

THE KNAPHEIDE MANUFACTURING COMPANY

Streamlining service and utility truck body design with SolidWorks software



Knapheide Manufacturing can respond more efficiently to requests for customized products with SolidWorks software sheet-metal design and configurations capabilities.

As the leading US manufacturer of service and utility truck bodies, the Knapheide Manufacturing Company is committed to using new design and manufacturing technologies to satisfy its customers' needs. Knapheide had used the AutoCAD® 2D design system, but in 2003 management decided to move to a 3D development platform. Because Knapheide had worked with AutoCAD software, a decision was made to transition to the Autodesk® Inventor® 3D package. As a result, the company implemented 20 seats of Inventor software in its engineering department.

However, after using the Inventor system for two years, the company's engineers encountered some issues working with the software, particularly in the area of sheet-metal design, according to Chris Weiss, vice president of engineering. "About 90 to 95 percent of what we do involves sheet-metal design, and we have some fairly advanced sheet-metal fabrication techniques, including specialized punching and roll-forming processes," Weiss explains. "We believed that, while Inventor provided some basic functionality, there might be another CAD system that would be more efficient. So we decided to benchmark all the leading 3D CAD systems to determine if we had made the best 3D decision."

In 2005, a cross-functional team of eight Knapheide employees conducted a thorough analysis of leading 3D CAD systems, including Inventor, Unigraphics®, Pro/ENGINEER®, Solid Edge®, and SolidWorks® software. After comparing information gathered through a detailed questionnaire, the team winnowed the field to two finalists—Solid Edge and SolidWorks software—and sent engineers for training in both systems, in order to conduct an even more extensive analysis.

Knapheide selected the SolidWorks 3D CAD software system, purchasing 30 seats of SolidWorks Professional and one seat of SolidWorks Simulation analysis software, because of its ease of use, integration with SolidWorks Simulation and a range of third-party solutions, open Application Programming Interface (API), SolidWorks eDrawings® design communication software, and advanced sheet-metal design and configuration capabilities. The company implemented SolidWorks software across all design and manufacturing departments, designating SolidWorks software as the sole platform for use in new product development.

Results:

- Responded more efficiently to customization needs
- Reduced prototyping costs through integrated analysis
- Minimized design errors
- Realized more effective collaboration and customer communication

Advanced sheet-metal production

With SolidWorks software, Knapheide engineers are more efficient and accurate in developing complex sheet-metal designs, thereby minimizing design errors and associated costs. "From a designer's perspective, it's difficult to visualize complex sheetmetal forms," says Project Engineer Lucas Creasy. "You may be able to imagine several bends in your mind and visualize how the form will flatten out; but beyond that, you start having questions. How will it fold up on our manufacturing machine? Will I be able to run it through all the other necessary processes?"

Using SolidWorks, I can create a virtual model of the sheetmetal component, fold and unfold it, and really see if I can make what I really want to create. With SolidWorks Simulation, we can check the final design before making a prototype, which cuts down on the number of prototypes we need to make. We anticipate that the SolidWorks software system will save a lot of time and money for our company."

Project Engineer Vinson Sill concurs. "For working with sheet metal, SolidWorks software is superior by far," Sill explains. "Once we have a workable design, we export the flat pattern to our nesting software, on to our CNC punches or lasers for cutting, then to a press brake. The process can happen very quickly."

Configurations support customization

Knapheide Manufacturing's business involves both standardized and custom-ordered products. The configuration capabilities of SolidWorks software enable the company to respond more efficiently to requests for customized products by leveraging the existing quality of its standard product lines.

"By their very nature, our products lend themselves to design tables and configurations," Weiss stresses. "We plan on taking advantage of these capabilities—developing a lot of different configurations to address lengths and sizes, and mixing and matching different assemblies and options—so we are more agile in responding to the needs of our customers."

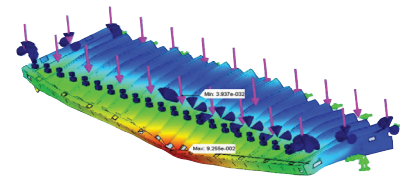
eDrawings files enhance customer communication

Using SolidWorks software, Knapheide Manufacturing engineers can quickly and easily communicate design concepts in 3D to customers through SolidWorks eDrawings files. "We recently worked on an international project, and eDrawings was a huge advantage for communicating overseas," Weiss notes. "eDrawings files foster internal and external collaboration. We plan on using them for facilitating design reviews, communicating with our shop, and interacting with customers and vendors."

The company also plans to use SolidWorks software 3D images to support its web-based marketing and its production of brochures and catalogs.

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Vinson Sill
Project Engineer



Using SolidWorks design software with integrated SolidWorks Simulation analysis capabilities enables Knapheide Manufacturing to reduce prototyping costs while minimizing design errors.



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