

Siemens PLM Software

Industry Insights

Accelerate oil and gas equipment design with Solid Edge

Oil and gas manufacturers face pressure to improve the speed and quality of their design and engineering processes so they can deliver new designs to their customers on time while meeting expectations for product quality, safety and compliance.

Solid Edge® software from Siemens PLM Software enables oil and gas equipment manufacturers of all sizes to improve their design processes so they meet their customers' expectations for high-quality products that are delivered on time, enabling them to increase cash flow and profit margins.

Using Solid Edge improves product development performance in these key process areas:

Communicate new designs to potential customers

Oil and gas manufacturers can substantially improve how they communicate designs to potential customers before the product is manufactured, and sales personnel can quickly convey the innovative features and value of your designs. Using Solid Edge makes that possible by enabling the creation of rich 3D product information,

including photorealistic images and animations. As a result, you're able to clearly demonstrate design innovations through the use of the latest visualization technologies.

Integrate proven standard components into new designs

Using proven standard components in new designs speeds the new product development process and improves quality and reliability in the final product. Solid Edge enables designers to easily access libraries of standard and catalog components and insert them into assemblies.

Speed 3D mechanical design

Designers and engineers are under pressure to work faster as well as produce accurate 3D part models, assemblies and 2D drawings. Solid Edge provides a complete software portfolio that speeds design and helps to eliminate errors before manufacturing. Design changes can be implemented faster and products delivered on time and on budget.

The Solid Edge advantage:

- Combine the speed and simplicity of direct modeling with the flexibility and control of parametric design that is made possible with synchronous technology
- Take advantage of integrated routing capabilities for piping and tubing, and specific add-on applications for process plant design
- Optimize design of fabrications, weldments and sheet metal components
- Use integrated analysis capabilities to ensure high performance, safety and durability while minimizing material costs
- Use powerful and flexible NC programming tools that are closely integrated with Solid Edge, including feature-based machining capabilities

Solution focus

Key solution components

- Solid Edge design for 3D part and assembly design using synchronous technology accelerates equipment design, speeds revisions and improves the re-use of proven components in new designs
- Solid Edge Simulation for digital validation of critical components that reduces the need to create physical prototypes, lowers material and testing costs and improves reliability and durability
- Solid Edge manufacturing for defining accurate machining processes that improve manufacturing efficiency and product quality
- Solid Edge for design management improves the overall efficiency of equipment design processes and projects, and ensures that accurate product data, specifications and compliance documents are easily accessible

Develop process plant components and systems

When designing process plant equipment for use in oil and gas exploration, production, transportation or refining, manufacturers can take advantage of pipe and tube routing capabilities that are built-in to Solid Edge, and integrated applications that optimize the design of these systems.

Design fabricated structures

Manufacturers need to develop fabricated structures that incorporate weldments and structural sheet metal components. Designers need to consider structural integrity and welding standards while minimizing material costs. Solid Edge helps you accomplish this by providing excellent tools for structural steel, and weldment and sheet metal design. Designers can simulate and test structures using embedded simulation capabilities to optimize structures and minimize material and manufacturing costs while ensuring performance and reliability.

Integrate electrical wiring and components

As more sensors and actuators are used in oil and gas equipment, routing electrical wiring and housing electronic components is becoming an important part of the design process. Solid Edge helps by enabling you to accurately model electrical

wiring, connections and housings. You can optimize wire routing, calculate correct cable lengths and define accurate bill-of-materials (BOM) for electrical components.

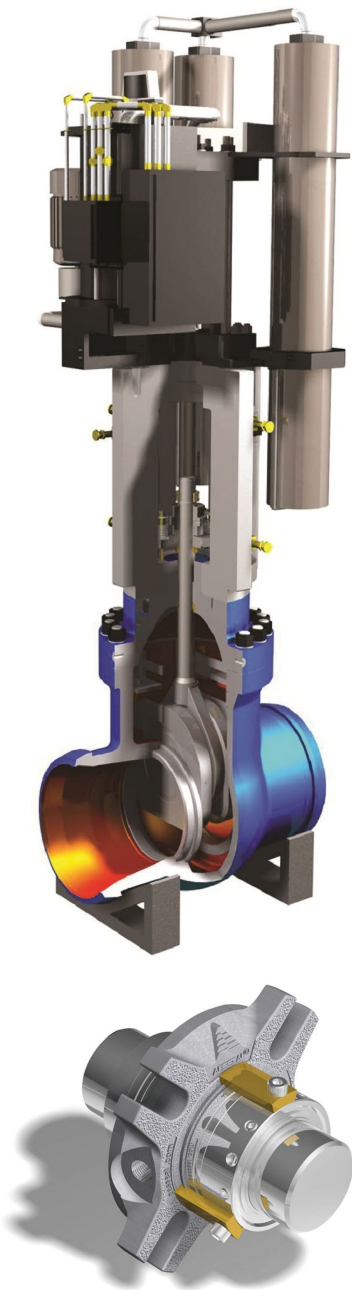
Define efficient machining operations

Efficient and accurate machining of complex components is a critical part of the product manufacturing process for many firms. Solid Edge offers powerful and flexible numerical control (NC) programming tools that include feature-based machining capabilities, which can be used to create tool paths that are associative to the Solid Edge computer-aided design (CAD) model. These tool paths can be automatically updated when the design is changed.

Prototype and test

Typically, design engineers have to wait until equipment is built to identify engineering problems. However, by creating and analyzing virtual models of machinery and equipment, designers can investigate different solutions and optimize performance. Solid Edge Simulation, a built-in finite element analysis (FEA) tool, enables design engineers to digitally validate part and assembly designs within the Solid Edge environment. The result is a significant reduction in development costs and time-to-delivery as designers solve problems before manufacturing begins.





Manage design projects and engineering change

Manufacturers need to retrieve data quickly, optimize resources and manage engineering changes efficiently. Solid Edge helps by providing visual design management tools that include preconfigured workflow capabilities, enabling your team to access and track design projects and engineering change information.

Access design projects while mobile

Engineers need access to accurate design and installation information while working on the shop floor and at remote locations. Solid Edge provides mobile viewing of 2D drawings and 3D CAD models, enabling you to access design information anywhere, anytime. Full 3D CAD design sessions can be run on mobile devices, enabling designers to resolve issues when traveling and meeting with customers and suppliers.

Manage quality assurance and compliance

Significant time and effort may be required to achieve quality assurance and demonstrate compliance with government and industry regulations. Solid Edge enables you to work efficiently in this area by managing regulatory requirements and documentation, creating print files of designs to ensure released versions cannot be changed, and implementing electronic workflows for controlled, consistent process completion. As a result, you have reliable audit results and a reduced risk of litigation.

Commission and service

Manufacturers need to support their customers by installing, commissioning and maintaining the equipment that they design. Mobile access to design data and the ability to create specific service instructions that incorporate 3D graphics ensure that in-service problems can be identified and resolved quickly and efficiently. Maintaining an as-delivered BOM for equipment also facilitates problem investigation and efficient maintenance procedures.

Realizing significant benefits

Designers and engineers in the oil and gas equipment manufacturing industry report significant benefits using Solid Edge. Some examples from published case studies include:

- Improved design productivity and product quality
- Reliable, automated design process with fewer errors
- Reduced time needed to perform a complex design task from two days to 30 minutes
- Reduced number of part variants by 70 percent
- Reduced manual data transfer by 75 percent
- Complied with rigorous International Organization for Standardization (ISO) certifications while building a unique product
- Improved marketing with attractive images and animations

For more information on this offering and to read customer case studies, please visit www.siemens.com/solidedge.

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