator enables designers to read and write both part and assembly files into Solid Edge.
- *Inventor-related improvements.* A new translator enables users to read both part and assembly files into Solid Edge without requiring the installation of Inventor software.

### View and email parts and assemblies with 3D PDF files

Solid Edge now lets designers create and distribute 3D PDF files of parts and assemblies. This format is ideal for enabling customers and suppliers to view designs, or when you do not need to use Solid Edge's PCF format to view and markup your files.

### Simulation for sheet metal design

Solid Edge ST4 simulation makes it easier to "optimize" designs including sheet metal parts. New capabilities provide designers with faster results, while facilitating the analysis of more complex designs.

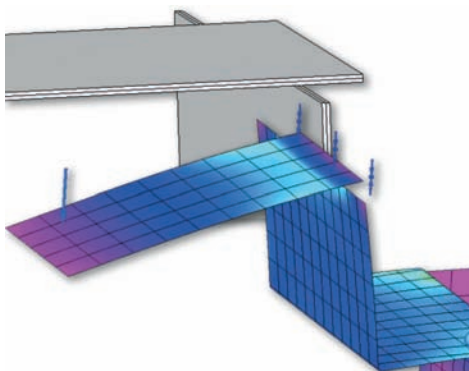
### Mid-surface creation and utilization

Designers can now create and use mid-surfaces of sheet metal models during a part or assembly simulation. Mid-surfaces can be "merged" or united with solid models resulting in a combination of fast-solving 2D shell and 3D solid elements. This versatile hybrid modeling capability speeds results, while facilitating the simulation of more complex designs. Leveraging the integrated design environment in ST3, ordered features (such as mid-surfaces) can now reside in

the same file as synchronous features and keep up to date during rapid design refinements.



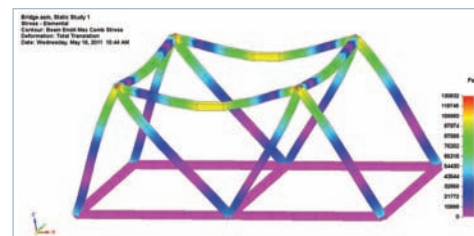
**Edge and face glue constraints** When defining part to part boundary conditions, the edges of surfaces (from sheet metal mid-surfaces) can be glued to faces of other surfaces or solids, facilitating the simulation of more real-world scenarios. Since matching element sizing is no longer a requirement, designers can analyze assemblies containing sheet metal parts much faster.



### Beam elements for frame analysis

Solid Edge Simulation now includes a new element type for analyzing frame type components. This new 1D element type is built into the Frame environment and can be used to determine deflection and stress for parts such as I-beams, T-beams, box

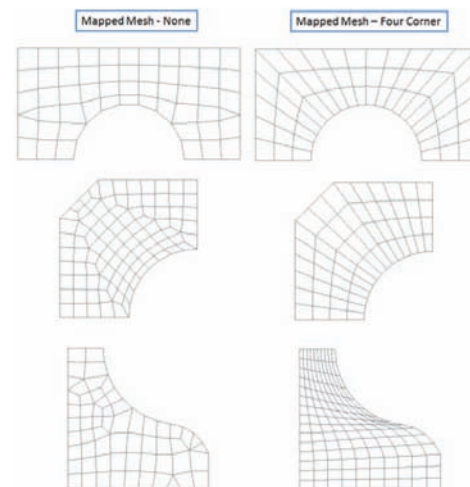
beams and C-channels that are automatically generated by the Frame command. Creating studies is simple as users only need to identify parts that are to be analyzed; Solid Edge automatically applies fast-solving 1D elements during the mesh operation. As a result, you get a much faster analysis without sacrificing accuracy.



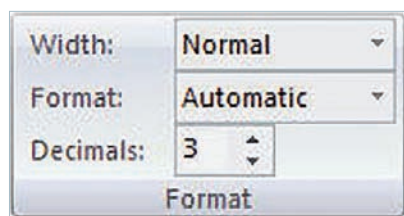
### Mesh options for custom refinement

Solid Edge simulation in ST4 also includes several enhancements to improve meshing that yields faster results without sacrificing accuracy including:

- A mapped mesh option to create a more orderly and well shaped mesh
- The ability to control the minimum number of elements on an edge as well as maximum elements on small faces
- Automatic adjustment of mesh size across surfaces that can accommodate a small radius of curvature
- Increased mesh elements around stress raisers (such as holes) to increase accuracy where needed, but conserve element counts in less important areas



**Improved visual feedback** For postprocessing, numerical formatting in the color bar improves results readability. For example, an Automatic option now displays the best format for each number by setting the number of decimal places and omitting leading or trailing zeros.



**Material reference temperature** You can now determine stress and displacements caused by material expansion or contraction caused by temperature loading.

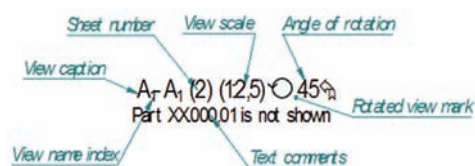
**New levels of usability** ST4 includes multiple enhancements to improve general simulation usability. For example, you can quickly edit a study by double clicking from the navigator. Similarly, new functionality improves the creation of face to face connections, while a new loads and restraints display improves application visibility and understanding.

**World-class drafting**

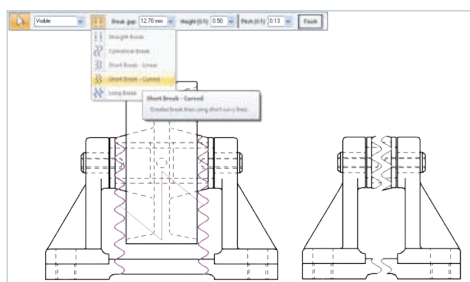
Solid Edge ST4 continues to focus on reducing engineering costs by enabling users to minimize drawing production time.

**Improved drawing view captions** ST4 lets you define custom drawing view captions including model properties such

as part numbers, view scales, sheet numbers and special annotations, which now can be displayed in multiple lines.



**Improved drawing views** Break lines used in broken-out section views can now be shown as curved lines and adjusted across the model. An option is also available to inhibit rib features from being sectioned.

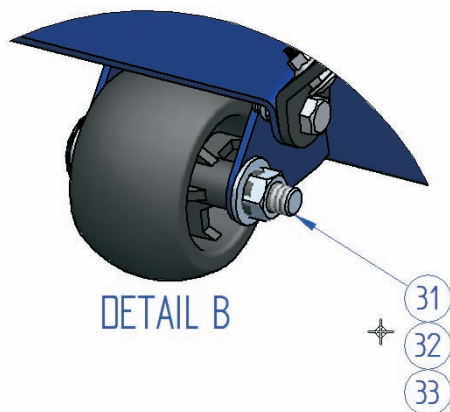


**Improved table display** Automatic tables (such as parts lists, hole tables, and bend sequence tables) can now be customized even more. Long text can automatically “squeeze” into narrow cells, by adjustment over the aspect ratio (character kerning); in addition, when space is very limited, text can be rotated. Cells for column or row headers or cells containing common data can be merged into a single cell to improve visual communication. Values can be overridden and formatted for display in bold, italics and underlining.

**Improved text boxes** You can now add highly customized notes using text boxes. Individual lines can be numbered or bulleted, and text can include custom characters using an improved character picker. Placing subscripts and superscripts characters (such as trademark symbols) is easier; new control over fractional display is included. Users enter the divide symbol between numbers. Solid Edge provides options for stacked, skewed or liner display. Saving these boxes in a Solid Edge library is a simple way to re-use rich notes.

Item	Document Number	Title	Material	Quantity	Mass	
					Mass (Item)	Mass (Quantity)
1	ASM_02_0	Mower Deck		1	34.892 kg	34.892 kg
2	PSM_01_00	Pulley Cover	Steel		1.632 kg	1.632 kg
3	PAR_04_00	Deck Wheel	Epoxy,		0.000 kg	0.000 kg
4	PSM_01_00	Deck Stiffener	Steel		13.949 kg	13.949 kg
5	PSM_01_00	Deck Support	Steel		0.024 kg	0.024 kg
6	PSM_01_00	Left Pulley Cover	Steel		0.642 kg	0.642 kg

**Automatic balloon stacking** You can now document the items numbers of a complete fastener stack with a single click. Balloons are created, stacked, and item numbers match the parts lists, even if fasteners are added or removed from the stack.



**Improved dimension display and copying** Dimension lines can now be jogged to better show values across narrow faces. A new dimensions copy tool lets designers duplicate attributes (such as tolerances, prefixes and suffixes) from one dimension to another.

**2D enhancements** Many more new capabilities are available in ST4 Draft, including:

- Additional JIS weld symbols
- Print preview for single and multi-sheet printing
- Ability to derive the sheet scale from the first paced view
- Option to link sheet scale to view scale
- Option to lock view position
- Undo Support capability for deleted views and tables
- Ability to display drawing view contents while dragging views

#### Design better – Solid Edge ST4

Solid Edge ST4 continues to lead the industry with synchronous technology, expanded collaboration, faster design validation, and reduced documentation costs facilitated by world-class drafting. Taken together these enhancements help you to develop better products faster.

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