

# Owner-Building a Cruising Multihull-Why Build Instead of Buying

## Why Building is Better

The multihull that an owner-builder constructs and finishes can not only be a very good boat, it can often be far better than a one from a production factory. It will also cost a fraction of the price of a similar sized production multi.

I probably have a jaundiced view of production multis. Since I first wrote this article, I have been involved in probably a few million dollars worth of sold production boats.



Though most of these were the little ones, several of the Sunchaser 58s are also included. My total royalty payments received for all these vessels, combined, to this time, is \$100. If the developers will scam me, what do they do to unsuspecting owners on the things nobody can see, like the laminates?

After all these years of increasing professional expertise, learning to optimize hull shapes, make the best materials choices, evolving every trick in superior vessel design, and efficiency; with some production boats, you have to throw that all out.

Those production cat's requirements seem to be the sum of the urban legends that the yacht salesmen have heard from the stream of visitors at boat shows. That, more than anything I hear of governs design decisions. I have been told that the only design requirement is to look good when stern tied at Miami. The rest of that stuff like bridgedeck clearance or pointing doesn't matter. The bar has been set very low for what is a reasonable ocean going catamaran.

Many of the production cats that I know of are not, in my opinion, serious boats like a J boat might be for monohulls.

The result is no demand for structural, fundamental quality. A boatyard that might have been shooting chopper-gun pickup camper tops last year can be successful at building and selling production catamarans this year. Optimized laminates and reasonable vessel weight are ignored

in place of fluffy interiors. It's sort of a circular rationale. If these heavy, low strength cats are not used offshore in anger, then they don't suffer any damage. Since they don't suffer any damage, they appear to be succeeding. The fact that they require huge rigs and engines, to move at all, can't point, will pound to windward, and have terrible rides in bad seas can be ignored.

I don't know why this can happen with cruising cats when popular monohulls can be so much more serious boats.

The conclusion is to only buy from reputable production builders who use experienced designers, or build your own vessel, again from an experienced designer. In both cases, it is very important to consult with your favorite designer. If there is no designer to stand behind the design, beware!

One of the most useful reasons to build instead of buy a cruising multi is the quality of the design and how that design fits your lifestyle. There are hundreds of great multihull designs for builders, but only a handful of designs are available as production boats. The chance of finding a vessel that fits your needs is much greater if you find a design and build it yourself.

Even a design that meets the needs of an owner quite well can be modified to better meet his particular requirements. An owner may want a revision to have 6'-9" headroom. With a production boat that is impossible if it was not so intended to start with. An owner-builder can make it so easily.

An owner-builder can have a boat with the very latest technical advances, especially if the designer is aggressive about that. In contrast, a production boat will take years from the design being drawn to hull number one going for its first sail. By then it is not a recent work. The accountants will then insist that as many units as possible be taken off of the mold, even if the design is well passed its time. A survey of boat shows finds an armada designs that are years out of date and still being sold.

In my office, like others, we have come across ideas for significant improvements in several areas of both design and building ease, including rudders, wing mast design and impact damage resisting. These advances become part of the drawings as quickly as possible. Improvements like these will not show up on production multis for years.

Many production multis are the result of a market study; and not always one done by multihull sailors. A market study can prove to be death of design excellence for a serious sailor. I have been in a marketing meeting where it was said that people don't actually sail these things, they just party on them. The features that would make a serious ocean boat often do not stand up to the test of marketing pressure and the imaginary average consumer. Having just worked with a developer on a catamaran intended for production, I could report that it is worse than I speculated when I first wrote this article in 1994. I was told that good sheet and halyard leads were not important, but we had to have a tub in it. I was told not to be concerned about pointing and tacking; everybody else has keels so we will too.

An owner-builder can chose and own a serious ocean multihull without the influence of marketing departments and the leveler of conforming to the average consumer, whoever that is.

A multi built by an owner-builder, if it is a recent design, should be both lighter and stronger than a production one of the same size. There are many reasons for that but they include the use of epoxy instead of lower grade production resins with gel coat, often better quality fiber structures with more recent engineering.

I recently read a paper about resins that has a huge impact on this topic. As we know, most production boats are built with inexpensive polyester resins. If you are lucky, they might have used the better vinyl ester resin. It turns out that the proper mixture of catalyst and initiator in polyester and vinyl ester resins is not only critically important but is also a function of tempera-

ture. With many formulations, at every change in temperature, the ratio of initiator and catalyst also has to change. If that is not done, the result is a partial cure and low strength, and it can never be remedied. Did Skeeter the laminator really keep track of the temperature and change the formulation on the fly during the day? You think? An owner-builder will probably use the superior resin, epoxy. It doesn't matter what temperature, the mixture of hardener to resin is the same. If for any reason it's not quite right at first, a later post-cure will improve the cure. The chances of getting a superior product can be much higher for an owner-builder. As a comparison, the

laminates done by the average owner-builder will usually be about 60,000 psi flexural strength. Some of my builders have achieved almost 70,000 psi. In comparison, a local production catamaran builder just posted results of 23,850 psi for the same D-790 strength test.



Many production multis are "packed". The marketing guys want to stuff as many features as possible into whatever waterline length it is. The result is too often a multi that won't point and wallows in bad weather.

An owner-builder has the option of not only choosing a design that has a long enough waterline to be safe, but even extending that waterline if desired. The result can be a better sailing multi than could have been gotten from a production vessel.

The phrase often applied to owner-built multihulls, "backyard boat" suggests rough plywood and house paint. Often these days, the opposite is true. Many backyard boats are stunning. Because of the care often taken, an owner-built boat can not only have very high quality where it is expected, but even where it is not expected; the hidden places. Probably nobody is more careful about preventing voids, or making good bonding joints for example than an educated owner-builder. With good tools, modern epoxy technology, and two part polyurethane paint an owner-built multi can look as good or even better than a factory boat.

One of the most important advantages of being an owner-builder is knowing what the multi is made of and how it was actually built. An owner-builder knows what is under the paint. Just as important is the understanding a builder gets of how boats are made. Most owner-builders become so educated that they could probably be marine surveyors when they are done building. The skills and knowledge stay with an owner-builder for a lifetime.

Repairs to an owner-builder's boat are different. They are less daunting. If a jetski crashes



through the side of an owner-builder's cat or tri, it is unpleasant but not a disaster. It was built once and the builder knows how to do that part again. An owner-builder is less dependant on high priced boatyards for repair. That ability can save thousands of dollars during the bumpy life of a boat. The knowledge gotten from building makes cruising to distant isles much surer and more confident. If something goes wrong you can fix it.

Finally, the costs are less for building a multihull yourself. Much less. Many people, including me, can only get into a multi by building it. Having to buy one would mean not owning a multihull for us.

Ignoring for now the price of shop rent, ruined clothes and bad fast food, the cost to build your own multi should be from a third to a half that of a similar sized production one. If one had, say, \$100,000 to work with, that could be a 30' or less production multi or a 40' to 45' multi that you build yourself. That can be a big difference in the ocean cruise you actually take.

Verify this with your local accountant, but for tax purposes, in my experience the various government tax agencies will count an owner-builder's labor as zero value.

Where to build



Builders choose many types of building spaces from backyards to space in an industrial park. Obviously shop space must be dry and lockable. Many multihull builders start with a space slightly longer than the boat and only fifteen or twenty feet wide. In this truncated space they

build components; hulls, cross arms, cabin sides and on. Once these are done they can be joined in more expensive full width space nearer the water.

A boat project will create great amounts of dust and noise. The epoxy has no fumes but later when painting these can be an environment problem. Make sure that your neighbors can put up with the output your shop creates.

Finally, do measure the width and height of the entire trip from boat shop to open water.

What to built it with.

Owner built multis usually come in two basic types, composite or wood/epoxy.

Wood/epoxy multis tend to be a bit less expensive and a bit faster to build. They are more vulnerable to impact damage. Composite ones made of foam/glass for example are a bit more time and greater materials cost but are better able to resist impact damage. Unlike framed hulls, composite ones have no stringers to contend with.

Most designers will sell a design in either material type depending on the builder's needs, and work with the builder to define those requirements.

Locating the best materials sources is almost a half time job in my office. We provide builders with at sources, but due to buyouts of companies, it has to be updated every quarter at least.

Asking the designer to connect you with other builders in your area is a good way to track down what is being used locally.

Multihull clubs are a sometimes good resource to find out where local builders are getting supplies. Some clubs even bulk buy supplies.

What skills are needed?

Naturally basic tool using skills are required. I have found in many cases that amateur owner-builders have better results with new technologies than professionals do. They don't presume to already know everything about boat building; they listen and read instead of deciding to build it the way the last one was done.

I consider skills and construction information inseparable. Most designers have very complete and informative plans. In addition there are important builder's books such as the Gougeon Brothers on Boat Construction or the designer's books on Boatbuilding. To help visualize how a project looks, my office has both a Construction Manual and a Construction Manual on Video. I expect more offices to do that in the future.

Builders who have purchased a compressor and air tools do not regret it.

What sequence do builders follow?

After selecting a design and a designer, owner-builders either do all the work themselves or they hire professional builders to help with some of the steps. Many times owner-builders get help building the hulls and crossarms then the owner takes it from there. Often professionals will let the owner help with the construction as well. In that way the owner gets all the quality advantages of a home built boat with significant price savings over a production one.

So, what are the down sides

Building your own multi is not for everyone. It puts a big impact on ones life and lifestyle. Varying from 6 month to several years' owner-builders must expect to have no free time and a serious countenance.

In years past owner-built multihulls could expect to sell for only slightly more than the cost of materials. For a variety of reasons that has changed in the 90s, though they still must be well built and finished to keep resale value. A well-built multi by a known and active designer should have the same market value as a production multi of similar size.

An owner-builder will find that the burden of proof is on him when dealing with surveyors and insurers. Since these professionals usually have no yardstick to gauge the quality and value of an owner-built boat, one has to prepare for what seem to be insulting and ignorant questions about that boat you built.

Building a cruising multihull is not for everyone, but with a good space to build in, the proper tools, skills and production information, and a positive outlook, building a boat can be a rewarding experience. It also serves as a great alternative for those unable to afford production cruising boats.