FARR
YACHT DESIGN

DESIGNER'S VOICE
An inside look at our world of yacht design.

Visualizing Through Renderings
By Jean-Marc LeRoy, Designer

At the office of Farr Yacht Design, we utilize a number of different types of software to achieve various goals and objectives. When it comes to conveying ideas or introducing boats not yet built to the public, there is no match to the visualization and realism that a rendered 3Dimensional image has to offer. If you have seen our website, any of the recent Volvo Ocean Race publications or the Beneteau ads for the new 44.7 in your favorite sailing publication, you have seen samples of recently created renderings.

Base geometries for hulls, decks and appendages are designed using 3D modeling software. This type of modeling allows designs to be put through design analysis and FEA (Finite Element Analysis) and hydrodynamic testing. When the final shapes have been created and are fully refined, they are assembled to form the key components that make the base of a rendering model.

Adding realism and dimensionality to

Designer Jean-Marc LeRoy joined Farr Yacht Design in January 2003

2005/2006 Volvo Open 70 Concept Yacht

an object is the end goal when it comes to renderings. Before the days of computers, images were created by the designers or by artists who could produce perspective views of boats using pen and paper. Times have changed and the pen and paper have been replaced with mouse and monitor. These modern day tools produce a very high level of accuracy, which is hard to match, but a good hand rendered image produced using old technology pen and paper does have a quality that is irreplaceable.

At times, the end product only needs to be 2D profile line drawing with color and depth added to better define shape and form to get the design concept across. Other times a perspective view of the entire boat is needed to convey the proper information. Such images are useful for a number of reasons. Boat manufacturers find perspectives helpful to promote new products before the first one is built. In addition, individuals or teams looking to gather corporate sponsorship

use these to aid their audiences to better visualize what the latest racing machines look like. At times they are simply used to convey new ideas to clients. Whoever the viewer may be, the end goal is the same: to better understand what has not yet been built.

The software used to create images is a combination of a modeling program coupled with a rendering program. In our case, Rhinoceros 3D developed by McNeel and Associates is used. This is a NURBS (Non-Uniform Rational B-Splines) based program that mathematically represents 3D geometry accurately describing any shape from simple 2D lines and curves to more complex, organic 3D free-form surfaces or solid forms. This allows accurate and quick creations of surfaces in 3D that, when assembled, become parts such as winches, hatches, stanchions and other bits that make up a boat. Hulls, decks and appendages can also be created using Rhino 3D. Flamingo, also developed by McNeel and Associates, is a photometrical accurate rendering program that enables the application of different material properties to surfaces. Color, texture, reflectiveness, transparency and translucency are some characteristics that can be applied onto surfaces and then modified to achieve the desired effects. Lighting plays a very important role in producing a convincing and accurate image. Flamingo offers a huge amount of flexibility in selecting different types of light qualities and light sources to create the right shade and shadows. As with other settings, there is plenty of room for fine-tuning to get the most desired visual effects. Adding depth of field, ground-plane and background help to create the proper environment for a greater sense of realism. The application of graphics or logos onto surfaces is possible for showing corporate sponsorship

logos on boats such as a Volvo Open 70's and manufacturers' striping and graphics.

As with most files, the more information that it holds the bigger the file size. Some of the more detailed and intricate models can be upwards to 40 megabytes in size. When a hi-resolution image is needed, the computer processing time can be near an hour on a 2 gigabyte RAM processor. Much longer times are needed when animation is involved.

The next dimension for rendered images is the introduction of animation. Setting parts in motion is not only great for the examination of tolerances and relationships between working parts but it can also bring the viewer closer and more in tune with the subject. Through the consolidating of many still images, a video is formed and the object appears to be set in motion. This is an area that we are currently experimenting and developing.

As the fast pace of software development continues its advancement, the quality and realism of images will only improve. Walk-through and fly-by videos of un-built objects almost seem commonplace now through virtual reality. Someday, you may find yourself sailing along in an idyllic setting on a newly created Farr Yacht Design yacht yet to be built.

Then again, sailing the real thing just can't be beat.
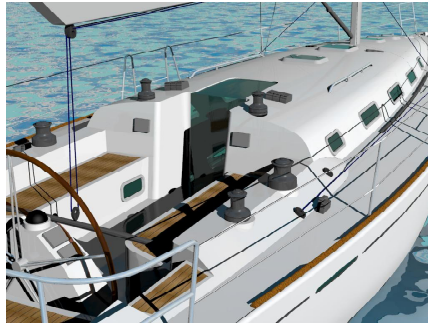
A close up view of the Beneteau First 44.7, Design 496