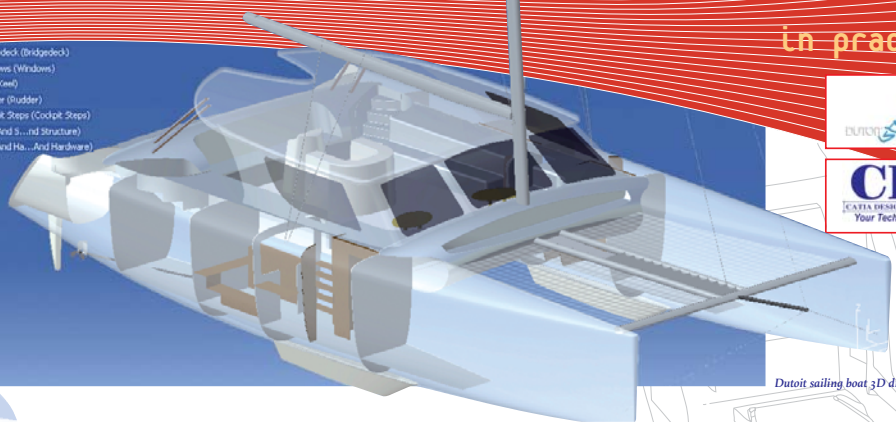




Dutoit leisure motor boat.



Dutoit sailing boat 3D digital model.

By Nick Lerner

# A Life on the Ocean Wave

South Africa based yacht designers use CATIA to efficiently develop superior, innovative vessels.

## SETTING OFF

Anton Dutoit spent his teens and twenties living aboard yachts, often racing, around the world with his family. When they returned home after 16 years, to Cape Town, South Africa, Anton put his extraordinary experience into practice and now runs an internationally renowned yacht design business. Anton spent his time ashore in libraries learning engineering. He also taught himself CAD and was able to experience most of the popular packages first hand.

Anton runs his yacht design business making use of Dassault Systèmes CATIA as the design development backbone. Anton spoke of this choice, "At Dutoit we develop new designs and retrofits from concept sketch to yard detail, for both sailing and power boats in mono and catamaran forms. We pride ourselves on being able to produce designs that combine aesthetic, technological and seaworthiness considerations in equal measure and at the highest level. It is important that we communicate our design intent very accurately to artisans, workshops, clients and others in the supply chain."

The international leisure marine market has experienced accelerated development to

become a multi billion-euro industry utilizing the most advanced design to manufacture methodology and technology available. While the largest and most prestigious yacht makers have deployed Dassault Systèmes based PLM, smaller companies within the global yacht industry supply chain have also been reaping its benefits. These may be seen in the development and successful launch of world-class craft produced by smaller companies around the world. Using Dassault Systèmes PLM they are able to improve designs for greater market appeal through performance, improved sailing characteristics and enhanced luxury. Companies in the global yacht production supply chain are able to benefit from the use of Dassault Systèmes PLM by communicating their ideas, design and manufacturing data directly to others in the supply chain both within and beyond their enterprise.

## ON COURSE

Anton added, "Using CATIA we produce design work in 3D and are able to provide output data in formats to suit all the people that we deal with. Therefore we produce isometric sketches, 2D patterns, detail images as well as output for CNC programming and 2D routing. "Having experience of all the current 3D design development systems I realised that CATIA is

**CATIA allows us the freedom to exercise our creativity.**

the most advanced single system and I used it as my benchmark when assessing the others. The level of support that I have received from Dassault Systèmes and its South Africa VAR, CDC, has been very valuable. They helped us with and initial specification and installation of the right system and modules to match our work, as well as providing training and ongoing technical support. "CATIA is a very intuitive system to use because it allows us the freedom to exercise our creativity within a set of strong engineering guidelines. The fact that the system is 'very deep' is an advantage because it effectively future proofs us by enabling our business to develop without the need to change technology platforms. Also, its ability to handle large assemblies is a great advantage and one which causes several rival systems to capsize."

## SHIP SHAPE

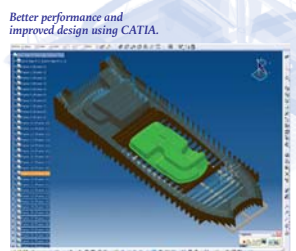
Dutoit make much use of the Photostudio module in CATIA to verify aesthetics and show customers a virtual 3D impression of the design. Anton spoke further of how CATIA helps brings designs to life, "Yacht design is all in the numbers; its very mathematical process to design a yacht and certain relationships between parameters

are fixed. The parametric operation of CATIA is ideal in this scenario because we can effectively link dimensions to each other and retain their relationships while developing the overall design. This very quick and easy operation is one that allows us to modify aspects of the design in the certainty that overall, engineering principles are maintained. The Generative Shape module is perfect for yacht design because it allows us to develop innovative geometry that works on a practical level." He continued, "Designing a yacht is a spiral process where you move towards a highly detailed final product from initial conceptual work. Control over surfaces, angles and run lines is crucial to the boat's final aesthetic and performance. The manipulation of these factors using CATIA is key to a successful outcome for Dutoit. The simplicity with which our designers can add bevels, levels, fillets and rounds makes their

work go faster and allows more time and freedom for innovation. Because it is easy to try 'what if' scenarios we frequently try out new ideas - which we would never be able to do with a less flexible system."

## SET FAIR

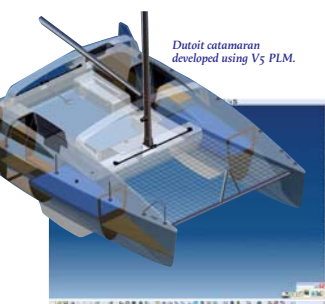
Anton spoke of how CATIA captures experience, "We have had CATIA for a year during which time we have developed a new working methodology. This required changes to our previous systems but the work has certainly been worthwhile and we are now enjoying the fruits of that labour." He concluded, "I have spent my life in or around boats and with CATIA I have found a system to channel that experience into new and better designs. The software allows us to capture and retain our knowledge and understanding of vessel behaviour, aesthetics and seaworthiness. Rules are developed in CATIA around dimensions, hull stiffness and other performance characteristics such as roll period and frequency, these being affected by several factors in the design. As a sailor and designer, I know how I want a boat to behave and how the design has to take shape to produce that behaviour. CATIA methodology makes the job much more efficient and ultimately helps us to develop better boats" - )



Better performance and improved design using CATIA.



Power boat 3D digital model.



Dutoit catamaran developed using V5 PLM.

For more information:  
www.dtyd.co.za  
www.cdcza.co.za