

Solution brief

Industry Insights

Achieve faster and more efficient machine design with Solid Edge

Siemens PLM Software

Industrial machinery manufacturers face pressure to improve the speed and efficiency of their product design and engineering processes so they can reduce delivery time and increase profit margins. Solid Edge® software from Siemens PLM Software enables industrial machinery manufacturers of all sizes to streamline their design processes and meet these market pressures.

- For small and medium business (SMB) machinery manufacturers who normally engineer-to-order, accelerated design means faster time-to-cash. Strong cash flow is critical for these smaller organizations and Solid Edge helps them improve their design processes and deliver machines faster while maintaining and improving profit margins

- For larger manufacturers who develop new machines and may have more complex processes in place, Solid Edge helps improve the efficiency of these processes and reduces the business risk associated with new product development

Regardless of their size, industrial machinery manufacturers must negotiate 12 key processes to succeed. Learn about the challenges for each key process as well as the solutions and benefits below:

Visualize new products

Build-to-order manufacturers need to improve how they communicate designs before manufacturing the product, and sales needs to convey distinct and innovative solutions. Solid Edge makes that possible by creating rich 3D product information, including high quality rendered images. As a result, you're able to clearly demonstrate innovations through the use of the latest design technology.

The Solid Edge advantage:

- Meet increasing demand for custom machinery with shorter product development times
- Support innovative machine design with powerful, flexible 3D design tools
- Maximize re-use of proven components and sub-assemblies in new machine designs
- Control material costs and optimize machine design using embedded, easy-to-use simulation tools
- Meet compliance standards with consistent document control based on electronic workflows and signoffs
- Link customer requirement documents with design projects
- Reduce end-user utilities costs with efficient machine designs
- Improve customer service by providing remote access to design data for field engineers

Solution focus

Key solution components

- *Solid Edge* for 3D part and assembly design using synchronous technology accelerates machinery design, speeds revisions and improves the re-use of previous designs
- *Solid Edge Simulation* for digital validation of critical components reduces the need to create physical prototypes, lowers material and testing costs and improves reliability
- *Solid Edge Manufacturing* for definition of accurate machining, fabrication and assembly processes to improve overall manufacturing efficiency
- *Solid Edge Design Management* improves the overall efficiency of machinery design processes and projects, and ensures that accurate product data, specifications and requirements documents are easily accessible

Manage customer requirements

Manufacturers must have a clear and documented understanding of customer needs, an accurate assessment of costs and lead time and properly balance time, effort and accuracy during the presales phase. Siemens PLM Software makes this a reality by enabling you to manage product catalogs and past-product information, and make an early definition of product configurations. This reduces risk by proposing practical solutions that are predictable and competitive.

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. Siemens PLM Software provides a complete and integrated software set to make design faster and more efficient, and eliminate design errors before manufacturing. This enables you to make changes faster and increase re-use, as well as deliver products sooner and grow revenue at higher margins.

Reduce custom content

Sales and engineering staffs need to optimize product specifications to meet customer needs while minimizing

customized product development. Siemens PLM Software helps you accomplish this by managing the product configuration throughout the sales cycle. You can select preferred configurations based on experience and standards, thus reducing risk by fulfilling more orders with standard, predictable product configurations.

Integrate electrical design

There is a trend toward using more sensors, actuators and motors, and routing electrical wiring is difficult as machines become more complex. Siemens PLM Software helps you navigate these challenges by creating virtual prototypes of wiring and component interconnects. Further, engineers can produce 2D working drawings and nail boards. As a result, you can produce correct cable lengths and predict system performance, and deliver accurate bills of materials and wiring cut lists.

Produce fabricated structures

Manufacturers need to develop a lot of fabricated steel content and engineers need to consider structural integrity and welding standards while minimizing material costs. Siemens PLM Software helps you accomplish this by providing



tools for structural steel design and detailing, and you can simulate and test structures using embedded capabilities. This enables you to improve margins from optimized structures, minimizing material and manufacturing costs.

Design sheet metal components

Manufacturers must be able to understand the design of safety guarding, housings, brackets and other sheet metal content in the context of an assembly. Siemens PLM Software can be used to assist you by providing industry-leading sheet metal design and detailing solutions so engineers can produce accurate flat patterns from the 3D model and send the geometry directly to manufacturing. This enables the customer to streamline sheet metal design and manufacturing, reducing costs and speeding delivery.

Design for manufacturing

Improving the design to minimize manufacturing costs, and understanding suitable tolerances and when to use machining or weldments is critical for manufacturers. Siemens PLM Software helps manufacturers overcome these challenges by providing standard geometry linked with available tooling, and making design data easily accessible to manufacturing. Thus, designs are optimized for production capabilities, and manufacturing errors are reduced.

Prebuild testing and prototyping

Typically, design engineers have to wait until the one-off machine is built and assembled to identify engineering problems. However, with Siemens PLM Software, this issue is mitigated by virtual assembly design with kinematic simulation, enabling engineers to refine machine functions, and integrated simulation tools, including static, buckling and vibration analysis. The result is a significant drop in costs and time-to-delivery as engineers can solve problems before manufacturing begins.

Manage quality assurance and compliance

Significant time and effort is needed to uphold quality assurance and regulatory compliance. Inadequate processes and documentation can present risks to machinery manufacturers. Siemens PLM Software enables you to avoid these issues by managing regulation requirements and documentation, creating print files of designs to ensure released versions cannot be changed, and implementing electronic workflows for controlled, consistent process completion. Consequently, you have reliable audit results and a reduced risk of litigation.

Manage projects

Manufacturers need to optimize resources, identify critical path activities and manage engineering changes efficiently. Siemens PLM Software helps by providing visual design management with preconfigured, automated workflow capabilities, enabling product development teams to access and track design projects and engineering change information. As a consequence, you can make fast and accurate engineering changes, hastening new product development and time-to-market.

Provide access

Field engineers need access to accurate design and installation information while working at remote locations. Siemens PLM Software provides mobile viewing of 3D computer-aided design (CAD) models and remote access to design data, and enables you to understand service procedures using 3D interactive product information. As a result, installation and commissioning is completed on-time and on-budget, and the manufacturer has accurate knowledge of equipment configuration at delivery and in service.

Realizing significant benefits

Designers and engineers report that they have achieved some important benefits by using Solid Edge. Some examples from published case studies include:

- Reducing development time for new machines by 70 percent
- Achieving more accurate cost estimates
- Cutting rework rate from 20 percent to 2 percent
- Decreasing time-to-market by 33 percent
- Improving product performance as well as product aesthetics
- Lowering prices for new machines

For more information on this offering, see www.siemens.com/plm/solidedge/machinery

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