

POWERBOATS

By ERIC SORENSEN



Pursuit of perfection: a built-to-order boat

If you're in the market for a new boat you'll find scores of production models to choose from, and chances are pretty good that a builder offers something close to what you want. But if you're looking for a boat that fits your exact specifications and you have the means — and the patience — there are two ways to go: semicustom or custom.

The distinction can get blurry. In general, semicustom means you have a fixed hull and deck, but the interior can be completely different; custom means the entire boat is one of a kind, says JB Turner, co-owner and head of the boatbuilding operation at Front Street Shipyard in Belfast, Maine (www.frontstreetshipyard.com).

"When a customer comes in they usually have an idea as to what they want to do with the boat," says Turner, who also managed the boatbuilding operation at Lyman-Morse, which specializes in high-end custom projects. "They want to sail around the world or they want a 90-footer, and here is what they'll use it for."

He says people usually have an idea of the size boat they want, having spent several years looking at production models at boat shows and concluding there is nothing that suits them. "Some find a hull and deck they like and have them finished off the way they want," Turner says. "Others start fresh: 'We want a 60-footer with three cabins, two heads and an aft cabin.' Then we start working with a designer to develop the lines."



Front Street Shipyard in Belfast, Maine — founded by the owners of several semicustom/custom boatbuilders — offers new builds, as well as refit and restoration work, repairs, maintenance and more.

It used to be that 50 percent would ask the builder to help them find a designer, he says. "Now 90 percent find a designer and say, 'Let's find a builder.' So we do our best to cultivate relationships with designers."

So how does a designer find a builder? Typically the designer works with the client to develop a preliminary specification, then sends it out to four or five yards for bids, Turner says. "The owner gets the bids back and picks three of the five yards, which he then visits to get a feel for the people, their track record with similar projects, how busy they are, how competent, and so on," he says. "Boatbuilding is, first of all, relationship building. ... They talk to the head of the mechanical and carpentry departments, the riggers, painters and get a feel for how they will be able to interact with the people who would be building their boat."

Sometimes the customers are knowledgeable, Turner says. Sometimes it just comes down to whether they trust and like you. "One of the first discussions is 'When can you build my boat?'" he says.

Few people would be in the boatbuilding business if it wasn't profitable and, one would hope, rewarding. Certainly, building a piece of fine art such as a one-off yacht has its rewards as an act of creation for the owner and the builder.

"One of the fun things about the whole process of custom boatbuilding — probably the most fun part for me — is building the full-scale mockup," Turner says. "People become engaged early in the process when they come in to see the mockup. They can lie on the bunks, sit at the settees, board the boat from the dock and see with a high degree of precision what they will be getting two years down the road. This gives people a real feel for what the boat will be like."

Most customers aren't used to reading plans and can't really understand what the boat will be like from looking at drawings and CAD renderings, he says. "A lot of times the boat's overall length will change because of the mockup," he says. "That's a few hundred dollars to change a mockup and hundreds of thousands to change the boat. Or they may leave the hull the same, but move bulkheads a foot or two to redistribute the space to better suit their needs."

Relationship building

One way a client can get into trouble is to insist on something that either will make the boat a disappointment or make it tough to sell when the time comes.

"People ask for things they may regret later," Turner notes. "Say they want a state-of-the-art, push-button electrical system, which has to have automatic switching, load equalization circuitry and battery combiners. Then they want to run the boat themselves. I say, 'Imagine you are standing there trying to figure out this system all by yourself and you can't get it to work right.' Very quickly that takes the charm out of the system. Usually they will say 'You're right. Let's redesign it to be simpler.'"

A custom boat not only is a lot of work for the designer and builder but for the owner, too.

"If you are going to build a custom boat, expect the builder to ask you hundreds of questions," Turner says. "If you are not good at answering questions quickly, if you don't have a pretty clear idea and vision of your finished boat, it will take longer to build and will be more expensive. On the other end of the scale we have customers who know



Aurore, a Burger built in 1966, is an ongoing restoration at Front Street Shipyard. Company founders are (from left) JB Turner, Steve White and Taylor Allen.

exactly what they want and tell us to build it. We had one owner who saw one of our 74-footers and said, 'That's the boat I want, only make it bigger.'"

When it comes to the builder's relationship with the naval architect, Turner's ideal designer "has the answers we need quickly and has a good vision for what the boat will be in the end," he says. "If we want to put weight here or increase the water tank by 200 gallons, they have to be able to tell us the ramifications quickly."

Front Street also works closely with the designer when going through the mockup with the customer.

"The owner makes many decisions when walking

through the mockup, and the ramifications of making changes — I have never built a mockup without making changes — can be worked out on the spot with the designer and builder right there," Turner says. "If you change the davit, the loads on the upper deck may change, and so on. That's why having all three of us there is so important."

What about the legal/contract end part of the project? "Contracts are more fixed-price these days, rather than cost-plus," Turner says. "It's extremely important to have a fixed specification, written with great clarity, and not deviate from those specifications."

First, the preliminary specification is developed and sent out to bid. "The preliminary price will be pretty close to the final one, but it still needs to be fine-tuned," he says. "Then the yard is selected, the mockup is built and gone through with the owner, and the spec is refined and a fixed price developed."

For an 80-footer, Turner says, the preliminary specification might be eight or nine pages of bullet points with eight or nine drawings.

That's what goes out to bid. "By the time we were ready to go to a build contract on one 80-footer we had a final spec that was 120 pages with around 40 drawings," he says.

Most people who have custom boats built have a lot of experience on the water and have a clear idea as to what they're looking for in their next boat, Turner says. "The average person wanting to build a custom boat has owned five to 10 boats previously," he says. "They could either be coming up or down in size."

He says Front Street doesn't build many boats smaller than 45 feet because there are so many production options below that size range. "Most custom boats are 60-foot plus, with a 60-foot powerboat coming in at \$3 million to \$4 million, typically, but there are so many variables determining cost," he says. "A 60-foot sail- or powerboat are pretty close in cost because the bigger engines in a motoryacht balance out the cost of the sailboat's rigging, keel and sails."

Turner says the difference between a \$3 million 60-footer and a \$5 million 60-footer mostly comes down to interior finish. "A lot of people think a sleek, modernist look is less expensive than a traditional ornate wood interior, but the truth is the minimalist interior is wildly more expensive because you can't hide any mistakes," he says. "Every seam has to be perfect. There are no trim or joints to hide mistakes. One boat we built at Lyman-Morse had a bamboo sole, maple walls, walnut valance and so on."

The choice of hull material is driven by weight requirements and how much money the owner wants to spend. One thing is for sure — it costs a lot of money to take out weight. "A carbon fiber prepreg epoxy hull is the ultimate, with skins on either side of a foam core," Turner says. "The next step down is vinylester-infused E-glass, and then follows hand-laid E-glass and vinylester."

There are many ways to go with the molds. "We can get them carved or we can hand-build them, either building a male plug to pull a female mold from or just going right to the female mold," he says. "It's usually less expensive to hand-build the molds here, but it takes several months longer. Since most people are in a hurry to get their boat we have the molds carved by one of the tooling companies that use CAD-operated carving machines."

Once the builder has the tooling, a typical 60-footer takes 18 months to build, give or take six months, depending on the order backlog. Clients often have a project manager or a captain oversee the project and make decisions on their behalf. Some hire a surveyor to come in and check on the progress occasionally. It all depends on the client and whether he wants to be involved in every decision and can find the expert help he needs.

New England Boatworks

Portsmouth, R.I.-based New England Boatworks is another high-end custom builder (www.neboatworks.com). The yard has built some of the most advanced sailboats in the world, including Dennis Conner's 2000 and 2003 IACC yachts Stars & Stripes, Puma Ocean Racing's Volvo 70 Mar Mostro in 2011, and the Mini-Maxi Bella Mente in 2012. NEB builds in exotic composites and aluminum, and titanium components can be found on many of its boats where weight savings is important and the budget allows it.

NEB has its own marina and repair facility, performing refit, maintenance and repair work year-round. Although it has specialized in custom one-off building for years, it is now offering a Doug Zurn-designed 50-footer on a semicustom basis. You start with the hull and deck, or just the hull, and have it your way from there.

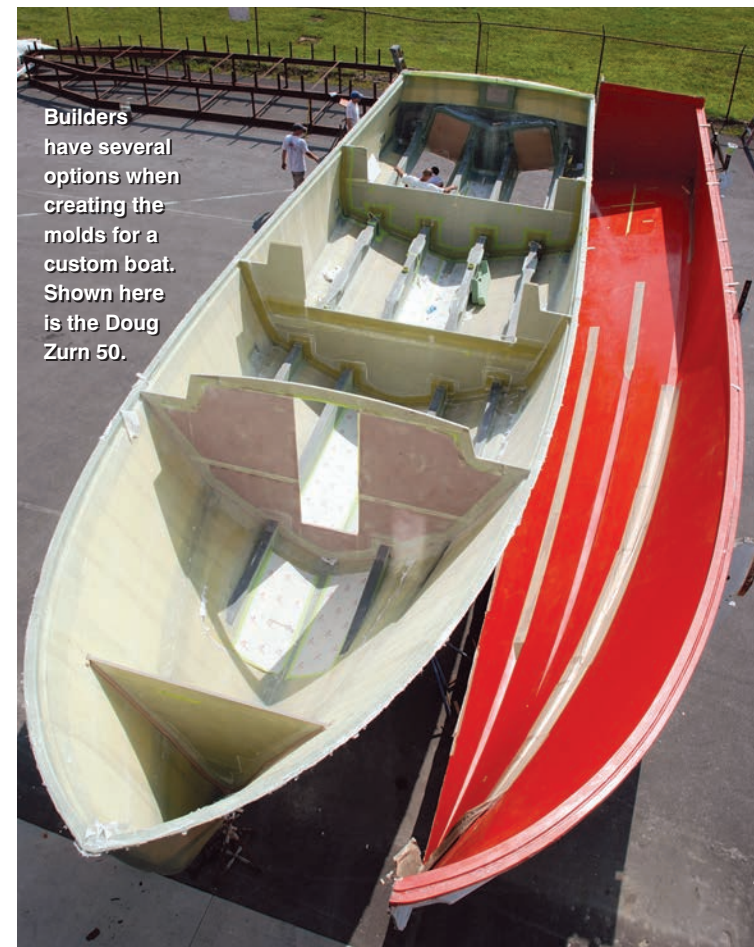
"The major advantage of a semicustom production run is that once hull No. 1 is built, we've done all the legwork," NEB co-owner Tom Rich says. "We have all the files, and we know how to build the boat. Subsequent hulls typically require less labor, and it will be more economical

and take less time to build since we've already solved any problems.

"It depends on how busy we are, but lead time on a 50-footer is typically 10 or 11 months once we get going," he says.

Rich points out that cost can vary considerably from one boat to the next, even though they may be the same size and, from the outside, look very similar. "With a boat like Zurn's 50 you can start with the 1,550-hp MANs and Rolls-Royce waterjets, which will make this a 60-knot boat," he says. "Or you can settle for less speed, put surface-piercing drives in it or save more money with shafts and run very well in the 45- to 50-knot range.

"Besides the propulsion system, the hotel services make a difference in not only cost but weight," Rich adds. "If you don't need air conditioning you may not need a generator, and if you take weight out of the boat maybe you can do with less horsepower and so on, reducing cost, weight and complexity."



Builders have several options when creating the molds for a custom boat. Shown here is the Doug Zurn 50.

You can also save money by having the custom builder get a hull and deck and finish it off, as NEB did with a Spencer Lincoln-designed Duffy 42 a few years ago. "We got a couple of hulls from Atlantic, which is a pretty cost-effective way to get a semicustom boat," Rich says. "We've done it a few times with the Maine-style boats, and it works fine if you're not trying to build a lightweight boat. Our hulls are superior in stiffness and weight because of the way we build them, and we would rather start from scratch, but a semicustom boat like the 42 is a good compromise for people who want the kind of craftsmanship we offer."

Many people are happy with a 16- or 18-knot cruise or slower, Rich says, and going the semicustom route with a hull such as the Atlantic might save \$250,000 in tooling and design costs, compared to a custom

hull and deck. "We usually stick-build the molds ourselves because we find that building them in-house is less expensive than farming out the work," he says. "How long the tooling lasts or how many parts we can get out of it depends mostly on how we build the boat."

A prepreg laminate, for example, requires heat for the curing process. "So those molds won't last as long as when we're building an open-layup boat, which uses epoxies that cure at room temperature," Rich says. "If we found two or three customers who want the same hull and deck it would cut the cost down since we could use the same tooling and then finish them off the way they want them."



This Doug Zurn-designed 50-footer is being built by New England Boatworks on a semicustom basis.



More high-end builders are infusing boats with epoxy — the ultimate resin in terms of strength, adhesion and elongation — and newer formulations that extend the cure time to three or four hours have made infusion possible. "The lightest possible composite boat is made with epoxy prepregs because the resin content is precisely controlled," Rich says. "In an infused boat your choices of coring are more limited because the coring has to lay against the outer fiberglass skins when you're dry-stacking it in preparation for infusion. That means it has to have sawn or knife-cut kerfs to make it flexible to take the shape of the hull. All the voids between the mold and the bag get filled with resin, including the core hull-to-deck joints and the kerfs in the coring. This extra resin adds weight."

Getting epoxy to adhere reliably to gelcoat can be tricky, so most of these boats are painted after they come out of the mold, Rich says. "This is also because the extra labor that would go into fairing the mold to a gelcoat-finish standard is poorly spent," he says. "It's a lot quicker to fair the hull to the same finish after it comes out of the mold."

Among the advantages of using a high-end custom builder is that you can design a boat to your specifications and desires, Rich says. "You can get the layout you want, put a stateroom in for the nanny next to the kids, add side doors and a dinghy garage," he says.

"If you take weight out of the structure, this allows for greater cruising range or less powerful engines and reduced fuel consumption for a given speed. You could also opt for large fuel tanks for more range or bigger engines for more speed."

Rich says NEB also can make a boat as quiet as the owner is willing to pay for. "Most of our customers are very concerned about reducing noise levels to the bare minimum," he says.

The power plant and interior details largely drive the cost of the boat. "From one end of the spectrum to the other, just the choice of propulsion can vary the price by \$300,000, which is around 15 percent of the price of the completed boat," Rich says. "That's actually not a lot more than some production builders charge, and you get exactly what you want — for example, an all-teak interior with raised panels. We use Nomex panels

with wood veneers that cost more and are harder to work with but save a lot of weight.

"We take pride in how we finish our boats," he adds. "We have some people who come in and don't want any wood at all topside. Others love the look of varnish."

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There are many options for the boater with a vision, patience, decision-making aptitude and the budget to see a semicustom or custom project through. In the words of German writer, artist and politician Johann Wolfgang von Goethe: "Whatever you can do, or dream you can do, begin it. Boldness has genius, power and magic in it. Begin it now." ■