

dk Composites

Saving time and costs with CATIA for Composites solutions



Overview

■ Challenge

dk Composites needed to develop and construct with precision technologically advanced composite dome structures for the construction industry.

■ Solution

dk Composites chose CATIA to turn design methods into reusable knowledge for obtaining optimum design, and increase efficiency and accuracy when creating composites structures using CATIA for Composites solutions.

■ Benefits

Thanks to CATIA for Composites solutions, dk Composites has slashed design cycles by 67% and reduced waste of expensive materials by half.



“CATIA’s power to capture and optimize design knowledge with the ability to predict the shape of the ply for cutting has cut design time by 67% and reduced wastage of expensive materials by half.”

Klaus-Juergen Heer
Head of Design
dk Composites

Focus on composite manufacturing

dk Composites was founded in 1997 as a German-Malaysian joint venture for the construction of composite domes as part of a Malaysian construction project. As the company grew, it became a Malaysian company focused on composite manufacturing with the ability to provide complete services from concept to delivery of turnkey projects. Although its main markets are architecture (domes and claddings) and marine (sailing boats, yachts and workboats), dk Composites has delivered successful projects in other market segments, such as train (composites carbody and interior), unmanned aerial vehicles, and tools.

Precision challenge

In its line of business, dk Composites needs to develop and construct technologically advanced products with a high level of accuracy. What is created in the design studio needs to fit precisely when manufactured and assembled.

In the past, creating the inner surface of a composite part and maintaining accurate information of the ply lay-up were major sources of errors, often resulting in time and cost wastage.

“What’s most important to us is a solution that allows us to do our work quickly, easily and accurately,” said Klaus-Juergen Heer, Head of Design at dk Composites.

Convinced of CATIA’s capabilities

The company decided to implement CATIA to virtually design in 3D and visualize projects before they are made and fitted. CATIA advanced Knowledge capture and re-use capabilities were selected to turn implicit design methods into explicit knowledge for obtaining the optimum design, while CATIA for Composites solutions were added to reduce the time needed to design composites parts.



“Our design and development team has been using CATIA since the company was formed,” said Heer. “We are familiar with and convinced of the benefits of using the software. Designing in the context of the complete assembly requires reliable modeling of realistic part thickness. The task of doing this for composite parts has been greatly enhanced by the functionalities offered by the composite solution.”

Value is sum of many small improvements

The implementation of CATIA for Composites has delivered many small improvements, which have translated to great value for dk Composites. Such improvements include the ability to visualize lay-up models and remember the stacking sequence, and the ability to capture information.

“In a current project characterized by a huge variety of very similar composite parts,” said Heer, “CATIA’s power to capture and optimize design knowledge as well as define standard rules and checks for design quality assessment, combined with the ability of CATIA for Composites to predict the shape of the ply for cutting, has cut design time by 67%, and significantly reduced waste of expensive materials by half.”

More than ten different materials are used in composites. They also come in different weave styles, core densities and thicknesses. CATIA has helped significantly by maintaining the lay-up sequence together with the actual quantity needed.

Opening up possibilities

CATIA for Composites enables dk Composites to perform tasks such as determining the thickness of parts more efficiently, giving the design team time and scope to experiment with more ambitious designs featuring complex parts.

“CATIA for Composites opens up a huge range of possibilities to improve the development and construction process. By merging design and development together with construction as one integral business process, its potential is tremendous and possibly limited only by one’s own creativity,” said Heer.

CATIA has been a strategic tool for dk Composites. “CATIA for Composites offers a vast array of benefits for the construction sector. We have just started to explore these benefits with already pretty positive results,” he said.

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