

EVOLVING THE REVOLUTION



Catalina 387



There must be a reason why Catalina Yachts has such a loyal following

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PHOTOS BY **BOB GRIESER**

Catalina Yachts doesn't release sales figures. It's a healthy, long-lived, privately owned company, and it doesn't have to. But you don't have to inspect the books to know that Catalina is one of the highest-volume sailboat builders in the U.S.

Considering the volume of their production, it's both surprising and admirable that the company is managed by only three principals. Along with putting out boats, they stay close to their customers and maintain powerful bonds of loyalty. Founder Frank Butler handles warranty claims himself, because if there's a problem, he wants to know; if

Now that fiberglass boat construction has a half-century history, it's appropriate to call Catalina's building methods "traditional." Major structures are laid up by hand in female molds (the molds are built in-house), and hulls are solid glass. The first lamination into the mold after the ISO/NPG gelcoat is a vinylester skin coat that acts as a barrier against moisture. Structural layers that follow are primarily E-glass with a percentage of S-glass, using mostly knitted laminates, which have more strength for their weight than woven laminates. At the California plant, high-density foam stringers are glassed into the hulls (above); at the Florida plant, hulls of 35 to 47 feet are fitted with a structural grid. Chopper guns are used for some nonstructural components, such as iceboxes. Parts that benefit from being finished on two sides are constructed with resin-transfer molding (RTM), a vacuum process that saves weight and reduces emissions

you've been around Catalina owners at all, you've probably heard them sing his praises.

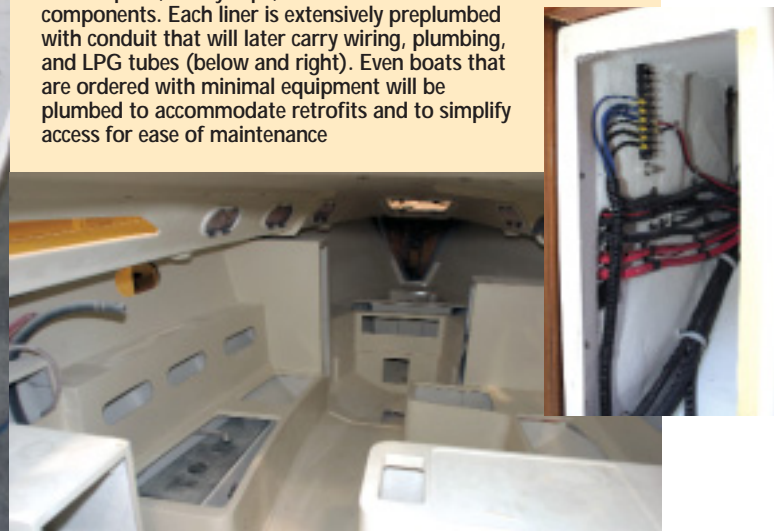
Frank Butler was a hands-on machine-shop owner when he jumped into the middle of the fiberglass boatbuilding revolution in the 1960s, by accident. The guy he paid to build him a boat didn't get the job done, so Butler walked



Decks are the first structures to appear on the factory floor (above). Except for dinghies under 16 feet (built with all-vinylester resins and foam-cored decks), decks are laid up with a balsa core with plywood or solid glass substituted for balsa wherever stanchions and other gear will be through-bolted. The solid coring is insurance against water intrusion. Metal backing plates, either aluminum or brass, are molded in to increase strength and spread the loads. When hardware is mounted later in the build process, an anti-seizing compound is used on fasteners so that they can be removed some day, if need be (below). Decks incorporate Kevlar reinforcing at the corners, and multiple mats are laid in for vertical reinforcing. For rigidity, decks are structurally bonded to interior overhead liners, leaving deck and liner as a single structure. The surface of the liner serves as a finished overhead for the interior



All Catalinas incorporate fairly complex one-piece hull liners that strengthen the hull and include complete or nearly complete furniture modules (above). The factory offers five interiors for the 42, and there are five interior molds to match. For any given model, there are 25 to 50 molds for the major parts, plus shower pans, vanity tops, and other lesser components. Each liner is extensively preplumbed with conduit that will later carry wiring, plumbing, and LPG tubes (below and right). Even boats that are ordered with minimal equipment will be plumbed to accommodate retrofits and to simplify access for ease of maintenance





Catalina joins hull and deck early in the build process. Depending on the model, hull-to-deck joints are either overlapped external or internal flanges or outward-turning flanges



Catalina builds its 310, 350, 387, 400, and 470 models at its plant in Largo, Florida, where interiors are constructed in open hulls prior to the deck installation. Heads in Florida-built boats are built as modules and dropped into place whole. Large hatches still assure that all mechanical and interior parts are removable. Boats built on both coasts have bulkheads fixed with adhesives and fasteners to act as transverse diaphragms while carrying no rigging loads



On models built in California, engine and interior components are passed below for installation into a completed shell of hull and deck. Obviously, those parts have to pass through one hatchway or another to get there, so they can also come back out for repairs when the time comes. Douglas (in yellow shirt) says it's a company goal to make a boat that is very repairable; all parts can be removed using hand tools and without disturbing other elements. The company makes an effort to sell replacement parts for all models, no matter how old, and Douglas touts Catalinas as good project boats for someone looking to rescue a fixer-upper. It would be cheaper to run plastic trim around the transom-hull joint, but the extra hours to create a seamless transition "are worth it for the look," Douglas says



The wood mill turns out solid-wood surrounds, not veneer, for the door frames and furniture edges that take the most wear. All surfaces are clear-coated, not stained, so the color can be matched when refinished. All doors are mounted on piano hinges. Cabin soles in 2004 boats are a teak-and-holly-look-alike high-density laminate

into the shop, took over the team, and finished the boat himself. When he left with his finished boat, he took part of the team with him and created Wesco Marine, which still exists as a machine shop supplying parts to Catalina. Then Butler introduced Coronado Yachts, including the Coronado 25, the first boat built with a molded interior pan, which both cut production costs and improved structural integrity.

When Butler sold Coronado to the Whittaker Corporation, he had a vision for a 22-foot trailerable that would give a new type of sailor access to distant waters. Whittaker wasn't interested, so when his non-compete clause ran out, Butler created Catalina Yachts and in 1970 introduced the swing-keel Catalina 22. Now, 16,000 Catalina 22s later, the updated version shares production with 26 other Catalina models from 13 to 50 feet.

Altogether, more than 75,000 Catalinas have come off the assembly lines. The 20-year run of Catalina 27s produced more than 6,600 boats beginning in 1971, and the boats were user-friendly even if the engineering in the

early years was spotty. Time passed, and the company's engineering savvy improved. Patrick Childress clarified that much by singlehandedly a Catalina 27 around the world between 1979 and 1982.

Long production runs are common at Catalina. The first of 700-plus Catalina 42s hit the water in 1988, and the 42 is now in a Mark II version. The 36, with more than 2,000 built, has also been updated, but with care, so as to preserve the active one-design fleet. As of 2004 the company has more than 130 dealers worldwide; most of the output stays in the U.S.

Catalinas are not about cutting-edge technology. Butler, vice-president/head designer Gerry Douglas, and sales manager Sharon Day have worked together for more than a quarter-century, and they prefer to keep the boats evolving with the market. They ask Catalina owners for their gripes and wish lists, and they listen to what people want. In general, this translates to cruiser-racers of moderate proportions, with plenty of interior space.

Catalina's 196,000-square-foot plant in Woodland Hills,



In-house sailmaking gives the company control of the working sails that it supplies to its customers (above and left). Mainsails may be either boom- or mast-furling. Nonfurling mains come with a Dutchman flaking system to flake the sail on the boom. Catalina also produces some of its own stanchions (of stainless steel) and machines its own propeller shafts (below)



Catalina smelts its own lead and casts its own keels, which are added near the end of the production line, on the night shift, so that workers have the use of overhead hoists while no one is working below. Rudder and steering are the last assemblies to go in before the boat is moved to the finishing dock



The California factory runs 24 hours a day, in three shifts. The Florida plant operates 2 shifts. Each crew may visit a single hull a number of times, leapfrogging complementary functions. Not all models are in production at once, and as far as possible the company builds only to order



Mattresses, cushions, and upholstery are manufactured in-house (above)

California—north of the Hollywood Hills from Los Angeles—was originally built to turn out Saturn rocket engines for the Apollo moon missions. The company also builds boats in Key Largo, Florida. Both are large plants, but size comparisons are deceptive. In Florida, operations take place in a number of buildings; in California, layup and assembly take place mostly in the main plant, with specialized functions dispersed among nearby satellite facilities producing, among other things, wood interior components, metal parts (for pulpits, stanchions, and so on), lead keels, and a supply of nontapered masts (specialized masts are subcontracted). Hulls and decks are laid up by hand. Smaller assemblies that benefit from being finished on two sides are constructed with resin-transfer molding (RTM), a vacuum process that yields lighter-weight parts, reduces emissions, and will probably be used on larger parts in the future.

Catalina is its own supply chain, producing all of its own keels, inner-spring mattresses, biminis and dodgers, and a large portion of its own sails. “Most components are

double-tracked,” Douglas says. “That means that we make some and we buy some. We build as much of the boat as possible, then we act as one of the suppliers.”

How much is “as much as possible”? Enough to include refrigerator doors. And the company smelts its own lead for keels. The machine shop, besides producing such items as spreader ends and masthead fittings, makes propeller shafts and trues the components to be installed as matched sets. A Plexiglas forming oven turns out shelves for medicine cabinets. Florida and California plants exchange certain parts, but mostly the boats are built in one place. There is no duplication of models between plants. Economies of scale help the company hit those all-important price points, as do volume discounts on such items as diesel engines and winches. “Sailboats,” Douglas says, “are among the last mass-produced, hand-built products in the United States.”



This is the first article in an occasional series on production boatbuilding.