

Automotive

Roush Fenway Racing

No carbs? No problem for Roush Fenway Racing

Product

NX, Teamcenter

Business challenges

Re-engineer engines mid-season

Meet ever-changing regulations

Keep all team members synchronized

Keys to success

Use Teamcenter to coordinate design information

Share accurate data among engineers and purchasing agents

Generate accurate BOMS

Results

New EFI equipped engines ready for the 2012 season

Driver Matt Kenseth captured the pole position and won the race

No on-track issues occurred with the new EFI system



Teamcenter helps Sprint Cup Series team switch to electronic fuel injection per NASCAR rules

Making race cars more like conventional cars

NASCAR announced in February, 2011 that all teams competing in the Sprint Cup Series would be required to replace the carburetor and distributors with an electronic fuel injection (EFI) system and ignition system for the 2012 competition season. According to The New York Times, "the sanctioning body (NASCAR)...tries to connect to the real world of passenger cars, and fuel injection adds daily-driver relevance."

"The change to EFI systems was not a large technical challenge since EFI systems have been around in production and racing for over 20 years, ensuring that the technology was fully mature," says Jim Ryder, design manager of Engineering at Roush Fenway Racing (RFR), one of the teams competing in the Sprint Cup series. "The challenge was in the amount of hardware that would have to change on the vehicle in a short time period, while still continuing to race our full schedule in 2011."

In May of 2011 formal guidelines were published and initial meetings were held with EFI vendors. The first track test was scheduled for July 7 with the first Sprint Cup carburetor-free race to be held in February of 2012.



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Jim Ryder
Design Manager
Engineering
Roush Fenway Racing

Racing to meet the deadline

“This left very little time for hardware design and prototype manufacturing,” says Ryder. “In addition, it was understood that the initial set of guidelines and rules published by NASCAR were very open and would change and mature as issues were found, and input from teams and suppliers was gathered. This meant that we would have to be prepared for last-minute changes to the system to meet regulations as they were developed.”

Roush Fenway Racing has used product lifecycle management (PLM) technology from Siemens PLM Software since 1999. Its initial deployment was NX™ software for computer-aided design (CAD) and computer-aided engineering (CAE). Recently the team also implemented Teamcenter® software for complete PLM. This proved to be instrumental in the successful implementation of EFI into RFR’s Sprint Cup race program.

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Generating a bill of materials (BOM) using Teamcenter proved to be one of the most important aspects of operating in a compressed time cycle involving ever-changing rules and designs. “The engineers were able to automatically create BOMs for our vendors and purchasing agents for each subsystem,” says Ryder. “The fuel-delivery

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system, the electrical system, chassis components and other hardware were automatically listed and tracked. This eliminated errors that are typically introduced from outdated spreadsheets or from copying and pasting. The purchasing agents at RFR are all Teamcenter users and Teamcenter is the standard platform for communicating with engineering on BOMs, project status and drawings.”

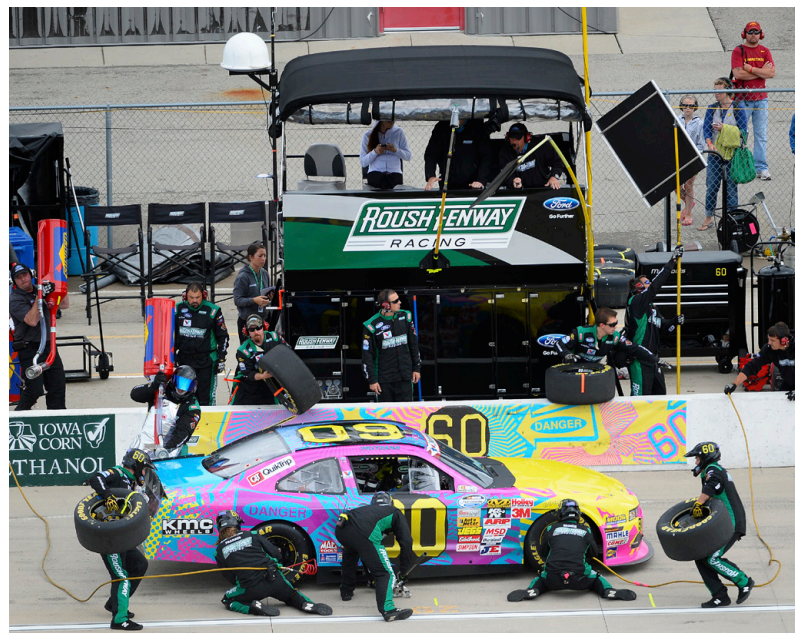
RFR’s quality department is another area that has benefitted from the implementation of Teamcenter. “All internally manufactured parts as well as vendor-supplied parts pass through our quality department,” notes Ryder. “The technicians in the quality department do not store hard copies of prints of our inspection procedures.

Instead, Teamcenter is used to store all documentation. Using Teamcenter, they are able to easily organize and locate the latest information they need for inspection, ensuring that it is always the latest revision level. This proved very efficient, because new hardware and test procedures were introduced with the implementation of EFI.

“Communicating all of the new hardware details and installation procedures to all of our internal race teams as well as customer race teams proved easy with Teamcenter. Engineers were able to create assembly drawings, assembly models and assembly BOMs for the race technicians who needed to understand the system operations for installation and operation.”

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Solutions/Services

Teamcenter
www.siemens.com/teamcenter
NX
www.siemens.com/nx

Customer's primary business

Roush Fenway Racing is a 50/50 joint venture between Roush Racing and Massachusetts-based Fenway Sports Group (FSG), which is a strategic sports marketing firm subsidiary of New England Sports Ventures, which owns the Boston Red Sox and 80 percent of New England Sports Network.
www.roushracing.com

Customer location

Concord, North Carolina
USA

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"Siemens PLM Software technology has played a key role in our successful implementation of EFI."

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Design Manager
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Using Teamcenter, RFR was able to efficiently design and implement EFI systems on the team's NASCAR Sprint Cup cars. "We were able to respond to the short development cycle, make changes as testing and rules required and communicate the latest information internally, as well as with our vendors and customers," says Ryder. "The use of Teamcenter helped ensure that our engineers were working with the same and latest CAD data, and that the information flowed seamlessly to purchasing and

quality. The efficiencies gained allowed us to iterate through several designs, optimizing for weight and performance."

The inaugural race for the EFI systems at NASCAR was the 2012 Daytona 500, at which RFR driver Matt Kenseth not only captured the pole position, but also won the race. "To date, RFR has had no on-track EFI issues," says Ryder. "Siemens PLM Software technology has played a key role in our successful implementation of EFI."

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