Utilimaster Corporation

DELIVERING COMMERCIAL VEHICLES AHEAD OF SCHEDULE WITH SOLIDWORKS

Developed with SolidWorks software, the design of the US Postal Service Flex Fuel Vehicle (FFV) includes storage shelving, walk-in interiors, and other custom features.

- Reduced design cycle by 30 percent
- Lowered costs by 25 percent
- Improved accuracy by 30 percent
- Realized annual growth rate of 30 percent

As a leading manufacturer of commercial vehicles, Utilimaster Corporation develops a variety of custom-designed vans and trucks that are equipped with unique features. Starting with a stripped-down automotive chassis, the company designs and builds specialized bodies and interiors to meet specific commercial purposes, including delivery and maintenance. Storage shelving, walk-in interiors, and open driver's steps are just some of the specific vehicle features addressed by Utilimaster.

For many years, the company utilized the CADRA® 2D design system for product development. During the mid-1990s, Utilimaster's design team grew dissatisfied with its 2D tools because they did not provide capabilities for creating detailed assembly and exploded-view drawings, which had become increasingly necessary for producing manufacturing instructions and supporting customer presentations, according to Bruce Kniller, CAD services manager at Utilimaster.

"We believed moving to 3D solids would better address our needs, help us to shorten the design cycle, and make us more competitive," Kniller explains. "Initially we used CADRA Solids but soon realized that Utilimaster needed a more robust design tool that provided an easy migration from 2D to 3D."

After evaluating several 3D modeling packages, Utilimaster selected SolidWorks® software as its primary product development platform. "We chose SolidWorks because it provides associativity between parts, assemblies, and drawings; unparalleled ease of use and a Windows®-based architecture; and a full suite of fully integrated SolidWorks Certified Gold solutions like SolidWorks Simulation for finite element analysis (FEA).

Condensing the design cycle

The SolidWorks implementation immediately had a positive impact on Utilimaster's product development process. "We used to make a large amount of drawings, which seemed to take a long time," Kniller recalls. "The move to SolidWorks increased the quality of data passed on to manufacturing and eliminated a large amount of time and effort from the process."

SolidWorks

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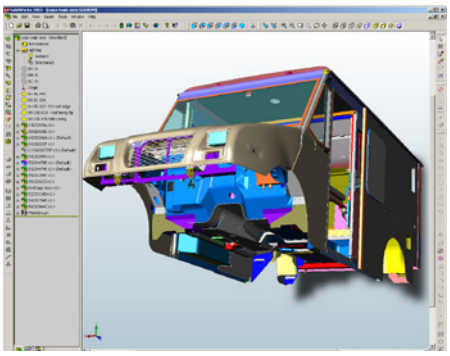

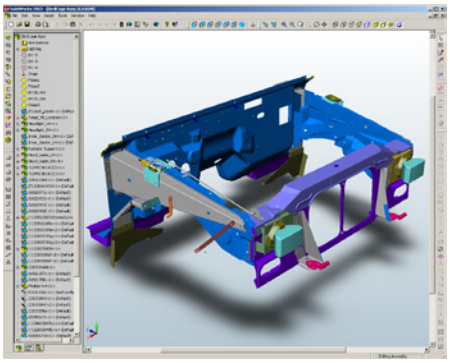

Utilimaster designers used the unique dynamic assembly capabilities of SolidWorks to ensure proper form and fit of the FFV Bird Cage front structure and radiator support (top) within the vehicle's body assembly (bottom).

In addition to making the creation and management of product design data faster and easier, the SolidWorks implementation has helped Utilimaster to improve and shorten other facets of its design process, such as the use of integrated analysis. "We never did analysis or simulations in the past," Kniller points out. "Instead we did a lot of physical testing and prototyping, which required a significant amount of time and effort. With SolidWorks Simulation integrated right inside of SolidWorks, analysis is accomplished fast and efficiently without the need for data translation."

An example of how SolidWorks has helped Utilimaster condense its design cycle was the development of a new vehicle for the United States Postal Service. Using SolidWorks, the Utilimaster design team reduced the design cycle on that particular project by 30 percent, Kniller says.

Configuring vehicle families

Utilimaster leverages the large-assembly and configuration capabilities in SolidWorks in the design of entire lines of vehicles with slight variations between individual models. "We use configurations to create various versions of a particular vehicle from the initial design. In the past, we would have had to design each model from scratch. Using configurations in SolidWorks, we can change the length, width, and height of a walk-in van, for example, from our initial base design," Kniller says.

"One of the configurations Utilimaster utilizes frequently is an exploded view. This feature makes it easy to create documentation and instructions for both customers and manufacturing. Before implementing SolidWorks, designers had to manually create 2D isometric drawings to support documentation needs," Kniller says.

He adds that the dynamic assembly capabilities in SolidWorks enable the design team to determine if all the parts in an assembly fit and function as intended by using the software's collision detection and interference capabilities.

Integrated direct manufacturing

Utilimaster has reduced its manufacturing preparation time by leveraging SolidWorks sheet-metal features and machining parts directly from SolidWorks solid models. "Our custom bodies and interior packages are primarily made from aluminum sheet metal," Kniller explains. "At one point we were doing DXF™ conversions to hand the design data off to manufacturing. Now, our CNC programmer can import the SolidWorks solid model directly into his CNC programming package because the data is OLE (Object Linking and Embedding) compliant, which saves additional time, effort, and cost."

The increased agility, flexibility, and speed afforded by SolidWorks has also helped Utilimaster reduce design errors and make changes more quickly and easily, Kniller concludes. "SolidWorks is an excellent fit for our design process at Utilimaster," he says.

SolidWorks

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