Maximizing the value of your brand: Solid Edge® software provides a complete end-to-end design solution for aesthetic engineering, encouraging unrestricted creativity while speeding results. From your imagination to your desktop, Solid Edge takes the design from thought concept to design reality.

Solid Edge – the tools you need for the designs you imagine.
It’s no secret that to be successful in the consumer products market you face some of the toughest challenges in the manufacturing industry. You are under intense and increasing pressure to maximize the value of your brand by defining, designing and manufacturing innovative products that get to market first. Winning market share means a continuous turnover of new designs that offer the consumer:

- Aesthetically pleasing shapes
- Sophisticated functionality
- A practical human interface
- Enduring quality
- The right price

Being first to market has multiple benefits: you can demand a higher price for new and enhanced products. Being on the shelf sooner means being on the shelf longer. And capturing and satisfying new customers provides larger opportunities for future revenue. This translates into maximum value for your brand.

Solid Edge, the leading mainstream CAD solution from Siemens PLM Software, can help you reap the benefits of being first. With a unique approach to aesthetic engineering, Solid Edge provides you with a complete end-to-end industrial design and engineering solution, encouraging unrestricted creativity while speeding results. Solid Edge – the tools you need for the designs you imagine.

Compared to traditional approaches, Solid Edge provides more freedom and control for evaluating and manipulating shapes in real time. Combined with a variety of process-oriented tools for shape design, plastics part modeling, sheet metal, assembly design and drawing creation, Solid Edge delivers everything you need to get down to the business of consumer product design.
Aesthetic engineering: combining form with fit and function

Solid Edge offers a practical solution for beating time, cost and quality objectives by extending your industrial design process to produce both aesthetically pleasing designs and engineering-ready data. It is critically important to retain the industrial design intent through the engineering cycle. But you must also be able to manufacture the product, at a suitable cost and retain its desired technical function. It is logical then to combine the two processes as seamlessly as possible. Solid Edge does this by providing enough flexibility for industrial designers to explore the appearance and feel for a product, while creating the engineering data that defines performance, value and manufacturability.

Form and function in a single model
The net result of this approach is that each of your proposals is modeled once, not twice. Form and function are contained within a single model. If an industrial designer changes something about the outside shape, the mechanical features automatically update to accommodate the change. Engineers don’t have to rework the internal parts each time the external shape changes.

If you are looking for an advantage that will help you get to market faster, with an attention-grabbing product at the right price, Solid Edge is the answer. It is flexible enough to generate your desired shapes, easy enough to make and communicate numerous changes and robust enough to maintain both the original design intent and the necessary engineering knowledge throughout the design and manufacturing process.

PROVEN RESULTS

“My tests prove that new surfacing tools in Solid Edge provide exactly what we need to design our deep fryers, steamers and coffee makers that appeal to the consumer market. Solid Edge allows us to focus on modeling and speeds time-to-market.”

Olivier Pellerin
Groupe SEB
Is Sur Tille, France
Get the shape you want

Solid Edge is built on a foundation of superior core modeling and process workflows that help engineers design more rapidly by modeling parts more efficiently than other CAD systems. For designers of more ‘stylistic’ shapes, Solid Edge’s revolutionary Rapid Blue technology overcomes the limitations of existing CAD systems and provides a new level of design control and flexibility for designers, engineers and industrial designers, while remaining easy to use and sympathetic to the creative process. Tailored commands and structured workflows help you get ideas from pen and paper into the computer and design much more quickly than general-purpose surface modeling tools. With Rapid Blue, you get the shape you want, not just the one your old CAD system wants to give you.

Creativity with control
Solid Edge shatters the barriers of traditional modeling systems, combining the flexibility of nonhistory-based modelers that appeal to industrial designers with the engineering benefits of a history-based approach.

While the history-based paradigm makes perfect sense for solid modeling, it creates unnecessary complications when it comes to complex shape design. In contrast, nonhistory-based modelers provide a more flexible modeling method, but at the expense of automating the update of related model elements – a key drawback in modeling stylized parts which often require a significant number of iterations.

Unsurpassed flexibility
Industrial design is, by nature, a creative process that involves a great deal of editing as designs evolve. Curves are the foundation for all modeling. It is critical that they are able to represent the desired shape and be highly flexible in their editing.

Recognizing this, Rapid Blue provides unique “shape-preserving” curves, which encapsulate in their behavior the ability to preserve their general shape characteristics such that your original design intent is built into each curve. For example, if a curve is convex along its entire length (as many consumer product designs’ main faces are) it will remain convex through all but the most extreme edits.

As a result, you save significant time when creating and editing designs using shape-preserving curves and experience less fatigue and frustration as Solid Edge automates an otherwise highly tedious process.

PROVEN RESULTS

Rapid Blue dramatically expands product possibilities by delivering direct freeform surface interaction in mainstream CAD. Rapid Blue’s dynamic feedback of surface creation and edit leapfrogs comparable solutions in providing flexible design capabilities.”

Ken Versprille, Ph.D.
Evaluate more ideas in less time
Engineers and designers design interactively, more so in industrial design than anywhere else. Because the style of the part is a key component, you explore many more alternatives. And the subjective element of industrial design calls for the ability to make changes with continual feedback of the results.

With the dynamic edit capabilities of Rapid Blue, you can edit your designs and see the results instantly as you drag your cursor on the screen. All design intent and history are preserved and the graphics update on every mouse move. This unique Solid Edge feature means that more iterations can be tried in a shorter time, improving product quality and acceptance. For the first time, you can now interactively tweak highlight lines and see the effects on all downstream rounds, fillets and blends.

A workflow for the way you design
Your designs typically evolve over time, particularly given input from the various players as they see the design progress. For example, after review, it may be decided that more flair is needed in one area of the product – a change that can only be achieved by swapping a simple arc for a more flexible curve. With traditional systems, this would require a significant amount of rework, including having to manually repair the history tree if the change is severe. In contrast, Rapid Blue presumes that change is necessary and that starting simple and adding further control later is a valuable workflow.

Convert to Curve and BlueSurf are two key technologies enabling a truly iterative workflow. Convert to Curve allows analytic elements, such as lines and arcs, to be converted to nurbs with a single click. With no loss of shape data, the elements become editable curves. Even more importantly, this conversion does not destroy the downstream work that has been completed. BlueSurf acknowledges and accommodates the inevitable increase in control required as designs progress. BlueSurf is the only technology in the industry to incorporate sweep, loft and blend into a single simple-to-use command. So, when appropriate, that initial simple sweep can be made more elaborate without having to manually repair the feature tree.

PROVEN RESULTS

“Solid Edge users now have the best of all worlds with a powerful solid and surface modeling system aligned with a sophisticated database system for managing product designs.”

Industry analyst
Ray Kurland
President
TechniCom Inc.
Solid Edge helps you design your products faster, while automatically building in manufacturability. Specialized workflows and engineering aids embody processes that are essential for consumer product design.

**2D to 3D wizards.** Wizards allow you to begin with 2D sketches and scanned images of your product designs and quickly create sophisticated 3D models.

**Plastic part modeling.** Automated workflows combine the powerful shape-creation capabilities of BlueSurf with engineering features that are critical in the design and manufacturing of plastic parts. An extensive list of features includes simplified web and rib modeling, one-step lip and groove creation, part splitting and associative core-cavity construction.

**Sheet metal design.** The most advanced sheet metal design software in the industry allows you to create product enclosures using standard sheet metal and fabrication terminology. Streamlined modeling commands quickly create tabs, flanges, louvers, dimples, cutouts, mitered corners, corner breaks and other sheet metal-specific part features. Automated placement of bend relief, bend allowance calculations and flat pattern development means components are designed ready for manufacturing.

**Wire harness.** The Solid Edge wire harness design package utilizes electrical circuit diagrams from popular eCAD systems to automate wire harness designs in Solid Edge. Electrical and mechanical design teams are able to collaborate more closely, creating complete digital mockups that include cables and wires. Dedicated tools deliver streamlined ways to create wires, cables and bundles. Correct cut-length information is easily accessible for manufacturing.

**Mechanisms.** Built-in mechanism analysis helps you check the validity of moving parts, such as handles and opening covers. Solid Edge automatically captures motion intelligence in assemblies, so you can quickly and accurately simulate movement, detect interferences and create animations.

**Design rule sensors.** Sensors are unique Solid Edge design aids that provide continual feedback on engineering rules and variables as the design develops. You can ensure that industrial design is in line with engineering by automatically monitoring key distances, surface areas, physical properties and other design variables while developing the model.
Avoid costly fit errors

From the very beginning, Solid Edge helps you build correct fit and engineering function into your designs, without limiting your creativity to produce eye-catching stylistic products. Solid Edge’s progressive assembly design techniques automatically build intelligence into your assemblies, helping you to create complete, accurate digital mockups fast and avoid costly mistakes in fit.

Hybrid 2D/3D layout drives top-down design by defining spatial envelopes and constraints for internal components. 2D sketches can be used to create or modify their 3D models. You can ensure that your parts fit accurately by designing them within the assembly model, using geometry from adjacent parts or sketches. To reduce assembly modeling time, you can “teach” parts to automatically snap into position with proper mating and alignment relationships.

Functional designs for rapid product introductions

Unique to Solid Edge, System Libraries provide new levels of productivity for re-using subsystems. More than just simple sub-assemblies, Systems Libraries allow you to define, store and re-use common parts prevalent in component packaging, along with their associated features and relationships. Complete arrangements of parts can be quickly snapped into place, automatically building all the necessary relationships and adding or removing material for supporting features such as holes, bosses and brackets. Your engineers can provide industrial designers with ready-to-use systems that incorporate known design parameters and rules, dramatically speeding up assembly design and improving your confidence in the finished product.

And Solid Edge helps you explore more design alternatives in less time by quickly and easily restructuring assemblies, creating families of assemblies to evaluate different product configurations and modeling assemblies with moving parts in their alternate positions.

PROVEN RESULTS

“Grouping parts in the System Library instead of in subassemblies will let our design engineers focus on components as functional systems.”

Chris Oesterle
CAD Support
Liebert Corp.
Columbus, Ohio
Concept
Companies designing consumer products need to maintain a critical balance between producing creative and unique products and working within extremely tight windows of opportunity. Solid Edge offers a new level of design control that is flexible enough to meet the creative needs of industrial designers, while remaining easy to use. Tailored commands and structured workflows help transition concepts from pen and paper into the computer, enabling you to turn ideas into reality. Generating ideas in 3D allows you to communicate concepts more thoroughly. From simple images through to photorealistic renderings and animations, realistic presentations provide a significant advantage when presenting to clients. Once the business is won, your designs are already validated for fit and function, speeding the time-to-market.

Styling
Solid Edge boosts design productivity for complex geometry with exclusive Rapid Blue technology. With Rapid Blue, you get the shape you want, not the one the CAD system wants to give you. Shape-preserving curves retain the original shape even through complex edits. Blue Dot editing introduces an industry first by addressing order dependency and providing greater freedom and control for evaluating and manipulating shapes in real time. Complemented by a variety of process-oriented tools for shape design and dynamic editing, Rapid Blue shatters the barriers of traditional “history-based” surface modeling. With fewer steps needed to create and edit complex shapes, you can evaluate more alternatives in real time.

Design
Plastic parts, common in consumer products, present interesting challenges for the designer. Not only do plastic parts need to be aesthetically pleasing, they must be functional and manufacturable as well. Process-oriented tools take the complexity out of common design tasks. The ability to add typical engineering features, such as strengthening webs, mounting bosses and vents, allows you to easily add function to your plastic parts and speed the completion of your designs. Solid Edge was developed from the ground up with a focus on assembly-centric design. By focusing not only on how parts fit together, but also how components function and interact, you can create 3D functional prototypes that help you optimize and differentiate your designs.

Simulation
Solid Edge provides two complementary methods for your designs to be analyzed and validated much earlier in the design cycle. The first – Femap Express software – offers step-by-step process guidance for fast and accurate analysis of components. Second, Solid Edge provides single-button associative transfer of Solid Edge parts and assemblies to Femap, the leading CAD-independent finite element analysis (FEA) tool for advanced analysis to ensure quality and optimize materials within complete assemblies. Both solutions utilize the well-proven Nastran solver technology for accurate and repeatable results. Engineers and analysts use Femap to virtually simulate a complete range of product behavior before committing to expensive product development plans. This process ensures higher product quality, lower development costs and reduced product development time.

Tooling
Based on the aesthetic nature of many consumer products, the design of mold tooling is critical to achieving time-to-market objectives. Solid Edge Mold Tooling is an integrated add-on package that establishes a powerful step-by-step process workflow for the design and manufacture of plastic injection molds. Solid Edge Mold Tooling offers dramatic time-saving potential by removing much of the repetition prevalent in mold tooling design, allowing you additional time for more important tasks. With accurate core and cavity creation, an extensive choice of industry-standard mold bases, automated generation of all required components and associative electrode design, Solid Edge Mold Tooling completes your mold designs faster and reduces cost.

Machining
With our partners, Siemens provides capabilities for comprehensive machining and shop floor management. Solid Edge files are associatively transferred to provide a complete solution for machine-tool programming and to maximize the efficiency of manufacturing engineers and NC programmers. Solid Edge Mold Tooling is also complemented by the Solid Edge Electrode Design Application, extending the time-saving potential for mold tooling beyond design and into manufacturing. Users are guided through a logical step-by-step approach to develop single or compound electrodes that are frequently necessary in the manufacturing of complex mold components.
Scalable design management

A new standard in CAD/PDM integration
With its groundbreaking Insight technology, Solid Edge became the only mainstream mechanical system to merge design management capabilities with the CAD tools that designers use every day. Setting a new standard in CAD/PDM integration, Solid Edge builds on the success of Insight, letting customers choose from a range of easily scalable cPDM solutions. Solid Edge Insight continues to provide proven management capabilities for departmental teams. Solid Edge’s integration with the powerful Teamcenter® software platform provides seamless and transparent connectivity between the applications. All essential Solid Edge commands are encapsulated, making sophisticated data management functions easily available to the Solid Edge user. Solid Edge-related data is easily captured for re-use in future projects without placing an additional burden on the CAD user, while full scalability means customers can grow their cPDM solution to meet growing business demands without starting from scratch.

Solid Edge Insight, delivered with every seat of Solid Edge, is an innovative solution that seamlessly integrates CAD, design management and web-based collaboration into a single tool that is easy to implement and easy to manage. Insight removes the perceived barriers to successful PDM implementation, while providing the fundamental capabilities for well-defined workgroups to successfully manage Solid Edge data.

Teamcenter Express software is a preconfigured, easy-to-deploy and easy-to-use product data management solution and the entry point into the powerful Teamcenter platform. Teamcenter Express is designed for mid-sized manufacturing companies that need to collaborate across multiple departments and across multiple sites, support multiple design systems and require additional workflow capabilities to manage product release and ECOs. Teamcenter Express helps companies to transform their process of innovation by applying preconfigured best practices to everyday engineering tasks and processes.

For companies requiring a complete PLM solution, Solid Edge provides a seamless CAD-centric integration with Teamcenter’s engineering process management software, the industry standard for cPDM. Teamcenter provides flexible and configurable management solutions addressing the full PLM process in a global environment.

Unlike traditional PDM solutions, the Solid Edge integration with the Teamcenter platform makes sophisticated data management functions completely transparent to the designer. Both Solid Edge and Teamcenter are developed by Siemens, ensuring a level of integration that is updated and synchronized with every release.
With Solid Edge’s innovative tools, you will quickly develop new and alternative designs in response to customer requirements, and Solid Edge allows you to clearly communicate your proposed designs through realistic images and animations. You can also create web pages using a simple wizard, so your customers can examine your designs in detail, using only a standard web browser.

**Photo-quality images**
Rendering tools in Solid Edge help you communicate your designs effectively and with photo-realistic style. You can quickly and easily create high-quality images of Solid Edge parts and assemblies for presentations, design reviews and sales or marketing efforts. Solid Edge renders models with special effects including colored light sources, shadows, background imagery, translucency, anti-aliasing, reflection, textures and bump mapping. Shading options include hidden line, phong shading and true ray tracing.

**Animations**
Solid Edge Virtual Studio provides the capability to create fly-bys. Built-in wizards allow you to simply produce a flight path and duration, and save the resulting animation as a movie in standard AVI format. In addition, Solid Edge includes a built-in motion analysis package that captures motion intelligence directly from Solid Edge assemblies. You can quickly and accurately simulate movement, detect and correct interferences and create animations of the full range of assembly motion.

**Web publishing**
Solid Edge Web Publisher is an integrated add-on package that makes it extremely fast and easy to share design information over the Internet or company intranets. Web Publisher is seamlessly integrated with Solid Edge, so you can publish web pages with Solid Edge 3D models and related data in seconds, without any web publishing expertise. Solid Edge Web Publisher makes part and assembly models accessible with the standard Microsoft Internet Explorer web browser, so design information can be easily distributed to anyone who needs it—providing a means to address form, fit and function issues very early in the design process.
An end-to-end solution

**Analysis**
Solid Edge provides two complementary methods for designs to be analyzed and validated much earlier in the design cycle. The first – Femap Express – offers step-by-step process guidance for fast, accurate analysis of solid and sheet metal parts. Second, Solid Edge has single-button associative transfer of Solid Edge parts and assemblies to full-blown Femap, the leading CAD-independent finite element analysis (FEA) tool for advanced analysis to ensure quality and optimize materials within complete assemblies. Both solutions utilize well-proven Nastran solver technology for accurate and repeatable results.

**Manufacturing**
Solid Edge Mold Tooling established a powerful step-by-step process workflow for removing much of the repetition prevalent in the design of plastic injection molds, allowing mold tool manufacturers to design complex mold tooling using Solid Edge models. Mold Tooling is complemented by Solid Edge Electrode Design, providing a streamlined process-oriented workflow for developing electrodes that are frequently necessary in the manufacture of complex mold components.

Solid Edge and NX Machining software provide single-button associative transfer of Solid Edge data to NX Machining – Siemens industry-leading manufacturing solution. Components designed in Solid Edge can be easily transferred to NX Machining for manufacture. NX Machining is aware of any design changes carried out in Solid Edge; changes in geometry will result in the part being updated in NX Machining and tool paths will be regenerated, saving both time and effort.

**Voyager Program**
To help you leverage your design data, the Solid Edge Voyager Program unites best-in-class suppliers of complementary software solutions and services to offer you an integrated end-to-end solution.

With more than 170 members worldwide, you can benefit from this seamless integration by being able to pick the solution of your choice.

Our Voyager Certified Select solutions support processes such as:
- Rapid prototyping
- Thermal analysis
- Plastics flow analysis
- PC board integration
- Documentation

In addition, Solid Edge-equipped Voyager B2B suppliers are ready to assist with your outsourcing needs, from design services to sheet metal and tooling.
Maximize the value of your brand

Solid Edge helps you transform creative ideas into deliverable, attention-grabbing products – ahead of your competition and at lower cost.

Solid Edge maximizes the value of your brand by:

- Combining industrial design and engineering to provide a complete end-to-end design solution for aesthetic engineering
- Allowing your designers to get the shape they want, not just the one their old CAD system wants to give them
- Rapidly creating and evaluating large numbers of alternatives
- Enhancing flexibility to optimize form, fit and function in real time, while maintaining design intent and manufacturability throughout the design process
- Reducing engineering changes by eliminating fit and function errors, and crushing the time required to make and communicate design change requests when necessary
- Including more people throughout the design process, allowing users to manage collaboration with other departments and suppliers
Solid Edge combines powerful tools for industrial design and engineering to provide you with a complete end-to-end design solution for aesthetic engineering – encouraging unrestricted creativity, while speeding results.

With much more freedom and control for evaluating and manipulating shapes in real time and powerful workflows for plastics part modeling, sheet metal, assembly design and drawing creation, Solid Edge delivers everything you need to get down to the business of consumer product design.

To learn more about how the design that is in your head can be the one that ends up in the computer, visit www.solidedge.com or contact your local reseller.
About Solid Edge
Solid Edge software is a powerful hybrid 2D/3D design system and a core component of the UGS Velocity Series portfolio that enables manufacturing companies to achieve competitive advantage through cost reduction while increasing top-line revenues. With superior part and assembly modeling, along with drafting, transparent data management and built-in finite element analysis, Solid Edge delivers the benefits of a fully integrated and managed design system that eases the growing complexity of product design.

About Siemens PLM Software
Siemens PLM Software, a division of Siemens Automation and Drives (A&D), is a leading global provider of product lifecycle management (PLM) software and services with 4.3 million licensed seats and 47,000 customers worldwide. Headquartered in Plano, Texas, Siemens PLM Software’s open enterprise solutions enable a world where organizations and their partners collaborate through Global Innovation Networks to deliver world-class products and services. For more information on Siemens PLM Software products and services, visit www.siemens.com/plm.