

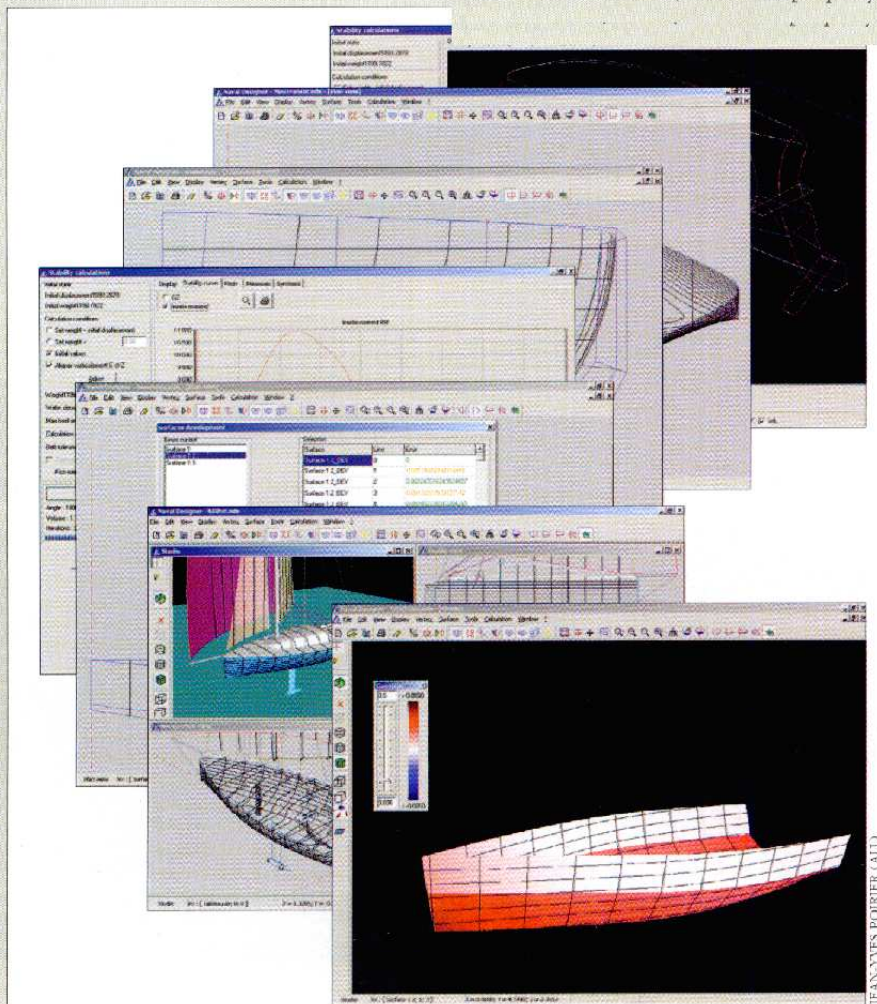
Low-Cost Hull Design

Despite its English name, the software application known as “Naval Designer” is of French origin. Developed by Vincent de Montard, it is an integrated hull-design “workshop” consisting of: a 3-D modeler; a rendering engine complete with texture and light parameters; and calculation, hydrostatics, stability, and weight-distribution tools. Available in three versions—Light, Standard, and Pro—Naval Designer features an efficient interface with multilingual menus (U.S. and U.K. English among them), multiple windows, and “floating” toolboxes, opened with a click of the mouse.

A from-scratch work session would begin with a rough model defined by a net of three lines and three columns—by default. A background image can be displayed to aid in designing directly from a scanned paper sketch or from an existing design; cross markers in the 3-D working space can also be used as visual aids for precise measurement. Naturally, the user can modify all aspects of the basic model, beginning with dimensions (in metric units only), and by adding vertex lines and/or columns, and adding or removing surfaces. A complete toolbox is always available to move, add, align, group, link, or unlink vertices at will.

Depending on the version of Naval Designer employed, up to 200 different surfaces can be combined or modified (but not trimmed) to create deck, roof, keel, rudder, winches, mast, sail, and so forth. Additional tools transform surfaces in the x-, y-, and z-axes, through rotation, translation, symmetry, and scale. The user can at any time display sections, waterlines, buttocks, and diagonals in all views and in all conditions of trim, pitch, and heel—a rare capability in this price range.

The rendered view called OpenGL is directly controlled in real time through the mouse or keyboard, and light and surface parameters display options such as color, transparency, reflectivity, and more. The Gaussian curvature option permits control of surface curvature with great accuracy, particularly in the forefoot area—which, as most designers know, is always tricky to model properly.



JEAN-YVES POIRIER (ALL)

Naval Designer is the name given to fairly new, flexible computer software suitable for small-craft design. In the foreground is a Gaussian curvature display that helps in drawing developable surfaces. The second “page” back shows how some of Naval Designer’s powerful tools for hull designing can be displayed simultaneously.

This feature also helps the user draw developable surfaces for a chine hull, or for a deck or roof in plywood or aluminum; a dark color indicates severe curvature, while white suggests locally or globally developable areas.

Standard and Pro versions come with surface-development capability, making CNC-panel manufacturing a true snap.

All versions of Naval Designer share the same powerful hydrostatic and stability calculations modules; the latter displays a 3-D animation of the hull rotation, with gravity and buoyancy centers moving. Results of calculations are displayed as graphical curves or numerical sheets, which can be printed or saved as text files. A payload option keeps track of all weights on board—gear, crew,

food, water, etc.—opened or saved as an external spreadsheet file.

Naval Designer has a fully functional downloadable demo, and a dedicated Internet forum.

Product price in the U.S. ranges from \$300 to \$1,000, depending on the version selected. A well-written and well-illustrated user manual is currently being translated into English. For more information, contact the U.S. distributor, Forum Marine, 3511 Silverside Rd., Suite 105, Wilmington, DE 19810; on the Web at www.navaldesigner.com.

—Jean-Yves Poirier

CNC for Hire

Eight years ago, David Jansen was director of engineering for North End