PRESS RELEASE

NILAYA IS A NEW "FEATHER" IN ROYAL HUISMAN'S CAP

Panamax sloop Nilaya reached another milestone with her departure from her construction hall at the builder's Vollenhove facility in preparation for the installation of her towering rig in Amsterdam. This highly anticipated superyacht is the first to utilize Royal Huisman's new Featherlight™ design and production method. Continuous weight monitoring throughout the build of Project 405 aka Reichel / Pugh - Nauta 154, confirms the Dutch

builder has achieved its goal of slicing 11% of the weight of its typical advanced aluminum cruising yachts. Most importantly, it has reduced weight without sacrificing stiffness or cutting corners on quality for this high-performance cruiser. The shipyard's revolutionary Featherlight™ method for this 46.8m / 154-foot sailing machine is not a single process or construction technique, but a holistic light weight approach combining various weight-saving solutions.

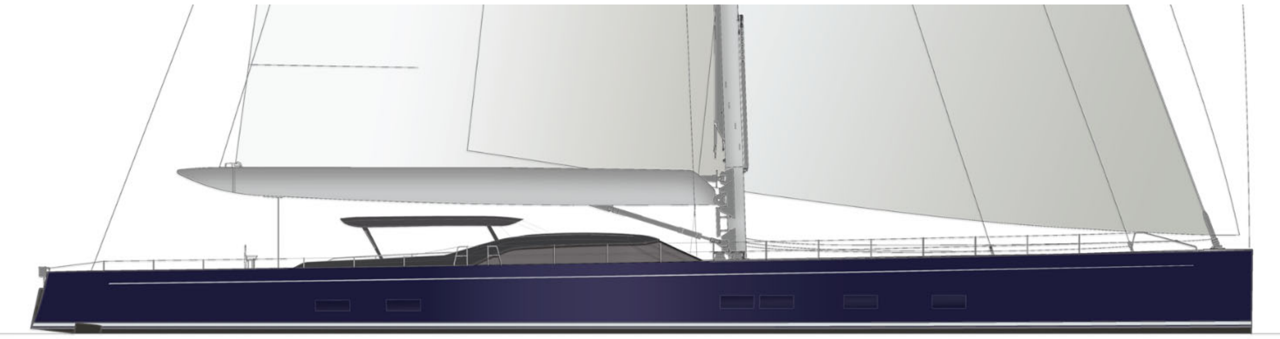
The Featherlight™ process makes use of Finite Element Analysis (FEA), a design methodology rooted in spacecraft technology. FEA modeling enabled selecting various construction materials and varied Alustar aluminum plate thicknesses and frame spacing to maximize hull stiffness while minimizing total displacement. With engineering and weight management brought in-house, the approach was comprehensive, extending to lighting, insulation, and all mechanical systems. The interior, too, benefited from careful weight analysis. All interior structural members utilize lightweight foam coring. This innovative approach narrows the displacement gap between aluminum and carbon composite yachts. Comfortable, robust characteristics of an aluminum yacht are now a viable option for owners seeking true sailing performance.

LIGHTWEIGHT MATERIALS ARE USED THROUGHOUT THE INTERIOR AND IN BOARD SYSTEMS

Capturing the carbon fiber expertise of its sister company Rondal, Royal Huisman's engineering team used this synergy to analyze and predict which structural components would be best made of composites or aluminum. For example, the entire 17.5m / 57-foot curvaceous coachroof and guest cockpit structure are carbon composite. Likewise, the recessed tender well on the foredeck (that transforms to a seating area for cruising or a flush deck for racing) is also carbon composite as are a watertight bulkhead, crew entrance, twin rudders, the keel trunk and a cockpit bimini hardtop.

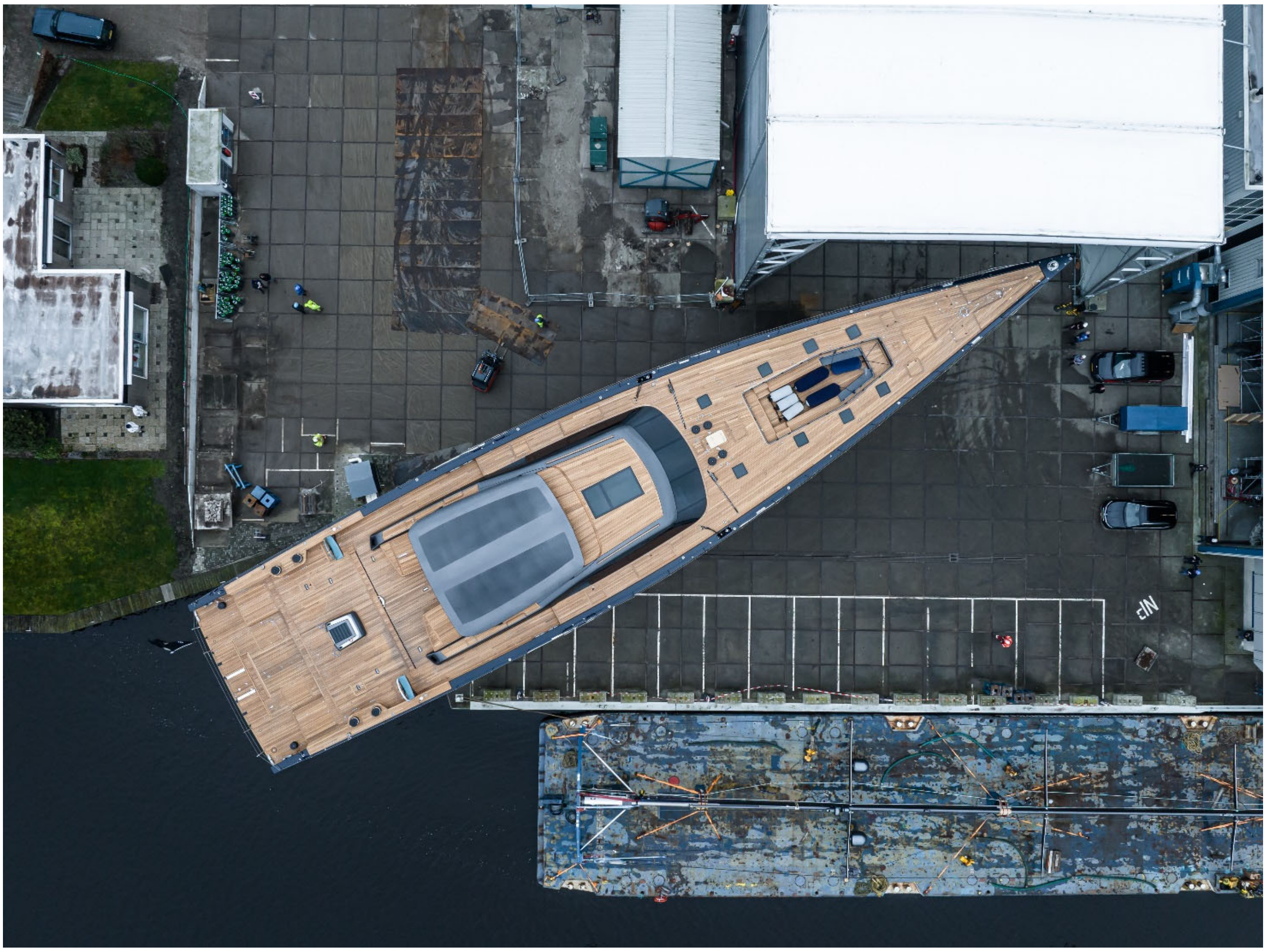
For any high-performance cruiser, a carbon fiber mast, boom, and standing rigging are critical to keeping weight as low and as centered as possible for optimal balance. While Rondal has considerable carbon spar expertise, bringing the design of this component — and the sailmaker – into the process during the larger hull design phase is a page out of a maxi-racer's playbook.

Project 405 is also the first yacht of this size range designed to take advantage of structured luff sail design pioneered by Doyle Sails, a choice that allowed the entire Rondal mast, rig, and components to be lighter — a key point considering her Panamax air draft. To take advantage of the very narrow headsail sheeting angles possible, Rondal created a radical new curved carbon fiber spreader design that is both shorter and more aerodynamic than anything previously available. Rondal also supplied new generation hybrid (carbon and aluminum) captive winches, hatches and various sail handling gear. Most deck hardware is titanium.



Nilaya's racy, low profile with its straight bow, wide transom, and twin rudders, echoes the look of her owners' previous highly successful maxi-racer of the same name. Not surprisingly, she is from the boards of the same naval architecture and design firms, Reichel / Pugh and Nauta, both firms with impressive reputations for high-performance sailing yachts. Exploring all the options for a luxurious performance cruiser also capable of podium finishes at superyacht regattas, the team made full design studies for the yacht in both carbon and aluminum using computational fluid dynamics (CFD) to optimize hull shape and balance. Royal Huisman's Featherlight™ method, an evolution of nearly 60 years of aluminum yacht-building experience melded with the latest carbon technology, provides her owners the best of both materials for a no-compromise yacht.

Nigel Ingram of MCM Newport serves as the owners' project manager on the build. "While the new Nilaya is meant to take the owners world cruising, he also asked for a boat with all the 'good habits' of their previous racer, meaning responsiveness and excellent handling. Alustar aluminum is the right material for an advanced, quality superyacht for global cruising. It deals with noise better and is a better choice for cruising in comfort to remote locations. However, we also thought it was possible



to build a lighter aluminum high-performance superyacht. Royal Huisman was not afraid to invest in research to explore and develop all manner of innovative weight-saving possibilities. They really chased the details."

Nauta Design's Mario Pedol noted that the choice of primary hull material did not fundamentally change the yacht's layout or total weight. "With Reichel / Pugh, we set the target weight. Royal Huisman really embraced the concept. It was a very good process, good collaboration."

Royal Huisman CEO Jan Timmerman used the occasion to highlight both the innovative construction methodology and the latest milestone for Project 405: "The success of the innovations with Project 405 paves the way to use this bold new approach for future builds. I am proud of the investment we have made in advanced engineering and of the way teams from Royal Huisman and Rondal advanced new solutions to meet the brief from very knowledgeable clients and designers. The owners as well deserve congratulations for pushing everyone to achieve just a little bit more and for encouraging innovation at every step. Nilaya will be the world's lightest aluminum sailing superyacht for her length: she rewrites the script for high-performance superyachts."

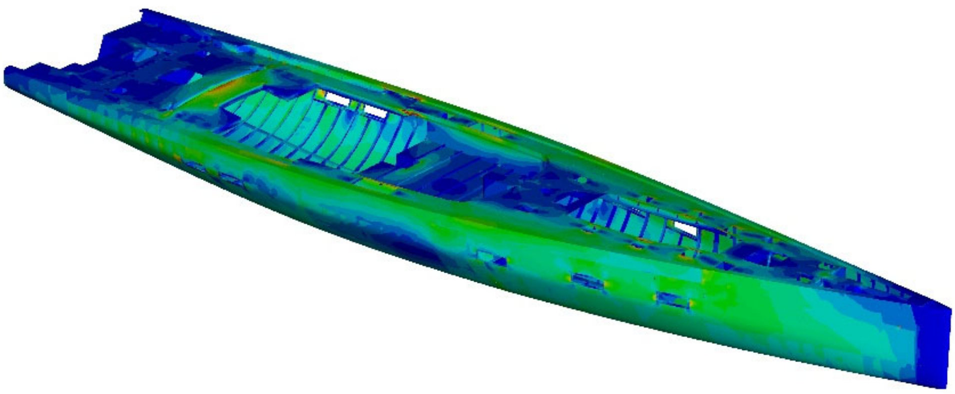
Royal Huisman Project 405 Nilaya will be delivered to her owners in the coming months.

END OF PRESS RELEASE

Editor's notes

An Investment in our DNA

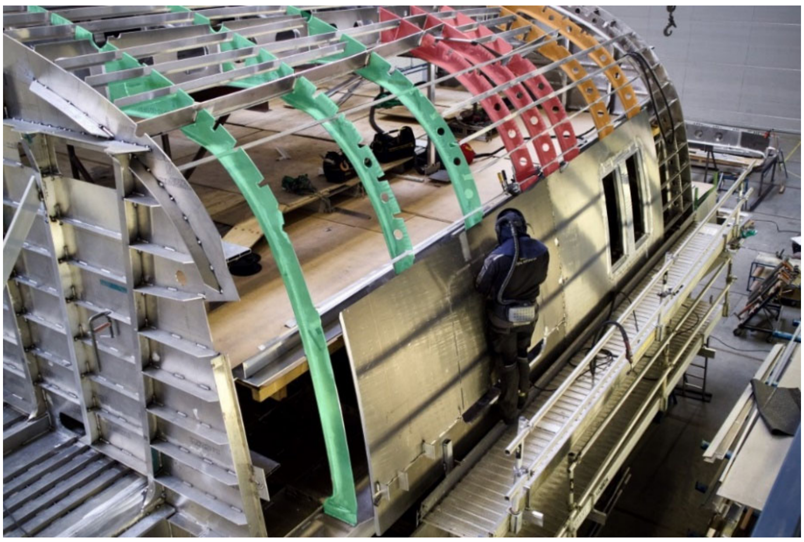
While many aluminum vessels have some composite parts, Nilaya is much more a hybrid. The revolutionary element of the Featherlight™ method for this 46.8m / 154-foot sloop is not a single process or construction material, but a holistic light-weight method for delivering a global cruising yacht that will be completely at home competing in superyacht racing events.



Featherlight™ is an integrated, multi-disciplinary approach focusing on weight reduction through advanced construction technology as employed by the European Space Agency. Finite Element Method Strength Analysis and Parametric Modeling allows the builder to determine exactly the right thickness of construction material for any location to achieve the design parameters, in this case both Alustar aluminum alloy and composite. Alustar already has 20% more tensile strength than regular aluminum.

NILAYA'S HULL CONSTRUCTION CONSISTS OF VARIOUS CARBON COMPOSITE COMPONENTS

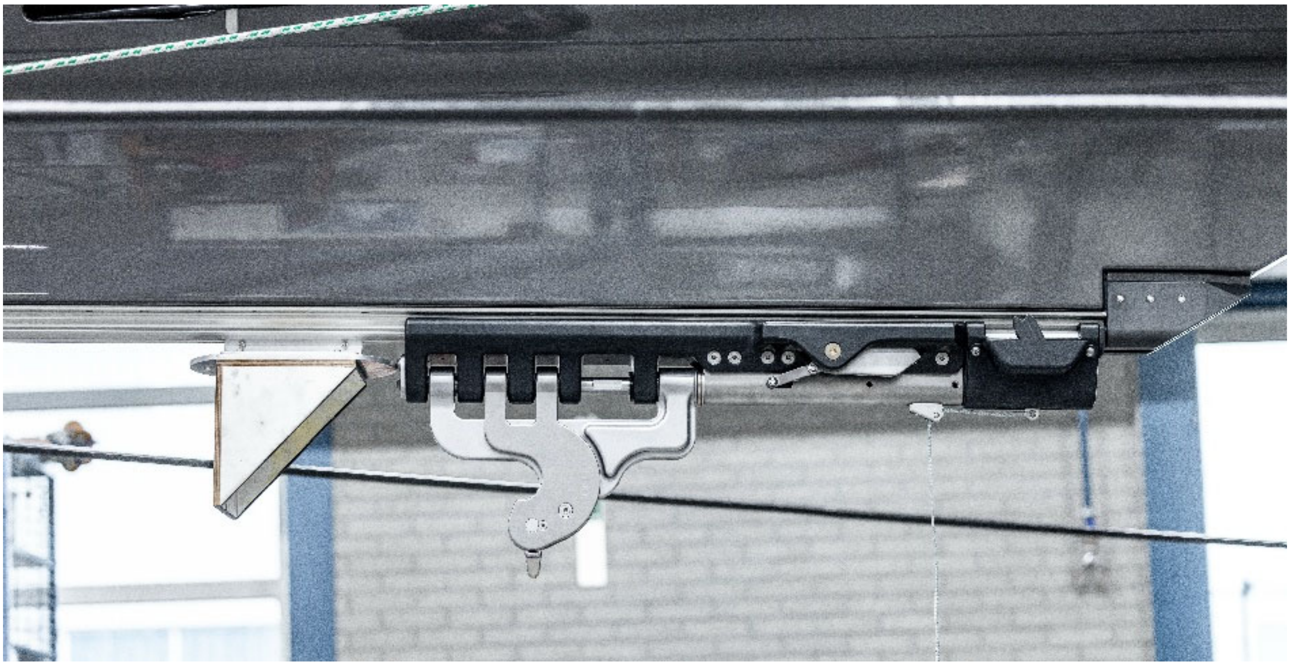
In some structural areas, extra component stiffness is achieved not with more metal, but by gluing carbon fiber to aluminum utilizing the latest bonding techniques. In other areas, elements are joined by bonding, eliminating the added weight of fasteners. Royal Huisman developed its own parametric software tool to quickly evaluate various structural designs for weight, stiffness and strength.



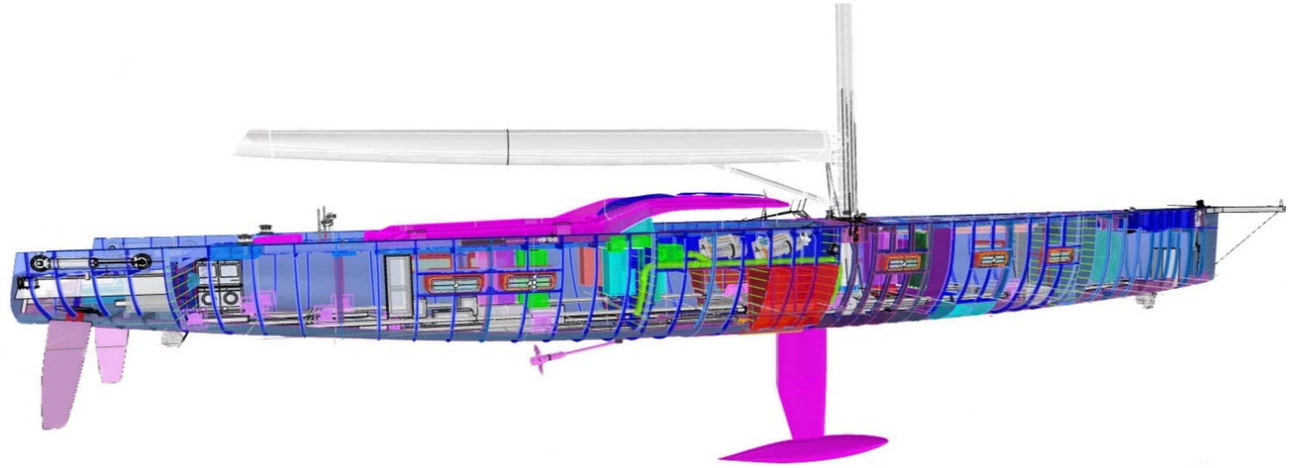
FINITE ELEMENT ANALYSIS MODELING ENABLED SELECTING VARIED ALUSTAR FRAME SPACING TO MAXIMIZE HULL STIFFNESS WHILE MINIMIZING TOTAL DISPLACEMENT

"The Featherlight™ approach is an investment in our own DNA," noted a spokesman for Royal Huisman's engineering team. Continuous weight monitoring is an essential part of the Featherlight™ process, so much so that a dedicated weight engineer is allocated to each project to ensure meticulous processing from start to finish.

Rondal, too, plays a role in the Featherlight™ approach as the system integrator. Ensuring the optimization of all the carbon components, its own engineers also supported the process throughout. Working alongside the sailmaker and naval architect on mast and rig development is a logical and efficient process. For Nilaya, the methodology brought product innovations such as a runner arrangement that saves 1,200kg / 2,646lbs and a new generation hybrid captive winch that saved half the weight of previously available captive winches.



Tapering to top of the mast on all four sides and eliminating a lock in favor of a unique headboard hook to capture and hold the mainsail are innovations that saved 150kg / 331lbs in a position that made a big positive impact on impact on the yacht's center of gravity.



A new course for sailing superyachts

Following an agreed overall weight target, every department was given a weight budget. With integrated teams exploring all the elements of the boat concurrently, everyone was aware of how each decision impacted others. Suggestions for improvements could be shared and analyzed real-time.

Beyond sailing performance, another positive result of Featherlight™ means that the yacht needs less power for motoring, a factor that leaves more space to the interior accommodation. In Nilaya's case, the Royal Huisman team developed a "tribrid" propulsion system in answer to the owners' request for an emergency 'get home' engine. This flexible system provides three ways to power the variable pitch propellor without a supplemental third engine or gearbox, thus saving 2,000kg / 4,409lbs. Its battery pack has the added benefit of allowing the yacht to operate silently in no-carbon areas. Similarly, a critical look at the HVAC system and selecting direct expansion and fan coils for each room, shaved another 600kg / 1,323lbs from systems weight.

Challenging a myth

For exterior and interior designers Nauta Design, Nilaya represents the largest sailing yacht yet in its portfolio. While she may share some handsome profile characteristics with her 34m / 112ft Maxi Class racing predecessor, this 12m / 42ft longer yacht is designed for luxurious cruising, albeit with a good turn of speed.

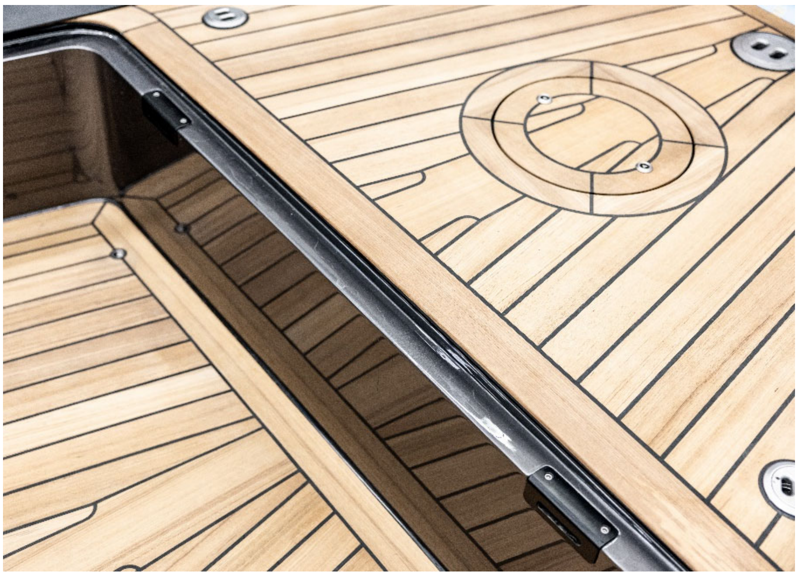
"To combine the comfort and robustness to explore the world with the [owner's] request for a lightweight yacht that would be responsive at the helm and competitive in superyacht regattas wasn't an easy task," noted Nauta's co-founder Mario Pedol. "One option was to build in carbon fiber, which is lighter and generally faster than aluminum. On the other hand, aluminum is more comfortable and impact resistant. We asked ourselves a very simple question: could we design an aluminum yacht that was much closer in terms of displacement to an equivalent carbon boat? The answer was yes, following my intuition that hull and deck are only 15% of the total weight of a modern sailing yacht; this was backed by analysis of our most relevant projects from our designs. In this process we took into account the owners' priorities, including less noise, the strength of the material, and the possibility of repairs around the world. We set about discovering ways to minimize the difference and look for advantages elsewhere," he said. "Royal Huisman supported this vision with enthusiasm and accepted the challenge."

Developing the deck and cockpit perfectly for the dual purposes of cruising with family and friends and regatta racing was very important to the owners, according to Pedol. "Royal Huisman constructed a 1:1 mock up of the entire aft half of the yacht for finetuning all the aspects from sail controls and steering pedestals to the dining table, seatback angles of sun loungers and the step to the aft deck leading to the swim platform. Checking sightlines over the coachroof from the helm positions received critical attention, even by simulating heeling angles."

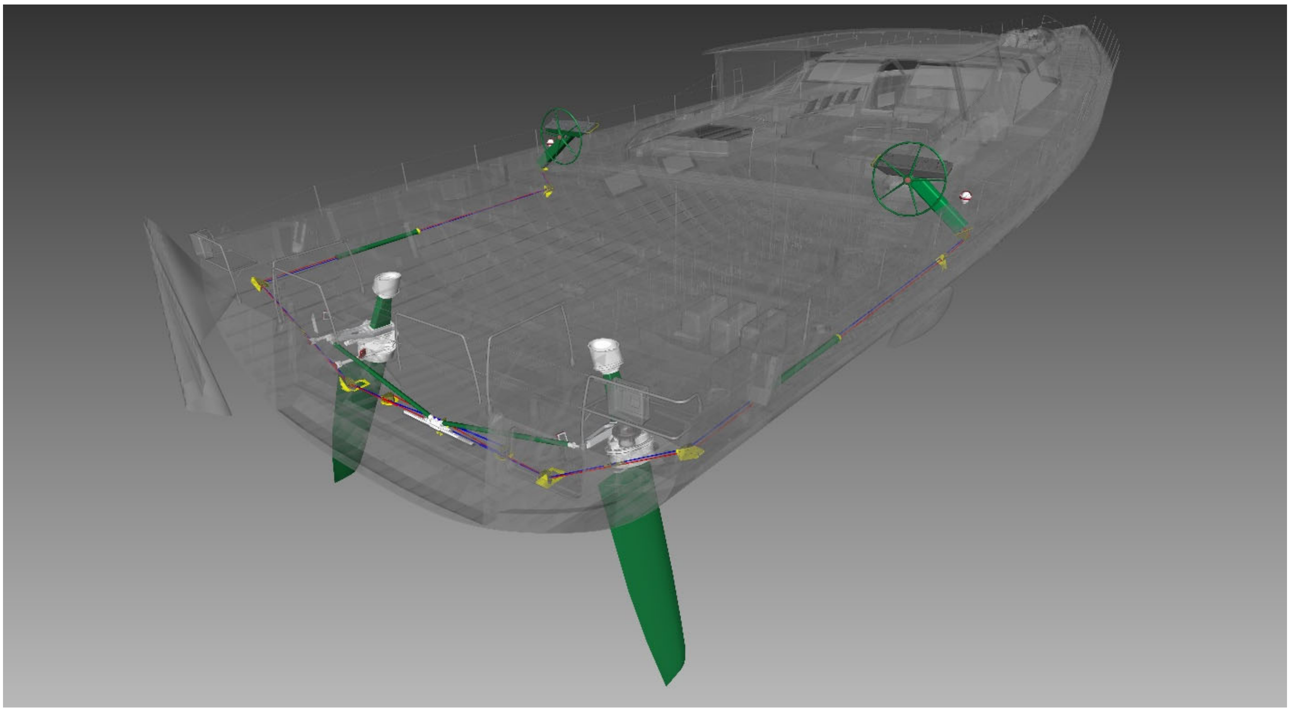
Building a blissful home on the sea

Nigel Ingram of MCM Newport is the owners' representative for Project 405 as well as the owners' previous Nilaya, which he describes as "a really happy boat." That yacht won nearly every regatta she entered. "The owners wanted a powerful performer with easy-to-helm responsiveness; basically, all the good habits of the last boat, but with more comfort and less noise." Nilaya, after all, means "blissful home" in Sanskrit.

Traditionally, reducing noise and vibration required the addition of weight — strictly the opposite of this desired outcome. To stay within the interior weight budget, Royal Huisman made extensive sound attenuation studies and developed sophisticated composite panels utilizing cork, foam, honeycomb and other materials. Accordingly, the shipyard made interior cabinets demonstrating the look, feel and sound of three levels of execution and allowed the owners to make the choice.



THE RECESSED, CARBON COMPOSITE TENDER WELL TRANSFORMS TO A SEATING AREA FOR CRUISING OR A FLUSH DECK FOR RACING



To perfect the hull shape, Reichel / Pugh Yacht Design enlisted the aid of one of the world's best Computational Fluid Dynamics (CFD) consultants, Caponnetto Hueber, and Giorgio Provinciali, a team with two decades of America's Cup experience. The top performing designs in both materials were made into models for tank testing. Beyond conventional CFD analysis, naval architect John Reichel explained that they layered on a sophisticated RANS code analysis to predict underwater turbulence generated by the hull, keel, rudders and propellors. It is the method used to optimize submarine hulls.

Finally, the naval architects collected extensive wave data from the owners' favorite windy cruising grounds and developed new hull shapes to run through the RANS CFD code to improve the seakeeping and motion characteristics of the yacht. As Reichel / Pugh improves the performance of their superyacht designs, they know it is critical to also improve the seakeeping characteristics in waves both under sail and power.

As the powerful sail plan was developing in concert with Rondal and Doyle Sails, running a Velocity Prediction Program (VPP) for the top designs showed that the yacht was shaping up to be an exceptional performer against top scorers in the maxi yacht fleet. The VPP predicts the yacht is capable of exceeding windspeed when reaching upwind with main and jib alone, even in a 10-knot breeze.

“The owner is a quality maniac,” said Nauta co-founder Massimo Gino. “Not only this hybrid use of the two materials but the approach to saving weight while keeping quality and comfort was a great solution for this project.” The choice of hull material did not alter the yacht’s interior design except as needed to adjust for framing dimensions, while the carbon composite coachroof preserved headroom.”

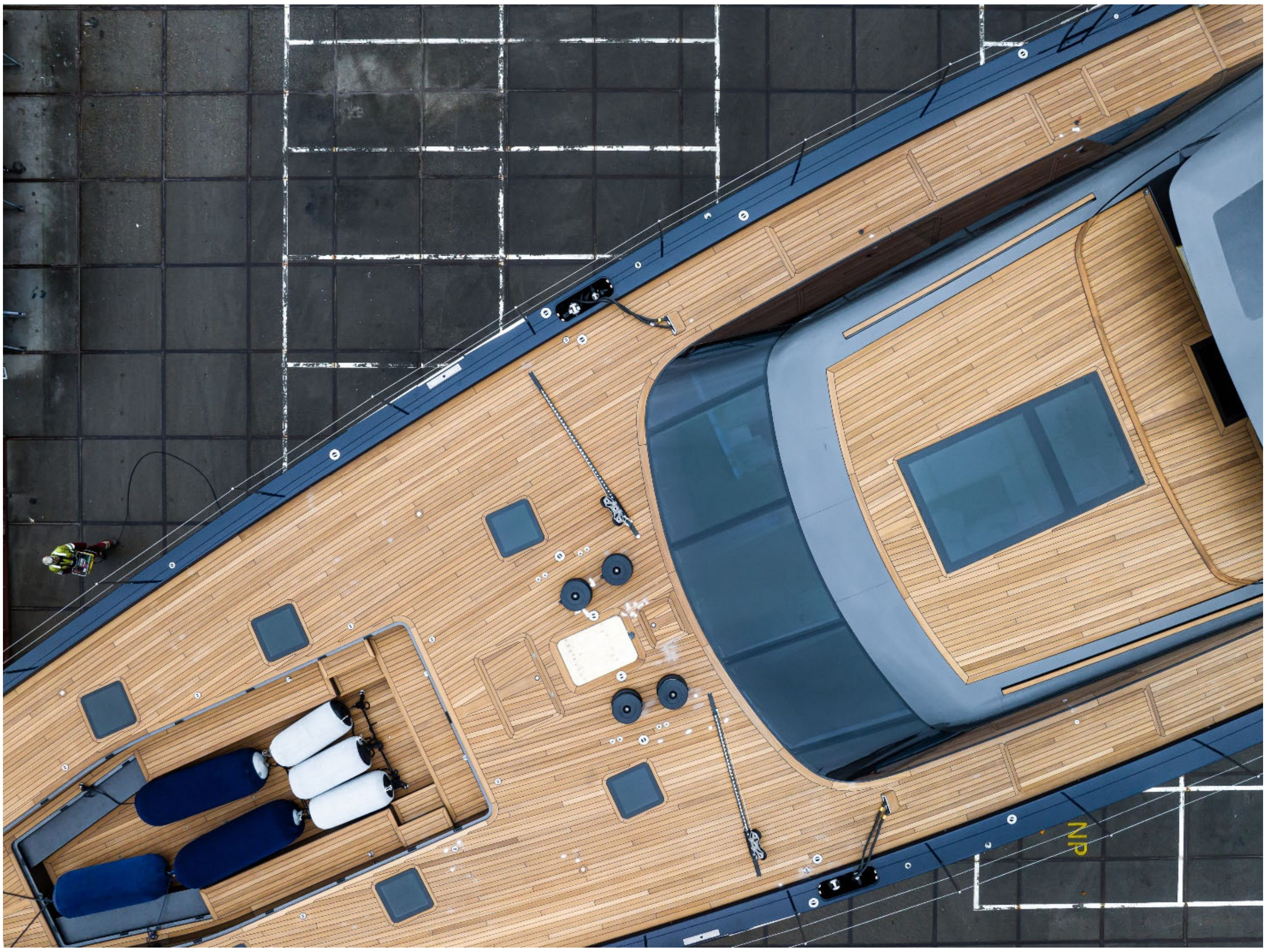
“By developing the complete interiors in 3D and consequently by producing hundreds high quality 3D rendered views, of both general views and details, in several different revisions and options, we were able to fulfill the owners’ expectations for light yet warm and welcoming interiors, which combine a modern look with classic elegance,” Gino added.

Throughout the year-long design process, the overall plan for the yacht changed little, Reichel said, except for becoming one meter longer, the length distributed mostly at the ends. “Weight distribution is critical for assuring comfortable motion on a cruising yacht. We gave the shipyard team a weight study early on, not just for the total but for balance and maintaining the proper center of gravity. “Royal Huisman responded with extensive Excel sheets showing the weight of every element. That’s a process typical of the highest end racing program construction.”

About Finite Element Analysis

Finite element analysis (FEA) is a complex mathematical geometric computation used for predicting how a part or an entire product will react under stresses such as load, force, heat, vibration, etc. Being able to look at a part in three dimensions also predicts how the part will react as the same stresses are being applied in its neighboring parts, thus identifying potential weak or vulnerable points that can be corrected in design. Think of it as a kind of digital prototyping but far more accurate and much faster. Solutions can be applied without having to build and test new physical models.

Royal Huisman used Finite Element Analysis (FEA) of Nilaya's 3D model to fine-tune the engineering to "a much higher level," according to naval architect Jim Pugh, adjusting plate thickness in the computer and predicting longitudinal stiffness or deflection without so



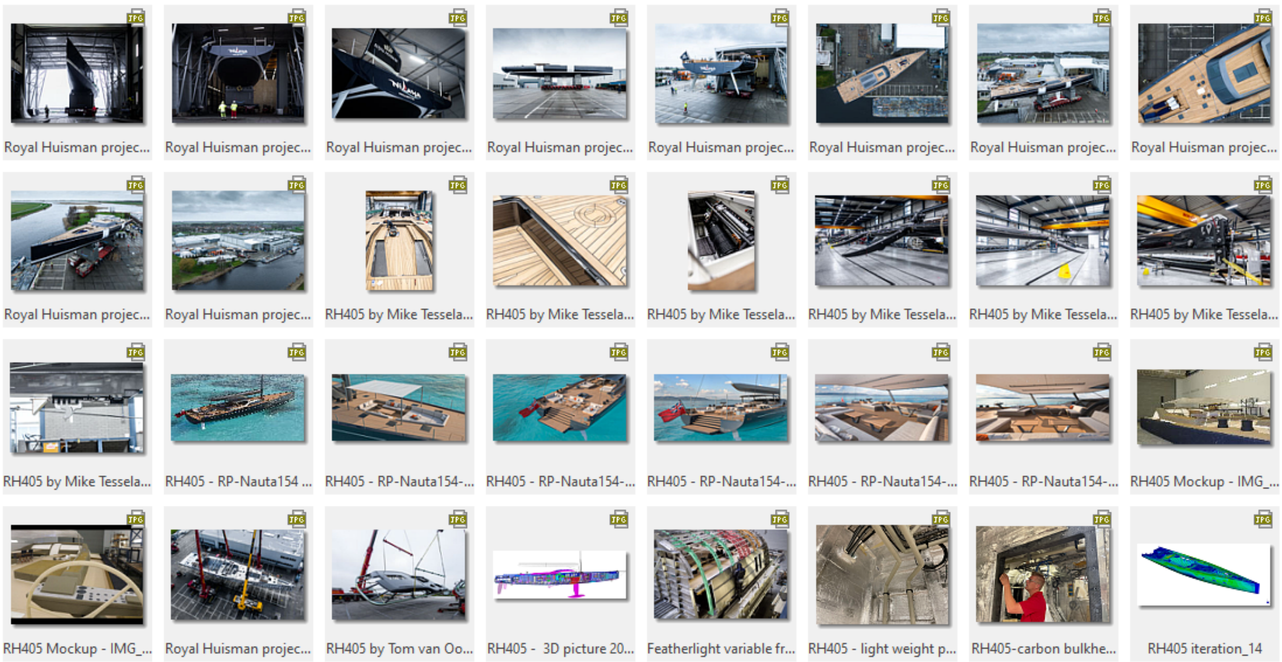
much as touching that first piece of material. But it wasn't just the engineering teams for carbon and aluminum structure that were involved. Royal Huisman created a new method of operation for Nilaya that kept all parties in the loop and working together from the outset.

"Bringing in the mast and sail designers early in the process has significant advantages," said Jim Pugh. "From the aero CFD side, Rondal and the sail designers shared high quality data about sail forces and sail loads that we integrated into the hydro CFD studies of the candidate hulls. This markedly improved the quality of the CFD hull testing and the resultant performance prediction. The mast and sail loads were then input into the hull and deck's structural engineering," said Pugh. "These studies are applicable to any design whether Featherlight™ or heavy, no matter the thickness of the plate or weight of the composite, such a study will yield remarkable results."

Main specifications

Yacht name:	Nilaya
Type:	High-performance cruiser sloop
Length overall:	46.8m / 154ft
Beam	10m / 33ft
Draft:	4.5 - 6.9m / 15 - 23ft
Accommodation:	8 - 10 owners / guests + 8 crew
General concept, ext. & interior design:	Nauta Design
Naval architecture:	Reichel / Pugh
Owners' representative:	Nigel Ingram, MCM Newport
Owners' race team:	Bouwe Bekking
Builder:	Royal Huisman
Construction:	Aluminum and carbon composite
Classification:	Hull structure & superstructure according to the rules & regulations of Lloyd's Register Special Service Craft Rules, eligible for the class notation: ✠100A1, SSC, Yacht, Mono, G6
Rig + handling:	Rondal carbon Panamax rig + Integrated Sailing System
Year of delivery:	2023

At this time no further details about the project are available.



Download high resolution illustrations

The images from this press release can be available on request via:

Jurjen van 't Verlaat: jurjen@royalhuisman.com or +31 527 243131.

As you might know Royal Huisman works closely with our clients and members of the yachting press. We do this in order to give all our media friends equal support and opportunity. Please introduce us to new press colleagues: we will be pleased to assist them and add their contact details to future press releases.