

INDUSTRIAL EQUIPMENT CASE STUDY
COPRO TECHNOLOGY



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Challenge:

COPRO Technology, specialised in roll forming technology needed to accelerate design and assembly of composites pre-forming machines.

Solution:

The company chose Dassault Systèmes' 3DEXPERIENCE platform and the *Single Source for Speed* industry solution experience on cloud for design and collaborative innovation.

Benefits:

With a single integrated platform of product information and a modular approach to design, COPRO Technology can rapidly and cost-effectively tailor its machines to customer specification.

INNOVATIVE COMPOSITE PARTS PRODUCTION

Many industries use carbon fiber reinforced plastics (CFRP) to create light but strong and stiff structures for their products. Particularly used in the sports, aerospace and automotive industries, CFRP are also increasingly popular for industrial machinery, engineering and construction. Composite profiles are usually manufactured by way of manual or discontinuous robot-based preforming techniques that rely on cost-intensive tooling. This was until Arne Stahl and Henrik Borgwardt, founders of German-based COPRO Technology, developed an innovative process, which they believe will significantly reduce component costs. During their eight-year tenure at the German Aerospace Center (DLR), Germany's national aeronautics and space research center, they developed and perfected a continuous composite preforming technology. "Our machines enable efficient and cost-effective production of preform profiles for the infusion or injection molding process," Arne Stahl, co-founder, COPRO Technology said. "Preforming is a highly expensive manufacturing step; automating this process can significantly reduce production costs. We adapted the roll forming process used in the metallic industry to CFRPs. Our roll forming machines are tailored to the composites production needs of our customers. As our technology will be certified by the industry and our company grows in size, we plan to build our own production lines and use these proven techniques to manufacture composite parts for the composite market."

COPRO Technology machines use rotating pairs of rollers that continuously form, at variable speeds, semi-finished textiles

into preform profiles with complex geometries. "Due to the infinitely variable adjustment of the speed difference between the roller pairs, we can produce complex three-dimensional composite preform profiles with different curvatures, widths and cross-sections," Stahl said. "This is because we don't use massive aluminum or steel forming tooling. Our machines are very flexible and can be adapted to different profile types enabling us to produce a family of components for a number of different products on one machine. It's very efficient both for high rate mass production and for small batch series. These machines can reduce preforming costs by up to 35%."

COPRO Technology has two sites, one dedicated to design and one for machine assembly. For this young start-up, a platform solution where project stakeholders are seamlessly connected was the obvious solution. The company, therefore, chose Dassault Systèmes' 3DEXPERIENCE® platform and *Single Source for Speed* industry solution experience for design and collaborative innovation. "We decided to use Dassault Systèmes 3DEXPERIENCE platform applications for all our company's design and engineering needs," Stahl said. The platform is perfectly suited to managing large assemblies and keeping track of a machine's design history for reuse in new projects, both COPRO requirements. "All our information is stored in one place: we have the design geometry, the dimensions as well as project management data all on one platform. Concurrent engineering is now a reality, which helps avoid communication issues."



"The 3DEXPERIENCE platform is perfectly suited to managing large assemblies and keeping track of a machine's design history for reuse in new projects. Working on the cloud with information stored on one platform makes concurrent engineering a reality."

— Arne Stahl
Founder, COPRO Technology

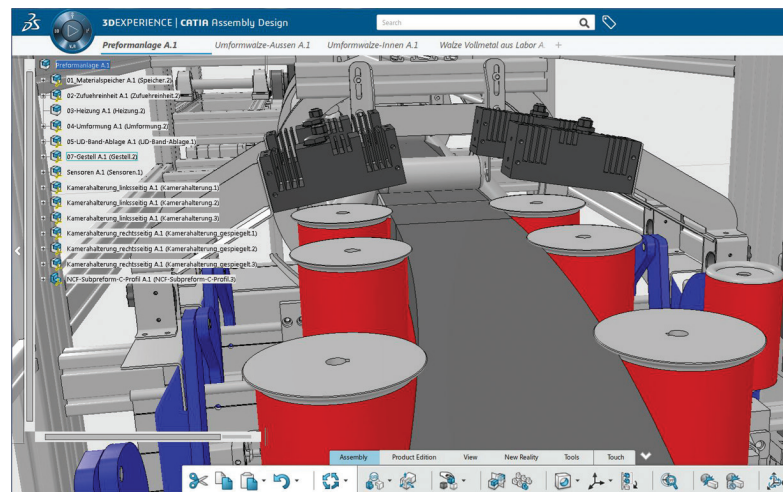
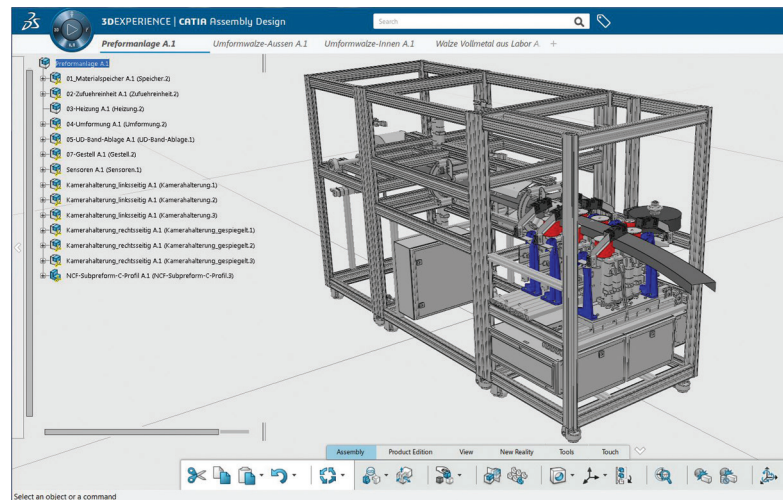
3DEXPERIENCE FOR START-UPS

Like many startups, COPRO Technology faced many challenges: little money to invest, the need to evolve its technology as the company grows over time, and no desire to invest nor manage an IT environment. Stahl and Borgwardt discussed their design needs and company vision with CENIT, a Dassault Systèmes' business partner. CENIT convinced them that the 3DEXPERIENCE platform on the cloud was the best solution to support their growth strategy. It is robust and offers a flexible subscription and pay-as-you-go model. "We chose the cloud version of the 3DEXPERIENCE platform because we can begin with Dassault Systèmes' startup offering and add new applications as we hire more people and add new roles. It can be immediately deployed and doesn't require IT equipment and administrative investments. Moreover, our data is secure and available 24/7. CENIT advised and guided us throughout our journey, providing implementation and training support. It's a very good solution that enables small companies to benefit from a high-end solution, up to now reserved only for large corporations," Stahl said.

Customers come to COPRO Technology with a composite part they want to produce, "and ask us if we can design a machine that can produce this part efficiently, at low cost and with minimal material waste," Stahl said. COPRO designers work with the customer to tailor the machine to their needs using the 3DEXPERIENCE platform's design application CATIA where 3D design models are fine-tuned to customer specifications. Once finalized, COPRO Technology orders machine parts from its suppliers and assembles the machine in its production site before delivery to the customer.

Customizing machines to specification, however, can be prohibitive in terms of costs, so how does COPRO Technology manage to be competitive in terms of pricing and delivery times? "We develop our basic technology using a modular approach with the 3DEXPERIENCE platform's design application CATIA," Stahl explained. "Some modules are standard and can be reused on new machines while others are adapted to specific customer needs, which avoids having to completely redesign a machine from scratch each time. It's a more cost-effective and less time-consuming method," he said.

Even though the company is well-established in Germany, COPRO Technology's major business driver is international growth. The company generated a lot of interest with potential customers at the JEC World in Paris, a trade show that unites major global composite industry players. In effect, it recently



Top image: Roll forming machine in the 3DEXPERIENCE platform

Bottom image: Detailed view of the rotating pairs of rollers

Focus on COPRO Technology GmbH

Roll forming technology for composite preforms

Products: Development of roll forming preforming solutions, composite preforms, small batch series of composite profiles

Employees: 8

Headquarters: Braunschweig, Germany

For more information

www.copro-technology.com

Focus on CENIT

CENIT is your partner for successful digital transformation. With a broad solutions and services portfolio, CENIT enables clients to optimize their horizontal and vertical business processes. With interdisciplinary knowledge of the processes involved and their considerable expertise in the field, CENIT consultants provide customers with end-to-end advice to ensure that solutions are implemented with an understanding of the entire value chain.

With a holistic approach and based on trusted partnerships, CENIT takes responsibility for solutions on behalf of our clients. From the initial consultation to the introduction of innovative IT solutions, right through to ensuring a cost-effective operation. The CENIT team adapts to each client, taking a practical approach, which enables measurable operational optimizations.

For more information

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signed its first contract to build a forming machine for a research laboratory founded by a major European automotive with local research partners.

COPRO Technology's growth will subsequently lead to an extended use of the **3DEXPERIENCE** platform to further develop its business potential. "We would like to use the **3DEXPERIENCE** platform's ENOVIA application for document and bill of material (BOM) management and to improve collaboration with our research partners and suppliers by providing them with access to our platform to exchange CATIA models during joint projects. As we later expand into composite part production, we will also analyze component strength and stress using the analytics capabilities of the **3DEXPERIENCE** platform," Stahl concluded.

Our **3DEXPERIENCE**® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

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