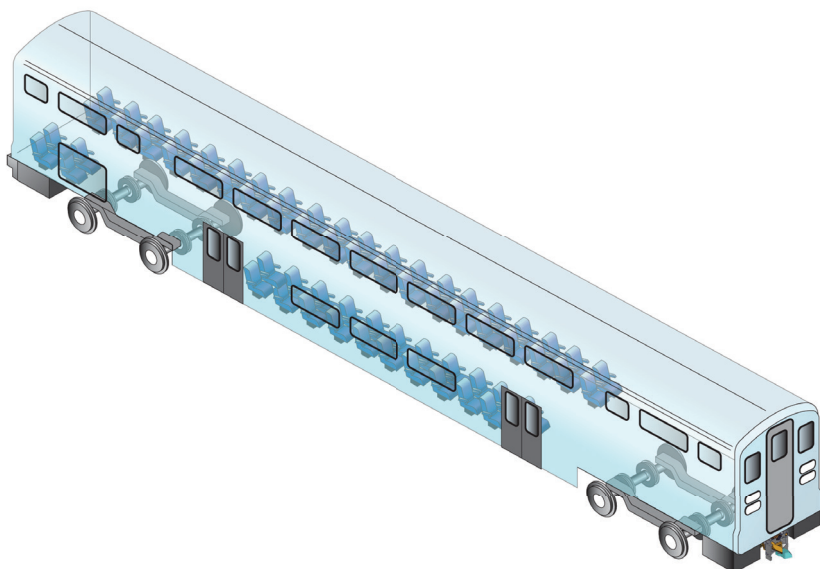


WABTEC PASSENGER TRANSIT

Speeding passenger train brake and coupler design with SolidWorks software



Using SolidWorks software, Wabtec has accelerated development of its coupler and braking systems for light-rail passenger trains.

For Wabtec Passenger Transit, making the trains run on time requires the efficient development of safe, reliable braking equipment and coupler systems. A Wabtec company, Wabtec Passenger Transit designs and manufactures pneumatic, electronic, and mechanical devices—such as braking systems, controllers, current collectors, and couplers—for the worldwide transit industry. Subway trains around the globe use Wabtec systems.

The company moved from its 2D MICROCADAM® CAD design tools to the Pro/ENGINEER® 3D CAD system several years ago to improve productivity, raise quality, and reduce costs. However, according to Gregory V. Scott, manager of Drafting/Document Control, Engineering Services, Wabtec decided to reevaluate its choice of a 3D solution because of challenges related to user training and proficiency.

“We initially moved to 3D to improve the visualization of design layouts and more effectively utilize analysis,” Scott recounts. “We discovered that we needed a tool that our engineers could set aside for a period of time and come back to without having to relearn the software. We wanted a 3D application that our people could navigate without having to go through lengthy, costly training.”

After reassessing its initial 3D choice, the company approached replacement solutions with a greater degree of caution, deciding to try out a 3D CAD package a few seats at a time before making a larger investment. “We started out with nine seats of SolidWorks® software,” Scott recalls. “It caught on very quickly because our engineers found they could become proficient with it much more easily. When we saw how quickly our designers accepted it, we made the decision to standardize on SolidWorks software as our preferred 3D solution.”

Challenge:

Confront rising design challenges related to time and cost by streamlining brake and coupler development and improving quality.

Solution:

Implement the SolidWorks 3D development platform to leverage simulation tools to identify design issues and a single environment to manage design data.

Results:

- Compressed development cycles
- Improved product quality
- Streamlined creation of product documentation
- Accelerated assembly operations

Wabtec standardized on SolidWorks software, installing 27 seats, because of its ease of use, large-assembly and design configurations capabilities, and integrated analysis and product data management (PDM) applications. The company has since added seats of SolidWorks Simulation Premium analysis and SolidWorks Composer product documentation software.

Driving large-assembly design

The development of Wabtec's systems requires the design of large assemblies. Using SolidWorks software, the company has improved its handling of large assemblies—and the better performance translates into shorter design cycles and fewer production issues. For example, Wabtec engineers use interference detection tools in SolidWorks software to resolve clearance issues and design configuration capabilities to create variations on a design in a more automated way.

"Although we create many custom designs, we also have systems that involve slight modifications, such as a left-hand and right-hand electric coupler that share symmetrical features. The same goes for brakes: brakes on both sides—actuators are right-hand and left-hand sides," Scott explains. "With the design configuration capabilities of SolidWorks software, we can easily create these modified designs from what we have already designed, which saves a lot of time."

Simulation puts quality back on track

Wabtec has long utilized analysis tools to meet the safety requirements associated with designing rail mass transit system components. Since implementing SolidWorks software, however, the company has realized additional product quality improvements from having greater access to and flexibility in using design simulation tools.

"The integration of SolidWorks Simulation is a big advantage for us," Scott stresses. "It allows us to use stress analysis and dynamics studies to really go after the performance of our coupler and braking systems. We have realized improvements in quality, and can attribute the extended wear we have designed into our systems to the greater number of stress analyses that we perform."

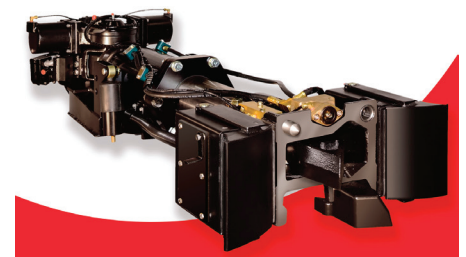
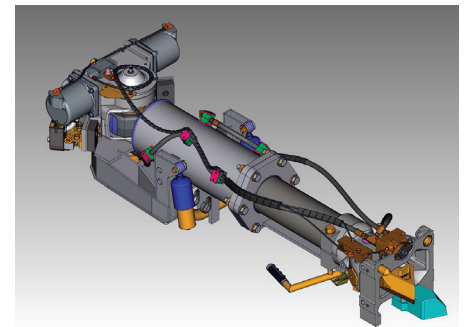
Managing data and documentation

By combining SolidWorks 3D CAD software and SolidWorks Simulation with the integrated SolidWorks Workgroup PDM and SolidWorks Composer product documentation systems, Wabtec has enjoyed additional productivity gains related to more streamlined system assembly and documentation creation operations. Improved data management, tighter revision control, and improved workflows accelerate assembly operations. In addition, the company plans to create some of its technical publications, such as training animations, directly from its solid models using SolidWorks Composer.

"With SolidWorks software, we have one product environment for managing all of our design data—from conceptual design and simulation through documentation (with SolidWorks Composer) and assembly," Scott notes. "That's the vision that we initially had when we moved to 3D. SolidWorks software has helped us to make it a reality."

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Gregory V. Scott
Manager of Drafting/Document Control
Engineering Services



Wabtec uses SolidWorks software at each step of its product development process, from conceptual design and simulation through documentation and assembly.



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