

Firth Rixson Forges Ahead By Adopting Pro/ENGINEER® and Windchill® PDMLink® Solutions

3D CAD and PDM Tools Speed Time-to-Manufacture and Enable Enterprise-Wide Collaboration

Firth Rixson Limited, Sheffield, England

With an unwavering commitment to quality and innovation, Firth Rixson has become a leader in the forging industry, providing manufacturers with rings, forgings and metal products. Today, Firth Rixson serves as a “one-stop shop” for original equipment manufacturers located anywhere in the world. The company has experienced double-digit growth over the last three years thanks to a strong global economy, effective acquisitions, smart divestitures, and wise investments. Firth Rixson’s products and services not only set the standard for quality, but also for on-time delivery and price. Seeking to increase its leadership position in an increasingly competitive environment, the company recently began examining the technology used to develop products—which led them to PTC’s door.

The Challenge: Optimise Design & Manufacturing Processes to Speed Development

Firth Rixson has been using 2D and 3D CAD (computer-aided design) tools since the early 1990s, while increasing its knowledge and skill through many organisational and industry changes. Having produced a vast archive of CoCreate® drawings during a decade’s time, the company found itself working with inefficient, error-prone, paper-based sign-off procedures and information distribution processes. The time had come for a change.

The Solution: Improved Collaboration and Visibility of Data Across the Enterprise

Optima (Nottinghamshire, England) – Firth Rixson’s Value-Added Reseller for product development solutions, recommended PTC’s Pro/ENGINEER 3D CAD to assist with 3D design challenges, and Windchill PDMLink to manage all product development data. Now the company has a solution for handling the complex geometry and design-for-manufacture—and fast delivery times—demanded by the forging industry.

Today, with Windchill PDMLink, Firth Rixson engineers have instant electronic access to a wealth of design and manufacturing data, both from legacy systems and from Pro/ENGINEER. According to Mark Haythorne, Chief Designer at Firth Rixson, the company wanted a system to “replace our existing database, then take all these documents and serve them up to people throughout the company.”



A forged bracket designed by Firth Rixson Ltd.

The Results: Converting Slow, Paper-Based System to an Electronic System

Due to its existing paper-based processes and volume of work, process and workflow improvement were key to Firth Rixson when selecting Windchill PDMLink. According to Haythorne, “We were still issuing paper documents in a long-winded process. If you’re doing 15 to 30 design changes per week—affecting numerous drawings—and you’re having to issue those drawings to five or six departments, while recording how they are distributed and getting signatures as proof of acceptance on all those paperwork details—then you need to work smarter.” With Windchill PDMLink, the company is archiving drawings and models within a centralised and controlled PDM database, and then publishing the documents across the enterprise.

“Whenever a new product is being produced, it’s generated within Windchill PDMLink, and users can only access current drawings—so we know that no one is using old documents or old files in cabinets that haven’t been kept up-to-date.”

– Mark Haythorne, Chief Designer, Firth Rixson

The Goal: Modelling Capabilities that Support Industrial Practices

According to Mark Haythorne, Firth Rixson evaluated some of the basic 3D packages on the market, such as Solid Edge® and SolidWorks® (“What we considered mid-range packages,” says Haythorne), but discovered that there were issues in terms of their support for the requirements of the forging process and their design capabilities. “While these [products] were capable of carrying out the 3D modelling for 80% of the work we were doing,” says Haythorne, “certain products struggled to enable us to generate full 3D models in a timely manner for ever-reducing manufacturing lead times. A quick turnaround of design work is absolutely key.”

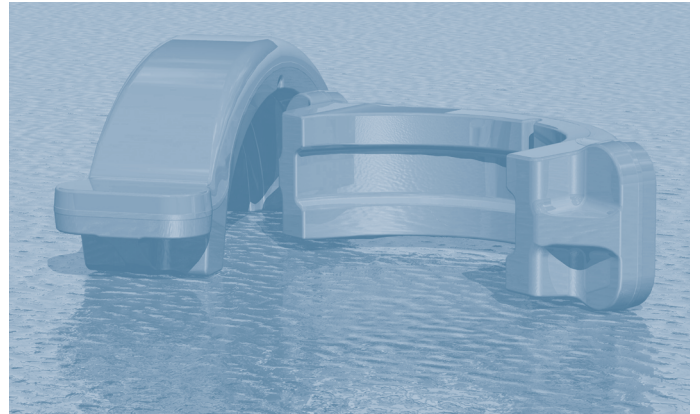
Firth Rixson evaluated Pro/ENGINEER and discovered a system that worked in a much more intelligent manner than the company’s existing design system, especially considering the complex nature of design for the forging process. While the existing system could create the all-important draft angles, the process itself was “unintelligent”. Surface entities needed to be stitched together manually to create solids for manufacture. According to Haythorne, “Pro/ENGINEER enabled our design team to go straight in and create draft angle surfaces within a solid model—a much smarter and faster design process.”

The Pro/ENGINEER solution provides further benefits, as the data can be instantly used downstream for creation of impression models for dies and tooling from which the forgings are manufactured.

Opening Access to Legacy Data

In its 150-year history, Firth Rixson had amassed a huge quantity of data—much of it within its existing CoCreate WorkManager environment—and everyone across the enterprise required fast access to that data repository. Thankfully, engineers benefited from the cooperation between PTC and CoCreate (which PTC has since acquired) and the resulting customised routines that the two companies developed, which eased the transition to Windchill PDMLink and its fully controlled, but accessible environment.

“We’ve done a single download of all our legacy CoCreate ME10 data,” explains Haythorne. “We had a script developed that takes the individual files from CoCreate WorkManager and creates a PDF image, along with a list of attributes for that document (customer name, customer part number, revision, etc.). Windchill PDMLink then read that list, found the drawing and associated PDF image, and added these as attachments within Windchill.” Now, whenever anyone requires access to those critical documents, they can log into Windchill using a standard Web browser, and view or print the PDF. This eliminates the need and the cost of having to purchase multiple licenses of CoCreate ME10 to enable users to view the documents they need.



A forged clamp.

Replacing Paper Processes

Firth Rixson initially adopted Windchill PDMLink merely to store drawings, but soon expanded the scope of that implementation to allow staff access to these critical documents any time of the day, in a controlled and managed environment.

Today, all departments throughout the company can log onto the Windchill database via the Internet, conduct a search, and view a drawing. Staff can only see the current revision of a drawing on the shop floor, thus reducing the potential risk of manufacturing the product based on out-of-date data, although all historical data is also stored and accessible. This electronic environment, combined with digital workflows and sign-off processes, means that Firth Rixson has been able to entirely remove its paper-based approval processes and achieve huge savings in time and duplication of effort.

“We’ve gone down the road of removing all paper documents, as far as drawings are concerned,” says Haythorne. “Whenever a new product is being produced, it’s created within Windchill PDMLink, and users can only access current drawings—so we know that no one is using old documents or old files in cabinets that haven’t been kept up-to-date.”

Future Expansion Plans

It's clear that Firth Rixson has holistically adopted Windchill within the entire enterprise, providing access to vital information to those that need it. But is the company planning to expand the use of Windchill further? According to Haythorne, the answer is an enthusiastic "Yes." Windchill will be used to create a series of repositories for numerous departments, such as Technical, Production, Sales and Manufacturing, where documents relating to production processes, like heat treatment and machine shop, can be safely stored, but still be visible to all for reference.

This open-access will give each department, as well as specialists, a specific and centralised area to store their own information and details—but more importantly, make that data, which historically may have been hidden away in filing cabinets, available to those that need it. Equally as important, according to Haythorne, because this data access is conducted in a controlled and secure environment of Windchill, the company "can then control who sees those documents and how changes to those documents are approved—following the same principles we're using in design for technical information," says Haythorne.

Why PTC?

Why did Firth Rixson choose PTC as the provider of its next-generation product development and data management environment? According to Haythorne, the benefits they saw with Pro/ENGINEER overcame the problems they had with their existing system. "It's a friendly system which supports our industry and its requirements in terms of generating complex draft angles and surfaces."

In terms of workflow, Firth Rixson is using Pro/ENGINEER together with their existing skills and knowledge with 2D ME10 developed by CoCreate. "We're now using Pro/ENGINEER exclusively for 3D design work, but when we use 2D, we still use CoCreate ME10," states Haythorne. "Pro/ENGINEER and Windchill PDMLink have given us the correct toolset to develop products quicker than our old system, but more importantly, we can now share and control all of the information associated with our products," concludes Haythorne.