

Carbonics 32

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



exceed 5 tons per square inch, and any air pockets in a laminate would get crushed. No paint will be used on the ballast tanks so they can easily be visually inspected for any void content or damage. Alvin's passengers will be housed in a new titanium sphere which was forged from two solid pieces of titanium weighing 17,000 pounds each.

The tanks have to fit a complex form. They are designed around the structure of the vessel, where

Going Deep with Alvin:

GMT Composites, Inc. was selected by Wood's Hole Oceanographic Institution (WHOI) to build the three primary main ballast tanks on the Navy's renowned research submersible Alvin.

Under WHOI's management, Alvin is undergoing a major 2-stage refit program to upgrade its maximum depth rating from 4,500 meters (14,764') to 6,500 meters (21,326') in a quest to bring 98% of the ocean floor within reach of researchers in Alvin.

Alvin is a human occupied vehicle (HOV) certified by the Naval Sea Systems Command (NAVSEA). Pressures at these depths

space is at a premium. Pictured here is the mold for one of 3 tanks with its contoured shape almost looking like a sculpture. Once the tank forms were lifted from the molds, additional reinforcements and internal baffles were added. It was a difficult process and rewarding to see the tanks heading off for installment in Alvin & its future missions. Alvin has been on 4,664 research dives in its almost 50 years of service. It is famously known for documenting the wreck of the Titanic, exploring the deep-sea hydrothermal vents off the Galapagos in the 70's, and recovering a lost hydrogen bomb in the Mediterranean Sea in the 60's.



GMT is honored to be a part of the Alvin program. While we have done jobs for the Navy in the past, none have been used in environments as unforgiving as over 4 miles below the ocean's surface.

West Coast Builder Goes BIG:

MacGregor Yachts nears completion on their third 70' and signs on with GMT Composites for the carbon masts. Roger MacGregor says this is the next evolution in the sequel to their best selling 65'. This one is the first to have carbon masts in the new ketch rig sail plan and promises to be even faster than the current 70's PHRF -42 rating! Watch the next issue of Carbonics for more details.





"The Source for New England Boaters", paid a visit to GMT's facility, and posted a video on their site about the tour. If you are curious about how we make a mast, take a look - at just under 8 minutes long, it's an interesting look into the world of carbon. It covers our process from raw pre-preg carbon into the lay-up room and out of the oven.

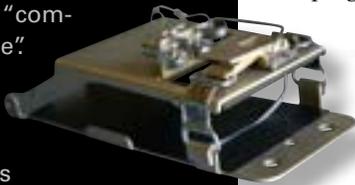


BoatingLocal.com

SOLUTIONS: Making Metal Exception For The Military

When customers are looking for solutions, we can provide one, even if its outside our normal "comfort zone".

We can't say who it is for, nor exactly what it does, but it is a good example of GMT's diverse abilities. Satisfied with previous projects this customer came to GMT with a special request to build this "battery box". The project is detailed, included titanium, and quality must be 100%. This contract shows our willingness to work with customers and our commitment to quality.



Eggemoggin 47

A Custom One Design?

You might think so by next summer. Brooklin Boat Yard launched the beautiful Bob Stevens/Jim Taylor designed 47' cold-molded daysailer named "Lark" this past summer just in time for the Eggemoggin Reach Race. She won the Spirit of Tradition class in her first outing up against the likes of modern classics like Isobel, Wild Horses, and the vexingly quick eight meter Pleione.

With a LOA of 47'6", a water line of 34'6", and a slender beam of 9', she's a looker. The design criteria made reducing weight aloft an important factor, and a carbon mast was spec'd as the most effective solution. GMT was up against several other carbon mast

suppliers in winning the bidding process, and Steve White, owner of Brooklin Boat Yard, had this to say about their final decision,

"Because of quality, price, and delivery, GMT was an easy choice to supply a new carbon mast and lightweight PBO standing rigging. We look forward to working with David and his crew again."

It didn't take Steve long to consider new projects with GMT. Lark was met with much praise, and not just for her race winning performance. She is as graceful, stylish, and easy to sail as she is fast. Brooklin Boat Yard had a lot of interest in the new boat. When the dust settled, they had contracts to build two new ones over the coming winter, both of which will sport GMT carbon rigs.

UPDATE: Able 58

In a first for GMT, Sandy Wakeman replaced his 20 year old GMT carbon furling mast with a new conventional GMT carbon mast and PowerFurl boom, removing 220 lbs aloft. Sandy wanted to increase the performance of his main sail with full battens, more draft, and more roach, yet maintain furling convenience. His comments really say it all, *"We had a great summer on her. Her boat speed and motion have changed remarkably with the new mast, boom, & sails. We reduced so much weight aloft that her motion in a seaway is now remarkably different & better...less pitching & rolling. This has been an unexpected benefit that we weren't explicitly focused on. Her motion at sea has always been fine, now it's even better. The reduced weight aloft, subsequent lowered CG, and our more efficient roached and fully battened main that rolls so beautifully into the new Powerfurl boom has been the greatest improvement Pilgrim has seen."*



PROJECT: PowerFurl



Largest PowerFurl Boom Competed

GMT was selected to supply several projects for the progressive Brazilian yacht maker, Pilgrim Supercats, including the massive carbon crossbeams for their 70' catamaran. Now completed and ready to ship is the 35' carbon fiber furling boom for the 70' cat. It is the largest PowerFurl boom GMT has built to date. Designed for the high loads of a catamaran, it is a resin infused, foam core, carbon structure with up to 29 layers of laminate in load sections.

Pilgrim's designers had some difficult criteria. Weight aloft is a critical element of catamaran design. Fast hull speeds call for a performance main with full battens and positive roach. The boom height is quite high which makes sail handling convenience a priority.

GMT's PowerFurl boom is able to address all these criteria in a single elegant solution. In-boom furling offers convenience, yet significantly reduces weight aloft compared to in-mast systems. It allows the use of full battens, positive roach, and more draft in the main sail. The PowerFurl also aides greatly in sail handling as it lets you raise, reef, or furl your main on any point of sail.

This is an important improvement over in-boom furling systems that use a universal joint and thru-mast shaft because they require the boat to be headed straight into the wind before the sail can be furled. GMT's design uses a low-profile track with no set-back or cutaway notch required in the mainsail tack which is lighter and more visually appealing.

These design features, coupled with GMT's ability to fully customize the PowerFurl boom, brought the Brazilian firm to the Bristol RI company. "GMT enjoys working with designers and owners so all the features of the rig are perfect", says David Schwartz, President of GMT. "All features such as the sheeting system, preventers, drive motor type, integrated LED lights and graphics are decided on by the customer during the design conversation".

The PowerFurl booms are designed for yachts from 45 to 90 feet, with structural engineering completed for larger yachts.



A short video of the PowerFurl boom:
<http://www.gmtcomposites.com/spars/booms>

Have you ever regretted selling a boat?

Did you ever have that special boat, and always regretted the decision to sell? The owner of this impressive 70 footer named Sonny did, and could never quite get passed selling her.

Sonny came from the drafting board of renowned naval architect, Dieter Empacher. She was built as a custom cold molded hull by the craftsman of Brooklin Boat Yard, and ultimately rigged with a GMT carbon mast and one of the first GMT PowerFurl carbon booms.

A few years after selling Sonny, the owner came back to Brooklin Boat Yard and said, "Let's do it again!". He meant it literally. BBY is building the exact same boat right down to her GMT carbon mast and PowerFurl boom to deliver in the



summer of 2013. It is one thing to say you are happy with a custom build and finished product, but it speaks volumes to go through the process a second time. It is not often you can turn back the hands of time on regret, but Sonny's original owner will get to sail again.

GMT Composites .com

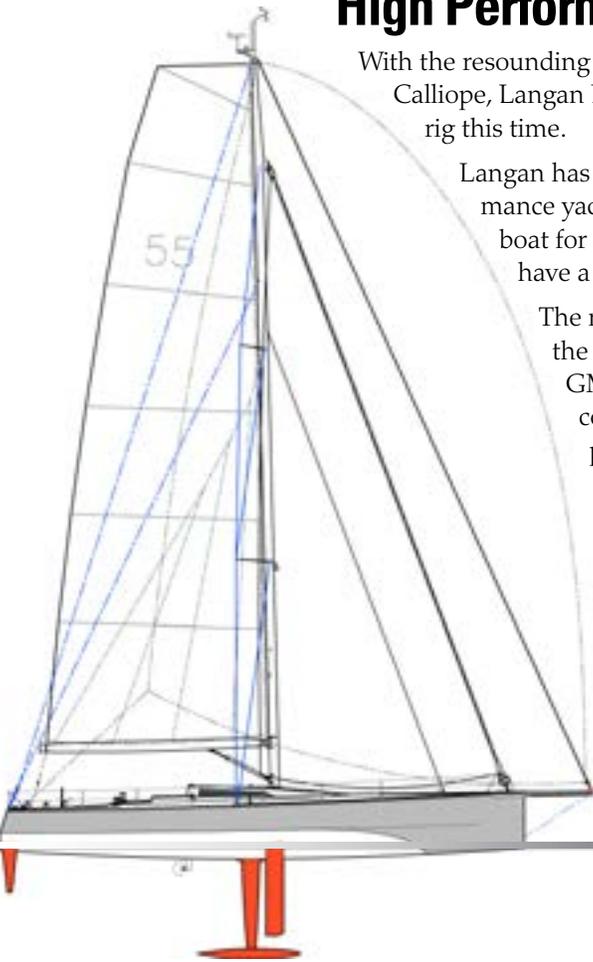
High Performance Yacht: GMT rig bound for Brazil

With the resounding success of working together on the arch for the 125' superyacht Calliope, Langan Design Partners has once again turned to GMT - but for a carbon rig this time.

Langan has been commissioned by a Brazilian client to design a 55' high performance yacht. She will suit the owner's desire for a very fast, yet manageable day boat for some racing, but also for fun and fast sailing with friends. The boat will have a canting keel, hi-tech construction, and a GMT carbon mast and boom.

The rig will be built in Bristol RI, and shipped to the yard in Brazil where the boat is being built. It will be one of two rigs currently being built at GMT that are bound for Brazil. Langan Design Partner Sam Howell commented on their previous experience with GMT in which the project was highly complex and challenging, "GMT delivered on time and to spec. They more than met our expectations".

It is great working with a local design firm of Langan's caliber on both domestic and international projects. This project is an interesting mix of performance and quality, yet without the no-holds-barred approach of a syndicated racing program. The experienced owner wants premium quality and high performance, with an eye on the budget, and it will be built with his direct input. It's a combination that fits right in with GMT's over-all goals.



GMT Debuts Ad In Southerly Magazine

Southerly Yachts puts out an annual "coffee table" magazine to highlight their boats, regattas, their customers and their adventures. GMT has supplied several Southerly 57's with PowerFurl booms, and there has been a growing interest in them by new owners. GMT developed a new full page PowerFurl ad for the latest issue, and also submitted an editorial piece on the benefits of in-boom furling in another example of partnership within the industry.



Taking Off With Terrafugia:

Terrafugia was founded by MIT graduates with a mission to make revolutionary, practical air and land vehicles - a car that can fly! They contacted GMT for hi-modulus precision ground carbon tubes they needed quickly. GMT applied their experience to deliver the tubing both on-spec and in less than a week. The prototype vehicle is currently going thru compliance process for both the Light Sport Aircraft and National Highway Traffic Safety Administration standards.



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