

GMT Carbonics 39

Advanced composite engineering and manufacturing for marine and industrial applications • Since 1984



Fat Cat - Stretches her legs

"Nothing like driving a house at 25 knots, jumping off waves..." is how one crew member described the 80' Morrelli catamaran, Fat Cat, in the 2011 Caribbean 1500 race which they won. Fat Cat, originally 65', has been "tweaked" over the years as she has been stretched out twice from the original 65' to the current 80'. That makes designing a new rig with only the original boat design specs a considerable challenge. To add to the challenge, Fat Cat's owner likes to sail fast and hard, and is rumored to insist on being the only one on the main sheet if they are flying a hull.

This was the starting point when it came time for a new rig this year. The owner went to every top carbon



spar supplier in the world for ideas and quotes as he wanted to maximize performance with the new rig. He had worked with GMT in the past, but wanted to make sure he would get the best designed spar available for Fat Cat. Gino Morelli, of Morelli & Melvin, came in to advise, but insisted the boat be pulled and formally weighed to begin calculations.

GMT's bid using high modulus carbon (*see inside side bar*) to achieve the weight and stiffness goals won the job. GMT's head engineer & owner, David Schwartz, has consulted closely with Morelli & Melvin in optimizing the rig design for the 80' cat. Commissioning and sea-trials are planned for the start of this season, and a full report will be following.

Hinckley & Morris

Morris Yachts has joined with Hinckley yachts, which makes three storied brands, including Hunt Yachts, under the same ownership. GMT has worked with both sailboat builders on several projects in the past. Most recently, we built a carbon Powerfurl boom for the newest Hinckley DS42 last summer, pictured here at her mooring in Maine. GMT had also recently contracted with Morris Yachts before the merger to build a carbon Powerfurl boom for their latest M42 Daysailor now being built. Perhaps it's a sign of synergy when two great brands are selecting the same supplier, but the transaction has been seamless. Both brands obviously share a common goal in providing the finest sailing craft to their customers, and it is a privilege to be associated with their Maine built boats.



TECHNOLOGY: HIGH MODULUS

The Fat Cat project is a prime example of optimizing structural spar design using GMT's 25+ years of engineering experience. The boat was stretched from 65' to 80', so the new mast needed to be stiffer and stronger. The catch was the owner did not want to add any weight aloft which would negatively impact performance.



We started by modeling the mast tube in three different grades (modulus) of carbon. The standard grade has a stiffness of 34 Mpsi, intermediate 43 and high modulus comes in at 57. To compare, we looked not at total weight saved, but at how less weight acting at 50 feet above the water would improve the performance of the boat. Modeling proved the best option was the high modulus carbon which reduced tube weight by 17% (146 pounds) at a cost increase of \$1.98 per foot-pound of righting moment improvement.

In comparison, the solid carbon standing rigging being used vs rod will cost \$5.35 per foot-pound of righting moment. Minimizing weight aloft achieved the goals of a stronger mast while maintaining 25+ knt sailing performance.

Pocket Boom:

Palawan: a S&S Classic

Palawan is a 1952 Sparkman & Stevens yawl built for Tom Watson Jr, president of IBM from 1952-1971. At 47'3" LOA and 11'3" beam, she carries the classic S&S lines, and is maintained in top condition at Rockport Marine.

Palawan's current owner wanted to make handling the mainsail easier, but was not willing to compromise the aesthetics of the boat. He felt most furling booms would not fit the look of Palawan. Finally settling on GMT's carbon Pocket boom as the best solution, he took it a step further with the hand painted faux bois finish to match Palawan's wood spars.

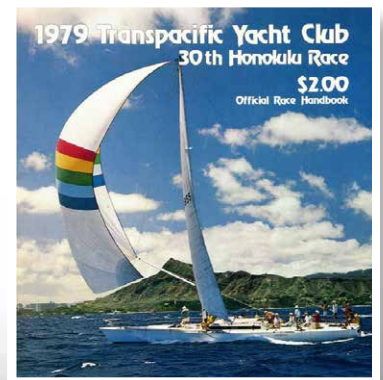


The owner worked closely with GMT during the design phase to minimize the side wall height of the boom for sleek aesthetics. The end result is a beautiful and functional boom that fits the classic yacht to a T – something GMT hopes would make Rod & Olin pleased to see on one of their designs.



Custom Carbon: Merlin

Merlin is back with her original owners, Bill & Lu Lee! Merlin set a Transpac record in 1977 that stood for 20 years, and has been a West coast icon in the sailing world since. GMT Composites built a carbon spar for Merlin in 2005 (& also another Lee design, Ragtime) after her aluminum spar failed just before the 2005 Transpac. The GMT rig is still going strong, and we have been in contact with Bill Lee discussing the rig details and specs, and how they might relate to all the changes they are considering. Bill is looking at all sorts of options for returning Merlin to her former simplicity (& success), most significant of which has to be doing away with the kantung keel. The GMT rig will stay though! We wish Bill & Lu all the best in getting Merlin up and going to their liking, and look forward to seeing her on the West coast waters again!

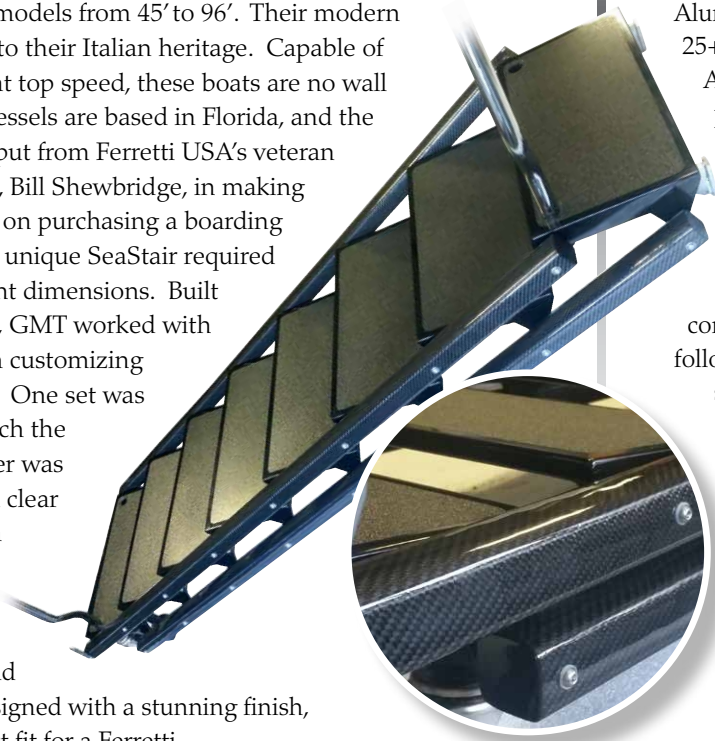


Sea Stairs: Italian Style



GMT has made a pair of carbon Seastairs for two 80' Ferretti yachts. Founded by two Italian brothers in 1968, Ferretti now offers 10 models from 45' to 96'. Their modern design speaks to their Italian heritage. Capable of over 30 knots at top speed, these boats are no wall flower. Both vessels are based in Florida, and the owners had input from Ferretti USA's veteran sales executive, Bill Shewbridge, in making their decisions on purchasing a boarding system. Each unique SeaStair required slightly different dimensions. Built at 7 & 8 treads, GMT worked with both owners in customizing their Seastairs. One set was painted to match the vessel, the other was finished with a clear carbon twill on the side rails with black treads.

Lightweight and impeccably designed with a stunning finish, they're a perfect fit for a Ferretti.



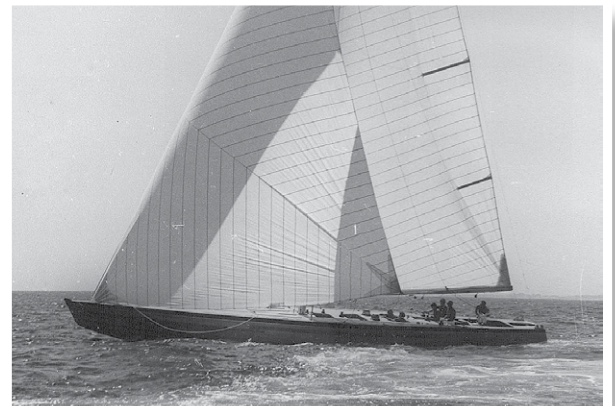
New life: Alden 50

Aluminum can only flex so many times, and 25+ years of sailing had levied its toll on this Alden 50's rig. Cracks were discovered at the partners, and Great Island Boat Yard delivered the difficult news to the owner that Alida's aluminum mast was unsafe to use.

Making lemonade out of lemons, the owner took it as an opportunity to upgrade his boat and make her better than new. The contract for the carbon rig was awarded to GMT following an in-depth quote process involving several top composite spar makers. A GMT carbon mast, PowerFurl boom, rod rigging, and new sails from Hallett Canvas & Sails (Falmouth, ME) will make this Alden yacht, built in the 90's, one of the finest on the water. Going from an in-mast furling aluminum spar to a conventional carbon spar will save a massive 450 lbs aloft! More will follow as the rig project progresses toward a spring commissioning in Maine.

America's Cup Longevity

Valiant is a Sparkman and Stevens design built at Derekor for the 1970 America's Cup. GMT built a carbon fiber rudder for her 16 years ago, but the rudder had not been pulled since. Corrosion had seized the bearings and crushed the sleeves. Fortunately, the carbon post was undamaged. A new sleeve was installed, and Valiant is ready to race again!



A Passerelle For The Record Books

Truth be told, we haven't contacted Guinness about an official record, but this is certainly the longest continuous carbon one we know of in existence. It is a 7m (23') carbon passerelle that was made for an overseas luxury tour company. They needed a continuous length boarding solution with easy handling and exquisite looks for their clients to safely disembark from the 300' long vessel. It needed to reach areas that are not accustomed to such large vessels like small docks and even river banks. Painted in two tone Awlgrip and non-skid paint with teak cleats and integrated LED accent lighting, it is safety rated for 500 kg. It highlights GMT's talent in providing custom designed carbon solutions in an elegant form factor. At only 75 kg, it eliminates the requirement for a mechanical davit. The increased stiffness also provides a safer, more secure, boarding experience for the many passengers. We are now in discussions for a 12m version! The super-yacht quality finish is both durable and in keeping with the luxury market of the tour company.



"...this pole has been one tough piece of equipment. It's a warrior"

Long Time GMT Customer



Summerwind New Home

The U.S. Naval Academy got a new jewel in their crown with the donation of the 100' 1929 Alden Design schooner, Summerwind, last fall in Annapolis. Summerwind is an exceptional schooner which underwent a full structural refit commissioned in 2009. She has a full complement of GMT carbon spars and

Park Ave. Pocket booms which reduced the rig weight by over 3,000 lbs. They are expertly hand painted to match the original spruce rig. Commander Marissa McClure says that the yacht will serve as the flagship for USNA Sailing.

Designers Corner:

Morrelli & Melvin need little introduction. Formed in 1992, Gino and Peter have an enormous track record from Olympic campaigns to writing AC72 rules. Their designs range from SUP boards to the 125' trimaran, Playstation, and now the HH66 cat. GMT has worked with M&M often over the years - currently on the rig for the 80' Fat Cat. This includes a carbon crossbeam, compression tube, and striker.



MM Morrelli & Melvin
Design | Engineering | Yacht Sales



GMT Composites, Inc.
Since 1984

48 Ballou Boulevard
Bristol, Rhode Island
02809-2728 U.S.A.

T: 401.253.8802
E: info@GMTComposites.com

Sign up for Carbonics with your smartphone!
Visit our Blog for more details



GMTcomposites.com



GMT on Facebook



GMT on Twitter