

Mitsubishi Motorsports

CAD and PDM transform Mitsubishi MotorSports

Mitsubishi MotorSports (MMSP) has cut development times for its Lancer Evolution World Rally Championship (WRC) cars by a full 30% while also improving design accuracy, product quality and manufacturing consistency – it was a clear front runner, said the judges.

Its achievements have come since standardising on PTC's Pro/Engineer 3D solid modelling, Wildfire collaboration tools and



Pro/Intralink CAD data management system. Chief designer Paul Doe says the MMSP development team now works entirely collaboratively. It uses PTC tools for everything from development and modification of complete surface design and car components, to CAE tasks including structural and thermal simulation and FEA (finite element analysis) of highly stressed and safety-critical parts.

Says Doe: "Our main challenge is to push the limits of performance without compromising reliability, and do that quite fast. So we've been exploiting the combination of tools in Pro/Engineer. For example, we use surfacing design not only for all sorts of parts, but to create the whole body shell, which is a complex combination of body panel surfaces. For that we use the original CAD data from the production car, but significantly modify the surfaces to remove weight and improve aerodynamics. Then we merge our new design data with the original body panel data and get the transitions.

"That's a big job because you're importing thousands of surfaces and facets. It's not quite free-form surfacing, but merging everything into one overall shell is a major piece of CAD surgery. Our previous package wasn't capable of dealing with that, but Pro/Engineer has a major set of tools. It means we can create a newly designed, complete wide-track motor sport panel for our supplier to build the component almost directly from the production car data."

Pro/engineer CAE is also in action. "We've done some impressive things; one of the most complex was the crank shaft for the 2006 engine. That's subject to significant and very complicated loads and constraints so we ran a series of analyses loading the crank shaft for all the load cases. That allowed us to take 1kg of weight off the crankshaft, while still keeping it stable and reliable."

As for managing the data, Doe says: "PTC Intralink ... underpins our internal collaborative environment. We have an FTP data link into Mitsubishi Motors, but we're hoping that PTC Windchill PLM [product life-cycle management] will improve on that – managing engineering data and documents as well as all planning and communication. Then we'll be able to give suppliers access to Windchill so they can do review and mark-up online." ■

Key Benefits

- Cut development times by 30%
- Improved accuracy of design throughout
- Improved quality
- Improved consistency of manufacturing

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Stannah Lifts

Stannah lifts output using PLM software

Stannah Lifts' collaborative cross-company product development environment, which automates custom design work and has effectively quadrupled the firm's capacity to build retail store platform lifts for the disabled, was highly commended.

Stannah invested in Autodesk Inventor for 3D CAD, and integrated that with its production and back office apps. Beyond the usual advantages of 3D, Stannah CAD development engineer Martin Lee says the data behind it is what's transforming the company.

First, data from Inventor was harnessed to feed the company's Radan CNC programming systems, eliminating manual data entry. But now Stannah is implementing data management, using Autodesk Productstream. The first stage – Autodesk Vault – makes it easier to share data by providing a single, secure repository that guards against overwriting or using the wrong version.

"We plan to automate and manage ECOs [engineering change orders] and to automate our BoMs [bills of materials], linking them straight into our ERP," says Lee. "We do currently enter this data into the system, but it's done manually. The new system will mean we have a seamless transfer of data from the design stage throughout the operation."

And hence its design-to-production revolution. "We see Productstream as having an integral role in our move towards complete integration of data," he confirms. "One of its big benefits is that, although other departments can access the data and add information and comments, they can do this without overwriting the design



data. This helps us maintain accuracy, and keeps the whole process moving smoothly and quickly."

Meanwhile, at the front end of vertical platform lift customisation, Lee's team has automated the design process even further. "The platform remains constant, but features such as floor-to-floor and headroom dimensions are tailored to suit each customer," he explains. "So we've created a program so that we just enter these variables and Inventor automatically draws the whole thing. The process takes less than half an hour, whereas before it took days."

By accelerating the development of each platform lift in this way, the team says it has been able to bring forward delivery times and also help fuel customer demand. "By completely automating the system we've at least quadrupled the number we can produce," claims Lee. "This not only helps us to fulfil our orders, but it enables us to spend time on creating more innovative new products." ■

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Key Benefits

- Quadrupled custom design and build engineering capacity
- Improved accuracy
- Reduced delivery lead times and cycles
- Increased customer product demand
- More time for innovative new products