

# CZECH AIRCRAFT GROUP

## Case Study



Photo © Czech Aircraft Group

### Challenge

Czech Aircraft Group develops light sport aircraft for training and recreational purposes. The company sought a design and project management platform suited for the aviation industry to unify its design processes, centralize data management and give it full control of all product development activities, including industry certification processes.

### Solution

With the *Engineered to Fly* industry solution on the 3DEXPERIENCE platform, Czech Aircraft Group now manages all product data in a centralized environment. Using the platform, the company follows industry-standard workflows to support the entire certification process for its aircraft in-house.

### Benefits

Standardized workflows and a single data environment allow Czech Aircraft Group to easily comply with industry safety regulations and respond to customer requests throughout the product development process. With all product development and design activities managed in the 3DEXPERIENCE platform, the company can foster effective collaboration across its team and launch new products to market faster.



**“The **3DEXPERIENCE** is a solid platform that supports us with standardized workflows, allowing us to precisely plan future projects and we’re seeing incremental improvements in terms of timeframes, which means we can launch products to market faster.”**

– Vojtech Tuma, Deputy CEO,  
Czech Aircraft Group

### **SAFE AND RELIABLE MACHINES FOR FLYING ACADEMIES**

It takes around 18-24 months for the average person with no previous flying experience to train and qualify as a commercial airline pilot. Trainees and their instructors spend hundreds of hours in the cockpit, usually in older models of light, two-seater aircraft with analog controls. Aircraft rental and fuel costs quickly add up, making flight lessons cost prohibitive for many. But Cruiser Aircraft, owned by Czech Aircraft Group, has made it its mission to deliver the most affordable, enjoyable and safest flight learning experience.

“Our planes are some of the most durable and cost-effective on the market,” said Vojtech Tuma, deputy CEO at Czech Aircraft Group. “Cruiser Aircraft builds on more than 80 years of tradition in aircraft design, development and manufacturing in the Czech region, and our research and development remains focused on flight characteristics, safety, durability and low maintenance and operational costs. We firmly believe that our aircraft present the ideal solution for flight training organization and flying clubs. The combination of our high-quality product, professional customer service and support is the key to our success and why we think customers choose us over the competition.”

As Czech Aircraft Group continues to grow its business, it remains focused on satisfying its customers’ needs, and staying up to date with the latest aviation authority safety requirements. Serving the European and US markets, the company must comply with international aviation regulations and manages all certifications in house.

“The major business challenge for us is to constantly develop the aircraft and guarantee the highest levels of safety together with delivering a pilot-friendly environment while ensuring low maintenance and operational costs,” Tuma said. “In aerospace, you need to fulfill the requirements of the Civil Aviation Authorities, including the European Union Aviation Safety Agency (EASA), as well as the pilots, maintenance technicians and management. We must balance all these needs.”

The company decided to move to an industry-specific platform to manage all of its product development processes in one place, including design and certification.

“We wanted to unify our design processes and gain accurate control of long-term projects,” Tuma said. “And we found the answer in the **3DEXPERIENCE**® platform.”

### **CERTIFYING A PLANE FOR TWO MARKETS**

Czech Aircraft Group’s planes are certified by EASA and approved for operation across Europe in the CS-LSA Light Sport Aeroplanes category. It also separately certifies planes for the US market to comply with Federal Aviation Administration (FAA) regulations.

The PS-28 Cruiser aircraft is designed specifically for basic and advanced flight training, as well as air clubs, recreational use and air tourism. Light, intuitive and highly maneuverable, the double-seat, all-metal aircraft is a popular candidate with training organizations across Europe and the US. Many choose the plane for its durability, forgiving flight dynamics and additional safety features such as tandem flight controls – ideal for bringing new pilots up to speed. The plane also boasts one of the most spacious and ergonomic cockpits in the light sport aircraft category, is equipped with modern and sophisticated avionics systems, and is one of the cheapest to fly. Energy-efficient and cost-effective to maintain, Czech Aircraft Group’s planes are well suited for years of intense use and have a proven lifetime of 11,000 flight hours, almost double the standard among light sport aircraft today.

Recently, the company launched a version of the PS-28 Cruiser, which has been approved by EASA for day and night visual flight rules (VFR). This additional certification was handled on the **3DEXPERIENCE** platform.



**“The **3DEXPERIENCE** platform gives me a sense of order across all active projects. Because I can now track the workload of team members, it allows me to assign new tasks effectively.”**

– David Bilík, Head of Design Department,  
Czech Aircraft Group

“We market our PS-28 Cruiser and SportCruiser aircraft in Europe and the US,” Tuma said. “The certification processes for EASA and the FAA are different. We required a certification process workflow for each of our products and for each of the regulations. ENOVIA on the **3DEXPERIENCE** platform supports us with these workflows, including the design organizations’ approvals and production organizations’ approvals for EASA.”

Because every plane is customized to suit each customer’s specific requirements, Czech Aircraft Group must independently certify each element before certifying the aircraft as a whole.

Before using the **3DEXPERIENCE** platform, this was a lengthy process. Czech Aircraft Group's technical documentation was paper-based, which meant that it wasn't connected to the plane designs in the CAD environment and all updates had to be managed manually.

"When doing the EASA certification of the PS-28 Cruiser, we had to keep interrupting the workflow at certain points to export PDFs of drawings, analysis and reports, and send the documentation to the agency," Tuma said. "With the **3DEXPERIENCE** platform, all data required by EASA is automatically labelled "EASA Review" during the approval process. The data is then released to serial production after EASA approval."

Czech Aircraft Group worked closely with Dassault Systèmes' business partner Dytron to define the functional specifications of the **3DEXPERIENCE** platform and tailor it to handle its specific workflows.

"Our business processes, especially during the design stage, are connected to EASA standards and therefore cannot be easily changed," Tuma said. "Dytron helped us customize the **3DEXPERIENCE** platform to support these design workflows accordingly. Using ENOVIA, we've reengineered and digitalized our approach and now complete each task in a systematic order to fulfill the certification process. It's much more efficient."

### HANDLING DESIGN CHANGES WITH AGILITY

Czech Aircraft Group was losing time and money with its previous product development approach. Designs were carried out using multiple pieces of software, and 2D and 3D data models were stored in different places.

"Whenever we start a new project, we need all the relevant data," Tuma said. "Before, all our data was in different sources and we couldn't be sure we were working with the most up-to-date models. This made revision management challenging too. Sometimes our designers inadvertently worked on the same designs and we had duplicates. Other times they designed a part in a different piece of software and then their designs couldn't be joined together. Now, all our designers, structural engineers, electrical engineers, airworthiness manager and head of design use CATIA. They can share information in real time and see the complete picture of every aircraft we're working on. It means that when our structural engineers propose a change to a particular part, the designer can quickly update the model and ensure all corresponding parts aren't affected."

For David Bilík, head of design department, Czech Aircraft Group, it's now much easier to manage his team of designers and ensure everyone is working productively.

"The **3DEXPERIENCE** platform gives me a sense of order across all active projects," Bilík said. "Because I can now track the workload of team members, it allows me to assign new tasks effectively."

Having all data and processes managed centrally by ENOVIA also makes it easier for Czech Aircraft Group's designers and engineers to collaborate effectively, even when they're working remotely.

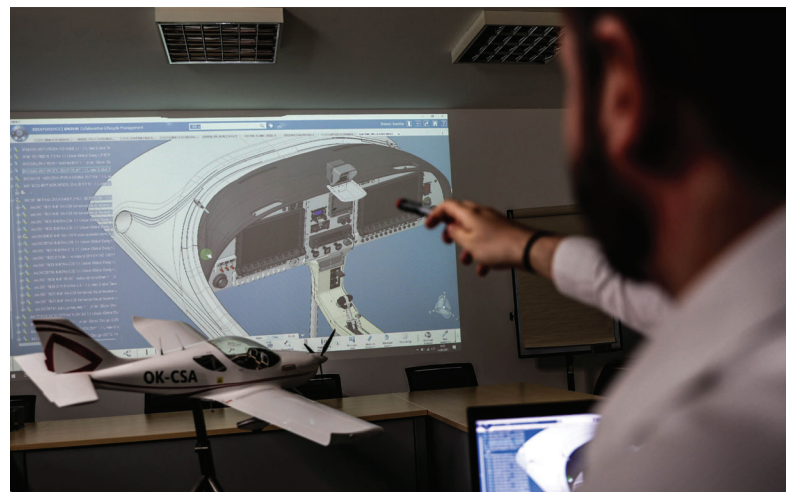
"The advantage of the **3DEXPERIENCE** platform is that it gives me the opportunity to share data and collaborate with colleagues across design teams," said Jan Pejchar, designer at Czech Aircraft Group.

### About Engineered to Fly

*Engineered to Fly* allows small and medium manufacturers and suppliers to grow their business profitably from bid to delivery. By connecting the dots, the **3DEXPERIENCE** platform reduces complexity to develop new bids, collaborate during product development and facilitate manufacturing ramp-up. Now, aerospace manufacturers can achieve higher margins with the ability to reduce design time, increase quality as issues are identified early, reduce the number of duplicate parts, and optimize for manufacturing.

### Benefits

- Win more business by launching new products to market faster
- Stay in control with full traceability for authority certifications
- Drive design and production efficiency by connecting all disciplines and eliminating inefficiencies in the design process
- Reduce change process requests and errors



*Top image:* Czech Aircraft Group uses CATIA on the **3DEXPERIENCE** platform to design and engineer its aircraft including the P-28 cockpit.

*Bottom image:* PS-28 Cruiser aircraft boasts one of the most spacious and ergonomic cockpits in the light sport aircraft category.

## Focus on Czech Aircraft Group

Czech Aircraft Group builds on more than 80 years of tradition in aircraft design, development and manufacturing in the Czech region of Moravia. The company is proud to be part of the central European aviation heritage, building aircraft for generations of pilots. Technological excellence and long-term dedication to innovation make the Cruiser Aircraft brand one of the leaders in the light sport aircraft segment of the general aviation market. Its portfolio is focused on two-seat, all metal light sport aircraft with over 650 units delivered to customers in 30 countries around the world.

For more information: [www.cruiseraircraft.cz](http://www.cruiseraircraft.cz)

## Focus on DYTRON

DYTRON has more than 30 years of experience in implementing CAD/CAM/PLM systems from Dassault Systèmes. It is a reliable and long-term partner for its customers, delivering support and advice, training and knowledge development, consultation and implementation services. Employing highly qualified and experienced professionals, DYTRON has unique know-how in development and design activities and the optimization of business processes for digital transformation.

For more information: [www.dytron.net](http://www.dytron.net)



"With the **3DEXPERIENCE** platform, cooperation and communication is like sitting together in one big office," Tuma added. "Everyone is working with the same tools. We also benefit from the online links between corresponding documents. It's very easy to browse the "parent – children" architecture and find what we're looking for."

Not only is the company able to design new planes more effectively, but it's also able to pass on invaluable information to its customers in a more intuitive way.

"For the customer, one of the key things is a good maintenance manual," Tuma said. "It should be as visual as possible and the **3DEXPERIENCE** platform helps us deliver that. We can make all the drawings and images available to our customers."

## Our **3DEXPERIENCE**® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE** Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our **3DEXPERIENCE** platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit [www.3ds.com](http://www.3ds.com).



## TURNING IDEAS INTO PRECISE DESIGNS

The company finds the sheet metal and composites design features in CATIA invaluable.

"The PS-28 Cruiser and SportCruiser are made mostly from aluminum alloys, so we use the Sheet Metal Design and Hydroformed Sheet Metal Designer roles in CATIA daily," Tuma said. "We import basic drawing files and elementary geometries to CATIA from 3D scans. From CATIA, we can export sheet metal flat patterns in DXF format and 3D models for 3D printing. Because CATIA integrates with our CNC machines, we can almost instantly bring the designers' ideas to life, ensuring great accuracy and eliminating human error. Having precisely designed and manufactured parts makes large assemblies much easier to produce."

Czech Aircraft Group uses CATIA to manage all carbon composites elements in the aircraft, too.

"For smooth surfaces made from carbon composites, we use the powerful tools in CATIA Generative Shape Design to create and modify designs," Tuma said. "It provides a productive and intuitive design environment to capture and reuse design methodologies and specifications. From CATIA, we can also import drawings and different CAD file formats, as well as 3D models for the 3D printer."

## KEEPING NEW PROJECTS ON SCHEDULE

Now, with all its product and project data stored in one place, Czech Aircraft Group can move its business forward confident in its ability to handle growing demand for its aircraft.

"Having one source of truth and all of our designs and data connected in a single environment helps to significantly reduce project delays," Tuma said. "We now have confidence that we're working with the correct data and there is little room for misunderstanding."

"The **3DEXPERIENCE** platform is clearly organized and ENOVIA is the perfect tool for data management," added Roman Švestka, documentation manager at Czech Aircraft Group.

As Czech Aircraft Group uses the **3DEXPERIENCE** platform to manage more new projects, the benefits of a digital, platform approach are becoming more apparent.

"We're improving our knowledge and seeing incremental improvements in terms of timeframes, which means we can launch products to market faster," Tuma said. "The **3DEXPERIENCE** is a solid platform that supports us with standardized workflows, allowing us to precisely plan future projects and support our team to work as effectively as possible."



**3DEXPERIENCE**

### Americas

Dassault Systèmes  
175 Wyman Street  
Waltham, Massachusetts  
02451-1223  
USA

### Europe/Middle East/Africa

Dassault Systèmes  
10, rue Marcel Dassault  
CS 40501  
78946 Vélizy-Villacoublay Cedex  
France

### Asia-Pacific

Dassault Systèmes K.K.  
ThinkPark Tower  
2-1-1 Osaki, Shinagawa-ku,  
Tokyo 141-6020  
Japan