SIEMENS

Aerospace and defense

Pilatus

Pilatus substantially improves productivity, shortens development cycle time and lowers total ownership cost

Industry

Teamcenter, NX

Business challenges

Realize more complex designs faster

Reduce development times

Guarantee aircraft quality and reliability

Keys to success

Teamcenter and NX as centerpieces of a comprehensive PLM system

Seamless integration of external design partners

Concurrent engineering

Results

Development times shortened

Lifecycle costs reduced

Designs optimized for low maintenance

End-to-end processes implemented from design through manufacturing

Using a comprehensive PLM solution, with Teamcenter and NX as the centerpieces, Pilatus integrates its total enterprise, enabling the sale of "aircraft and training systems on every continent"

Passion for flying leads to innovation and precision

Pilatus Aircraft Ltd (Pilatus) in Stans, Switzerland, develops and produces single-engine turboprop aircraft for the civil and military sectors. The company combines Swiss precision and quality with pioneering spirit and innovative strength. Its trailblazing innovations include the multi-role aircraft Pilatus Porter PC-6, known as "the Jeep of the air" due to its versatility and robustness; the PC-12 NG, the world's best-selling single-engine turboprop business aircraft; and the military training aircraft PC-21. Following the company slogan, "Passion for Flying," more than 2,000 Pilatus employees worldwide continuously endeavor to develop new and better aircraft models.

Within the aviation industry, Pilatus is a relatively small manufacturer. To be successful, the company must quickly react to changing market requirements, identify market niches and supply these niches with high-quality products. At the same time, the products must comply with the

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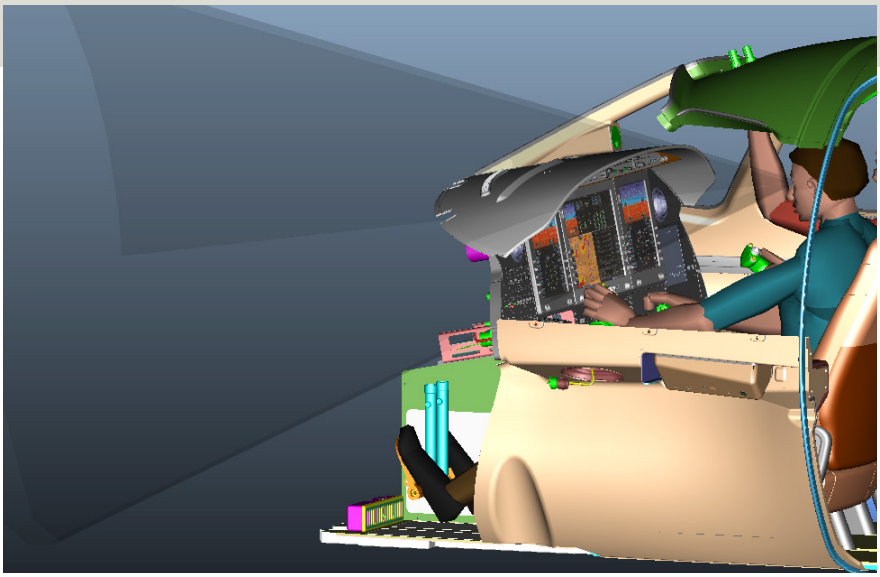
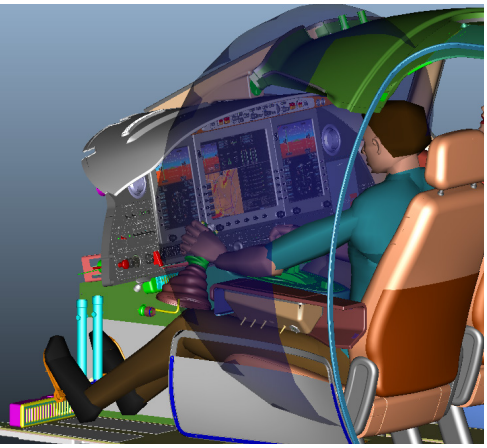
Walter Rentsch
Senior Design Engineer
Pilatus Aircraft Ltd





many legislative regulations of different certification authorities and unconditionally fulfill customers' expectations for safety, maintenance and reliability.

Because every Pilatus model is technologically more advanced than its predecessor, regulatory compliance increases accordingly. A modified technology or the integration of a new system leads to different dependencies for which other regulations may apply. Additionally, global competition intensifies the pressure to reduce an aircraft's time-to-market, which means that development cycles have to be accelerated.

Pilatus is facing ever-increasing product complexity combined with steadily-increasing time-to-market pressure. These challenges can only be met with comprehensive knowledge management, a focus on end-to-end processes and efficient software tools – in other words, with a fully developed and tailor-made product lifecycle management (PLM) strategy. During its long-lasting relationship with Siemens PLM Software, Pilatus developed a well-engineered information technology (IT) architecture and comprehensive LM solution.

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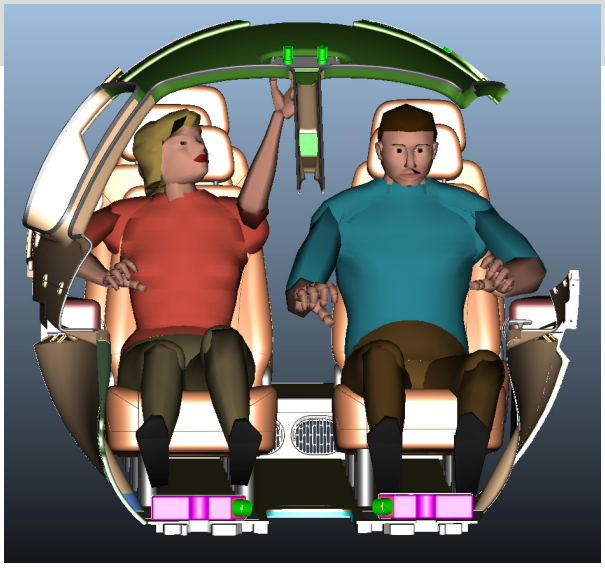

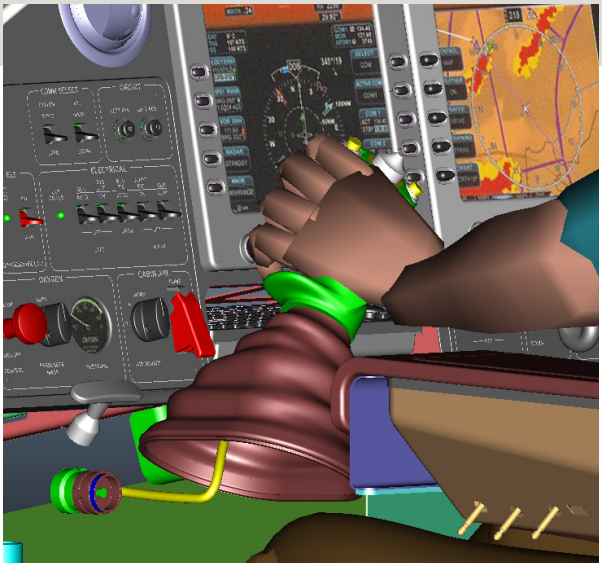

PLM used to establish safe end-to-end processes

The centerpiece of the PLM solution is Teamcenter® software, an advanced product data management (PDM) system that can be used to digitally control the entire development process, from engineering to manufacturing. Pilatus used Teamcenter to establish a single, precisely arranged source of knowledge. All departments and persons involved in development have access to this knowledge according to their individual access authorization.

Across all departments, approximately 260 staff members are individual authors who create and store new data and documents using Teamcenter, and about 320 other staff members use it as "consumers," because they need to access information for their daily work. Using Teamcenter, information is completely and immediately accessible wherever and whenever needed. Thanks to automatic, process-controlled data conversion into neutral formats, such as the JT™ data format for lean 3D visualization of computer-aided design (CAD) data or PDF (portable document format) files for reports, work results can be used by anyone without the need for special software tools. Moreover, the use of Teamcenter helps strengthen inter-divisional communication and reduce administrative effort.

With control of the release process for parts and assemblies as well as a workflow-based data export to other IT systems, Teamcenter enables additional optimizations and greater information security. The synergy of Teamcenter with NX™ software, an integrated design, engineering and manufacturing solution, helps ensure trouble-free re-use of design data across the entire product development process. Structural analysis engineers access data via NX for their analyses and store their reports for subsequent certification using Teamcenter. After release notification, the parts are available for configuration management and manufacturing.

"The use of Teamcenter supports our management of the entire process and fulfills all requirements of our customers and authorities," says Walter Rentsch, senior design engineer, Pilatus. "Our tight control and best practices would not be possible without using Teamcenter."

"By using the global capabilities of Teamcenter, our external partners are deeply integrated into our processes. We benefit significantly from the trouble-free data exchange."

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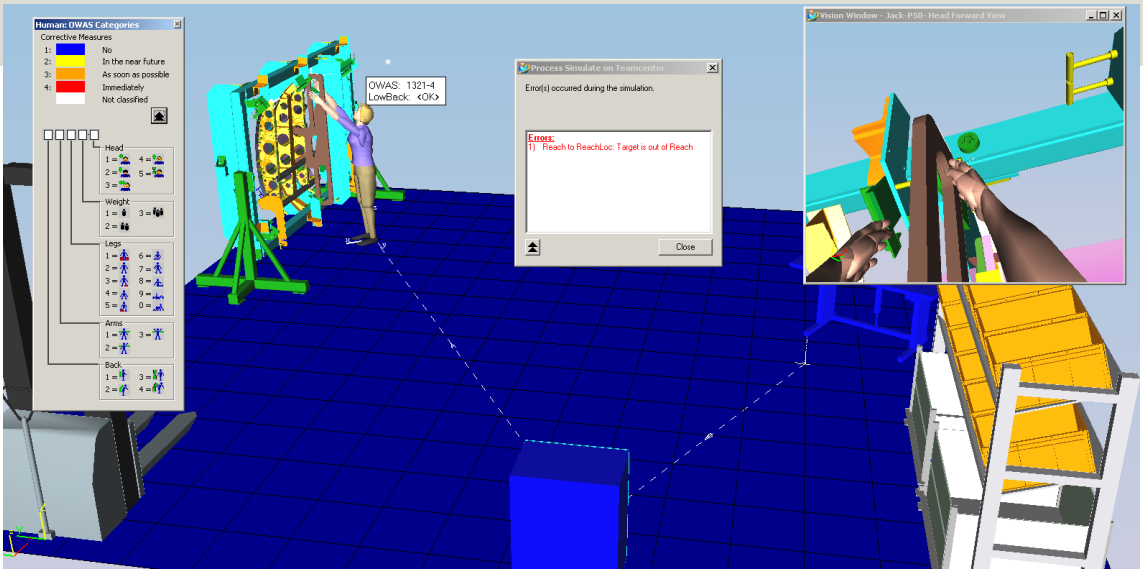

Common source of knowledge – even beyond company borders

Using Teamcenter, Pilatus provides its single knowledge database beyond company borders. The aircraft manufacturer collaborates with external design partners to reduce workload for its own design engineers at the start of a new project.

"By using the global capabilities of Teamcenter, our external partners are deeply integrated into our processes," says Rentsch. "We benefit significantly from the trouble-free data exchange."

Enterprise resource planning (ERP) integration was achieved through the gateway facility of Teamcenter to SAP® software. Depending on process and workflow, Teamcenter is used to automatically transmit data, such as part attributes, to SAP for use by production planners or purchasers. As a result, development processes are optimally connected with other processes to streamline order management and logistics.

The electronic computer-aided design (ECAD) tool Capital Logic from Mentor Graphics is also a fundamental part of Pilatus' PLM solution. The tool is leveraged using the interface capabilities of Teamcenter. One requirement for the integration and customization of the interface was to make data transfer as automated as possible. For example, reports created in Capital Logic are automatically read into Teamcenter and stored in the right place. Additionally, part metadata, such as part numbers, is automatically synchronized. This reduces the risk of having double or flawed entries. This automatism enables faster and more accurate communication and reduces the administrative workload of ECAD engineers.

Concurrent engineering with Teamcenter

With the assistance of Siemens PLM Software consultants, Pilatus implemented a concurrent engineering approach that led to a significantly shorter development cycle. Now, thanks to the common source of knowledge, engineering work within the design process is performed in parallel. The use of Teamcenter facilitates the

Solutions/Services

Teamcenter
www.siemens.com/teamcenter

NX
www.siemens.com/nx

Customer's primary business

Pilatus Aircraft Ltd is the world's leading manufacturer of single-engine turboprop aircrafts and the only Swiss company to develop, build and sell aircraft and training systems on every continent.
www.pilatus-aircraft.com

Customer location

Stans
Switzerland

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required coordination. Teamcenter is used to control specific access authorization for design data versions. In this way, for example, numerical control (NC) programmers can do some preliminary planning, even if the part design is not entirely completed. Importantly, staff members complement the overall coordination of all persons involved in the design reviews.

The second significant advantage of the concurrent engineering process is that other aspects of the product lifecycle, such as maintenance factors or system integration, can be included at a very early stage of the design process. The earlier that problems or optimization potentials are identified, the less effort is needed to implement the changes. Hence, with design data available in the JT data format, the use of Teamcenter also helps facilitate collaboration with staff members who are not involved in development, enabling the design engineers to readily benefit from the experience of other departments.

For Pilatus, it is very important that its products are designed to require minimal maintenance. With Teamcenter, maintenance experts transmit their experiences and comments to the design engineers before a part is produced, so crucial changes are made more cost-effectively. Moreover, maintenance-optimized design reduces unnecessary and expensive cost adjustments throughout the product lifecycle, which contributes to Pilatus' positive brand.

"With the tools of Siemens PLM Software, we integrate all departments into the design process early-on," says Bruno Cervia, vice president of research and development at Pilatus. "Thus, we are able to design better aircraft in less time."

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Siemens PLM Software

Americas +1 800 498 5351
Europe +44 (0) 1276 702000
Asia-Pacific +852 2230 3333

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