

# Majenta PLM provides support for the advanced surfacing capabilities of NX and development of the revolutionary Adastra superyacht



## John Shuttleworth Yacht Designs

### Industry:

Shipbuilding

### Business challenges:

- The most demanding project to date
- Design changes inevitable
- Changes need to be made quickly and easily

### Keys to success:

- Flexible shape creation, manipulation and analysis
- The ability to provide a complete 3D CAD model suitable for CNC mold production

### Strong, safe and speedy

For 30 years, sailing enthusiasts have been turning to John Shuttleworth Yacht Designs for the ultimate in performance, style and value within the multihull market. In the 1980s, the company's design team developed the concept of "Integrated Structure," which resulted in boats that were lighter, stiffer and stronger than any previous multihull designs. With lightweight streamlined shapes for outstanding aerodynamic performance and wide beams for stability and comfort, these became consistent race winners. Several of the designs still hold some of the toughest long-distance ocean sailing records and many of their racing and cruising multihulls have completed round-the-world voyages.

The company continued to expand this technology as it developed sailing and power multihulls with increased range and the ability to achieve significant savings in fuel consumption. The 3D modelling of freeform primary surfaces was carried out using a specialist naval architecture application and deck structures were created using a standard 3D computer-aided design (CAD) package.

### The most advanced project to date

When the company took on its most advanced commission yet -- to design an innovative vessel for private clients with extensive sea voyage experience -- it was clear that because of the developmental nature of the project there would be changes during the design process. In brief, the challenge was to produce a beautiful yacht that would have low fuel consumption, excellent seakeeping qualities and luxurious accommodation.

Orion Shuttleworth, Designer/Consultant for John Shuttleworth Yacht Designs and one of Adastra's design team, takes up the story: "The Adastra superyacht project takes the power trimaran concept further than has ever been attempted before. We knew we would need a software package that would allow us to make these changes quickly and efficiently. At the same time, we wanted to offer a more detailed design package and provide a complete 3D CAD model suitable for CNC (computer numerical control) mold production."



## Solution:

Provision of NX with customised technical support from Majenta PLM

## Business impact:

- All design features resolved in 3D for the first time
- Full and immediate return on investment via Adastra project alone
- Whole development process transformed
- New opportunities to advance lighter, more efficient hull and deck structures
- Speedy support from Majenta PLM enabled timely delivery and high quality designs

The company selected Siemens PLM Software's NX™ software through Siemens PLM Software's partner Majenta PLM. Shuttleworth had previously used NX for yacht design during his time with another company and explains: "For ease of modelling, design productivity and reliability, NX was the obvious choice when I became involved in the Adastra project. I was advised that Majenta PLM would be able to provide a very good level of support. They have indeed been excellent. They offered a competitive package that met our needs then helped us get everything up and running quickly and easily by explaining each step of the setup process clearly. They also advised on specific functions of the software."

## Product development transformed

The use of NX transformed the entire product development process, giving Shuttleworth greater control through flexible shape creation, manipulation and analysis tools. Shuttleworth explains, "We immediately found that our surfacing capability was much better, because the freeform shape modelling capability of NX Shape Studio and the mesh surface tools enabled us to create organic primary surfaces using NX. We could review the shape and check options for different styles and lines very quickly as we balanced the lightness required for low fuel consumption and performance with stability in waves. From a design workflow perspective, it is much better to keep as much of the design as possible in one piece of software."

According to Shuttleworth, using NX enabled him to operate effectively because he could explore concepts efficiently: "The developmental nature of the project meant that we made a number of changes as we progressed and the ability to update the model easily proved extremely useful. I could quickly accommodate the inevitable changes in direction that occurred during the design process." At one point, the outriggers had to be redesigned because the vessel's weight increased after a change in specification. "Using NX enabled us to make this modification quickly and easily by simply replacing the outrigger geometry and parametrically updating all the detail features associated with it," notes Shuttleworth.

Throughout the development process Majenta PLM's experts were ready to give support by telephone or email. "We got very quick and clear responses to our problems with a solution virtually every time," comments Shuttleworth. "Majenta PLM's help enabled us to do our job better and was key to us achieving high quality designs on schedule."



**"For ease of modelling, design productivity and reliability, NX was the obvious choice when I became involved in the Adastra project. I was advised that Majenta PLM would be able to provide a very good level of support. They have indeed been excellent."**

Orion Shuttleworth,  
Designer/Consultant for  
John Shuttleworth Yacht  
Designs



## **An innovative departure with an immediate return on investment**

For John Shuttleworth Yacht Designs, using NX for product development was an innovative departure from previous processes. "It was the first time that we worked out all the design features in 3D from the start," says Shuttleworth. "With such a complex hull form, requiring extensive structural analysis, it was essential in order to get the results we finally achieved. Using NX allowed us to develop ideas into highly detailed models suitable for manufacture and the end product is better, because all the details of the design were fully resolved in 3D." With a foam sandwich of glass and synthetic fibre for the hull, Adastra has a 16-meter beam, three anchors and a carbon fibre superstructure.

The company also gained a full return on its investment in NX. "Given the complexity of the Adastra design, it was worth buying NX for this one project alone," says Shuttleworth. "We could not have achieved the final design in any other way and we will definitely benefit from using NX on future projects. We have greatly increased the quality and detail of the designs that we produce." He adds that the use of NX enables the company to offer a far more comprehensive package to prospective clients.

After five years of discussion and virtual design, the boat was built in a shipyard in China and by early 2012 was ready for its first tests at sea. The future, as seen by Shuttleworth, includes a move towards more fuel-efficient yachts. The company is already working with researchers on alternative propulsion systems, including hybrid solar systems and kite power. Shuttleworth points out, "Our engineering knowledge and our methods of analysis are under constant development and this will result in lighter, more efficient hull and deck structures. We trust that Adastra will draw the world's attention and show the kind of superyacht we are capable of designing. I look forward to the opportunity to design many more efficient, long range, luxury multihull superyachts. Whatever technical challenges lie ahead I know that Majenta will always give an exceptional support service."



Contact us for further information:

**Majenta PLM Limited**  
5 Medway Court  
University Way  
Cranfield Technology Park  
Cranfield, Bedfordshire  
MK43 0FQ

**T 01234 757 695**

**F 01277 263 245**

**Email:**  
[sales@majentapl.com](mailto:sales@majentapl.com)

**NX**

Solution  
Partner

PLM

**SIEMENS**

© 2012 Majenta PLM Limited. All rights reserved. NX is the registered trademark of Siemens Product Lifecycle Management Software Inc. or its subsidiaries in the United States and in other countries. All other logos, trademarks, registered trademarks or service marks used herein are the property of their respective holders.