case study

BorgWarner Emissions/Thermal Systems

CONSOLIDATING THREE ENGINEERING ORGANIZATIONS WITH SOLIDWORKS

BorgWarner Emissions/Thermal Systems is a leading tier-one manufacturer of emissions control and cooling systems for automotive and truck applications. The acquisitions of Eaton, Kysor, and Schwitzer, three leading suppliers with strong reputations in the automotive and trucking industries, formed the new division in 1999. Following the merger, BorgWarner faced the challenge of integrating the product development processes of three companies at various locations into one, according to Randy Schwan, CAD/PDM Systems Manager.

Together, the three organizations used a total of five different CAD systems and various data management systems. The first order of business was to standardize on a single CAD system. "We have product design operations in Michigan, the United Kingdom (UK), and Germany, and tooling designers in North Carolina and Brazil," Schwan explains. "To maximize productivity and leverage design work across the organization, we knew we needed one standard CAD system that could be integrated with an easy-to-use product data management (PDM) system to bring our product development processes together."

BorgWarner evaluated all major 3D CAD systems before standardizing on the SolidWorks® 3D mechanical design system. The company selected SolidWorks because of the software's ease-of-use, value in terms of price and performance, ability to leverage legacy data in a variety of file formats, ability to handle polymer moldings and aluminum castings, and integration with a number of add-on modules and specialty applications.

Common worldwide design platform

Since implementing SolidWorks software, BorgWarner has not only established a common worldwide design platform but has also implemented the SMARTEAM® PDM system, and condensed its product development processes. "Standardizing on SolidWorks enabled us to take all of these different groups and bring them together to function as an efficient organization," Schwan says. "Because the software's simpler to use, we've seen our design cycles become much shorter. And, with SMARTEAM, everyone can access the design data from anywhere, which means less time is spent on searching or querying and sending files."

Schwan adds that transitioning to SolidWorks has enhanced the company's design visualization capabilities, which improves communications with customers, vendors, and management. "We are constantly using SolidWorks solid models to show what we're trying to accomplish and receive approvals. For example, we recently illustrated a better, more innovative way for mounting our product in international truck vehicles with less work," he says.

BorgWarner Emissions/Thermal Systems is a leading manufacturer and tier-one automotive supplier of emissions control and cooling systems for automobiles, trucks, heavy equipment, and agricultural vehicles. The Thermal Systems group was formed as a result of the acquisition and merger of Eaton, Kysor, and Schwitzer – three of the best-known names in the automotive and truck industries. BorgWarner is committed to remaining a leader in highly engineered components and systems for vehicle power train applications worldwide. Headquartered in Auburn Hills, Michigan, the division operates manufacturing/technical facilities in 43 locations in 14 countries. Customers include Ford, Daimler/Chrysler, General Motors, Toyota, Honda, Hyundai/Kia, Caterpillar, Navistar International, PSA, and Volkswagen.

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- Merged three organizations onto one design platform
- Condensed design cycles
- Reduced errors and rework on castings
- Improved design communication and collaboration

SolidWorks

New standard for castings

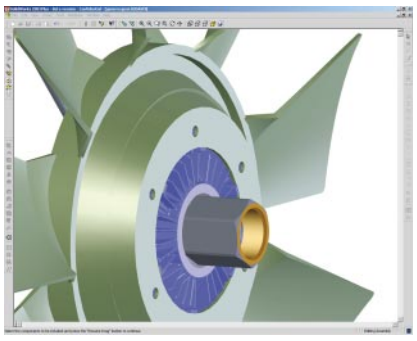
In addition to standardizing on SolidWorks software for product design, BorgWarner has made SolidWorks the standard for the manufacture of polymer moldings and aluminum castings, many of which are tested to perform while spinning at 3,000 rpm. "We've made the decision that all of the vendors we work with for castings must work with SolidWorks models because it allows us to reduce the number of errors," Schwan notes. "Over 90 percent of mistakes in castings are attributable to misinterpretation of drawings. When our vendor machines directly off of a SolidWorks solid model, we get what we ask for. We've had fewer errors on casting parts working in the SolidWorks 3D design environment, and we save time and effort."

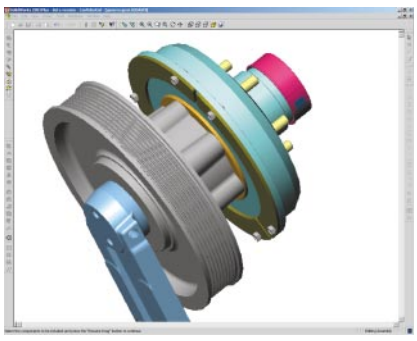
The company also uses several SolidWorks capabilities – including draft, mass, center of gravity, and interference-checking functions – in casting development to eliminate design steps as well as the level or errors and rework. "We use the interference-checking capability frequently. We download engine models to check for clearances when we insert our assemblies and also have our mold manufacturers send us the mold geometry and check it against our model. Using SolidWorks, we've improved our design cycle quite a bit by eliminating much of the trial-and-error tasks and rework from our process," Schwan says.

Global data management

BorgWarner also implemented the SMARTEAM enterprise PDM system to optimize the management of its product design data. BorgWarner uses SMARTEAM for collaborative design, change management, and revision control. "We selected SMARTEAM because of its tight integration with SolidWorks, ability to handle data from different CAD systems, viewer capabilities, and the openness of its API links for implementation on top of an Oracle® database.

"We are using My SMARTEAM Community Workspace, Web Editor and SMARTEAM Web, and Workflow at five sites – three in the United States, one in Germany, and one in Brazil – and will soon be using these solutions in the UK and China," Schwan points out. "We're using SMARTEAM to manage more than just CAD data. The ability to transfer information and have multidisciplinary signoffs from sales, engineering, and manufacturing groups located all over the world makes us much more efficient as a global organization."





By implementing SolidWorks software in tandem with the SMARTEAM PDM system, BorgWarner has integrated the product development organizations of what were once three separate companies with facilities scattered across the globe onto a single design environment, improving design communication and collaboration.

BorgWarner Emissions/Thermal Systems is a leading tier-one manufacturer of emissions control and cooling systems for automotive applications. The Thermal Systems group, which was created through the merger of Eaton, Kysor, and Schwitzer, faced the challenge of integrating the product development activities of three companies into one efficient organization.

The company selected the SolidWorks 3D mechanical design system because of the software's ease-of-use, value, capabilities for leveraging legacy data, ability to handle polymer moldings and aluminum castings, and integration with numerous add-on modules and specialty applications. BorgWarner added the SMARTEAM PDM system because of its tight integration with SolidWorks, ease-of-use, and openness for integration with existing systems. By standardizing on SolidWorks and SMARTEAM, BorgWarner merged three organizations, shortened its design cycles, reduced errors, and improved design communication and collaboration.

BorgWarner Emissions/Thermal Systems

BorgWarner Emissions/
Thermal Systems
Marshall Technology Center
1507 S. Kalamazoo Avenue
Marshall, MI 49068
Phone: 269-565-8100
Fax: 269-565-8200

www.ets.borgwarner.com

SolidWorks

SolidWorks Corporation
300 Baker Avenue, Concord, MA 01742
Phone: +1-800-693-9000
Outside the U.S.: +1-978-371-5011
Fax: +1-978-371-7303
Email: info@solidworks.com

SolidWorks Europe
Phone: +33 4 42 15 03 85
Fax: +33 4 42 75 31 94
Email: info@solidworks-europe.com

SolidWorks Asia/Pacific
Phone: +65 6866 3885
Fax: +65 6866 3838
Email: info@solidworks-ap.com