

Aircraft nose fairing.

Composed for the Future

Digital Product methodology and the use of V5 PLM helped secure a major OEM contract for UK composites specialists Tods Aerospace. Measurable productivity benefits have been experienced not just by the company but also throughout its supply chain.

Tods Aerospace Limited based in Somerset, is a leading UK composite specialist. Their work is found in a range of aerospace, mass transport, defence, marine, telecommunications and other applications. The company designs and manufactures from a range of composite materials, some of which are produced in-house or subcontracted to Tods' own or an OEM's specification.

Tods has been a Dassault Systèmes CATIA user for 7 years and now has a total of 8 CATIA V4 and V5 seats. It is partly due to its enthusiastic acceptance of the V5 PLM that the company was recently awarded an exclusive 5-year contract to supply composites to a major British defence helicopter OEM.

JUST WHAT WE NEED

Tod's Engineering Director, Peter Eckersall explained the importance of V5 PLM at the company. "To win this valuable contract we had to demonstrate our ability to work within the Digital Product system operated by the OEM. This involves direct integration with the OEM's PLM system via VPN lines. Using this route we can access the OEM's Digital Mock Up (DMU). This enables concurrent design engineering practices that allow us to check assembly clashes and parts interference."

Eckersall continued, "No drawings are used in the Digital Product programme and we

use V5 PLM data to generate machining programmes while Manufacturing Information Sheets contain only the data that our operators need; all extraneous information is removed."

This practice produces considerable time savings. Eckersall says "We are achieving a 20% reduction in design effort and sometimes that figure is much higher."

DIGITAL OPERATION

Tool-making used to represent a bottleneck at Tods until it started to use V5 PLM. Now that toolmakers are supplied with the precise models and associated data they need, productivity from that division has been greatly increased. Similar benefits have also been experienced since V5 PLM generated lay-up sheets have been available.

The use of Digital Product methodology at Tods has led to changes at downstream suppliers too. Eckersall remarks, "The move to full integration of PLM throughout the supply chain means that everyone must use the same model. The benefits of that practice in design, manufacture and quality are profound, but if the PLM chain is broken the benefits necessarily decrease. In other words if one supplier in the chain is unable to access the model, others higher up the chain have to do the work on their behalf – a practice that cannot persist."

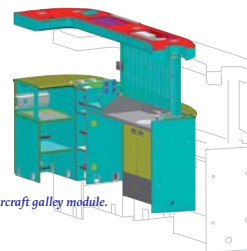
By **Nick Lerner**

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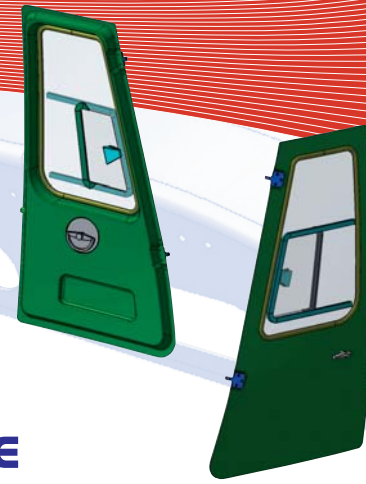
Not all of Tods OEM customers use Digital Product; several use lower technology methods. "But," says Eckersall, "the benefits from V5 PLM are so significant that more of the companies we work with are deploying it. And, because we have successfully integrated PLM into our organisation, we are very well positioned for the future, and confident that we will win more business by having this capability. Increasingly, engineering is not just about whether you can make things, but also whether you can operate digitally."

BLACK ART

In engineering circles, the use of composites is considered a Black Art because some of the processes are based on years of experience



Aircraft galley module.



Aircraft cockpit doors.

In practice



rather than scientific analysis. For example, changing ply direction or adding a material layer may not have a completely predictable outcome. Tods is careful to retain this specialised knowledge and a Material Technology Team have full access to V5 data to aid their work. Other users in Stress Engineering apply software analysis to the V5 model confident that they are working on the current iteration, with the results of their solutions quickly incorporated into developing models. Dassault Systèmes' PLM is an excellent knowledge capture repository that the engineers at Tods plan to utilise as they roll out its PLM strategy.

Eckersall discussed other benefits that Dassault Systèmes software brings to Tods. "V5 PLM provides us with a strong foundation that allows us to consider several productivity enhancement options. Among them is an ability to view data on the time and cost of manufacturing processes and take appropriate action where it is needed. Since composites are often repaired we see a lot of our work come back. Tracking the lifecycle of assemblies, and having access to their design and manufacturing data, has proved a very useful tool. Another benefit is being able to provide data to our suppliers in a format that they can most easily use. Some suppliers are not up to speed on 3D so we use PLM to generate file formats that they are currently able to handle."

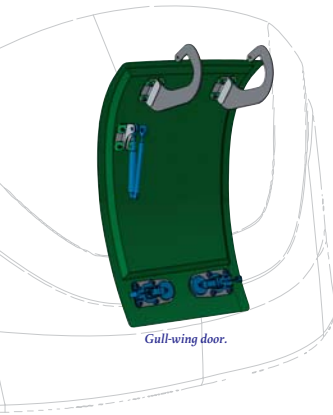
SUPPLY CHAIN EFFICIENCIES

Dassault Systèmes VAR, INCAT, has worked closely with Tods over several years by installing and supporting the V5 PLM system and running regular 'health check' maintenance procedures that ensure the best performance is always available from the system. Eckersall commented "We are not IT experts so we need a trusted partner who knows what is available and what will bring production and business benefits to Tods. We have regular planning meetings with INCAT where our PLM needs are defined and met by the best available technology and infrastructure. We discuss upcoming initiatives and organise training based on our specific requirements."

In conclusion, Eckersall says, "Dassault Systèmes and INCAT are contributing to our ability to operate digitally. As more companies realise the benefits that this methodology offers, Tod's industry position will strengthen. PLM was certainly instrumental in us winning and keeping a major helicopter contract; it brings productivity benefits throughout our design and manufacturing operations, and it is bringing greater efficiency to our supply chain" •

For more information:

www.tods.co.uk
www3.incat.com



Gull-wing door.