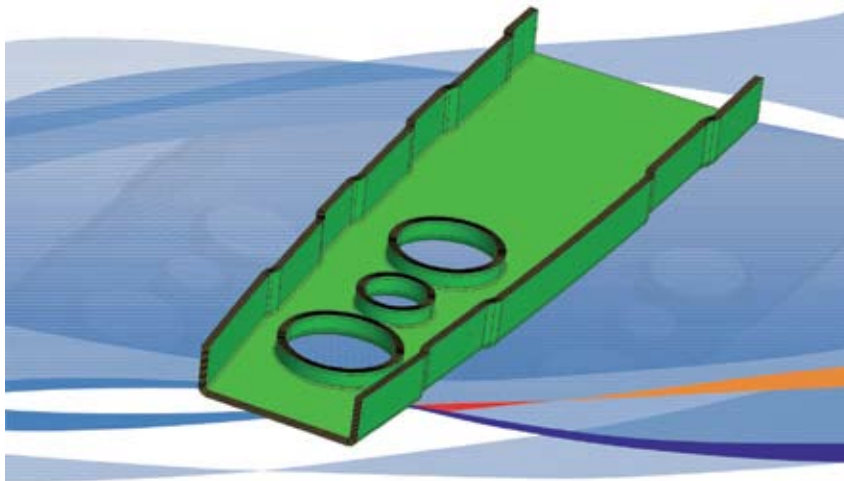


Patria gains composite benefits with CATIA V5



“It’s so easy to make alternate parts and variants with CATIA V5. We can change the geometry very efficiently into different shapes.”

– Antti Aho-Mantila,
R&D Engineer, Patria Aerostructures Oy

Overview

- *Patria could not easily update composite aerostructure designs, which often had to wait until all other models were finished, extending the design cycle.*
- *CATIA V5 and its Composite Design 3 module allow Patria to quickly and automatically update the composite model as other models change.*
- *Total cycle time is dramatically reduced and designers have more opportunity to try innovative approaches. Design capacity has doubled.*

CATIA V5 solves composite design challenges

Although located near the edge of the Arctic Circle, Patria Aerostructures has put itself at the forefront of composite design for aircraft parts. The small Finnish company, part of the much larger Patria Group, even won a coveted role in the Airbus A380, the largest passenger airliner ever constructed.

Maintaining its position requires a dedication to constant improvement, however. Patria’s recent migration to CATIA V5, an IBM PLM solution developed by Dassault Systèmes and its fully integrated composite solution, Composite Design 3 (CPD), has given the company the most advanced capabilities in its field.

“We looked at competing products, but it became very clear to us that we would get tremendous advantages by having everything under CATIA V5,” said Antti Aho-Mantila, R&D Engineer for Patria Aerostructures. “To go with a different composites solution would have required data translations every time we moved back and forth. We would have lost the automatic update ability that CATIA V5 provides. We did not see any advantage to that.”

Updating to CATIA V5 had many advantages, however, Aho-Mantila said. Especially in the concept and prototype design phases, when design definition is constantly changing, the company's CATIA V4 composites solution could not keep pace. Any major change in geometry generally required the designer to throw away what had already been done and start fresh. "Usually, that meant we left the composite model to the last task after all the other models were finished, and that is not suitable for fast design iterations," he said.

Leaving the composite design until last sometimes caused delays and always meant massive workloads at the end of a project. Because composites are so difficult to design, involving complex deformations that vary with the fibre direction, laminate thickness and a host of other variables, any late cycle error made in the rush to finish could be costly.

Double capacity with the same staff

The move to CATIA V5 and CPD dramatically improved the process of composite design at Patria, said Aho-Mantila, who estimates the move doubled the existing staff's design capacity. Best of all, composite design is concurrent with the rest of the project.

"We are saving many hours on the design of a single model because we no longer have to do the geometry," he said. "If we are creating a family of similar parts, we can create one intelligent model that can adapt to the new dimensions very easily, saving many days in the design effort. The real power of CATIA V5 is to create very, very fast design definition."

The key, Aho-Mantila said, is that all models and definitions – including aerodynamic surfaces, tool surfaces and composites definition – provide design-in-context through multimodel links. "To get the latest design definition from other designers, all you have to do is update the links."

Part families are particularly easy to create. "The normal CATIA V5 functions of Powercopy, Catalogue and Replace are really helpful. Models can be finished quite fast if you are starting from one where similar geometry and composite definition are already present."

Easy to learn, easy to use

Other benefits of CATIA V5 include its intuitive user interface and powerful online help menu. "In CATIA V4, you needed to read many manuals and go to many courses to learn it. In CATIA V5, icons and the overall design process are very straightforward. I think that up until now, it is the easiest composite software to learn."

In the future, Aho-Mantila said, Patria hopes to use the Knowledgeware capabilities of CATIA V5 to capture some of the composites design expertise of the company's top engineers. "If we can create intelligent models that can be used by everybody, we will have more flexibility in who can be assigned to a project."



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