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Columbus 40S

HYBRID POWER GOES MAINSTREAM

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COLUMBUS 40S HYBRID

BY COMBINING AN INNOVATIVE PROPULSION SYSTEM WITH LUXURIOUS, LIGHT LIVING SPACES AND SPORTY LOOKS, ITALIAN YARD PALUMBO BRINGS HYBRID POWER TO THE SUPERYACHT MAINSTREAM.

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At the recent 2014 ShowBoats Design Awards, the Columbus 40S Hybrid picked up more awards than any other yacht. While her name hints to a particular unique quality of hers, it was a factor in winning just one award. Yes, the yacht won the environmental award, but she also surpassed all the other semi-displacement yachts for best interior design and won a holistic design award for her seamless blend of interior and exterior style. It goes to show that there are many layers to this fascinating yacht.

At her core is her innovative hybrid propulsion system. "These engines were pushed to the owner by the shipyard, which came into yachting with a big interest in environmental preservation," says Gianpaolo Lapenna,

project manager for the Naples, Italy-based Palumbo Group. "Most of the products on the yachting market are similar, so you need to push new technologies, innovation. A zero-impact boat will never exist, but hopefully things will get better and this is the road we have to work on."

The 40S Hybrid's flexible system uses two diesel engines and two electric engines with three different modes of operation. The conventional diesel mode offers a top speed of 22 knots. Even in this mode, the hull shape optimizes fuel efficiency, preventing the total fuel consumption from exceeding 40 gallons per hour when cruising at 14 knots.

In electric mode, the main engines are switched off and three generators provide power to the electric motors. Each electric motor can

produce 75 kilowatts, which allows for a speed of 7.5 knots while burning a total of 13 gallons per hour. (The yard decided against using battery banks as it claims the power passage through the batteries and inverters causes about an eight-percent loss in performance, thus increasing fuel usage.) This electric mode provides ultra-quiet running since the generators are enclosed in soundproof cases. The sound level in this mode is a low 40 decibels in the guest cabins with the yacht underway, and there is zero vibration. "We entered the port of Monaco in absolute silence using this," the captain confirms.

Environmentally speaking, the generators' fixed rpm in this mode cuts down on the exhaust gas temperature variations that are responsible for



sulfur oxide and nitrogen oxide air pollutants.

Finally, there is a shaft generator mode, in which the main engines drive the electric motors and also act as generators. When operating between 800 and 1,800 rpm, one or both of the diesel generators can be switched off while the main engines provide up to 75 kilowatts of house power for the yacht. This saves fuel as well as reduces emissions.

The biggest challenge was fitting all this into an engine room, says Sergio Cutolo of Hydro Tec, who did the Columbus 40S Hybrid's naval architecture and exterior styling. As a result there is no separate control room for the engineer, but instead there are comprehensive touchscreen control panels in the engine room, the wheelhouse and even the crew mess. "From these panels you can choose whatever you like to have on the screen," says the captain, "and you can control everything on the boat: valves, pumps, lights, curtains, engines, generators."

While a similar power system has been used on smaller yachts, this is the first large yacht to employ it, and so the first to encounter the problem of class—how would the classification society RINA categorize the yacht? The solution lay in a brand-new class notation. Working with Palumbo from the beginning of the project, RINA created the Hybrid Propulsion notation so it could offer the yacht the legal protection of official certification. The society also gave her a Green Star Plus for her environmental credentials.

The propulsion system, particularly the ability to cruise in silence in electric mode, reinforces the relaxed, family-boat ambiance—with a sporty edge—that the owner desired. His brief for the interior was to create a feeling of openness (including excellent headroom) and a connection with the natural environment. The open-plan main salon reflects these requests well. Large windows, reaching from thigh to head height, offer expansive views even when sitting at the dining table forward, and Cutolo went to great lengths not to compromise them. "The owner wanted no distraction from the sea," he says. "So we have these transparent bulwarks, like windscreens, so there is nothing in the way."

This is literally true in the central portion of the space, where to port and starboard of the low, comfortable seating area, nearly 10-foot-wide French windows open accordion style and long balconies fold down. "You feel like you are seated on the sea," says the captain.

Up a deck, the upper salon was kept small to allow for as much outdoor space as possible. This includes a good-sized sunbathing area, a shaded sofa and a wet bar. The foredeck offers yet another outdoor spot, with a sunpad and Jacuzzi situated in utter privacy when the yacht is moored stern-to.

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A vertical bow sets the tone for a streamlined and muscular design (left). A smaller upper salon (opposite, bottom right) maximizes the outdoor space (opposite, top). The engine room does not have a separate control room but the sophisticated management system allows controlling the systems from other spots on board.



"You need to push new technologies, innovation.
A zero-impact boat will never exist,
but hopefully things will get better."

— GIANPAOLO LAPENNA, PALUMBO GROUP





The owner's brief called for creating a feeling of openness and **a connection with the natural environment.**

The cabin layout is unusually flexible. The owner's suite forward on the main deck features an office, seating area, dressing room and spacious en suite with a double shower. But at the opposite end of the deck below is a space that can be made almost as luxurious; the wall separating the two aft guest cabins slides away, one of the beds folds into the wall—disguised behind a leather panel—and a sofa and coffee table are added in its place to create a full-beam VIP with his and hers en suites. Aside from a small visible section of the sliding door's frame you'd never know the space had once been divided. Two more standard en suite guest cabins are forward on this deck.

Throughout the yacht, deep window recesses and low furniture—much of it designed by the yacht's Italian interior design firm, Hot Lab—impart a relaxed atmosphere, while there is good headroom throughout. The interior scheme in general is simple with subtle design cues, for example a variation in the ceiling panels on each deck (a soft curve in the upper deck and sharper lines on main and lower decks). Details, such as textured wood on the master suite's cabinet doors, highlight rather than obliterate the natural grain. The effect complements the natural connection the owner requested. "The initial idea was to work with the roughness of materials, especially woods, to obtain a



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The owner's suite has the king-sized bed centered in the cabin (opposite, top), a full-beam en suite (opposite, bottom left) and an office (opposite, bottom right). A fully equipped bar welcomes guests into the main salon from the aft deck (below).





While much thought went into the guest spaces, **crew areas also received a lot of attention.**



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Combining two guest cabins creates a huge suite (left, top). Crew spaces have high-quality finishes (left, bottom). To connect guests to the sea, there is a beach club (opposite, bottom) and the main salon features opening windows and balconies (opposite, top).

natural, neutral feeling, extremely warm and relaxing,” says Enrico Lumini, a designer at Hot Lab.

Pale-stained teak and American walnut are used as standard veneers on most surfaces, with neutral-colored adria venato and breccia sarda marbles in bathrooms and on other countertops. Cool, natural luxury may have been the desired look, but the interior designers could not forget they were working on an aluminum sport boat—one with environmental concerns—a challenging balance. “We worked on two main principles: be light and be recyclable,” says Lumini. “All marbles are only four millimeters thick, mounted on a recycled aluminum honeycomb. All woods are FSC [Forest Stewardship Council] certified and [from trees] with a high-growth rate. All paints are water based, without aggressive chemicals. Also, in the production process, we tried to eliminate any unnecessary transportation of goods, concentrating shipments; so very few trucks actually left from [the production base in] Milan to [the shipyard in] Naples.”

While much thought went into the guest spaces, crew areas also received a lot of attention. The main deck galley and lower deck crew mess are both of a decent size, but it is the high-quality finish and head heights that are most notable. The design includes well-conceived entry points from crew to guest areas, including from the mess into the lower-deck guest corridor, the crew stairway into either the galley or next to the owner’s main-deck office and a crew stairway opening into the wheelhouse. The captain’s cabin is off the crew mess, rather than by the wheelhouse as standard, although a touchscreen by its door gives him control close by.

On the upper deck, the bridge is integrated and most equipment is hidden in long drawers. All systems can be checked and operated using a touchscreen, so the more traditional controls are a back-up. For navigation the captain uses the Xenta joystick. “Pressing T, I can use it as a bowthruster; pressing C, I can use it to maneuver the boat,” he says. “I also have a wireless one (that hangs around the neck); I can maneuver from the stern, from upstairs, from wherever. If you want you can give an IP address to the system and move your boat from home; that is something not recommended—but it can be done. This is state-of-the-art technology.”

The yacht’s exterior design reflects its high-tech nature. Cutolo’s modern, muscular lines and the silver and white paint job chime with the yacht’s remit as a 21st century sport yacht, while the vertical bow, Cutolo says, “is mainly aesthetic but it gives you some advantage on the waterline. The only problem you have to solve is spray; but we tested the boat even on windy days and it was dry.”

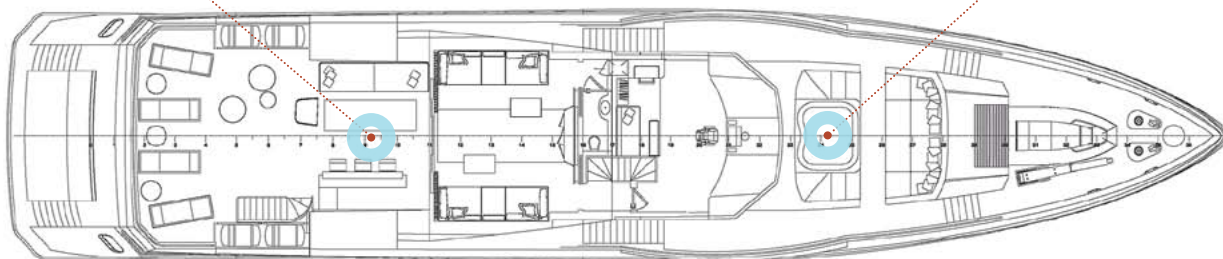
Indeed, Palumbo has pulled off a very modern synthesis: a sporty boat built to be green and thrifty, a high-tech boat with a natural ambiance—clearly a winner all around.

SB ENHANCED DIGITAL CONTENT ON THE IPAD APP



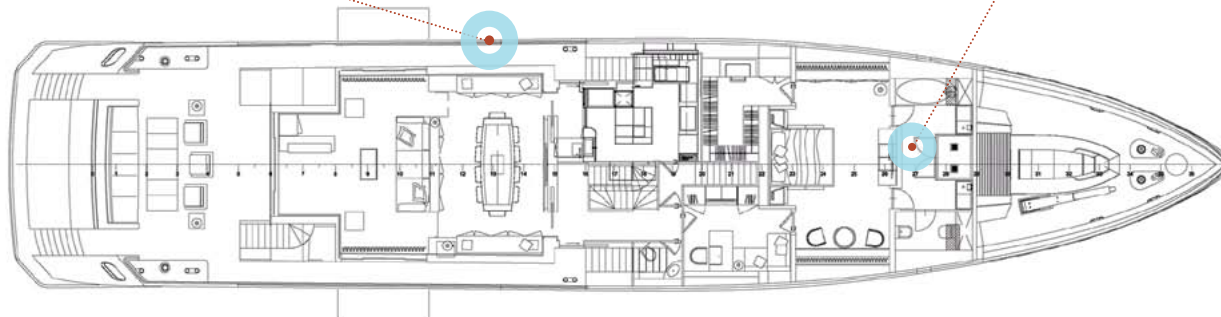
PRIVATE MATTERS: The upper aft deck is protected from prying eyes and weather by the sweeping sides of the superstructure.

SOAK IT UP: The Jacuzzi sits on the foredeck, ensuring privacy when the yacht is moored stern-to.



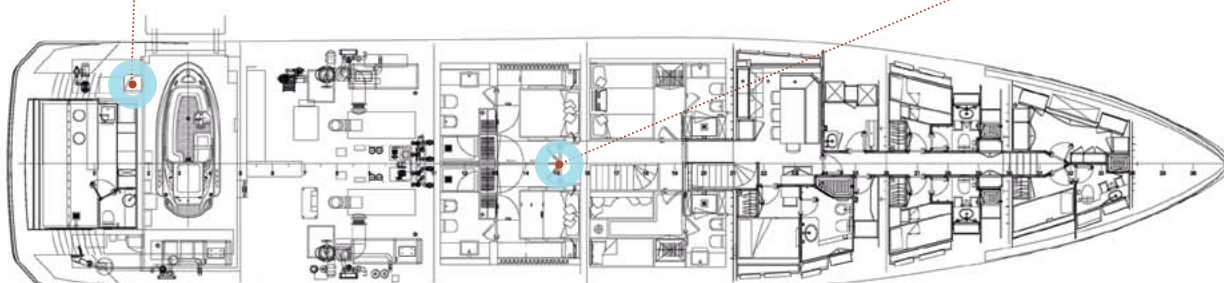
SEEING THE SEA: Transparent bulwarks outside the forward part of the main salon give diners unobstructed views.

FRESHEN UP: The master cabin's en suite features a soaking tub and an extra large shower.



CLUB LIFE: Stowing the Novurania tender athwartship leaves room at the transom for a congenial beach club with a wet bar.

WHEN TWO BECOME ONE: Two lower deck queen-berth cabins can create one large VIP thanks to a sliding door.



Specifications:

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www.columbusyachts.it

LOA: 131' 3" (40m)
LWL: 119' 5" (36.4m)
BEAM: 26' 11" (8.2m)
DRAFT (FULL LOAD): 5' 9" (1.75m)
DISPLACEMENT (FULL LOAD): 203 tonnes
GROSS TONNAGE: 395 GT
POWER: 2 x 1,920-hp MTU 12V 2000 M94; 2 x 60kW Siemens

SPEED (MAX/CRUISE/ELECTRIC): 22/15/7.5 knots
RANGE: 5,000 nm @ 12 knots
FUEL CAPACITY: 11,782 U.S. gallons
BOWTHRUSTER: 55kW CMC fixed
STABILIZERS: CMC zero speed
GENERATORS: 3 x 80kW Kohler
FRESHWATER CAPACITY: 1,505 U.S. gallons
OWNER AND GUESTS: 10

CREW: 8
TENDER: Novurania Equator 500
CONSTRUCTION: Aluminum
CLASSIFICATION: RINA @ C HULL;
• MACH Ych, EFP Hybrid Propulsion (Y), Aut CCS (Y), Green Plus (Y) Platinum; MCA LY2 compliant
NAVAL ARCHITECTURE & EXTERIOR DESIGN: Hydro Tec
INTERIOR DESIGN: Hot Lab Yacht & Design