

64' IRC Racer/Cruiser

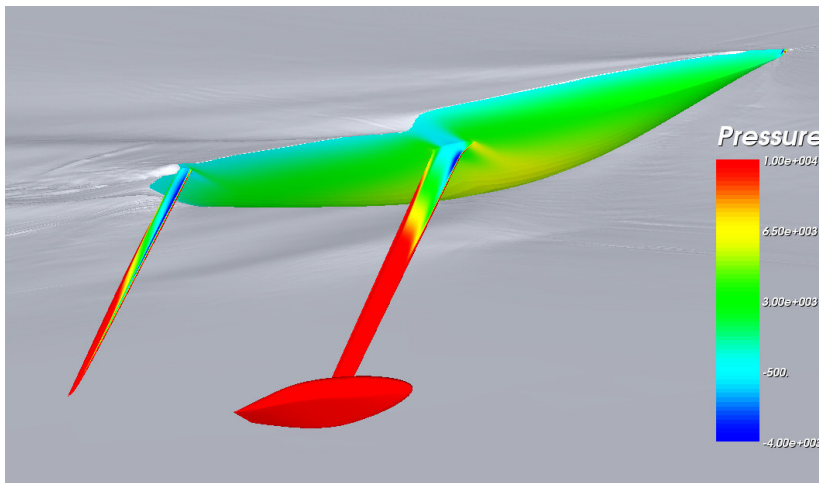


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This dual-use 19.5m performance design proposal builds on the success of IRC Mini-Maxis like Alegre, the latest in large racing yachts – faster and more powerful than previous generations, but adds the minimum of features necessary for an owner to be able to enjoy a thoroughbred off the racetrack as well. This is enabled by the design characteristic of increased stability without performance loss in the light producing a true all-rounder which fits perfectly into IRC. The displacement range uses the benefits of modern design and construction values to combine the upwind performance of an inshore raceboat with much of the offwind speed of 'sled' type designs. The hull shape is focused on IRC in particular as evidenced by the immersed stem knuckle and the powerful sections at the stern which combine with fuller sections forward to which promote the longest and most powerful heeled length. Since this proposal is a starting point for the design process, detailed studies will be required to finalise the design parameters relative to the event profile chosen by the client, but the direction for the main variables in this design is clear, most importantly the power of the hull shape and the performance range it is required to excel in as increasingly powerful designs are now handling lighter conditions better than ever.



The deck plan is based on a Grand Prix layout, adapted to produce a dual purpose cockpit with comfortable seats protected by low coamings. This provides an optimum combination of secure seating for guests with minimal impact on pure racing performance. Additional optional details such as halyards run under the coachroof, centreline lights let into the coachroof, and underdeck line runs reduce clutter and allow the design to look like a sleek daysailer as well as function like a thoroughbred offshore racer. A liferaft locker in the cockpit floor offers an ORC Special Regs complaint location compatible with weight centralisation. The 'German Admirals Cup' mainsheet shown runs forwards along the boom and emerges at the mainsheet winch, but a simpler alternative with higher traveller frictional loading is available leading outboard and then directly to the winch. Longitudinal jib tracks are shown as the best general purpose solution, but transverse tracks would provide the widest range of adjustment for a racing trimmer. Powered winches and hydraulics would allow combined daysailing and racing, with AC derived high pressure hydraulic controls using a 12v powered pump offering the lightest weight fingertip control, with manual backup.

The draft of 4.00m promotes the most effective use of the large lead bulb, suspended from a milled steel lifting strut sized to balance upwind lift development with minimum frontal and profile area. The T arrangement is necessary to keep the centre of mass of the bulb under the forward LCB, while the centre of the fin area stays further aft to maintain its relation with the sailplan. The latest sections developed for us by Cape CFD for this type of application are extremely efficient even in challenging hydrodynamic conditions. One option would be to produce a bulb with galleries containing easy to remove ballast to allow the design to be moded for upwind vs. offwind courses. Similarly the rudder has been fine-tuned to provide lift across the widest range of inflow angles promoting a smaller foil area, and its location is key to minimising drag from exposing the low pressure side at the surface when heeled.

A powerful upwind sail plan was chosen for this design in proportion to its RM, ensuring strong performance across the full spectrum of windspeeds. The carbon swept-spreader rig with non-overlapping jibs and no checks or runners is favoured by IRC and makes for a very easy boat to sail. Our philosophy in making these rigs work is to ensure that the demands of area and planform are balanced. In particular jib area and aspect ratio has a major role to play in

assisting the helm with finding and maintaining a groove upwind, and allowing jib trimmers to alter shape as desired. This foretriangle exhibits optimum values of area and aspect ratio, producing the extraordinary jib reaching performance seen in the polars. This foretriangle height meshes neatly with a mainsail of attractive aspect ratio without an excessive topmast length complicating the rig engineering for masthead halyards. The basic offwind sail plan uses masthead spinnakers flown off a fixed bowsprit. These Asymmetric sails reflect the narrow apparent wind angles (104 deg. In 25kn true) of a high performance design. Since IRC is liberal with spinnaker area the target SPA is over 400m², including A0 spinnakers (SMW>75%) would be expected particularly off-shore.

The modern layout suggestions match the requirements for a stylish enjoyable daysailer/cruiser interior, while allowing the boat to be raced with minimal impact. Boasting interior headroom of 2.0m the spacious and open central saloon has options for table and settees outboard which could be double or triple stacked pipecots in race mode, or for a horseshoe settee with galley along the opposite side. Forward ahead of the mast is a fully enclosed head with shower tray to port, while to starboard is a large storage compartment for safety gear, anchor etc. and hanging locker. Ahead of this is a comfortable owners cabin with seating and storage. Aft are two enclosed double cabins, with removable aft bulkhead panels to allow pipecots in the stern to be used while racing.

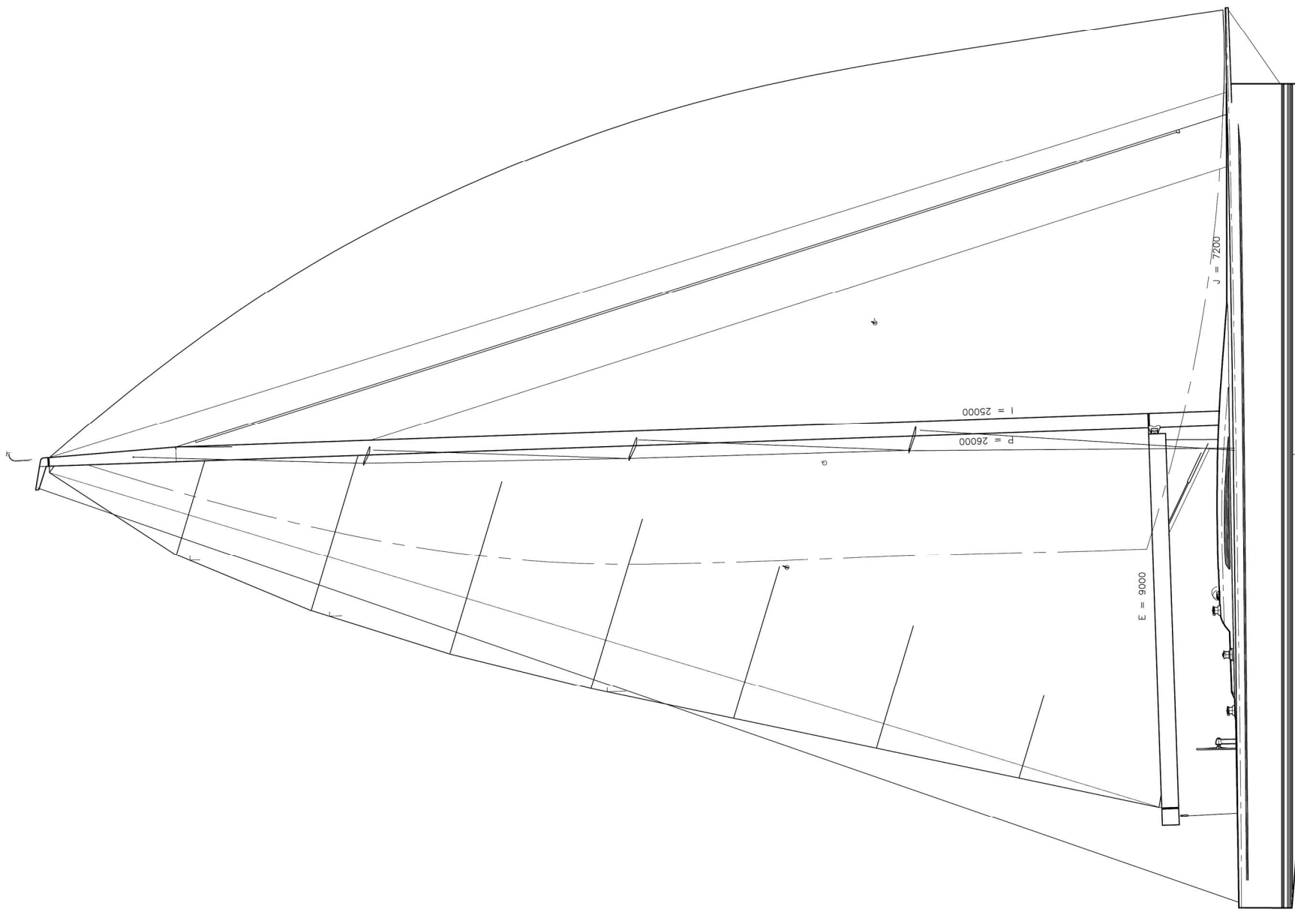
There is a range of choices available to fine tune the budget, performance, and amenity levels to best reflect the clients choices. Once the clients demands and expectations are clear we have developed the team necessary to offer excellence in the wide range of fields which comprise modern yachts design and engineering. The research and development phase necessary to match the expectations for performance with the conditions is carried out by Dr. Charles Crosby of Cape CFD, head of the Shosholoza IACC Fluid Dynamics program. His background in aerospace and the America's Cup and the depth of research methodology available (Flowlogic panel code, Comet or CFX Navier-Stokes) ensures comprehensive performance modelling at the beginning of the design phase. For the critical engineering decisions we rely on Steve Koopman of SDK Structures, who with his partner Dirk Kramers are at the leading edge of composite structures. Their track record as the engineers for Alegre, Alinghi, Artemis, and Numbers is proof of their domination in this size and type of design.

Dimensions:

LOA	19.500
LWL	17.759
Beam	4.500
Draft	4.000
Disp	12750
I	26000
J	7200
P	25000
E	9000
ISP	27800

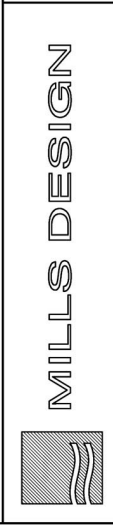


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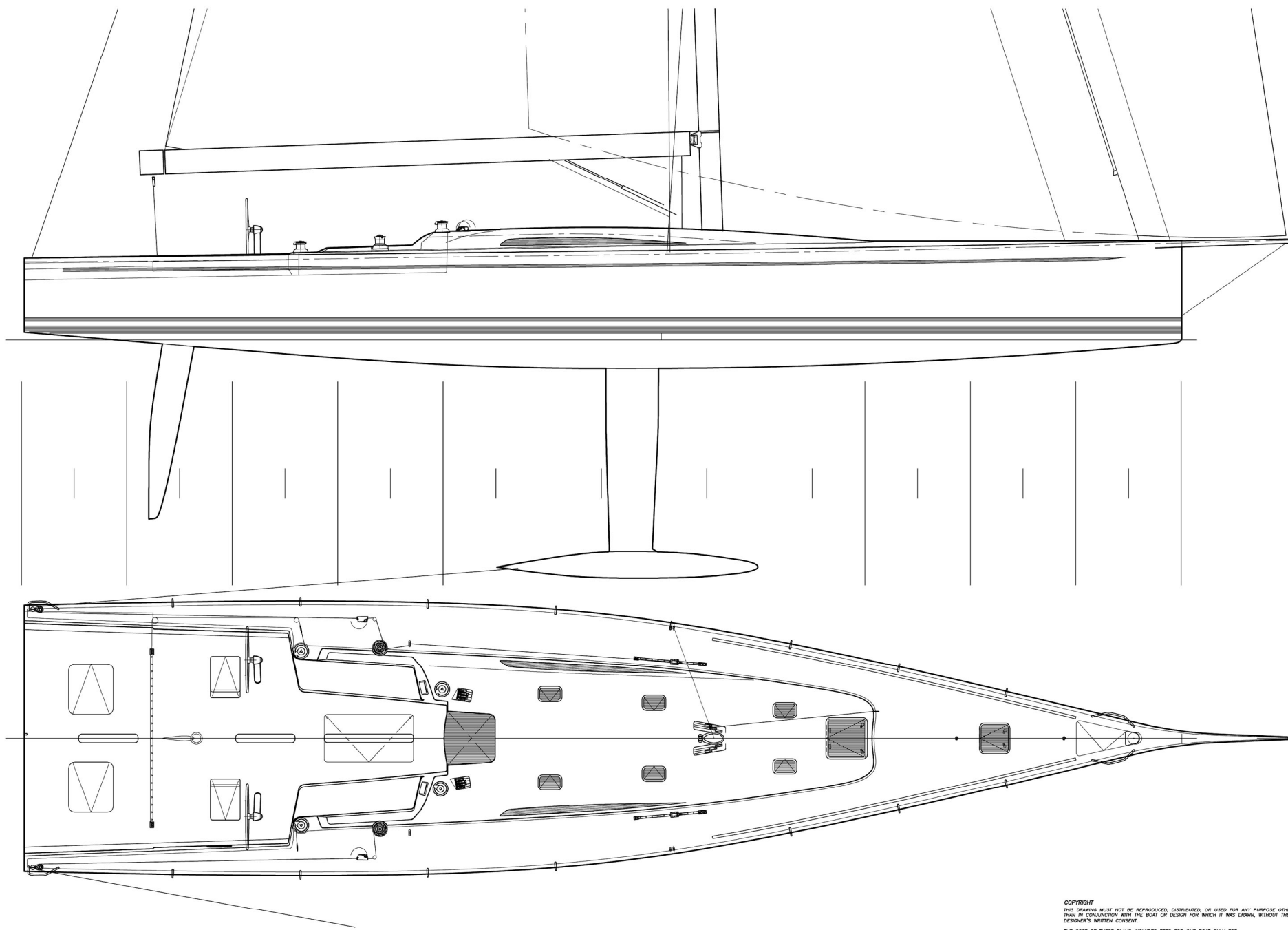


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19.50m IRC Cruiser/Racer
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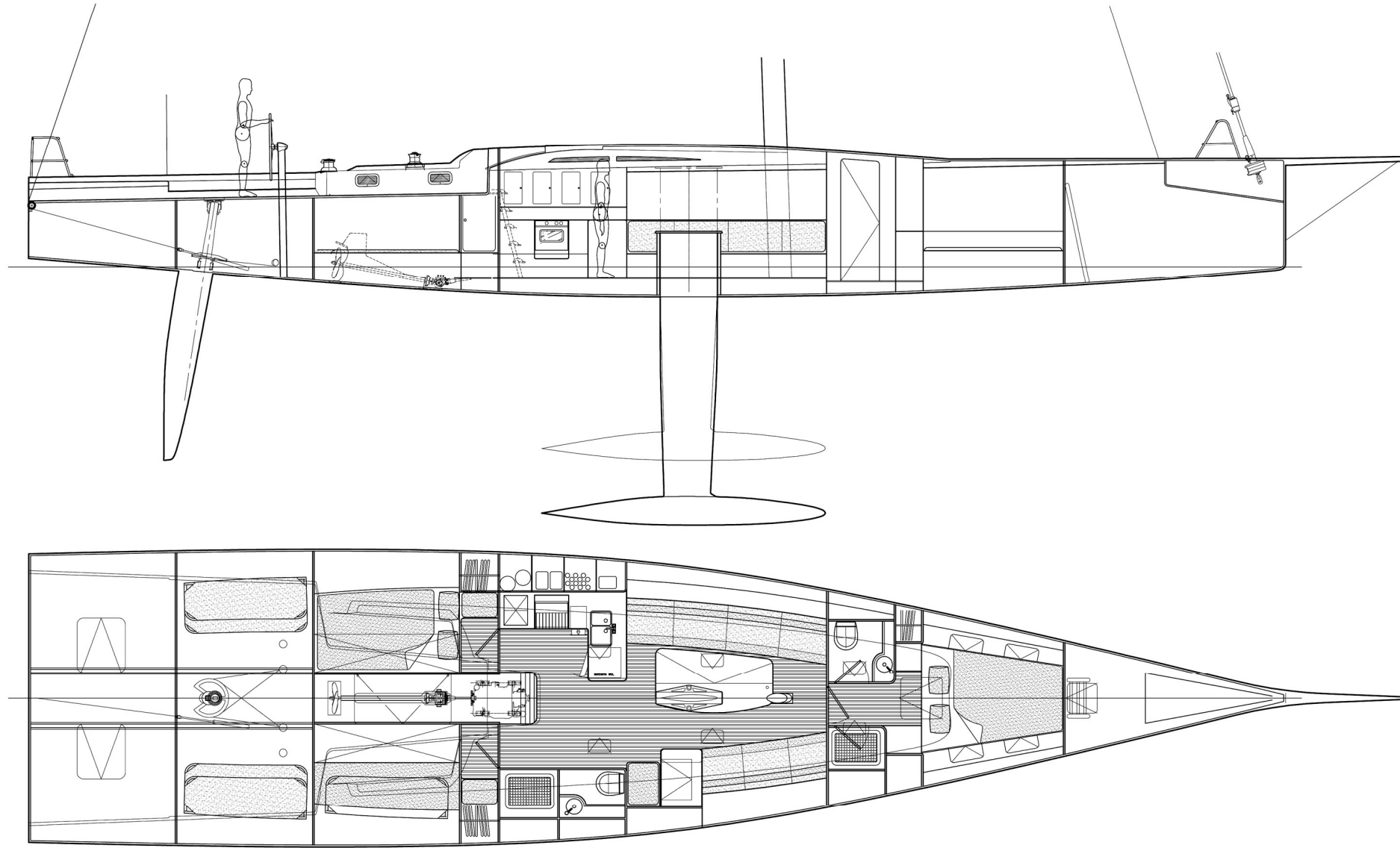


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Deck Plan
 Scale @ A1 = 1:37
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19.50m IRC Cruiser/Racer
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MILLS DESIGN

19.50m IRC Cruiser/Racer
 for:

Interior Plan
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Mills Design

Mills Design is a performance yacht design firm headed by Mark Mills. Since opening in 1995 they have enjoyed continuing success particularly under the IRC rule where their boats both custom and production have proved to be winners worldwide. Mills was appointed to the Royal Ocean Racing Clubs Technical Committee early in 1999, and joined the US-IRC Technical Committee upon its formation in 2006, confirming his deep involvement in Rating and Handicapping issues.

3 Winning examples:



Tiamat
UK IRC National
Champion 2006 (all
1sts)
French IRC National
Champion 2007 (all
1sts)
Scottish Series 2005
Cowes Week 2005



Mariners Cove
Irish IRC National
Champion 2008
UK IRC National
Champion 2006
Cowes Week 2006
Trafalgar and Carls-
berg Cups



DK 46
Big Boat Series, Rolex
Trophy, Geelong
Week, Hamilton Is-
land, Port Philip IRC
Championships, Kings
Cup (3 times), Lang-
kawwi (2 times), Yacht-
ing Cup (2 times).

3 Launches so far this year:



King 40
Production IRC 40
King Marine
Irish Commodores
Cup Green Team
Red Funnel Win days
after launching
Orders for 12



Landmark 43
Production IRC 43
Premier Composites
Orders for 10



No Naked Flames
Custom IRC 37
Davie Norris
Irish Commodores
Cup Green Team

3 in May:



Ambush
Custom IRC 41
McConaghy's



Tiamat
Custom IRC 43
Vision Yachts



Alegre
Custom IRC 69
NEB