



We are an employee-owned company, with long experience, low overheads, and the most motivated and diligent workforce in the industry.

IMOCA 60 | *Charal*

Since 2016, Fibre Mechanics has been building a continuous stream of components for IMOCA 60s and Multi 50 Trimarans, including the deck and topsides of *Charal*. We continue to supply key structural components to most of the top French racing teams.

I Introduction

Fibre Mechanics was founded in 2016 by the team responsible for the technical management of Green Marine for over thirty years. Seven years later, we run a work force of over eighty on two factory sites, with fourteen engineers in the technical, production and management offices.

In addition to this we have a twelve-man affiliated design office, carrying out detailed engineering and design for both Fibre Mechanics and third party projects.

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Vandal 14m Chaseboat

Launched in 2020, the Vandal 14 chase boat was built by Fibre Mechanics, in conjunction with Tenderworks, for a Dutch shipyard as one of the tenders for a large motor yacht.

Naval Architect – Farr Yacht Design

Stylists - Redman Whiteley Dixon

Builders: Fibre Mechanics/Tenderworks

I Factory sites



Our Lymington headquarters occupies the same purpose-built boatyard which was home to Green Marine for over twenty years. The factory has been adapted and updated to suit new building materials and techniques. In early 2023 we opened a second factory fifteen km to the east in Hythe with direct waterfront access, to accommodate much larger yachts.

Blank canvas / wide, open space

Our first project in the new factory is a re-build and conversion of a carbon racing catamaran, into a 100ft cruising catamaran. The first priority was to widen the doors to 18m. Six months after opening, the new Hythe factory has an overhead crane, a 50m x 9m mezzanine, and a 30m hull oven. The catamaran project is in full swing and we have just started production of an 88ft cruising monohull in the oven.



New factory site | Hythe

In January this year we opened a second factory with enough open space to accommodate projects up to 50m. The requirement was for waterside access for launch and recovery, and for the potential for expansion. We needed both a wide, open factory floor and a series of workshops for fabrication, electrical, hydraulic and joinery work. We took over an empty shell with limited insulation and a small roller door at the front.



Lymington factory | main oven

The factory floor of our original factory in Lymington is dominated by a 50m x 11m hull oven that can be partitioned to suit the size of the projects in build. On the mezzanines at each side we have a flat panel production line with a CNC pre-preg cutter at one end, and a series of vacuum tables and ovens at the other.

I Racing yachts



We are racing yacht builders, with experience stretching back over four decades. Our team's collective boat building experience dates back to the winner of the 1979 Fastnet Race, while the latest yacht to leave Fibre Mechanics in June 2023 was a super lightweight lake racer, built to challenge for the Bol d'Or on Lake Geneva in the 2024 season. The path between these two is a portfolio of racing boats that includes many of the most recognisable names in Volvo Ocean, Americas Cup and Ocean Racing history.

IMOCA 60 | *Charal*

Since 2016 we have built a continuous series of components for a series of IMOCA 60 teams. Fibre Mechanics built the deck and topsides of *Charal*, along with key structural components such as foil boxes and bulkheads. These projects are normally constructed in collaboration with other racing boat yards. In the case of *Charal* we worked with CDK Technologies from Port La Foret in France.



Assa Abloy

All told we have built 14 boats for the Whitbread / Volvo Ocean Race, including *Intrum Justitia*, *Ericsson 2*, *Pirates of the Caribbean*, and all seven of the Volvo 65s that are, this summer, completing their 3rd Ocean Race.

The production and engineering team that specified and supervised the Volvo 65s are now the Technical, Projects and Production Directors of Fibre Mechanics. We bring an unmatched depth of experience to the construction of yachts that are both lightweight and durable.



RAN 2

Between us the team at Fibre Mechanics has built dozens of IRC and ORC racing boats. One outstanding yacht is the 72ft Judel/Vrolijk minimaxi, originally launched as *RAN 2*, which was built in the Lymington factory that is now Fibre Mechanics' HQ. Adrian Gillitt, who managed the build of *RAN 2*, is now projects Director at Fibre Mechanics.



Cruising yachts

While the technical advances in racing yacht construction developed at a very fast pace in the 1980s and 90s, the challenge for carbon boat builders since the mid 1990s has been to bring the benefits of advanced composite construction to bear on the build of performance cruising yachts. Reducing the structural weight of a cruising boat is simple enough, maintaining that approach through every aspect of fit-out is much more difficult, and is the key to building high performance cruising yachts.

Allegra | 82ft Performance Cat

Allegra was built at Green Marine in 2015 and incorporated a full Nauta-designed interior, large saloon, owners' cabin with two guest and one crew cabin. Systems design and project management was by James Day; composite process engineering was by Marcus Attridge and Adrian Gillitt; now Technical Director, Composite Engineer and Projects Director respectively at Fibre Mechanics.



Cinderella / G2

The Bill Tripp designed 39m sloop G2 was originally built as *Cinderella* by Green Marine and Vitters Shipyard in 2003. A major refit was undertaken by Pendennis Shipyard in 2019, including major structural rearrangement of the foreship and aft wheelhouse by Fibre Mechanics.

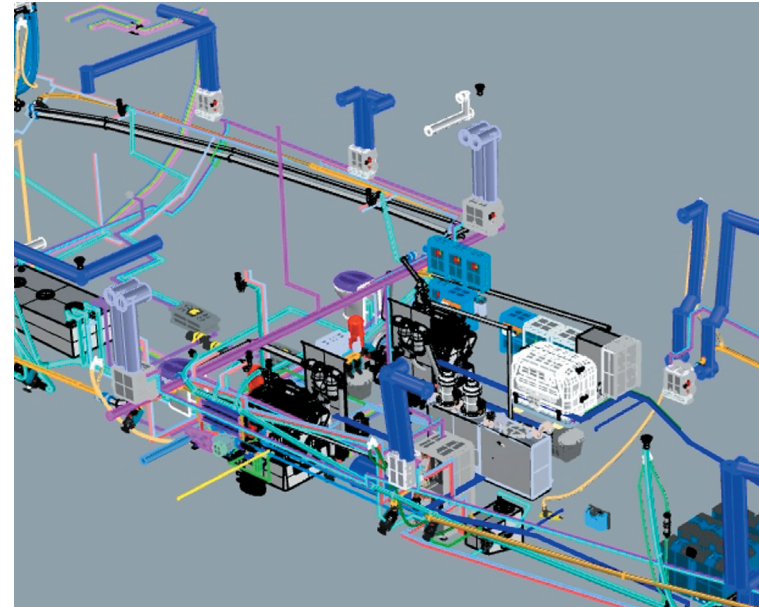


Wally Cento | *Galateia*

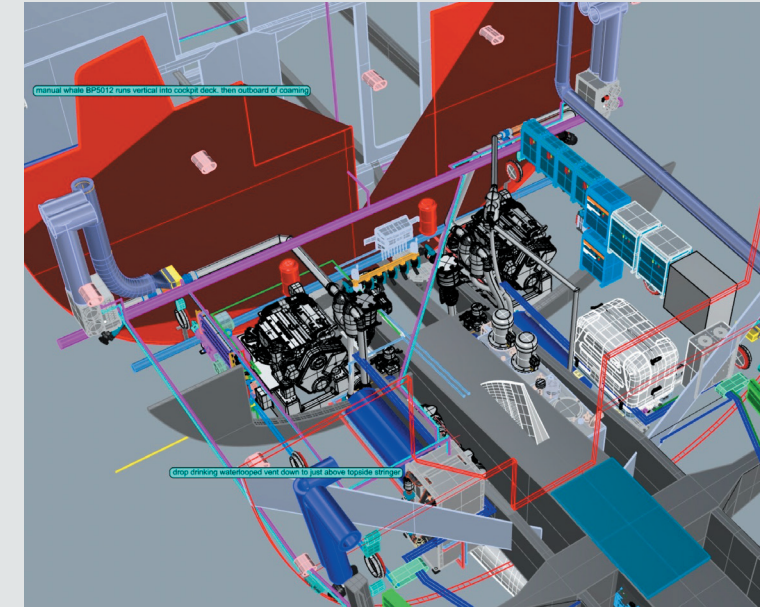
The only way to achieve the goal of a 48-tonne racing yacht with a 25-tonne lifting keel fin/bulb was to take an extreme approach to saving weight to all parts of the yacht. Construction was managed by Adrian Gillitt with James Day responsible for the detailed engineering design. Adrian and James are now Projects and Technical Directors of Fibre Mechanics respectively.

| Design engineering

Our Technical Office is led by James Day. James supervises the work of a six-man team working on equipment specifications, pipe and wire routing, and the overall integration of yacht systems with composite structure. The Technical Office is the interface between our Clients' Naval Architect and our workshops; providing workshop drawings to our project managers, boat building teams, joinery and electrical contractors etc.



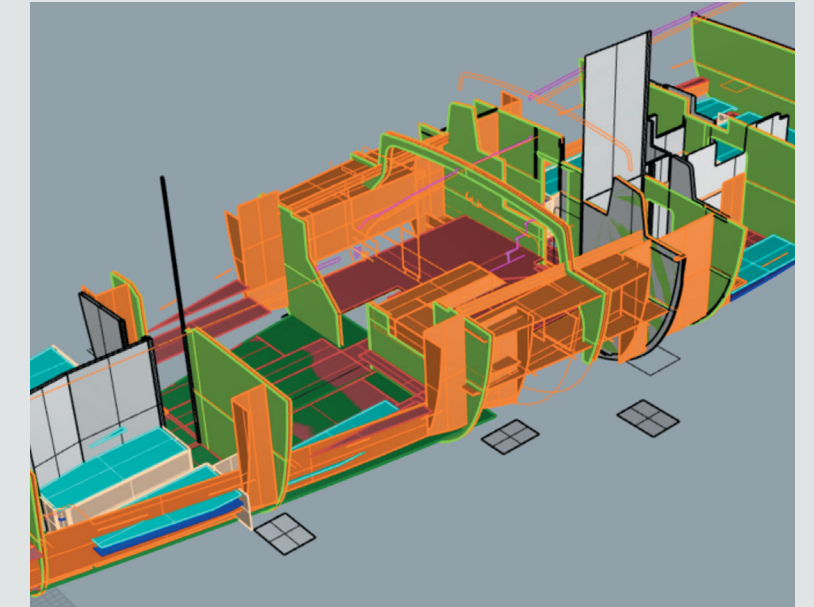
Piping and service routing in progress



Engine room layout prior to full size mock-up



The Technical Office is the interface between our Clients' Naval Architect and our workshops...



Establishing 'net space' for interior designers

I Interiors

We collaborate with a small number of specialist interior contractors based in the UK and Europe, who can build high quality foam and honeycomb-cored joinery. To keep control of weight, Fibre Mechanics can manufacture the base joinery panels in-house and always manufacture the carbon composite support structure for the cabin soles, joinery units and overhead panels.

We calibrate each piece of joinery to suit its position and purpose in the yacht, by tuning the veneer thickness, skin weights and core densities.



Galateia | interior

The Wally Cento *Galateia* was project managed by Adrian Gillitt, now Projects director at Fibre Mechanics. Adrian was instrumental in the specification and construction of the interior.



We calibrate each piece of joinery to suit its position and purpose in the yacht...



Galateia | galley

The interior joinery construction and installation was contracted to Struik & Hammerslag UK, now Norfolk Interior Systems. Fibre Mechanics and Norfolk Interiors are currently working together on a new 87ft shoal draft yacht.



Galateia | saloon

Behind all the joinery panels and under the sole boards there is a complex composite foundation structure. A great deal of weight can be saved in this area by using composite beams and support grids in place of aluminium or plywood.

Moulds and tooling

Where a mould has large fair surfaces and is free of complex detailing, such as a typical yacht hull, we fabricate wood moulds in-house.

For complex shapes, and moulds with complex detailing we make use of one of three specialist machining companies to build patterns, or direct machined moulds. Most projects require a combination of all three approaches, and often we incorporate machined sections into wood fabricated moulds.



Hull mould | 85ft cruising sloop

Where the shape of the hull is fair and featureless a wood fabricated mould is the least expensive option. Wood fabricated moulds are also very stable when heated at 90 degrees for pre-preg cure. Typically, we build moulds by machining accurate transverse frames, applying longitudinal battens, and sheathing with plywood. By using recycled wood panels and sustainable wood for battens and ply, wooden moulds generally have a lower environmental footprint than machined moulds.



Where a mould has large fair surfaces, such as a typical yacht hull, we fabricate wood moulds inhouse.



Mould tool | Gunboat 80

For complex custom moulds we often use direct machined female tooling. We usually incorporate a machined glass or carbon section within a wood fabricated mould, to overcome a local area of complexity.



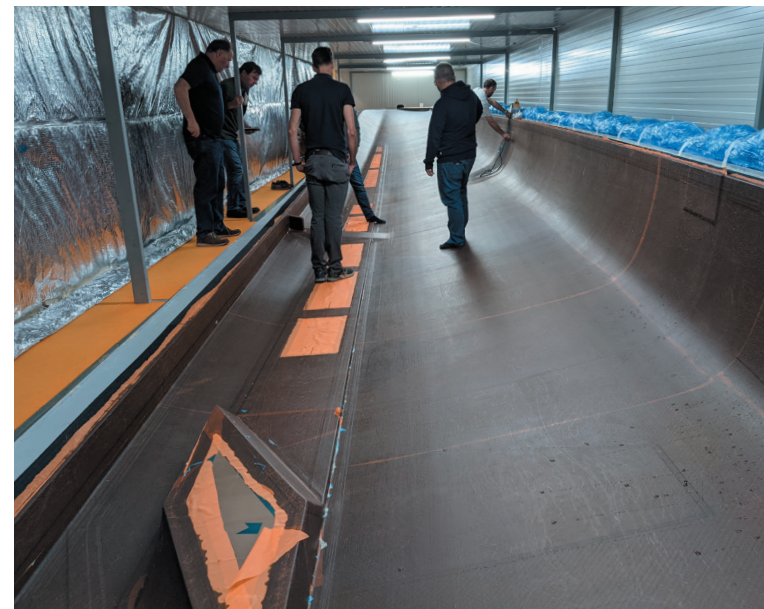
Hull mould | Galateia

A full carbon mould was built for *Galateia*, primarily to allow for the construction of subsequent identical boats. GRP or carbon moulds are easier to move and less expensive to store than wooden moulds. We evaluate the cost/benefit between carbon, glass, direct machined and wood tooling on a project-by-project basis.

| Capability

We build custom yachts and components in every combination of materials, on moulds built by hand or milled by CNC router. Our factories are equipped with hull ovens monitoring multiple channels of vacuum and temperature. An 8m CNC cutter prepares the majority of pre-preg material used in the hull ovens, clean rooms and component ovens; an in-house CNC router cuts mould frames and core kits.

We work with key industrial partners, giving us access to autoclaves of up to 3.6m diameter.



Tunnel oven | Lymington

The Gunboat 80 hulls were built in a custom tunnel oven on the mezzanine in our Lymington factory. We have developed a method of building ovens that can be adapted to any size or shape, and that can be modified and re-purposed for the next project.

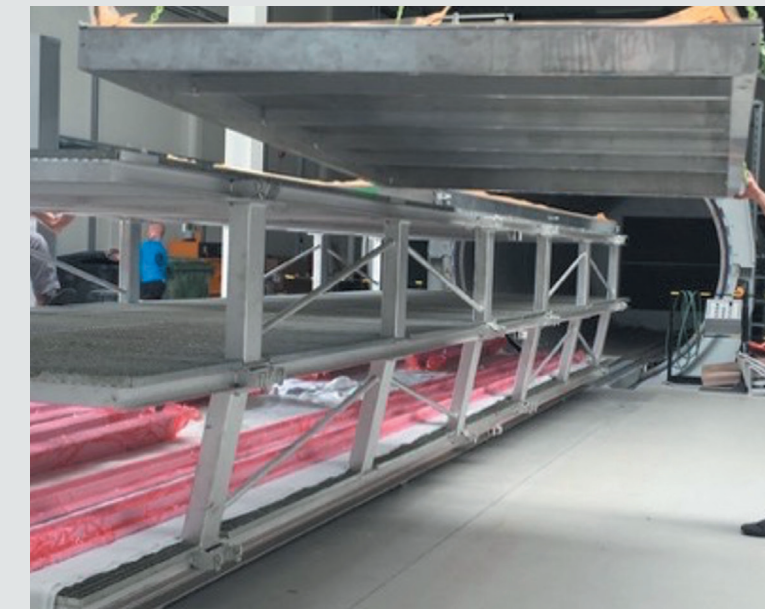


We build custom yachts and components in every combination of materials...



CNC pre-preg cutter | Lymington

Almost all our pre-preg reinforcements are cut on this machine, and de-bulked before being incorporated into a component.



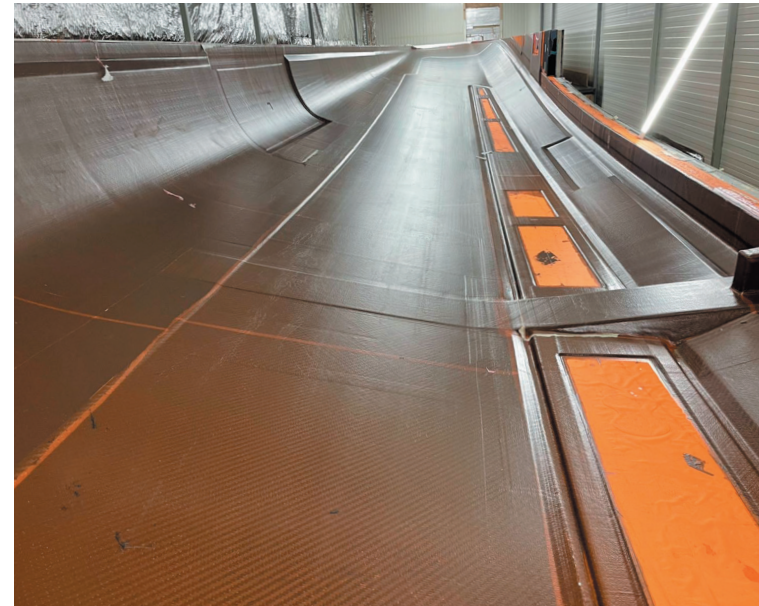
Industry collaborations

For component and panel work we work with the SCNTPL composite centre in Poland where we have access to fibre cutters and automatic fibre placement machinery as well as two excellent autoclaves.

Projects

Fibre Mechanics' management team has always worked closely with yacht racing teams. Over the last seven years we have taken the concept of collaboration several steps further, developing close ties with shipyards throughout Europe.

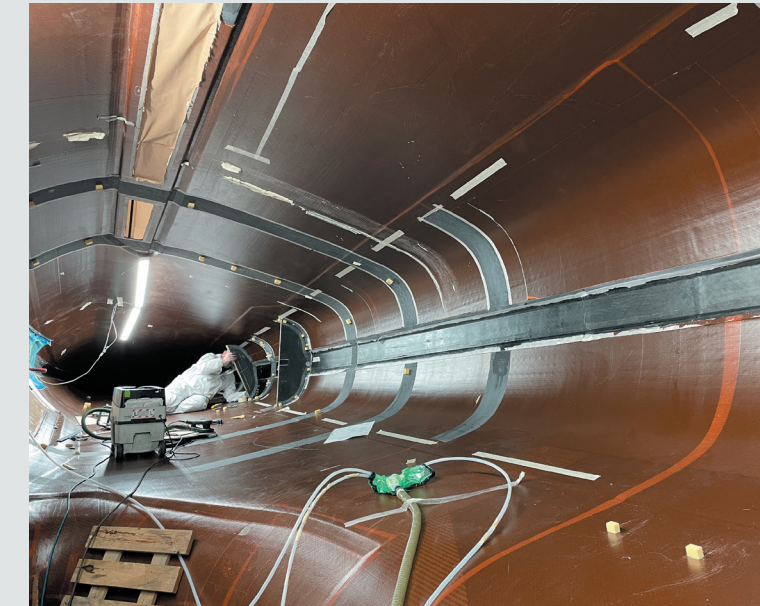
A key feature of all Fibre Mechanics' projects is our open and transparent way of working with our clients' project team. Recent and current projects include the composite structure of the new Gunboat 80, a 100ft cruising catamaran re-build and fit-out project, and a new build 87ft shoal draft sloop.



Half hull | Gunboat 80

The main hulls are being built in four pieces in direct female tooling (inner/outer topsides port and starboard, joined on the centreline of each hull). This photo shows the starboard outer hull immediately after its final cure cycle, in our mezzanine tunnel oven. The hulls are cured at 95 degrees centigrade for 12 hours to minimise the tendency of the resin and fibre pattern to 'print-through' to the final paint finish.

We are six months into a two year project to re-purpose a 90ft racing catamaran



Gunboat 80/01 Highland Fling XVIII

Each hull was assembled in Fibre Mechanics' Lymington factory and transported by road to La Grande Motte in France. A team from Fibre Mechanics, led by Colin Short (Production Manager) assembled the two hulls and the bridge deck of Gunboat 80/01 in the Gunboat factory in February 2022.



Project M-90

Having studied the possibility of building a custom boat from scratch, the new owners of *Gemini 3* decided that not only was the project to re-purpose an existing boat economically viable, but it was also a more environmentally sustainable project. The project started with a 12-month design study, and the boat was shipped to Fibre Mechanics' new facility in Hythe in December 2022.

Projects

Gemini 3 will be re-launched in 2024, having been extended to 100ft, fitted with a central nacelle & superstructure, and electric propulsion.

Also, in the new Hythe facility, we are in the first stages of building a custom 88ft performance cruising yacht designed by Tripp Design and due for launch in April 2025.



***Gemini 3* | Rebuild: stage one**

The first stage was to survey and repair the existing yacht structure, and to prepare the boat to accept a series of new components. At the same time, we were building transom extensions, coaming mouldings and a new nacelle in Lymington. The yacht is now 100ft and the nacelle hull has been fitted. Over the next few months, we will be fitting the nacelle deck and superstructure.

Gemini 3 will be re-launched in 2024, having been extended to 100ft...



Tripp design 291 | 87ft shoal draft sloop

This performance, 87ft shoal draft cruising yacht is designed for a family to cruise in comfort, with the help of a two-man crew.

Fibre Mechanics was selected to build the yacht when it became clear that the owners required a combination of performance and shallow draft that could only be achieved by a builder dedicated to weight saving in every aspect of the yacht.



Tripp design 291 | hull mould

A female mould is constructed for the hull shell to minimise the filler required to fair the yacht prior to painting. The pre-preg laminates will be cured at 95 degrees centigrade to minimise 'print-through' on the final paint finish. While the tooling for the hull and deck is under construction, our technical office is busy finalising the detailed fit-out of the yacht. One of the first tasks is to set the 'net-space' available to the interior designers; and to do this the routing of all pipes, wires, air conditioning, tank spaces etc. must be decided.

