Wave Piercer

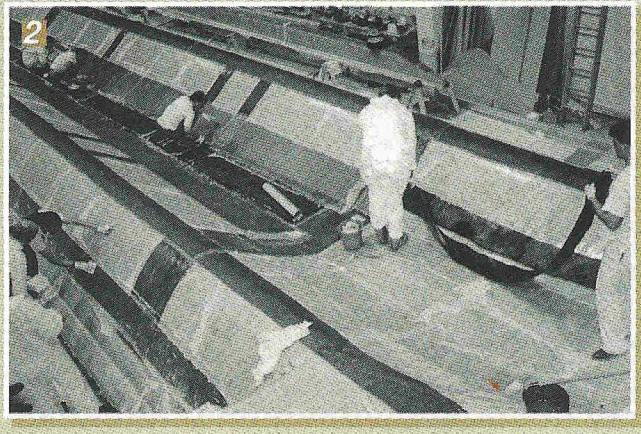
At Yacht Vision '98—the New Zealand Marine Export Group's much-publicized international event held in Auckland earlier this year—Kiwi designer Craig Loomes was declared the winner of the High Modulus-sponsored Spruce Goose award. This competition, based on design briefs for as-yet unbuilt boats, drew a large number of entries; Loomes won decisively with a 50m (164′) wave-piercing displacement catamaran concept.

That boat may have been imaginary, but the Loomes design pictured here is the real thing, and author Bruce Pfund discusses it in the main text. At press time, this 26.7m (87½′) sportfisherman, being built by Wave Piercers New Zealand Ltd., was nearing completion while a somewhat similar 37m (121′) Loomes design was undergoing testing.

To evaluate his models, Loomes uses the well-regarded towing tank facility at the Australian Maritime College in Tasmania, where his distinctive wave-piercing displacement hullform tests very well indeed. Its exceptional efficiency ensures long range (a claimed 9,000 nautical miles with the 26) and a smooth ride in open-ocean passages (vertical accelerations measure 66% lower than a monohull of the same length). The wide stance of these boats means Loomes' deck configuration offers 40% more area than a monohull counterpart, and permits a superstructure with substantially more interior volume. And then there's the aggressive styling, which is sure to stop traffic (or win design awards).

Loomes favors composite construction, and the more advanced the better. In ***Photo 1***, the crew is laying triaxial


1


2

turned their attention to the international boat, yacht, and marine-component markets, where recent currency revaluations have made New Zealand products more competitive than ever.

Given the size of New Zealand's population (approximately 3.5 million people), the amount of boat, spar, and hardware construction happening there is amazing. Just to put things in perspective: When I returned to the United States from New Zealand in early February, my final destination was Miami. On the shuttle-bus ride from the Miami airport to my hotel in Fort Lauderdale (where I went to prepare for seminars at *Professional BoatBuilder*'s annual IBEX trade show) we drove by, in the span of just 40 minutes, nearly as many people as live on New Zealand's two islands.

During 10 days of intense exposure to New Zealand boatbuilding—where I was escorted by members of the staff of High Modulus, a marine composites and engineering firm based in Auckland—I visited a great variety of boat-related operations. They included: one-off advanced carbon-fiber yacht builders; "fizzboat" manufacturers (I'll explain the term shortly); sparmakers equipped with 50m-long autoclaves; and retirees working in rented space using pick-up professional crews to build beautiful, well-engineered, cruising multihulls.

International competition for yacht-building projects in both power and sail is intense, so innovation in New Zealand is clearly tempered with hard-headed concerns for practicality and profitability. But the gleam of boatbuilding enthusiasm there in everyone's eyes is unmistakable. Those folks are having fun. Compared to the grim mood of professional boatbuilding in the States these days—where the major national trade association is worried about declining public interest in boating, and where most builders are feeling increasing regulatory pressure—the upbeat outlook in New Zealand was refreshing.

The Empty Shop

One of my first shop visits in New Zealand captured for me the essence of boatbuilding there. To get to this particular shop, we drove down a steep winding road through a lush green forest. At the bottom of the hill was a single-story structure, newly built from salvaged beams and rusty corrugated panels. Sited alongside a lovely river, the shop's setting was positively idyllic.

Inside, I talked with the shop's owner, who intended to build just one big sailing catamaran—a boat whose plans were professionally drawn, based on the owner's prior cruising and chartering experience. He figured to recover the project's total cost—and turn a nice profit in the bargain—by

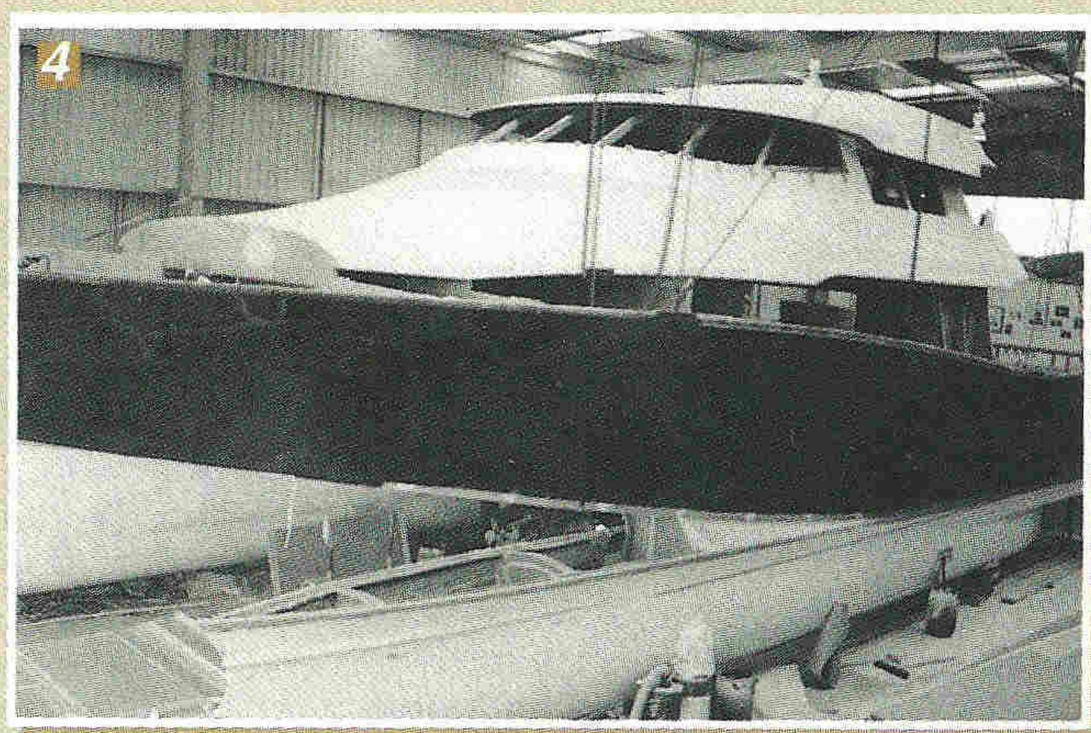
fabrics—wetted out with epoxy resin in a fabric impregnator at the shop—longitudinally onto the inside skin of a topside panel for the 26. First the cross-linked PVC foam core was "planked" into a female jig. The inside skin is then laid up and, after longitudinal framing is installed, the assembly will be rolled over. The outside skin is then laid on, faired, and painted to first finish coat while the panel is still on the floor, off the boat. The entire topsides panel is then bonded and taped to the demihull (one of the semicircular canoe hulls), the center hull (which remains clear of the water in calm conditions), and bulkheads.

In ***Photo 2***, the inside surface of the boat's center hull is getting unidirectional carbon-fiber "pad" layers in way of the longitudinal and transverse framing. Loomes, who is managing the project, says that "great attention to detail was taken during design with regard to global deformation of the boat. The stiffness of the 26 is such that ¼"differences in floor level between the two outer hulls cause 25% disparities in load-cell output between port and starboard hulls during weighing." He adds that a comprehensive strain gauge and accelerometer installation is planned as part of the continuing research in structural design for future boats.

Photo 3 shows the inverted mold of the main deck. Both skins of the glass/epoxy/foam sandwich are in place, as are the carbon unidirectional "pad" layers, which form one flange of the longitudinal deck-support beams. The foam-stiffened web and carbon-reinforced lower flange—molded off the job as flat panels—were trimmed to fit and then tabbed in place with double-bias glass. (For a detailed discussion of flat-panel fabrication, see the three articles on this topic in PBB No. 45, starting on page 54.) Parts of the transverse bulkhead are being bonded and tabbed in place; the rest of these bulkheads are already in the hull and, during assembly, will be trimmed to match the ones shown here. The completed demihulls—framed and painted—are visible in the left background.

In ***Photo 4***, we begin to "see" the finished boat as the major parts are assembled. Note the unpainted rabbeted strip along the length of the lower topsides panel, which will be tabbed to the demihull. The superstructure is sitting on bulkheads prior to the crew attaching the cabin sides, foredeck, and side decks. The open demihull reveals its internal crash bulkheads and a heavily reinforced transverse bulkhead that will attach the forward part of the demihull to the massive structure of the center hull.

—Paul Lazarus, Editor



CRAIG LOOMES/WAVE PIERCERS NEW ZEALAND

chartering the vessel during the next *America*'s Cup competition, scheduled to be held in New Zealand in the year 2000. This gentleman radiated rock-solid confidence in his project.

But I confess that, at first, I found the utter emptiness of his shop a bit spooky. There was no boat to be seen; only a few CAD drawings pinned to a bulletin board, a few tools over in the corner, and one long, lonely, blue chalkline running the length of the vast concrete slab, laid out for aligning the multihull's male-mold strongback. That was it. When we first walked into the shop, I wondered to myself, "Why did my hosts bring me here?" Their motivation, however, soon became clear: this visit exemplified the national obsession with boats and the joys of boatbuilding that I encountered everywhere I went in New Zealand.

My conversation with the owner was about the boat's design, the engineering of laminates and cores done by High Modulus, and the ready availability of skilled, freelance, composite boat builders (more on that in a moment). This owner, and so many others I met on my trip, are not just committed to building; they're also dedicated to *boating*. Their designs and their construction practices have evolved from practical, firsthand experience with what works and what didn't, in cruising, racing, fishing, or around-the-bay day trips.

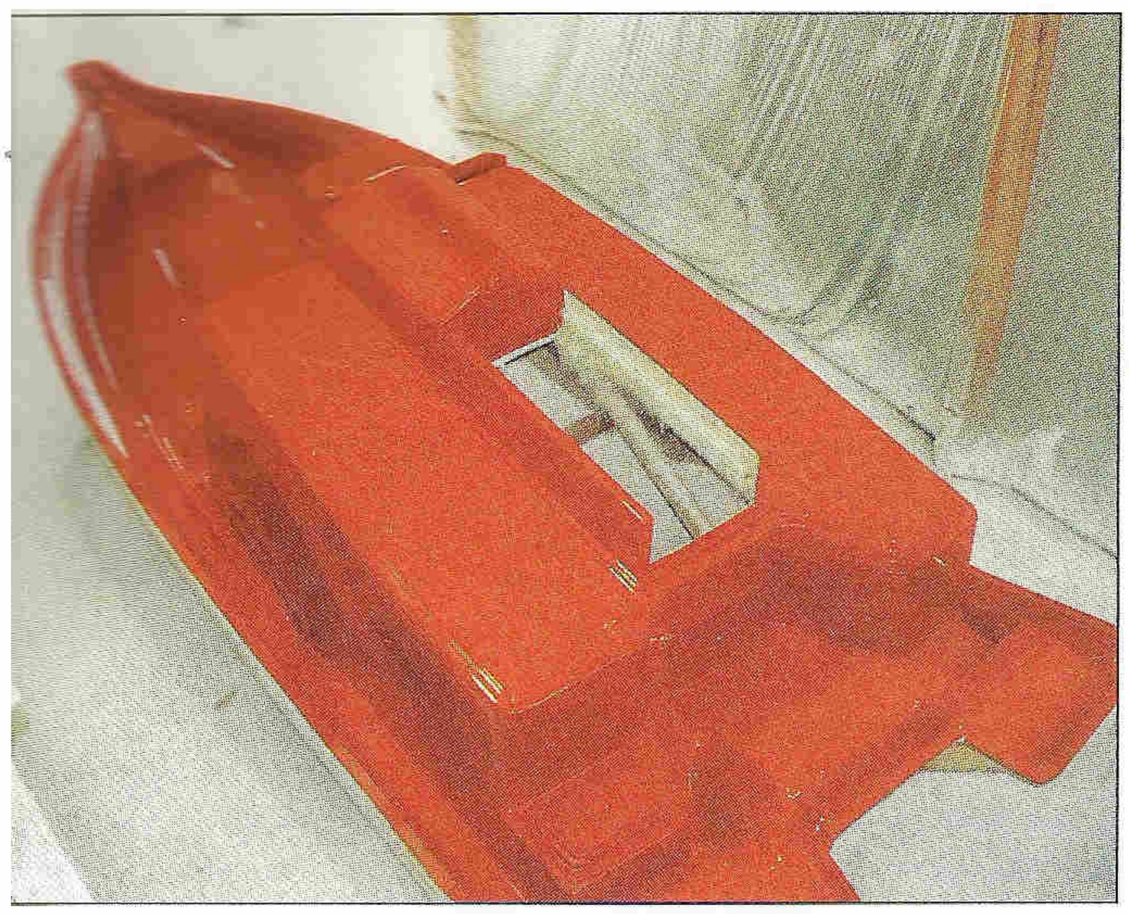
Standing in an empty shop at the end of the road, this fellow had absolutely no doubt that his dream would become a money-making reality. And as we drove back up the hill, I had become a believer, too.

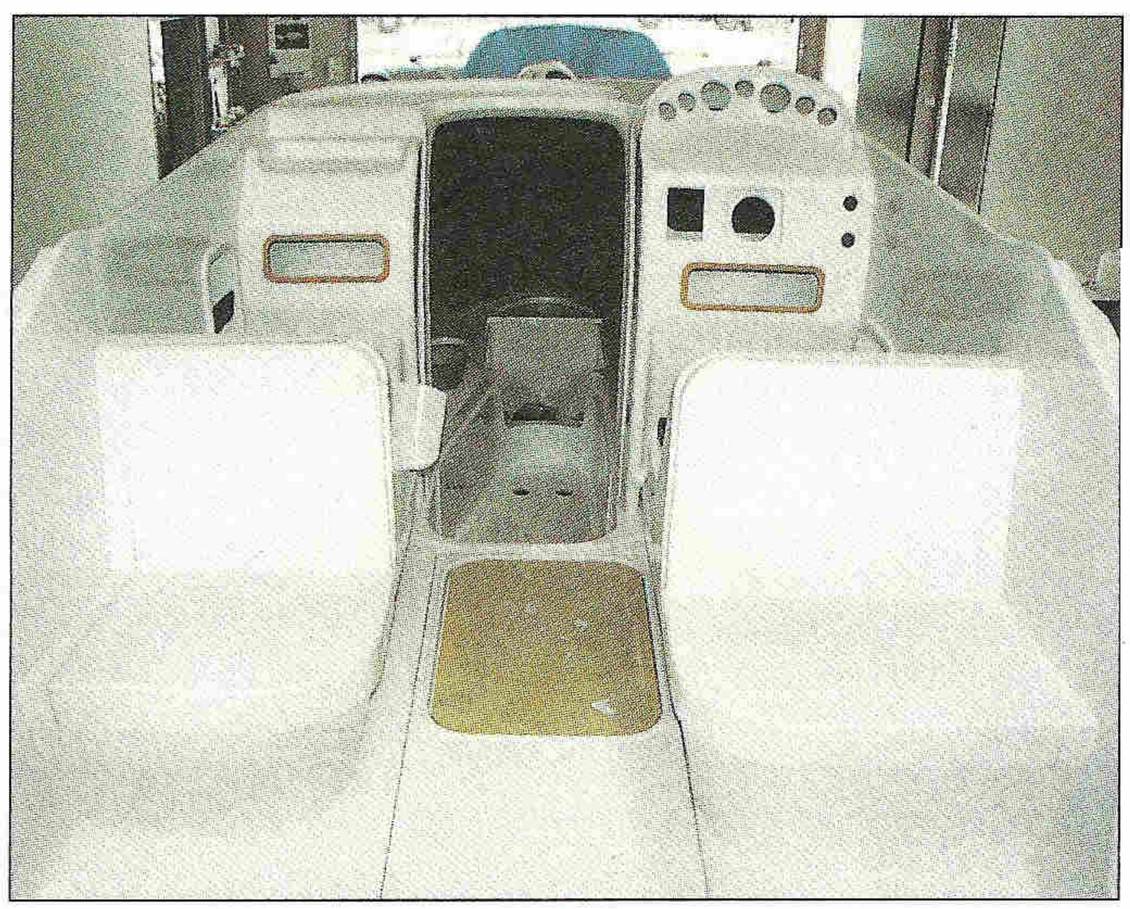
"She'll be right," said someone from High Modulus about the boat-to-be that we'd just left behind. It is a phrase I heard often in New Zealand, where it basically means "Everything will work out."

Freelance Professionals

Some of the most inspiring boatbuilding I saw was in fact focused on building just one vessel, as in the example above. Boat ownership is an *unfulfilled* dream for many people elsewhere in the world, because the economics of purchasing a big custom or production boat are simply out of reach. And building a dream by yourself can be a lonesome, nearly impossible undertaking, even if you do have adequate funding. In New Zealand, though, it's perhaps more possible than anywhere else, and the circumstances that make this so bear careful examination.

Consider the following scenario: You're a citizen with a dream boat in mind. You've found a designer to prepare a set of plans, and a materials supplier willing to do the engineering for the materials and laminate specifications. Still, you need skilled help to make your dream a real boat.





Because this is New Zealand, a cadre of highly skilled freelance boatbuilders are available for hire. No fewer than *4,500* hours of shop time in composite and wooden boat building are required of apprentice builders before they can graduate to "tradesman" status. Government-funded training programs begin at the secondary-school level. By the time a student completes the necessary number of classroom courses and hours in the shop, he or she is a well-qualified individual—precisely the sort of person a man with a dream might be looking for. I found workers like these in two different boatshops in the Tauranga area of the North Island.

In both cases, men with dreams had commissioned plans and engineering: one for a catamaran spec'd for wood-foam-wood epoxy and triaxial-laminate construction; the other, for a deep-V powerboat of similar construction. When they had their plan packages in hand, these two gentlemen rented their own shop spaces, hired workers, and began building. By buying all the construction materials and renting the shops themselves, and by paying their skilled help directly (without builder markups), both owners were realizing substantial savings.

There were no steep learning curves needed for training unskilled workers, thanks to a well-attended and well-supported national system of vocational education. And, the levels of craftsmanship—in wood and composites—that I saw on both these vessels was absolutely top-notch. It is a building strategy for which no counterpart exists among backyard builders in the United States, or anywhere else, for that matter.

Here in the States, the "one boat only" guys tend to drive materials vendors crazy. Anyone with a good personal computer and desktop printer can make an official-looking letterhead and claim to be a professional boatbuilder. These one-time builders look for wholesale discounts accorded legitimate manufacturers, along with the free engineering and technical support that only volume purchasers truly qualify for. What's worse is that the quality of the end product often gives anyone involved in the project a black eye. In other words, for vendors the little guy trying to build one boat out back is just an unprofitable pain in the neck.

By contrast, in New Zealand you find small one-shot shops that can build with the same level of professionalism as the big guys, and unlike here in the States, the individuals I spoke to who were privately building a one-off were more than willing to pay for naval architecture and laminate design. Which is why they tend to get good advice; and the suppliers and consultants who service them can be proud to have their products associated with projects that can safely be assumed to turn out well.

The ready supply of skilled workers is of course of great value to the professional shops, which is the industry the program was designed to serve. Manufacturing time-estimates can be more readily met because there's less on-the-job training taking place during a project. The apprentices work closely with skilled tradesmen, who provide direct supervision and simultaneous quality-control oversight.

Anyone who lacks a true interest in composite boatbuilding is unlikely to survive even a small portion of the required thousands of hours of basic training in the vocational education system. But once that time has been satisfactorily completed, it's a safe bet that the graduate apprentice is both competent and committed. What better qualifications could you ask for in a potential employee?

Small Shops Building Big Boats

Custom yacht and boat building in New Zealand contends with alternating cycles of feast and famine, as does custom yacht work anywhere in the world. But during my travels in New Zealand, I heard of a number of unusual strategies that builders there have used to stay in business at a seemingly guaranteed profit margin, while slashing their labor and overhead charges to offer low costs for luring projects and clients from afar. In view of the inescapable conclusion that New Zealand's location might be considered "geographically challenged," inventive approaches to attracting international business are sometimes necessary.

Richard Downs-Honey, co-owner of High Modulus, described one of these situations to me. "Let's say the builder tells his potential big-project customer: 'All I want to do is make a reasonable profit at the end of the job. I'll let you have a look at my books, so you can evaluate my overhead costs. I'll completely shut down all other work while we're building your boat. And I'll let you run my shop. I'll work with you as a paid consultant, at an hourly rate. You pay the heat, light, electricity, rent, and insurance. You'll save my markups on these costs. You'll also pay my workers directly, so you'll save money there, too, but you'll pay their insurance.'"

Downs-Honey continued his description of the builder's sales pitch. "'You buy all your materials directly through my accounts; I won't mark them up at all. Have your bookkeeper do the accounting. When the project's over, pay me my X-percent profit margin, and I'll be a happy man. You'll have a great boat

BRUCE PFUND

Tristram Boats in Hamilton has been winning boat show awards in New Zealand for the quality of workmanship evident in its finished product. ***Facing page****—Note the complexity of the tooling for the molded FRP liner of this 6.9m (22½') cabin model* ***(left)****. The aft-facing seats hinge at the top, providing generous protected stowage underneath. Tristram's versatile trailerables are examples of a class of small craft that Kiwis affectionately refer to as "fizzboats," or "fizzers."*

at what you'll know for sure is minimum cost. And I'll get my shop back and go into production again.'"

An unusual strategy? Definitely. But it's worked in New Zealand, and it's indicative of the kinds of creative business approaches taken by Kiwi boatbuilders to meet the ever-changing, highly competitive demands of custom, one-off boatbuilding in the international marketplace. At the least, the New Zealand alternative described above is an antidote to stories, common elsewhere, of a custom-yacht client who ends up owning the yard that goes belly-up during construction, just so he can get his boat. What is also not uncommon outside New Zealand is underbidding by yards in order to get jobs that ultimately turn out badly, or end up in litigation. While the Kiwi boatbuilder's strategy described above certainly carries its own set of risks, it does give the smaller yard a shot at big projects, while simultaneously protecting the project-boat's owner.

Now, About Those "Fizzboats"

During a tightly scheduled week in which I visited more than a dozen composite boat shops and marine-component builders, most of the time I recognized the same materials and processes found in shops and plants in the United States, Europe, and the Far East. I was puzzled though, one morning when my "guides" told me that we were off to visit the "fizzers." "What the heck is a fizzer?" I asked. "You know: *fizzboats*," they replied. "Small, fast, production boats that fizz about on the water." Chalk up one more new term up in my expanding New Zealand vocabulary.

What I learned about fizzboats right away is that, in relative terms, the domestic market for them is fairly small, on the order of just a few thousand boats per year at best. That's equivalent to a few *weeks'* worth of production from one of the big U.S. builders, which would satisfy a full year of demand in New Zealand. As a result, the way fizzers are designed, built, and marketed in New Zealand is quite different from here in the States.

For one thing, there are nowhere near as many manufacturers. That's no doubt due to the limited size of the New Zealand market, which simply could not support the hundreds of small production shops we have in the United States. Secondly, although characterized as "production" boats, many of the fizzers that I saw were in fact highly customized for each owner, but based on a standardized hull and running-gear platform. Custom rigging, helm modules, tackle stations, and interior accommodations were the norm on many of the fizzers I checked out while haunting the Kiwi marinas.

One builder I visited, Tristram Boats of Hamilton, was getting rave reviews from the New Zealand boating press for its new 6.6m (21.5') cabin model, winner of the New Zealand Boat Show Trailerboat of the Year award. *[Tristram's newest cabin model won this year's award for overall excellence just as* Professional BoatBuilder *was going to press—Ed.]* Tristram fizzers have complex moldings: almost all of the deck and cabin parts are unitized modules, as opposed to the "stick-built" customized parts typical of products from other builders. Reviewers commented favorably on the "solid one-piece" feel of Tristram Boats, and on the high quality of its integrally molded features. Unitized construction at Tristram was evident when owner-designer Lance Fink walked us through the shop. The sole-liner mold for the cabin model was as complex—and as beautifully executed—as any I've seen in my travels around the world's boatshops, and the laminate quality of the finished parts was first-rate, too.

Richard Downs-Honey pointed out that quite a bit of laminate engineering had gone into this particular model at Tristram. "We tried to help the builder save some money by switching them from traditional woven roving and chop to more sophisticated triaxial knit reinforcements. Although these fabrics cost more, savings in material handling and labor actually reduce the completed part's price. Fancy reinforcement fibers like carbon or Kevlar don't make sense for a shop like this, but a well-engineered, high-performance E-glass laminate schedule can improve product quality *and* profitability."

Reading the local boating magazines during my stay revealed the fizzboat market to be a very competitive one, just as it is in the States—except that in New Zealand the market is not dominated by one or two major players, as it is here. Fizzers come in a variety of styles in both composites and aluminum, and Tristram's efforts to set itself apart from the competition seem to be paying off.

Building Recyclable Boats for Japan

Japanese automotive giant Toyota is behind some rather distinctive production boatbuilding at McDell Marine Ltd. in Auckland. During my visit at this shop I saw an unusual blend of high-volume auto-industry production thinking applied to *limited*-production boatbuilding, with an unusual slant on pollution.

Here in the United States we seem obsessed with "front-end" production pollution from boat construction. With the exception of Wolfgang Unger at SeaWolf Industries (New Smyrna Beach, Florida)—who has modified a Canadian tire-shredding machine to digest dead fiberglass boat parts, and then developed systems to take the recycled scrap and convert it into usable products—little thought has been expended in the marine industry on how to eliminate or recycle used-up fiberglass boat hulls and decks.

BRUCE PFUND

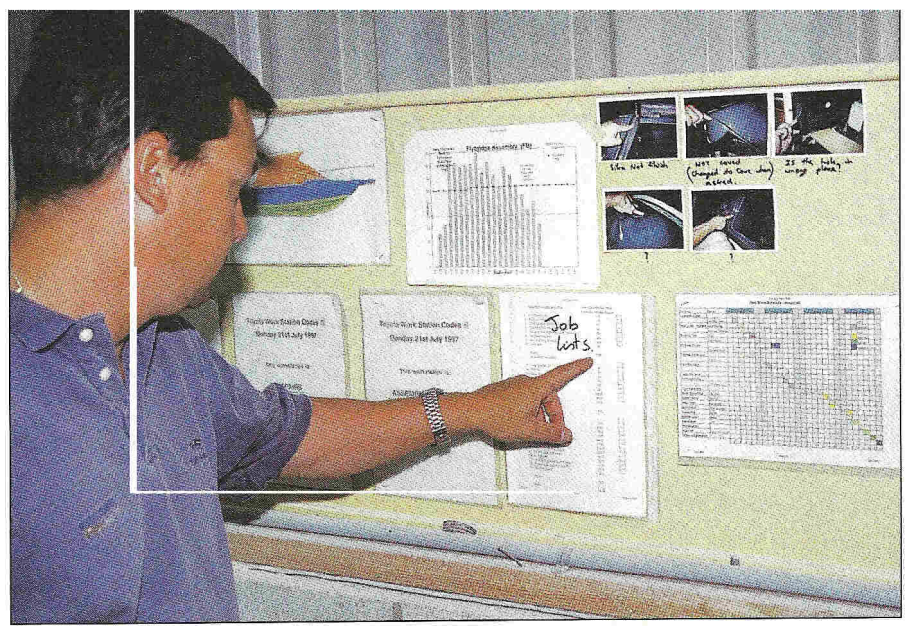
The boats that McDell Marine in Auckland is producing for Toyota are made with composite decks and superstructures on painted welded-aluminum hulls to meet Japan's strict post-consumer recycling criteria.

By contrast, McDell manufacturing manager Ken Olsen told me that "Toyota's production boats—made with welded and painted aluminum hulls, and composite decks and superstructures—are specifically made that way to meet Japan's strict post-consumer recycling criteria. Boats won't be sold if they don't meet the spec. On the boats we're building for Toyota, the aluminum hull gets recycled while the composites of the deck and topsides get scrapped."

Olsen noted that, thanks to this far-sighted approach to boatbuilding, the volume of composites headed to landfills in Japan is greatly reduced, which is a critical consideration in light of Japan's population density and limited land mass.

McDell Marine is an interesting shop. First of all, Toyota's "ally" (as aluminum is called for short in New Zealand) hulls are built by another company, painted, and then shipped to McDell for fitting out, which consists of systems and composite decks and structures. Each step of the production process at McDell occurs at a dedicated work station that contains all the tools and hardware needed for a certain set of tasks. There's no time wasted running back and forth to the parts room or tool crib. When grinding is involved, for example, that station has its own dust-collection system and ductwork. Similarly, at another station, scaffolding is welded up to permit easy worker-access to the boat for that station's particular tasks.

In the case of the instrument-panel assembly station, the panel is mounted on a pivoting mechanism, so that it's easy for the worker there to sit comfortably in one position, yet have access to both sides of the panel by flipping it back and forth. A slick setup. Colored time-and-motion analysis charts for every assembly task are posted at each station's bulletin board, so the worker or workers can self-monitor their production rates. Polaroid photographs of typical defects that can occur doing the jobs called for at that station are clearly displayed, so the workers can avoid making the same mistakes. In brief, the whole shop-floor operation definitely has an automotive production-line feel to it.



BRUCE PFUND

Said McDell's Olsen, "We found the work-station concept to be very effective, but there were a few surprises, one of them being just how much lighting was required to help our crews produce the cosmetic quality Toyota demands."

Big banks of fluorescent lamps, along with halogen spotlights, are concentrated on certain areas of the shop. Although the *general* level of shop illumination from ceiling-mounted halogen lights was what I'd call standard, each work station appeared as a bright island on the shop floor.

Another surprise for McDell, according to Olsen, was the high level of quality control and inspection expected by Toyota. The Polaroid photos at each station served as a constant reminder of what could go wrong so it can be prevented, rather than doing things twice to get them right once. It's always easier

The McDell shop floor is arranged in automotive-style work cells, each one well-illuminated. ***Facing page—*** *McDell's Ken Olson describes the various pieces of information posted at a workstation bulletin board; note the photos of typical manufacturing defects to be avoided.* ***Left—*** *Olson demonstrates the ease with which a worker can assemble both sides of an instrument panel.*

Continues from page 51

(and more cost-effective) to prevent problems during the building phase than to rectify them during the final quality-control checks before the boat leaves the shop. I got the strong impression that what McDell had learned from Toyota's automotive-style emphasis on quality was being applied to all the varied composite products being made in that shop. "Remember how the Japanese car builders slammed the United States manufacturers on the issue of quality back in the 1980s?" owner Kim McDell asked me. "Well, Toyota is pursuing the same strategy for boats in their domestic marke If these boats sell well at home—watc out."

A Wave-Piercing Sportfisherman

I soon learned that the lovely, rollin countryside of New Zealand's Nort Island, where gracious houses are sited on steep hillside lots, could unexpectedly open up into beautiful deep-water bays where there was often a boatbuilder or two located at the head of the harbor. On one of my expeditions, for example, when I was less than a half hour from downtown Auckland (yet very much out in the country), we came upon a fascinating project that pushes the envelope of offshore fishing boat design and construction.

As a lover of the classic, austere "Palm Beach" style of sportfisherman, I didn't really know what to expect when told that we were going to visit a fast 26.7m (87 ½′) sportfishing catamaran equipped with a pair of wave-piercing demi-hulls. "How fast is 'fast'?" I asked. "Over 25 knots," came the reply, "and with good stability at trolling speeds in up to 4m (14′) seas. The owners are serious anglers."

No kidding. Downs-Honey added that High Modulus had done a lot of engineering to help create an advanced E-glass, carbon-and-Kevlar, cored-composite structure. The project had to have a selective use of these high-performance reinforcements to produce such a large structure and still maintain the low center of gravity essential to meeting the project's stability criteria.

All I could say when we arrived at the yard was "Wow!" At first glance, seen framed in the doorway—the boat completely filled the shop space—her proportions seemed far too beamy for practical fishing, and the styling of the topsides looked to me, well, zoomy. It certainly did not resemble any notion of a "classic" or conventional sportfisherman. The wave piercers added to the vessel's strange appearance, but they were lovely needles indeed, tied into their hulls and cross-beams with some very fancy chine transitions and complex laminates.

Forward and aft views of the Loomes-designed, long-range, 26.7m (87½′) wave-piercing catamaran shown under construction earlier in the article. The sportfisherman's 10m (32′) beam permits an expansive interior volume, while the radiused, opera-style cockpit puts the angler close to the action, despite the size of the boat.

CRAIG LOOMES /WAVE PIERCERS NEW ZEALAND

How, I wondered, with all that interior space, the wide 10m (32′) beam, and a multilevel house sitting on those hulls could this creature claim to be a sportfisherman? I got my first clues while crossing the plank from the shop's mezzanine to the fishing deck. We were way up off the shop floor. The wave piercers are quite narrow and deep, but when I checked the hull's waterline, I realized that it wasn't really that far away. It felt a bit like boarding an exotic high-speed iceberg: much of the skinny wave piercers' hull volumes are destined to be underwater.

The fishing deck is large and flat, with no steps or engine boxes intruding on the space. The cockpit is characterized by an extended, radiused center section that gets the fighting chair close to the deck edge, and gives it a broad arc to swing in when the angler is following a fish. From the bridge control-station above, the view I had down into the cockpit was pure Palm Beach, and I suddenly felt right at home. Turn your back to the helm, and you're looking directly down onto the fishing area with absolutely no obstructions. The captain will have a full hull-to-hull view.

Apparently, the owners of this boat are stand-up-style fishing fanatics who will be using a traditional fighting chair only occasionally. The multihull design and unobstructed deck give them complete freedom to walk abeam, so steering a fish in the wide gap between the hulls, or around the closely trimmed transoms, should be a snap.

Compared to a monohull of similar length, there was a tremendous sense of size aboard this big battlewagon. The contrast really shows in the vessel's interior volume, with its two twin-bed-equipped cabins and *five* additional double cabins. The bridge and main saloon are enormous, and the panorama from the bridge controls is a commanding one. The steeply pitched house front is almost invisible when looking forward, and the all-around visibility, so often lacking in fully enclosed bridge designs, is terrific.

Wave Piercers New Zealand is the name of the Auckland company building this boat; it was drawn by Craig Loomes Design. Loomes, who is also overseeing construction, watched me with a smile while I checked out the fishing deck and bridge area. I expect he'd seen the look of stunned disbelief on faces other than mine. In the bridge's enclosed forward section we discussed boat handling and backing-down on fish with this unusual craft. According to Loomes, the multihull's wide stance and waterjet propulsion systems give it "spin on a dime" maneuverability. At speed, the entire vessel rises on the lift generated by the wave piercers. The central hull's steep V-shaped contour is clear of the water; at lower trolling and transit speeds, its shape mitigates wave slap against the crossbeam connecting the two demi-hulls.

The forward faces of the superstructure are full of windows. Thanks to the extensive use of carbon-fiber unidirectional reinforcements throughout their framework, the window frames themselves are narrow, and barely interrupt the view.

Similarly, the tremendous loads of the skinny wave-piercers are distributed through carbon and Kevlar woven and uni reinforcements. Loomes said, "Although we're not using pre-preg construction, the lightweight, foam-cored E-glass composite structures we can reliably produce here at the shop make this boat's projected performance possible. Very selective application of higher-performance, more expensive materials keeps the costs within reason."

Loomes showed me tank-testing and computerized-modeling data, all done to meet the owners' criteria for speed, stability, and transoceanic range. An impressive amount of research—and a considerable pre-build budget—was required before the first frame was ever cut.

All in all, this was the most novel sportfisherman I'd boarded in many years. And don't tell me the project is wildly impractical, either, because I won't buy into your argument. You can forget about docking fees, or dinging the deep demi-hulls in the harbor. Get out of your conventional mind-set, and get some New Zealand *attitude*, where it seems that almost anything is possible. Powered by twin 1,200-hp MAN diesels, this vessel's anticipated top speed is 31 knots; she will cruise at 26 knots, and has a range of 1,700 nautical miles at cruising speed.

Think a moment about being offshore in some of the world's best and least-explored fishing waters. For example, New Zealand anglers talk a lot about heading to Tonga, across the open Pacific Ocean, or possibly exploring the island chains of Micronesia. But, Tonga's about 1,200 miles away, and open-Pacific seas prevail. Which is why advanced craft such as this one are ideal for deep-sea exploration.

It's impossible to acknowledge—in the brief space of an article or two—the many New Zealand boatbuilders, designers, and material vendors I met during my visit. I can assure you, though, that each and every encounter left an indelible impression on my understanding of boatbuilding in New Zealand.

Here in the United States, the boatbuilding industry seems burdened with lawyers, accountants, and unpleasant but necessary environmental considerations. Too few boatbuilders appear to be enjoying themselves. By contrast, the pure joy of boating and boatbuilding, both power and sail, was evident wherever I went in New Zealand. And the engineering, quality, and performance of the products I saw was truly *world class.*

PBB

About the Author: *Bruce Pfund is the technical editor of* Professional BoatBuilder.

Editor's Note: *For the next issue of the magazine, Bruce will focus on advanced aluminum and composite boatbuilding projects he saw in New Zealand other than those described here.*

Advanced craft such as this novel sportfisherman are ideal for deep-sea exploration.