



INFINITI 53

FARR[®]
YACHT DESIGN


INFINITI
YACHTS

EXCEPTIONAL PERFORMANCE





ADVANCED TECHNOLOGY, OCEAN RACING PEDIGREE.

Our new 53ft. canting keel racing yacht concept is uniquely positioned to provide exceptional performance in a wide range of conditions – able to perform well in inshore events and excel in offshore events. Advanced technology and extensive research is behind this design.

CONCEPT

Since Farr Yacht Design introduced the Cookson 50 in 2003, it has proven to be an unbeatable combination of value and performance.

The Infiniti 53 builds upon the Cookson 50's winning ways, taking advantage of 12 years of research, performance improvements, and advances in structural engineering and composite construction techniques.

Unique among designs at this size, this boat incorporates a transverse, retracting DSS foil that provides significant stability at speed and acts to lift the boat up reducing effective displacement.

Farr Yacht Design has entered into a technical and development partnership agreement with Dynamic Stability Systems and is in a unique position to provide fully developed DSS based solutions to its clients.

The design has been developed from the ground up to maximize the benefits of the canting keel and DSS packages and promises to provide unrivaled performance across a broad range of conditions; able to perform well inshore and excel in offshore events.





FARR YACHT DESIGN

Farr Yacht Design is the top racing-yacht design team in the world based upon one of the most extensive and impressive records of winning yacht racing results compiled by a single design group.

Their legacy of achievement dates back more than 30 years, including 43 world championships won in Farr designs and a multitude of design successes at internationally prestigious grand prix yachting events, including the Volvo Ocean Race, Vendée Globe, Sydney Hobart Yacht Race, Barcelona World Race, Transat Jacques Vabre, Copa del Rey and many others.

Incorporated by Bruce Farr and Russell Bowler in 1981 as Bruce Farr & Associates, the present-day Farr Yacht Design has grown to a design team comprised of 13 members providing an enormous range of talent and skills.

The designers at Farr Yacht Design share a superior and comprehensive understanding of boat design, construction and performance. The team has a passion for sailing, fostered as youths and developed through professions ranging from drafting, design, boat building and sail making to race rule management, computer science and engineering,

The team at Farr Yacht Design combines an unprecedented depth of yacht research experience with advanced internal research capabilities and state-of-the-art tools. Across a broad range of styles, Farr Yacht Design excels in providing well-detailed and thorough yacht designs. The team has earned a reputation for being successful creators of refined concepts formed in well-engineered structures.

Farr Yacht Design is based in Annapolis, Maryland in the United States, a city rich with maritime history located on the Chesapeake Bay.

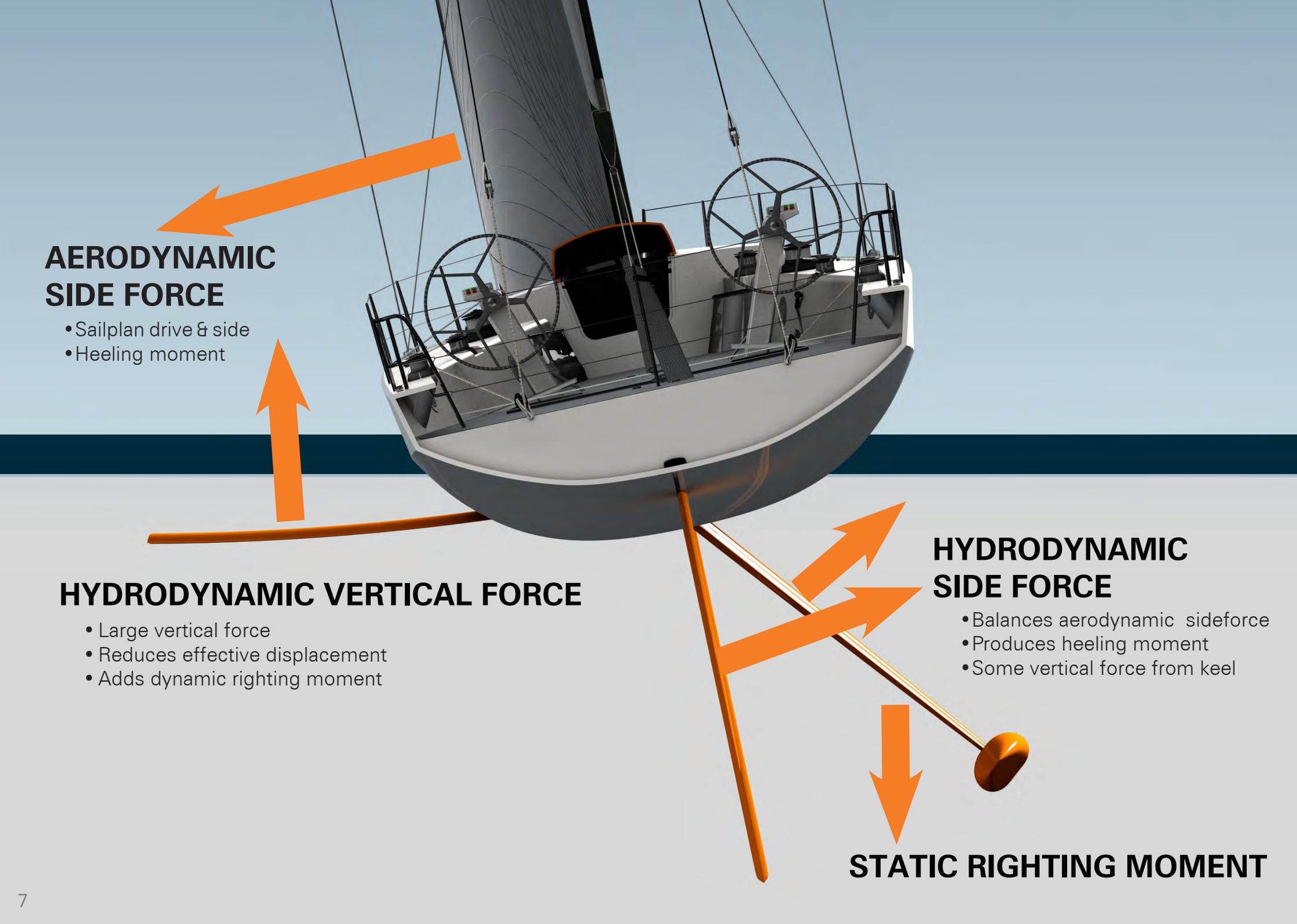


DYNAMIC STABILITY SYSTEMS

DSS is a retractable foil, deployed outboard from the leeward side of the yacht. at the waterline Thanks to its profile, the foil effectively lifts the leeward side of the yacht, increasing stability, with a similar effect to adding crew to the weather rail. Simultaneously it also helps to reduce wetted surface area and drag.

Compared to other ways of increasing stability, DSS holds these benefits:

- a) The DSS foil increases stability as it passes through the water - and is 'dynamic': The faster the yacht sails, the more stability the foil produces. This ensures that the yacht heels far less than a typical yacht, increasing the efficiency of the sail plan and making it easier angle for the crew to operate on deck.
- b) While increasing stability, the lift the DSS foil generates also reduces displacement and hull drag thereby further increasing speed.
- c) Compared to a conventional yacht, which relies upon hull form stability and beam to generate power, a DSS-equipped yacht can be narrower. This both makes it substantially lighter, with less drag, but also enables superior light wind performance, when the DSS foil is simply retracted into the hull.
- d) When sailing upwind, the DSS foil reduces heel, reduces pitching, consequentially increasing the efficiency of the sail plan and onboard comfort.
- e) More stability, more lift, less weight, less drag, less heel = a smarter, faster and more comfortable way to go sailing.



AERODYNAMIC SIDE FORCE

- Sailplan drive & side
- Heeling moment

HYDRODYNAMIC VERTICAL FORCE

- Large vertical force
- Reduces effective displacement
- Adds dynamic righting moment

HYDRODYNAMIC SIDE FORCE

- Balances aerodynamic sideforce
- Produces heeling moment
- Some vertical force from keel

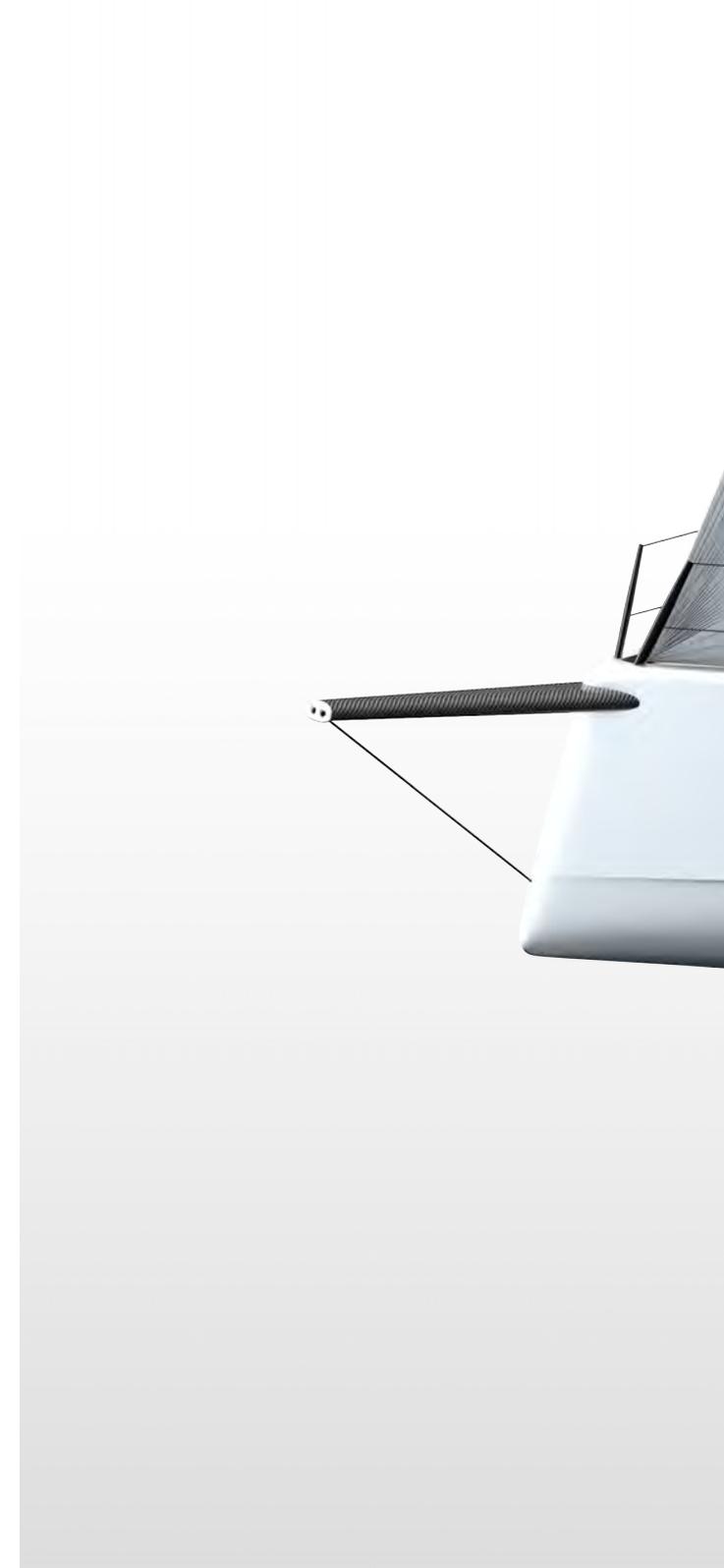
STATIC RIGHTING MOMENT

HULL DESIGN

After a detailed review of handicap fleets and race results worldwide we have selected an overall length of 53 feet. We feel this will achieve the best possible fleet placement and places the design in a very sweet zone of the IRC rating space between 50 and 55 ft. After extensive review of global race results we see a fast 53' canting yacht being well placed to excel in both inshore and offshore competition; able to get out in front of the TP52 style yachts and sail to its strengths. A displacement of ~ 7300 kg is a lighter displacement for its length than a TP52 but has been specifically designed to be a robust offshore capable design with an ergonomic offshore deck layout and interior. The construction specifications are not so aggressively light as to incur significant construction costs or impose dramatic rating penalties. The boat is a similar beam to draft as a typical TP52 so as to give the boat a balanced performance capable of excellent performance in a wide range of conditions. We have sought to develop a very low drag hull form that can be driven efficiently by a reasonable sailplan even in light air but has sufficient form and ballast ratio to achieve exceptional performance in moderate to strong breezes. The hull form represents a development of FYD's extensive race boat development projects and benefits from extensive computational fluid dynamics studies of various hull forms to develop efficient, low drag hull forms that are optimized

to expected sailing conditions. As a light, high speed boat the hull has a relatively high beam to draft and features a full length chine positioned to maximize high speed handling and form stability. Forward the chine blends into fair strakes that act to peel the spray sheet off the boat and provide dynamic bow lift at speed. Care has been taken to develop a hull shape that maximizes its effective length relative to its rating without adding extra drag at low speeds. The hull shape utilizes a sophisticated and highly resolved surface description that allows a high level of control in developing both the heeled and upright shape. The boat incorporates a high chine line that acts to increase high angle stability and serves to assist directional stability and transitional planning downwind and reaching. This is reflected in the deck beam being carried to the transom in order to maximize crew hiking moment when the crew shifts aft in strong winds, particular reaching and running.

The hull incorporates a number of signature aesthetic features that give the boat a unique character. The reverse stem and subtly reversed sheer line give the impression of forward speed even at rest and draw comparison to FYD's other high level Grand Prix designs.





DECK LAYOUT

The boat is designed from the outset to perform exceptionally well in IRC offshore races. This is reflected in the deck geometry that includes a low aspect chiseled house designed to deflect green water. The deck layout is a modern, grand-prix arrangement designed to allow ergonomically optimized access to all sail controls.

Twin driven Harken pedestals, one placed aft of the traveler, are used to power the mainsheet and primary winches as well as one of the pit winches. The winch package features carbon fiber Harken 65s all around, except for the primary winches, which are carbon fiber Harken 990s. This arrangement offers a large amount of flexibility that is very useful during sail handling maneuvers.

In addition to being able to power any of the driven winches, the aft pedestal also drives a rotary pump to power the sailing hydraulics. This pump can also serve as a backup power source for canting the keel. Using hydraulics for certain sailing functions reduces the amount of line in the cockpit and allows for very precise and easy adjustment.



INTERIOR

The interior is a fully functional racing layout. The lightweight galley is just forward of the companionway, and designed to be with used underway. The partially enclosed head is located just forward of the galley, though the mast bulkhead

Under the cockpit there is a dedicated navigation station, which rotates on centerline to allow the navigator to always sit to windward. Likewise, there are 5 pipe berths on either side of the boat to allow the off watch to effectively distribute their weight.

The boat features a fully retracting propeller, mated to a 55hp engine. This arrangement ensures that the boat will have plenty of speed while under power, while significantly reducing drag while sailing.



APPENDAGES

DAGGERBOARD

Along with a single transverse DSS foil, the boat features a centerline rudder and a gybing centerline daggerboard. Although allowances have been made for twin rudder and twin daggerboard installations, the use of the DSS allows the boat to sail at lower heel angles meaning a centerline daggerboard and rudder are more efficient – this allows us to simplify the onboard systems saving weight and cost and improving rating.

KEEL

The keel cant to 37 degrees actuated by a single custom designed ram and PLC system. Draft has been set at 3.65 m which provides a low center of gravity and plenty of upwind lift without incurring the rating penalty associated with significantly deeper drafts. The keel canting axis is recessed to maximize the stability from canting the keel and features a 3 degree inclined keel pin axis that generates side force and significant vertical lift acting to reduce effective displacement at speed especially when running without the DSS in use.



CONSTRUCTION & ENGINEERING

KEEL FIN AND BULB

The fin is steel with a lead bulb that offers a low VCG for improved righting moment. The bulb shape is a development of FYD's computational fluid dynamics based research program into optimum bulb shapes, and offers low drag in a wide variety of wind conditions.

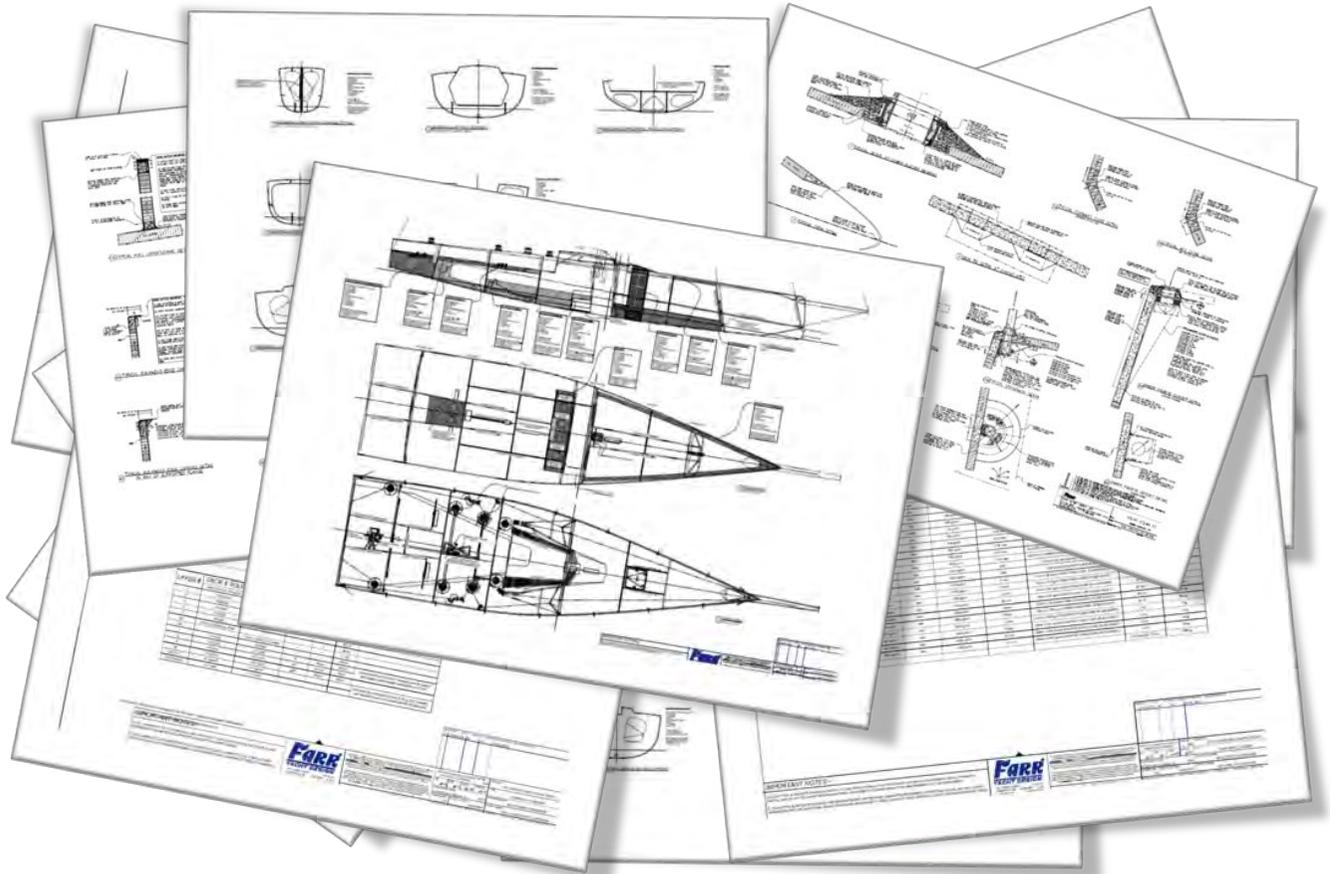
RUDDER

The rudder is a modern, high aspect ratio planform with a carbon stock that helps minimize pitch inertia and provides superior stiffness and strength. The foil sections for both the keel and rudder are custom developed proprietary sections designed to make the boat easy to sail in a straight line, maneuver at the dock or in tight corners around the race course and give the boat wider groove.

The construction of the boat is designed to comply with the ISO 12215 standards and to be strong enough to survive in the most difficult offshore conditions.

The structural arrangement reflects FYD's dedication to producing optimized structural solutions that balance performance, material cost and reduced production time. The structure is engineered primarily using pre-preg carbon and foam cores and is optimized to consider the efficient use of materials.

Wherever possible, lightweight interior panels are utilized as structure to support hull and deck shell, eliminating redundant sub structure and reducing interior weights.

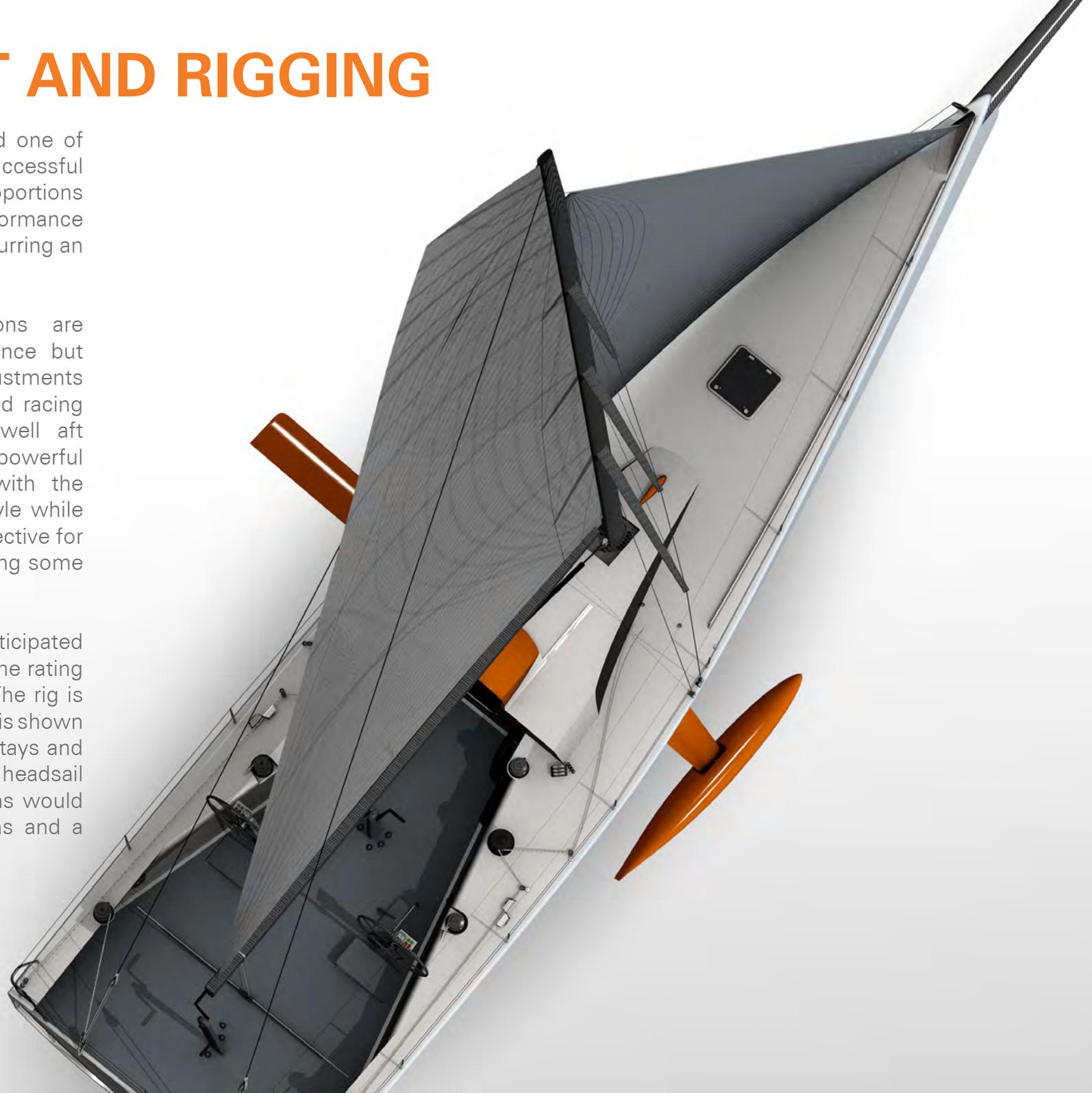


SAILS, MAST AND RIGGING

IRC rates sail area very strongly and one of the core challenges in designing a successful IRC design is selecting sailplan proportions that provide sufficient light air performance and dynamic acceleration without incurring an excessive rating penalty.

We feel the selected dimensions are appropriate for all-around performance but further development will reveal adjustments to optimize the package for expected racing scenarios. The mast is stepped well aft in the boat to take advantage of powerful reaching configurations and pair with the offshore oriented hull/appendage style while maintaining sail sets that are also effective for inshore and other venues incorporating some upwind sailing.

A moderate square head main is anticipated but mainsail size can be tailored for the rating and anticipated focus of the boat. The rig is stayed with 3 aft-swept spreaders and is shown with a pair of running topmast backstays and deflectors for control over a variety of headsail combinations. Headsail combinations would utilize multiple solent/staysail options and a generous fixed bowsprit.





SPECIFICATIONS

Length Overall:	16.15 m / 53ft
Length Waterline:	15.00 m / 49'2"
Maximum Beam:	4.40 m / 44'5"
Displacement [Measurement]:	7450 kg / 16424 lbs
Bulb Weight:	3390 kg / 7473 lbs
Cant Angle:	35 degrees
Draft:	3.65 m / 12ft
IRC Crew Number Max:	16

I:	21.45 m / 70'4"
J:	6.87 m / 22'6"
P:	22.6 m / 74'1"
E:	7.45 m / 24'5"



SUMMARY

The Infiniti 53, as with all Infiniti Yachts, uses Dynamic Stability Systems to provide unmatched levels of performance, comfort and stability. Every step is taken to provide grand prix performance while retaining the versatility required for discerning clients wanting a fusion of performance, comfort and style; elements which perfectly embody the ethos and culture of Infiniti Yachts.

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