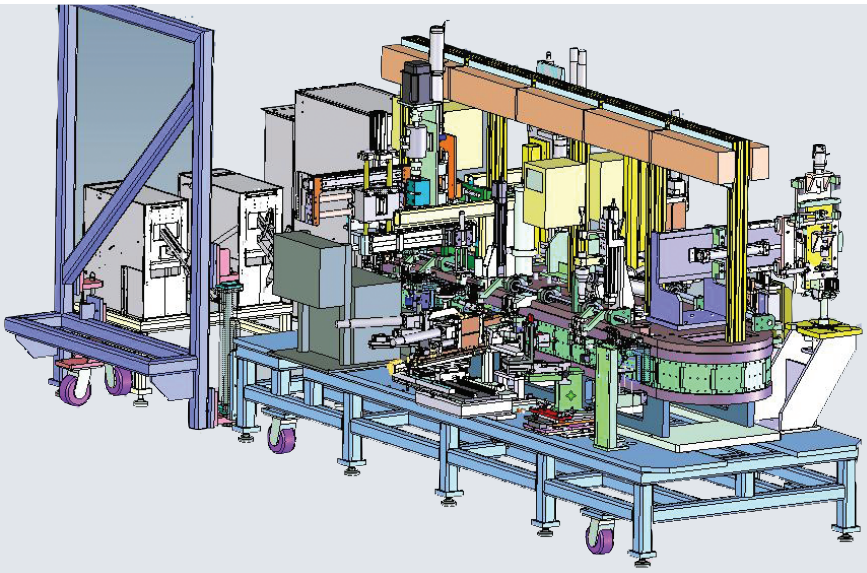
Assembly & Test Worldwide

ACCELERATING AUTOMOTIVE ASSEMBLY AND TEST SYSTEM DESIGN WITH SOLIDWORKS PREMIUM



Using integrated SolidWorks Simulation assembly analysis on all press frames to check stress levels and deflections, AAA engineers have cut steel usage by 10 to 15 percent.

- Cut design costs by 10 percent
- Increased throughput by 10 percent
- Reduced steel usage by 10 to 15 percent via integrated assembly analysis
- Improved design visualization and communications

Assembly & Test Worldwide (ATW) operates five separate divisions, including its Advanced Assembly Automation (AAA) division, which specializes in developing component assembly and testing systems for the automotive industry. AAA engineers first moved to a 3D development platform in 2001 when the company made the transition from AutoCAD® 2D software to the Autodesk Inventor® 3D CAD system. After using Inventor software for more than three years, management decided to reevaluate the company's design platform in 2004, with a particular focus on assessing large-assembly design capabilities.

"Our engineers routinely work with large assemblies of between 1,000 and 5,000 components," explains Bill Budde, general manager at AAA. "In 2004, we took another look at available large-assembly capabilities in conjunction with efforts to automate processes and standardize procedures. We had evaluated several CAD systems – including SolidWorks®, Solid Edge®, and Pro/ENGINEER® – back when we moved to Inventor software. That research had shown SolidWorks software to be a strong product, so to further validate our payback assumptions for making the switch, we ran three stations of SolidWorks in parallel with five stations of Inventor on an actual project."

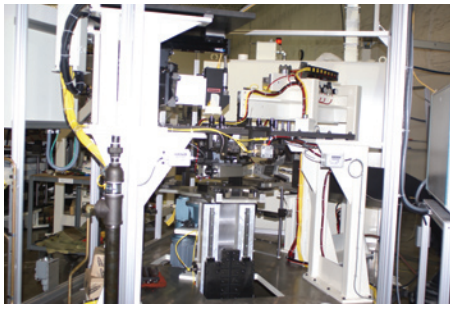
The culmination of that benchmark experience was a consensus of opinion among AAA engineers that SolidWorks CAD software was easier to use and more intuitive. "Another important part of our justification in moving to SolidWorks was the ability to conduct assembly analysis using integrated SolidWorks Simulation software, which we could foresee using heavily," Budde recalls. "We also had greater confidence in the strength of our reseller, Solid Insight, to support our installation, implementation, and training needs."

Since AAA's initial implementation of 20 seats of SolidWorks Professional software, the company has added additional seats, including a half-dozen seats of SolidWorks Premium software. Now AAA runs more than 30 active seats of SolidWorks.

SolidWorks

"With SolidWorks Simulation, we discovered that we could save money by using design optimization to cut unnecessary material while still providing a high quality product that performs to specification."

Bill Budde, General Manager



Engineers at ATW's AAA division use SolidWorks software to automate the development of assemblies of 1,000 to 5,000 components, resulting in less rework and increased throughput.

Less rework, faster throughput

AAA's yearlong transition to SolidWorks software, which included basic and advanced modeling as well as SolidWorks Simulation software training, coincided with the company's standardization and automation effort. "The transition to SolidWorks provided an impetus for our focus on process improvement," notes Budde. "We got to use many of the great tools SolidWorks provides for achieving standardized procedures and process automation."

Following the transition, AAA engineers completed all new projects in SolidWorks. Since moving completely to the SolidWorks design platform, the company has begun to realize a return on its investment. "We are starting to see the benefits of the move to SolidWorks software," Budde says. "We have cut our design costs by about 10 percent, and the reduction in the amount of rework has boosted our throughput by at least 10 percent. The move to SolidWorks software has worked out well and has provided a stepping stone for improving our processes."

Optimization via assembly analysis

An important factor in the success of the SolidWorks implementation is the impact of the assembly analysis capabilities provided by integrated software. For example, one of the company's new standardized procedures is to run SolidWorks assembly analysis on all press frames to check stress levels and deflections.

"Before SolidWorks Simulation software, we overbuilt our press frames and pick-and-place machines. We were concerned that if they were not heavy enough, deflections and high stress levels could lead to premature component wear or the creation of excessive customer scrap and downtime," Budde explains. "The motto of our industry used to be: 'When in doubt, make it stout.' With SolidWorks Simulation software, we discovered that we could save money by using design optimization to cut unnecessary material while still providing a high quality product that performs to specification.

"Although it's difficult to generalize due to the custom nature of our equipment," Budde adds, "I would estimate we are eliminating 10 to 15 percent of our steel costs on large press frames and similar weldments by right-sizing the different components, but also by trying different combinations of strategically placed ribs in the design phase prior to actual fabrication."

Enhanced design communications

By moving to SolidWorks software, AAA also improved its ability to communicate design concepts to customers, vendors, and partners. "We use SolidWorks eDrawings® files extensively to share data with our customers and tooling suppliers," Budde notes. "We have also had opportunities to use the animation feature on the sales end, using a working model to illustrate a process or concept to our customers.

"There is definitely a 'wow' factor when you can communicate with customers in 3D," Budde continues. "It's sure a lot better than trying to describe a 2D drawing sitting on a table."

SolidWorks

Dassault Systèmes SolidWorks Corp.
300 Baker Avenue
Concord, MA 01742 USA
Phone: 1 800 693 9000
Outside the US: +1 978 371 5011
Email: info@solidworks.com
www.solidworks.com

Advanced Assembly Automation
A Division of Assembly & Test Worldwide
313 Mound Street
Dayton, OH 45402
Phone: +1 937 222 3030
www.assembly-testww.com
VAR: Solid Insight, Dayton, Ohio