

# Triumph Composite Systems

Engineering efficiency soars by up to 30% with DS PLM



Triumph Composite Systems

A Triumph Group Company

## Overview

### ■ Challenge

Triumph Composites wanted to increase engineering productivity by reducing the time required to locate the latest version of files and manage manual, paper-based processes.

### ■ Solution

Triumph Composites used DS PLM, including CATIA, ENOVIA DMU and ENOVIA SmarTeam Design Express with the Aerospace Supply Chain Hub to streamline engineering processes with out-of-the-box functionality that contributes to a low cost of ownership.

### ■ Benefits

Triumph Group has already increased engineering efficiency by 25-30% and expects to extend these benefits as DS PLM is rolled out to other areas of the organization.



“The ENOVIA SmarTeam Aerospace Supply Chain Hub provides a solution that is tailored to the requirements of an aerospace supplier, without the cost and time involved in an extensive customization effort.”

Justin Von Hagel, Director of Engineering,  
Triumph Composites

### Building a design engineering capability from the ground up

The history of Triumph Composites began in 1990 when the Boeing Company opened a composites manufacturing facility in Spokane, Washington. This facility was designed to support the manufacturing of two specific composite products: floor panels and environmental control systems ducting. Over the years, the facility added new manufacturing techniques including rotational molding, Ultem post-forming, and reinforced thermoplastic laminate pressing. In 2002, Boeing Spokane was purchased by the Triumph Group, Inc. and became Triumph Composite Systems, Inc.

Until the purchase by Triumph, the company primarily built parts to its customers' prints and had minimal design capabilities. But in line with recent trends in the aerospace industry, increasingly its customers began demanding comprehensive system solutions, including design, engineering, manufacturing and aftermarket services. “We made a

strategic initiative to upgrade our design engineering capabilities,” said Justin Von Hagel, director of engineering for Triumph Composites.

Triumph Composites engineers evaluated a variety of 3D computer-aided design (CAD) and product data management (PDM) solutions. “We considered several alternative CAD applications, but the power and ease of use CATIA offered, plus the fact that most of our customers use CATIA, caused us to conclude that it was our best choice,” Von Hagel said.

“Then we faced the choice of which global collaborative product data management solution to use. One of our primary objectives was to minimize the time and cost involved in the implementation process. Since we were building our design organization from scratch, we didn't have many processes and procedures in place. We were free to evaluate a full range of solutions and select the one with the best built-in solutions for the aerospace industry.”





“The ENOVIA SmarTeam design repository has greatly reduced the time required for engineers to locate the current version of a model, while preventing accidental deletion and unauthorized modification.”

Jay Hoover, CAD/CAM Administrator,  
Triumph Composites

### Aerospace industry-compatible workflow without customization

Ultimately, Triumph Composite Systems chose a Dassault Systèmes Product Lifecycle Management (DS PLM) solution that included CATIA, ENOVIA DMU, ENOVIA SmarTeam Design Express for CATIA and the Aerospace Supply Chain Hub (ASCH). Out-of-the-box functionality and low cost of ownership were key factors in the decision.

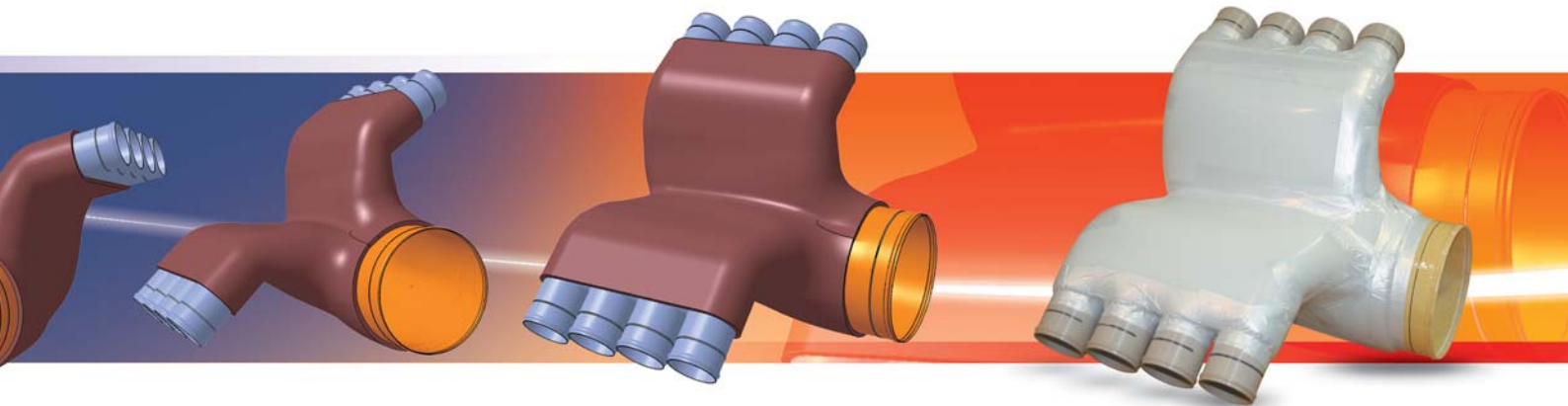
“The pre-built workflow in ENOVIA SmarTeam Design Express and its Aerospace Supply Chain Hub (ASCH) solution eliminated the need for us to go through the long and expensive customization process typically involved in implementing a PDM system,” said Jay Hoover, CAD/CAM administrator. “The preconfigured database includes data structure, workflows and scripting designed in advance to meet the requirements of the aerospace industry. The result was that our implementation was much faster than if we had selected a conventional PDM solution.”

ASCH pre-built workflows include creation of program class structure, maturity management, document management, creation of document class structure, specification management, export management, change management, control of non-conformance, product design and analysis flow, plus internal release workflow.

ENOVIA SmarTeam Design Express and ASCH save Triumph Composite Systems engineers considerable amounts of time in locating models and drawings, and ensure that everyone is working with the latest information. The ENOVIA SmarTeam system now controls the native CATIA files in a secure electronic vault. This ensures data integrity, prevents accidental deletion and unauthorized modification, and allows drawings to be easily checked in and out. Based on permissions defined by the system administrator, both engineering and manufacturing personnel can instantly access 3D models and drawings, eliminating delays and the risks inherent in paper document distribution.

### Single repository saves time in locating latest version

“In the past, we had many versions of the same model with the same file name in different locations,” said Kevin Palmen, design engineer. “It was often difficult to determine which version of the file was the current one. It was also possible for two people to be simultaneously working on different versions of the same model. ENOVIA SmarTeam gives us a single point of data in a single location. There is only one place to look and one version of each model, which saves time and eliminates errors. The time savings achieved in locating files has made the largest single contribution to our improvement in efficiency.”



ENOVIA SmarTeam Design Express makes it possible to search through the database in many ways. Models are listed not only by part number but also by a wide range of other attributes, including revision, drawing name, description, drawing number, and many more parameters. Search results provide a thumbnail view of each design, making it easy to identify the appropriate one. The software tracks where-used and composed-of relationships automatically, making it easy to determine where a certain part can be found within different assemblies. Engineers can instantly pull up not only the current version but also the previous versions. This makes it possible to go back and look at how the drawing has evolved, which is often very helpful in creating the next version.

“In the past, if there was a change, an engineer would create paperwork and walk it around to the people who had to approve it,” Palmen said. “Often the people who needed to approve the documents were not there, so the engineer had to drop them off in their inbox. A manager might already have dozens of engineering change orders in their inbox, not to mention many other documents requiring their attention.”

ENOVIA SmartTeam Design Express and ASCH have greatly reduced the time needed to process engineering change orders (ECOs). The workflow

automatically routes the documents to the appropriate people in the right order. Originators can easily see the status of the ECOs they have produced and when the documents were forwarded to each reviewer. Reviewers can log in to see the documents awaiting their review. The transparent nature of the process makes it easy for originators to stay on top of the review process and encourages reviewers to respond quickly.

### **More powerful benefits, more widely available**

“We have also seen substantial improvements since we upgraded our CATIA solution,” Hoover said. “The new version of CATIA is more powerful, yet paradoxically it is also easier to use. The intuitive user interface and online help menu make it a simpler system to operate for users that lack CATIA experience. In particular, it’s much easier to create an intelligent design that can adjust as parameters change. It also offers many new features that make it a more powerful design tool. For example, we use the Powercopy feature to save time by replicating features wherever they are needed.”

Triumph Composites uses ENOVIA Digital Mock-Up (DMU) Navigator to provide access to models for non-engineering users who do not need the design capabilities of CATIA. DMU Navigator handles digital mock-ups of all sizes, up to and including large



“ENOVIA DMU Navigator makes it easy to roll out design review and markup capabilities to non-CATIA users.”

Kevin Palmen, Design Engineer,  
Triumph Composites



aerospace assemblies. "Planning, manufacturing, quality assurance, purchasing and even some engineers who don't need design capabilities use DMU to view models and drawings," Mundy said. "Also, when customers make changes to models, we perform a compare operation in DMU to see exactly how they changed."

Triumph Composites is now creating the workflow for its internal release process utilizing ENOVIA SmarTeam Design Express and ASCH. This includes the design review and manufacturing engineering processes up to the point of releasing a part to manufacturing. The ENOVIA SmarTeam workflow will save time after the initial design review by completing the rest of the process through automated workflow, while keeping all of the players informed and involved. For example, everyone will be immediately notified by email when a part is released. This will make it

possible to get a jump on ordering long lead-time items, allowing production to begin sooner and decreasing time to market. In the future, Triumph Composites is also planning to utilize ASCH to automate collaborative processes with customers and suppliers.

"The implementation of ENOVIA SmarTeam and ASCH at Triumph Composites has been a major success," VonHagel concluded. "We have already achieved a 25% to 30% increase in engineering efficiency and expect to see that figure increase once the complete product release workflow goes live. We are also planning to roll out ENOVIA SmarTeam workflow to other areas of our organization, including Quality, Tooling Planning and Purchasing. Due to this success, our corporate team is looking at recommending ENOVIA SmarTeam throughout all of the Triumph companies."



"CATIA is so powerful and intuitive it has helped our engineering team increase their efficiency."

Jim Mundy, Design Engineer,  
Triumph Composites



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