

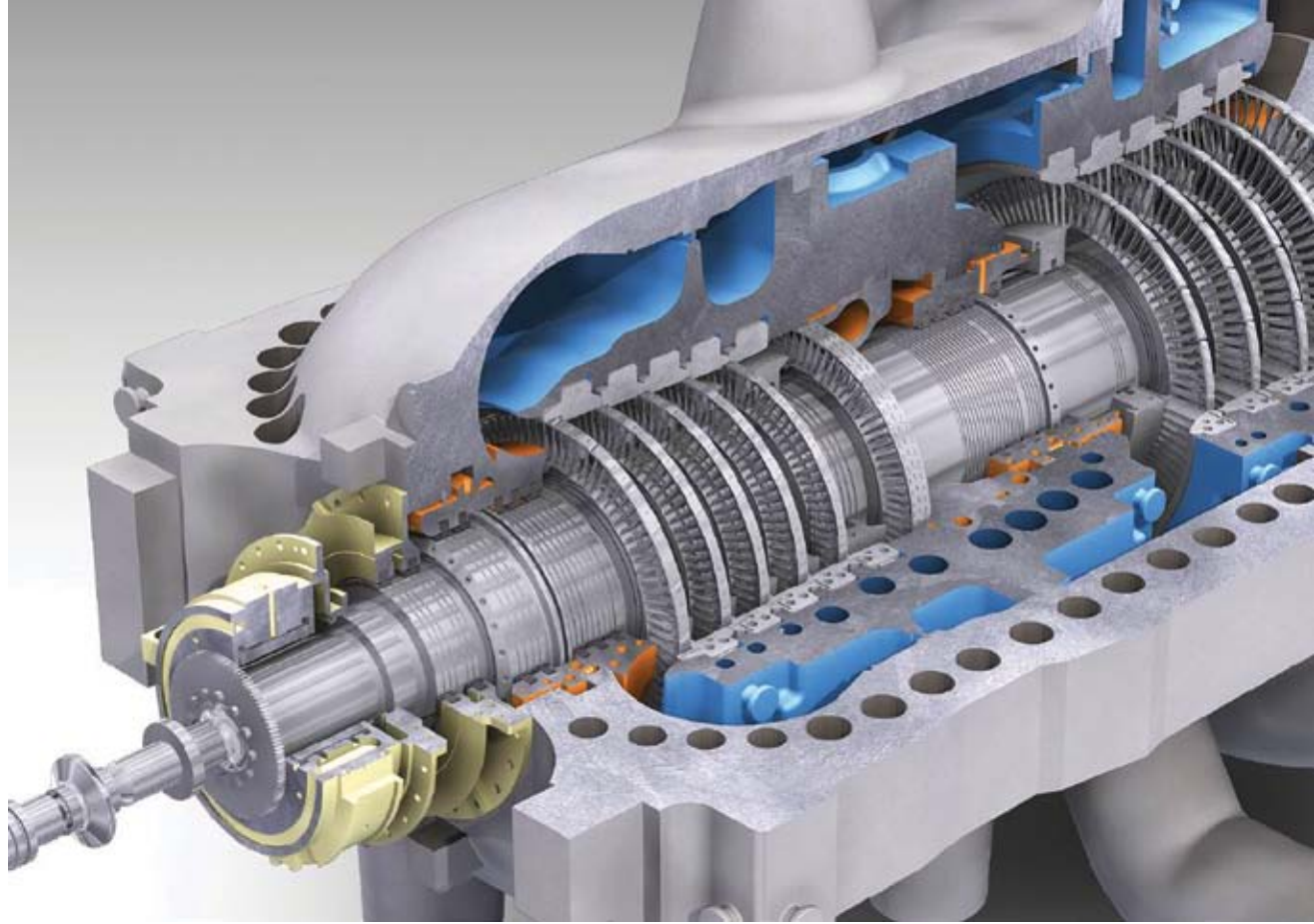


**What's New in
Solid Edge ST4?**

www.swooshtech.com/siemens/solidedge

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.

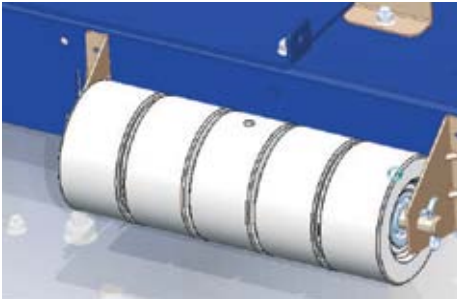
SIEMENS



HIP turbine courtesy of POMIT Co., LTD, Korea. Modeled and rendered in Solid Edge.

WHY SOLID EDGE ST4?

Productivity, collaboration, and cost reduction play a constant role in your daily business. Solid Edge ST4 will accelerate and improve your business's performance. This software serves as your elite choice for accelerating design, getting products to your market faster, speeding your ECO execution, and maximizing your re-use of imported 2D and 3D data. Your company will be distinguished by your ability to provide superior part and assemblies modeling, as well as your ability to draft, manage transparent data and element analysis. Solid Edge ST4 enables your business to deliver the fastest, most flexible design experience possible while easing the challenges inherent in performing your product development.



MORE REALISTIC DESIGNS WITH THE DEFAULT DISPLAY

(upgraded graphics)

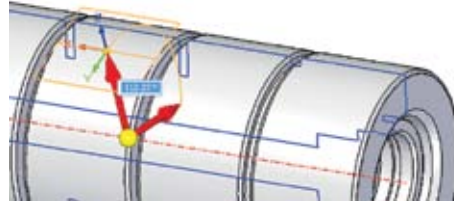
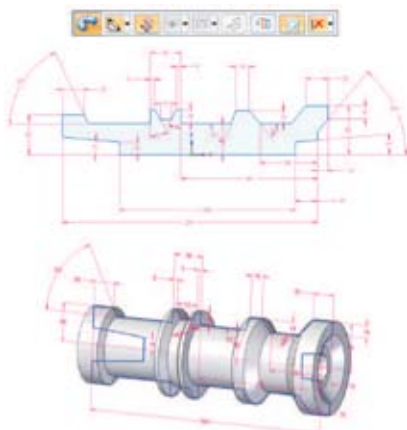
Designers will notice a much richer display in Solid Edge ST4 right out of the box. Photorealistic rendering is still offered (and enhanced), but Solid Edge now supports reflections and a virtual mirrored floor with casted shadows.

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.



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

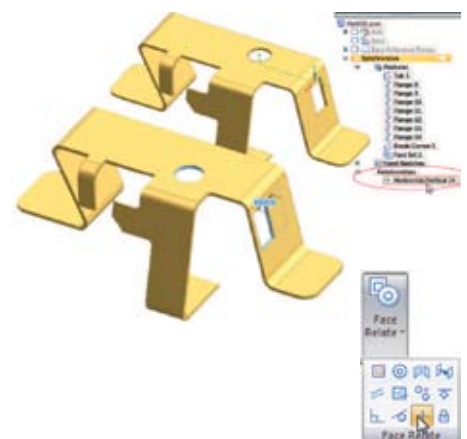
These 3D model relationships can be used to create and preserve horizontal and vertical conditions between faces or to align key points. This relationship can also be used to “center” faces. Horizontal or vertical relationships applied to 2D sketches are transferred to the 3D model.

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.

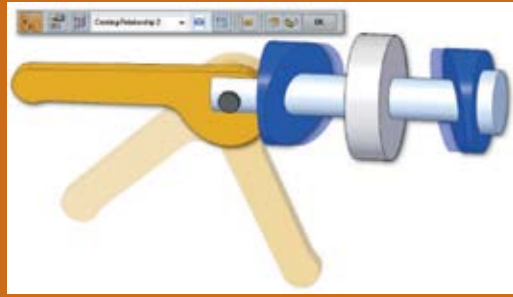
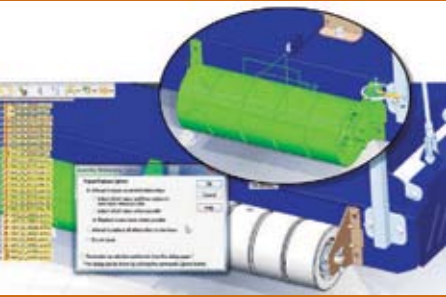
KEY POINT DISPLAY AND PROCESSING

“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.

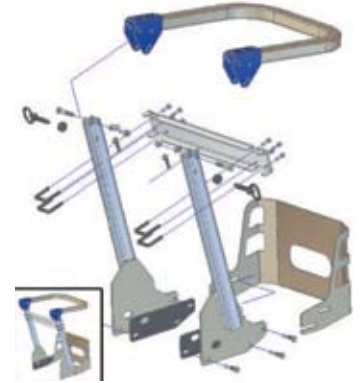
NEW ASSEMBLY FEATURES

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.

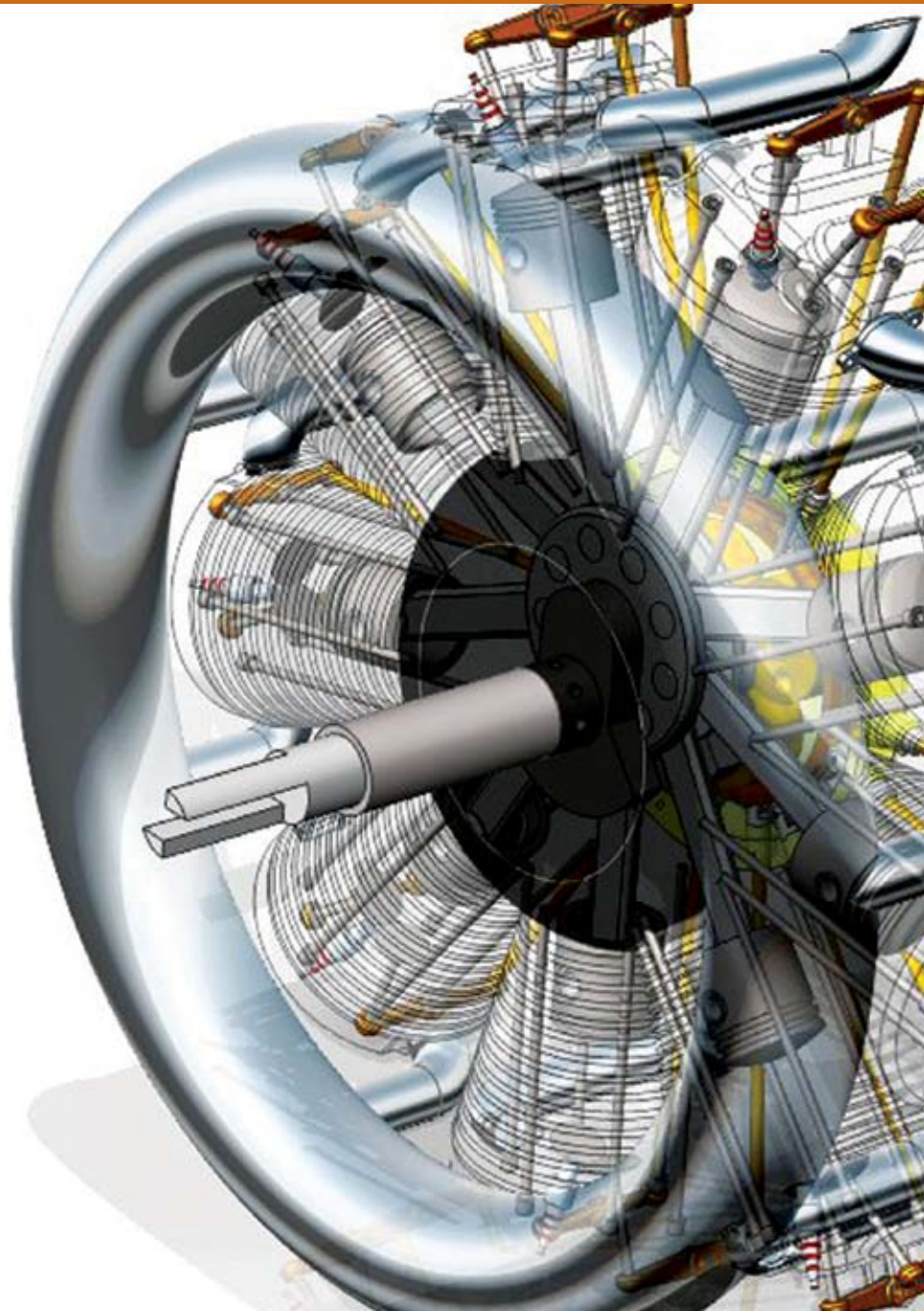
In addition, more standard parts are provided, while usability improvements to standard parts, frame components and piping library increase productivity.

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.

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 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.

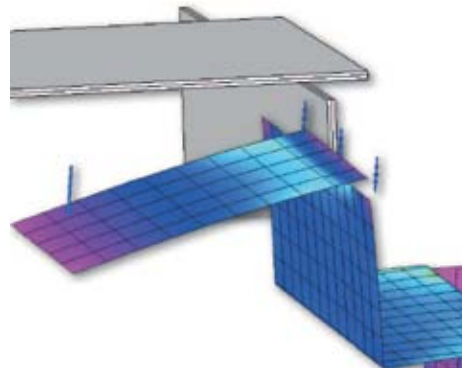


MID-SURFACE CREATION AND UTILIZATION

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.

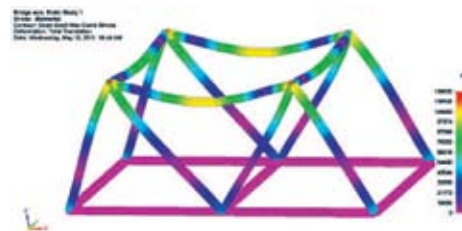
EDGE AND FACE GLUE CONSTRAINTS

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

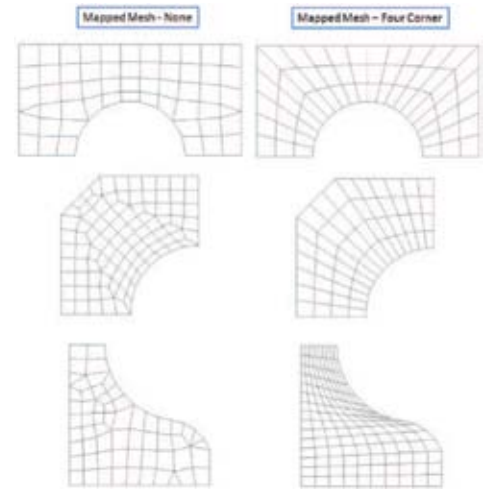
Solid Edge Simulation now includes a new element type for analyzing frame type components. This new 1D element type is built into the Frame environment and can be used to determine deflection and stress for parts such as I-beams, T-beams, box beams and C-channels that are automatically generated by the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

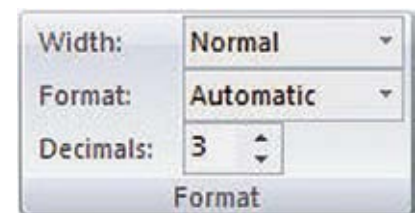
- A mapped mesh option to create a more orderly and well shaped mesh
- The ability to control the minimum number of elements on an edge as well as maximum elements on small faces



- 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

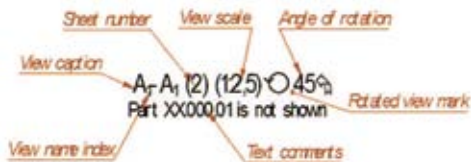
ST4 includes multiple enhancements to improve general simulation usability. For example, you can quickly edit a study by double clicking from the navigator. Similarly, new functionality improves the creation of face to face connections, while a new loads and restraints display improves application visibility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

WORLD-CLASS DRAFTING

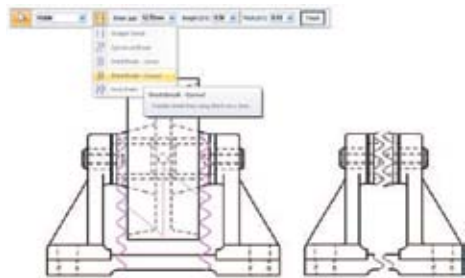
Solid Edge ST4 continues to focus on reducing engineering costs by enabling users to minimize drawing production time.

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.

AUTOMATIC BALLOON STACKING

You can now document the item 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

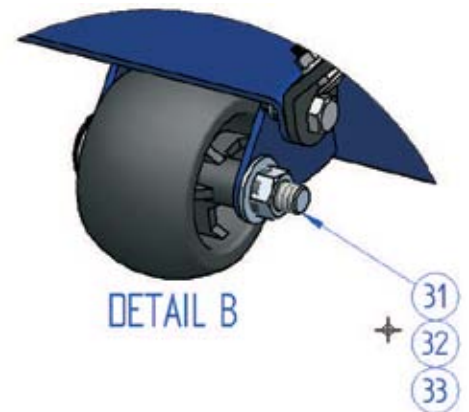
Dimension lines can now be jogged to better show values across narrow faces. A new dimensions copy tool lets designers duplicate attributes (such as tolerances, prefixes and suffixes) from one dimension to another.

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

Item	Document Number	Title	Material	Quantity	Mass	
					Mass (kg)	Mass (Quantity)
1	ASPL_02_0	Power Deck			34.892 kg	34.892 kg
2	PSM_01_00	Pulley Cover	Steel	1	1632 kg	1632 kg
3	PAL_06_00	Deck wheel	Epoxy	1	6000 kg	6000 kg
4	PSM_01_00	Deck St-Flange	Steel	1	18549 kg	18549 kg
5	PSM_01_00	Deck Support	Steel	1	6024 kg	6024 kg
6	PSM_01_00	Left Pulley Cover	Steel	1	6642 kg	6642 kg



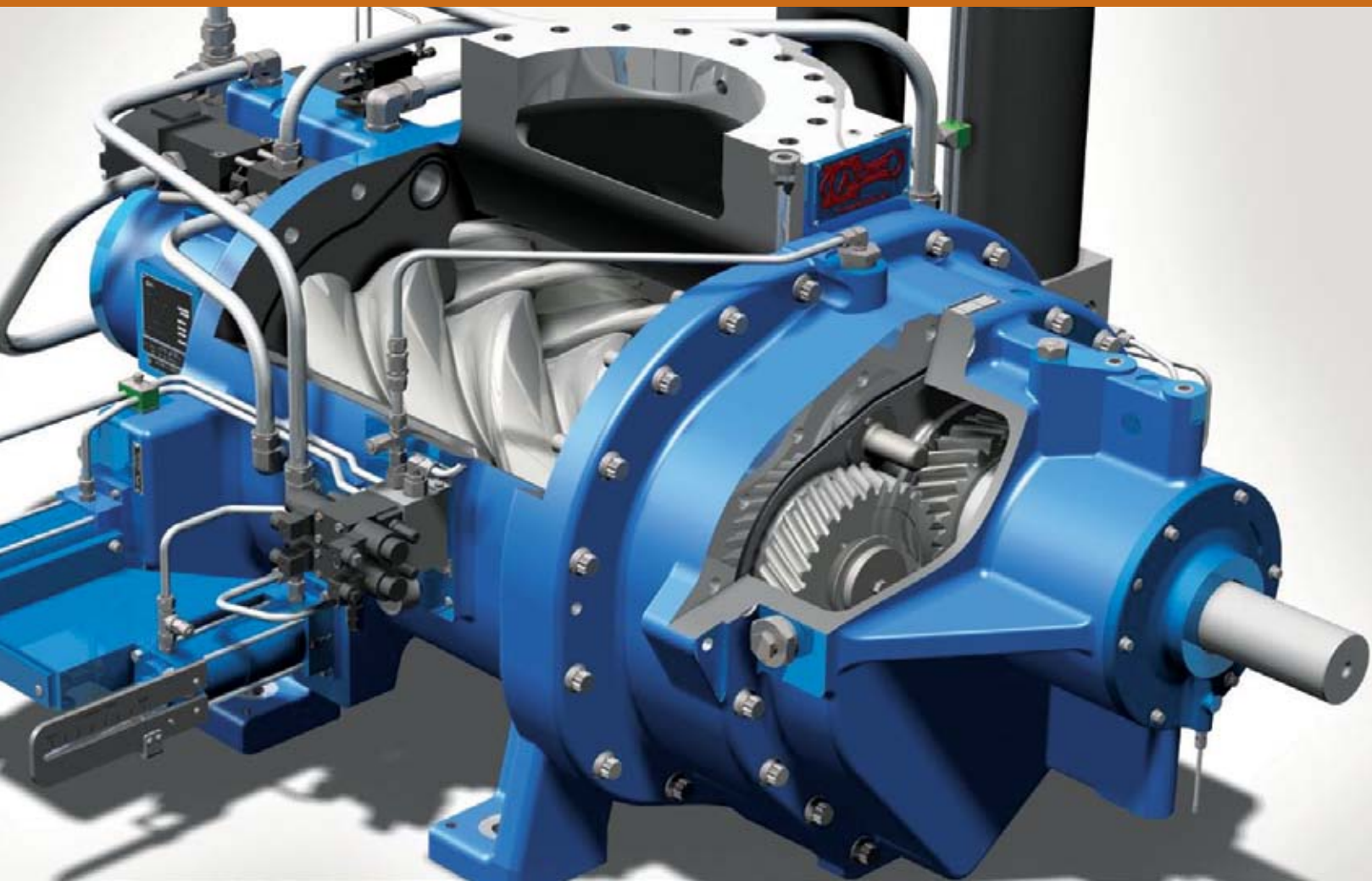
DESIGN BETTER – SOLID EDGE ST4

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.

To Learn More
visit www.swooshtech.com/siemens/solidedge

REMEMBER...

When productivity, collaboration, and cost reduction play a continual role in your daily business, turn to Solid Edge ST4 to improve your business's performance.



Success with Solid Edge

Case Study: Helena

Helena Laboratories is a clinical laboratory instrument manufacturer. Its clients include major medical centers, small hospitals, large reference laboratories and small private doctors' laboratories. With hundreds of laboratory products and more than 40 registered patents, Helena continues to be a market leader in the design and development of new diagnostic tests.

Helena switched to Solid Edge® from previously used SolidWorks software. Helena now achieves 100 percent conversion of its SolidWorks and CADKEY® software wireframe designs into Solid Edge and preserves its valuable data. There were added business and technical benefits too, such as the ability to upgrade to Teamcenter Express for product data management.



"It will be years before SolidWorks can convert into the Catia kernel. I don't want to stagnate for 10 years...Solid Edge in the last three to four years has been working on a technological evolution while SolidWorks has been working on menu bar icons, shading and colors."

"We need a stable path for the next 5 to 10 years. We found that stability with Teamcenter Express and its expandability to full-blown Teamcenter from Siemens PLM Software. The SolidWorks path seemed uncertain to us."

Billy Oliver
Design Engineer at Helena

Case Study: Edison 2

Edison2 was founded by Virginia real estate developer and automotive entrepreneur Oliver Kuttner, in response to a challenge – the Progressive Insurance Automotive X Prize competition. This competition offered a top prize of \$10 million to the team that could create a safe, clean, production-capable, well-performing vehicle that gets over 100 miles per gallon equivalent (MPGe, or the amount of energy contained in one gallon of pump gasoline; this measure was used as a way of including electric vehicles in the competition). Kuttner assembled a "dream team" from the top ranks of sports car racing.

The Edison2 concept car that won the \$5 million prize was designed entirely using Solid Edge® software from Siemens PLM Software.



"Anyone who has an interest in design should consider Solid Edge with synchronous technology. It's brilliant."

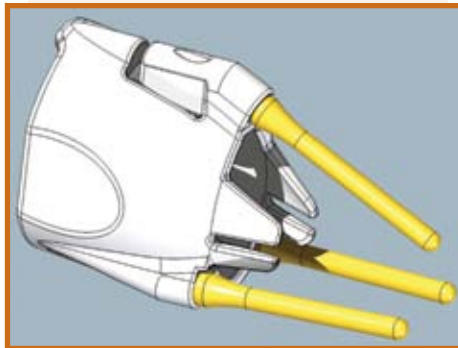
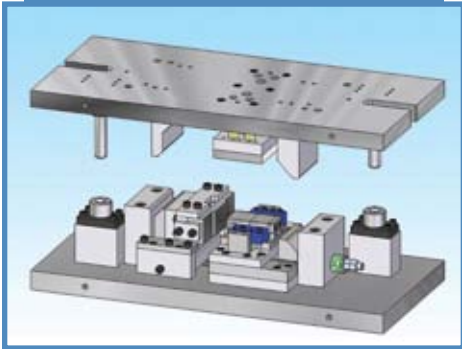
Ron Mathis
Chief of Design for the Edison2

"We plan on using synchronous technology a lot in developing the next-generation car, and it's really going to cut down on the time to production with our pre-production prototype."

Brad Jaeger
Director of R&D for the Edison2

“Synchronous technology, which is implemented in both Solid Edge and NX, greatly contributes to a remarkably fast learning curve on the part of CAD users with literally no 3D design experience. The users don’t have to worry about history, yet get the speed and flexibility of direct modeling with the precise control of feature-based design. Regardless of the past 3D CAD operations performed on a part, users can easily create whatever geometry they want.”

Takashi Nakayama
Engineer, Technology Department
Development Group
Toyo Rikagaku Kenkyusho Co., Ltd.



“Not only is it easier to design parts and assemblies from scratch using synchronous technology, another important advantage is how quickly we can process ECOs (engineering change orders), and it doesn’t matter whether the design was done using Solid Edge or a third-party CAD system. For example, when we needed to make one of our coolers smaller, it took only 2 hours using Solid Edge with synchronous technology to relocate all of the internal parts and assemblies. Drawings and STEP files were distributed to manufacturing within the same day. Something like that would have taken a few days previously!”

Dr. Andrew Thomas
Chief Technical Officer, Energist
Group

“Solid Edge with synchronous technology is really a new CAD technology. Having used five different 3D CAD systems over the past 25 years, Solid Edge with synchronous technology offers a different thought process that eliminates the complexity of previous systems. The old days of being locked into a complex process are over. Siemens is breaking the walls down and establishing a far superior design approach.”

Dave McClain
Group Leader, Mechanical Design
Space Dynamics Laboratory





Swoosh Technologies & Solutions: Swoosh Technologies PLM has a long legacy of working in the fields of aerospace, automotive, off-road vehicles, and machinery design to leverage PLM solutions that help companies achieve business objectives of quality improvement, waste reduction, shorter cycle times and increased product innovation.

Swoosh Technologies Educational Services: delivers complete product training for Solid Edge, NX Product Design & NX Manufacturing (basic to advanced full 5-axis), Teamcenter Engineering and Teamcenter Express. We offer off-site training at one of our three locations or on-site training at your destination. Our courseware is developed in-house and targeted specifically for your design and manufacturing requirements.

Swoosh Technologies Staffing: can help smooth the gaps in your engineering design and manufacturing environment for short or long term contract placement. Our engineering staffing solutions offers contract placement, temp-to-hire and direct hire candidates in the fields of product design and manufacturing.

Swoosh Technologies Solutions Partners: Siemens PLM delivers world class solutions with the power of Synchronous Technology (ST). Solid Edge with ST is changing the way products are designed. Design it once, change it forever.

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