

NX

Wayne Taylor Racing

Wayne Taylor Racing scores major success in GRAND-AM racing

Industry

Automotive

Business challenges

Manage conversion to new body

Gain competitive advantages

Thrive as small team with big ambitions

Keys to success

Designing components in-house whenever possible

Ease of exchanging data with suppliers

Familiarity with NX design software

Results

Smoother operations

Increased race car performance

Improved team execution during races



Wayne Taylor Racing's No. 10 Velocity Worldwide Corvette Daytona Prototype which placed second at the 2013 Rolex 24 at Daytona.

Professional sports car racing team uses NX for competitive edge

Wayne Taylor Racing comes in a close second at the 2013 Rolex 24 at Daytona

The Rolex 24 at Daytona race is tough on cars, drivers and crews. It's quite an achievement just to finish this grueling 24 hour race, but coming in second overall is a triumph. That is exactly what the Wayne Taylor Racing (WTR) team did in the first race of the 2013 Grand American Road Racing Association (GRAND-AM) season. Drivers Max Angelelli, Jordan Taylor and Ryan Hunter-Reay battled, from the start of the race on Saturday to the wave of the checkered flag on Sunday, during the 51st running of the Rolex 24 at Daytona. Their second-place finish with the Number 10 Velocity Worldwide Corvette Daytona Prototype (DP) delivered the first-ever

podium position for the Corvette DP at Daytona International Speedway.

WTR has been using NX™ software from Siemens PLM Software since the racing team's inception in 2007. WTR races in the GRAND-AM Rolex Sports Car Series, a professional sports car racing league. To create a "level playing field" (or, in this case, a level race track), professional auto racing organizations dictate that all teams comply with a "formula" for each car.

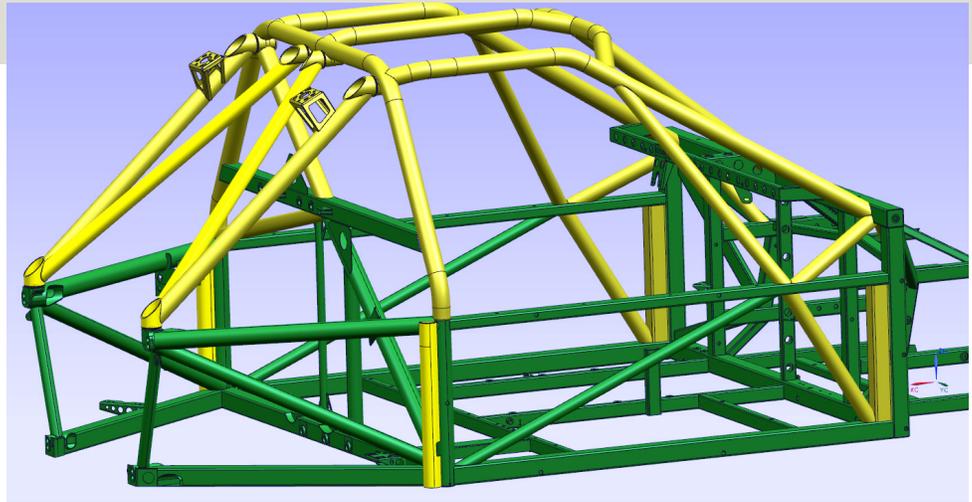
In the Rolex Series, DP cars are developed in a tightly-constrained, rules-based environment. As a result, the races are a competition between the team's engineering and strategic performance, the car's capabilities, and of course, the skill of the drivers. Although the cars look somewhat similar, the various manufacturers do have design freedom to associate the cars you see on the track to the cars they sell in their showrooms.

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“Not only do many racing teams use NX, it is practically a standard for auto-makers, so it’s very easy and convenient to send CAD data back and forth to OEMs as well as constructors.”

“Because NX is widely used in the racing world, we always ask our vendors about their ability to send us NX files for quick and easy reference.”

Brian Pillar
Race Engineer
Wayne Taylor Racing



Wayne Taylor Racing engineers used NX software to fit the body and optimize the Corvette’s aerodynamic package for the Dallara chassis.

Siemens PLM Software’s tools provide a serious competitive advantage to teams such as Wayne Taylor Racing.

NX is well-known in most professional racing circles, including GRAND-AM. WTR can easily exchange electronic data with their suppliers – even if they use other computer-aided design (CAD) systems – because NX is built upon open standards that support efficient data exchange. “We have a long history with Siemens PLM Software products,” says Brian Pillar, race engineer at WTR, “Our team had used a chassis from a supplier that was entirely designed using NX and we have continued to use Siemens PLM Software’s products throughout our history.”

Automotive original equipment manufacturers (OEMs) provide the engines for the series, and the car bodies are made to resemble their sports cars, such as the Corvette Daytona Prototype car first used by WTR during the 2012 season. “Not only do many racing teams use NX, it is practically a standard for automakers, so it’s very easy and convenient to send CAD data back and forth,” Pillar says. “Because NX is widely used in the racing world, we always ask our vendors about their ability to send us NX files for quick and easy reference.”

Small company makes big things happen

Unlike constructors and OEMs who have anywhere from dozens to thousands of NX users, WTR has only two users right now: Pillar and his assistant engineer, Adam Banet. “As a small company, we barely scratch the surface of capabilities within the NX software and Siemens PLM Software’s product line, yet we are excited about the potential as our racing team grows,” Pillar says. “During the 2012 Dallara-Corvette DP conversion, NX allowed us to efficiently collaborate with larger motorsport organizations such as Dallara and Pratt & Miller.”

To prepare for the 2012 season, WTR needed to marry the new Corvette car body with the Dallara chassis, which wasn’t designed to fit the Corvette. Considerable design work was needed to fit the body and optimize the Corvette’s aerodynamic package for the Dallara chassis.

“There were a lot of modifications required to the steel frame/roll cage and other systems,” says Pillar. “We relied heavily on our CAD software to communicate with Dallara for the chassis and Pratt & Miller Engineering for the Corvette body. It allowed us to collaborate with and act as a liaison between the two companies.

Solutions/Services

NX
www.siemens.com/nx

Client's primary business

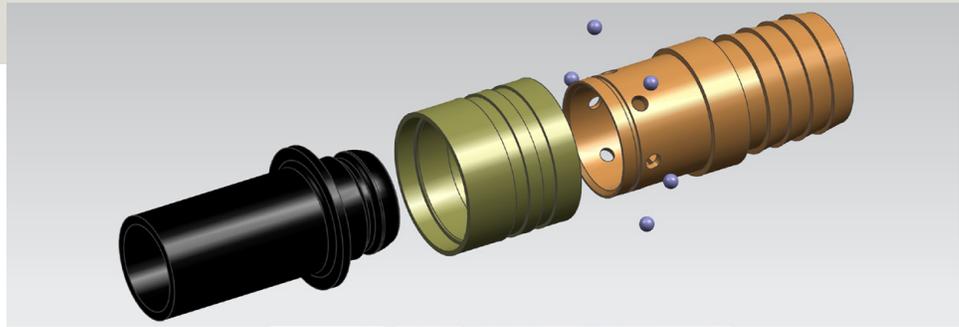
Wayne Taylor Racing (WTR) competes in the Daytona Prototype division of the GRAND-AM Rolex Sports Car Series. Car number 10, the Velocity Worldwide Corvette Dallara DP-05, will compete during the 2013 season with co-drivers Max Angelelli and Jordan Taylor.
www.waynetaylorracing.com

Client location

Indianapolis, Indiana
United States

"NX also helps us increase race car performance in the design of anti-roll bars and damper components, and gain a competitive advantage during pit stops by helping us design wheel gun sockets, a quick-change rear valance, and the new driver blower disconnect system."

Adam Banet
Assistant Engineer
Wayne Taylor Racing



Parts of the connector to the driver's helmet air-conditioning system designed using NX software.



The actual driver's helmet showing the connector parts designed using NX software.

"Pratt & Miller Engineering also uses the NX CAD software, which greatly simplified things. However, Dallara, an Italian company, utilizes another software system, so we do a lot of importing and exporting."

In addition to the conversion to the new body, WTR uses NX in-house to design a wide range of components for various purposes. "We use NX to help us make things run more smoothly, such as the pit timing stand and car setup tools," Banet says. "NX also helps us increase race car performance in the design of anti-roll bars and damper components, and gain a competitive advantage during pit stops by helping us design wheel gun sockets, a quick-change rear valance, and the new driver blower disconnect system."

"The majority of our in-house fabrication projects are sheet metal-based, which require shaping, folding, welding and riveting," says Banet. "These components can be aerodynamic devices, used for mounting electronics and accessories, ducting air, etc. Previously only a couple team members had the 'craftsmanship' to work from a drawing to create sheet metal components. Employing the flat pattern function from NX sheet metal software has enabled everyone to fabricate simple sheet metal components. This has expedited the part turnaround and freed up team members to focus on more critical projects."

WTR is also using NX CAE to help analyze parts in a pre-production, and the company plans to expand the use of NX in conjunction with computational fluid dynamics (CFD). "CFD is a highly complex niche area and the capabilities of NX will allow us to do some in-house work as we move into this area," Pillar says.

The company also plans to use Teamcenter® software, also from Siemens PLM Software. "Teamcenter is a huge need for us," says Pillar. "We currently generate vast amounts of data during tests and race weekends. Our ability to manage this data with the aid of Teamcenter instead of using Excel spreadsheets will give us important capabilities to improve search times and gain many other data efficiencies such as variants and options, where-used, versioning and more."

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