



# Columbus Sport Hybrid 40m

by Columbus Yachts, with HydroTec and Hot Lab Yacht & Design Studio

**G**reen, high-performance and comfortable: *what more could you want?* Columbus Yachts, the brand of the Italian group Palumbo best known for naval transport repairs, a sector where it has long been active with a large number of builds, refits and repairs, has recently presented the new 40 S Hybrid.

Having had the opportunity to see the vessel during construction at the Naples shipyard, we visited her again at the Monaco Yacht Show in Monte Carlo, the occasion for her debut with the general public. From a technical point of view, we had already seen a lot, especially the numerous technological solutions present on board this yacht with a view to obtaining heavily reduced consumption and environmental impact. However, it must be said that after having seen her in the shipyard, to see her again fully fitted out made a powerful impression on us, especially thanks to the high level of general care taken with the finishes and the working of the materials that the shipyard has also used on this vessel. ➤





On these pages you can admire the original lines of the Hybrid 40m, also expressed by the unique form of the hull, which leads to low hydrodynamic resistance and hence greater efficiency.

We say “also used on this vessel” because we have already encountered the same high level of finishing that the shipyard’s workforce can achieve on the build that gave the yachting world Columbus Yachts’ 54 m Prima, presented at Monaco in 2011. Boosted by her immediate success on the market, the shipyard developed three different lines of leisure vessels from 26 to 110 m – the Sport Hybrid (the line that this yacht belongs to), the Classic, whose founding yacht was Prima herself, and finally the Explorer, with designs from 37 to 90 m. It’s an ambitious programme, but one which is possible thanks to appropriate production facilities and most importantly to experienced personnel and a production history dating back to 1967. It must also be said that this 40 m vessel is only the first hull in a line that already has the second hull under construction and scheduled for delivery in 2014. The shipyard also has a 55-m and a 65-m vessel under construction, both in the Classic line. Palumbo Shipyards also has production facilities in Malta, where it is primarily involved in refits and repairs but where it can also produce 100-m-plus vessels – as an alternative to Naples, but with the same personnel. Now let’s talk about this cutting-edge vessel. The 40 S Hybrid incorporates a vast range of technology, starting from the development of the naval platform by Sergio Cutolo’s HydroTec, with which the shipyard has worked previously. To build a yacht capable of high performance allied to outstandingly low consumption and environmental impact, hybrid engines alone – i.e. those assisted by electric motors as we will discuss below – were not sufficient.

The aim was to start from a hull capable of high levels of hydrodynamic efficiency, and on this point the designer, Sergio Cutolo, says: “We have been working on the design of a semi-displacement hard-chined hull for a long time, we have experimented with it and developed it over the years starting from the Baglietto hulls on which I have worked extensively in the past. The objective of the studies that we have undertaken to date is to obtain high efficiency at low and intermediate speeds.

We began by analysing the Hunt hull, which obviously requires a series of adjustments in hydrodynamic terms as it grows in size. We have analysed and developed design solutions on this point, successfully obtaining a hull able to maintain the typical characteristics of a hard-chined hull, but capable of exceeding its limits at basic and medium speeds. Palumbo’s Sport Hybrid 40 m is the latest example of a concept that we have been working on for years, and which is increasingly specialised.

We have carried out extensive CFD and tank testing, successfully minimising the effects generated by all the hull’s appurtenances. This is a process that began a long time ago and continues in this boat at a highly advanced level. Many other small but significant adjustments have been made in relation to all the components and construction choices. Our big advantage has been that we designed everything apart from the interiors, because in this way we were able to manage the positioning of each component, successfully maintaining the optimum balance between form and function. The fundamental component of all of this is integration – everything on board is part of an integrated design and nothing is unconstrained by the objectives that we set ourselves at the beginning. We are very proud of the result but also of the reception it has had from both the specialist public and the general public.

We are also proud of the recognition we have received for the aesthetic aspects and the originality of the lines, even though it was actually the requirement to create a boat capable of standing out while meeting the performance requirements that determined her lines.





◀ The main deck ▶ The sun deck



▲ The beach club ▼ The wheelhouse







*Attention to comfort and to the many possible solutions that offer great livability were the guidelines for the entire project. For example, these images show the salon with its two wide lateral apertures in correspondence with fold-down bulwarks to guarantee perceptual contact with the sea and also to provide two terraces.*

*Moreover, we knew that if we offered a hybrid vessel, the public would expect something different in terms of line as well, we couldn't create a design that was to some extent conventional by breaking with the past in technical terms. I must say that even the captain, who is a yachtsman and therefore very critical regarding certain aspects, made some very pleasing comments. One of the things that he found particularly striking was the stability, but we expected this because the shape of the hull provides increasing stability with increasing speed. Another thing that he mentioned enthusiastically was the analysis of consumption, because at 14 knots the 40 S Hybrid uses a total of 150 litres/h, while the top speed is 23 knots, all with approximately 200 t of displacement. We think this project is a really important result because it contains a huge range of technologies which are intended not only to enhance performance and reduce consumption and environmental impact, but also to optimise the interior spaces. In this respect, we have developed a smaller, unsupervised engine room with the controls located on the bridge where the chief engineer has available everything required during normal operation of the systems. In practice, the engine room needs to be accessed only for maintenance requirements, but during navigation the pilot does not need anything beyond what is present on the bridge.* ➤

▲ The main deck ▼ The main salon



▲ The main salon ▼ The dining



*On the facing page we can appreciate the décor of the Owner's area and the adjoining office, as well as the main corridor leading to the suite, which is certainly bigger than we would expect. Note, too, that the same attention to the choice of materials and finishings can be seen throughout the yacht, including the crew quarters.*

## Columbus Sport Hybrid 40m



*This was possible thanks to systems integration and the control systems that are now available, but I like to highlight it to show that this vessel has the most modern, efficient systems currently available on board. I must say that the shipyard gave its all when it comes to construction capacity, but also technical support. They supported us at every stage and we did the same when it came to requirements arising during construction, but the shipyard was able to interpret our instructions perfectly and what should have been a prototype became a flawless product, in my view. Integrating a large number of complex electrical systems required a lot of work in advance, and then considerable care in construction. With the electrical systems, we found some very important allies. The stabilisation system developed and manufactured by CMC allowed us to create a platform that is perfectly stable in all conditions, including at zero speed. Thanks to the high efficiency of CMC's systems, we were able to use smaller fins, contributing to the hydrodynamic efficiency."*

It was undoubtedly no easy job, but a team consisting of Giuseppe Palumbo, Sergio Cutolo as the engineer who developed the hull and exterior design, and Hot Lab for the interiors, could not fail to achieve a highly attractive result.

During the construction of the vessel, we visited the shipyard and spoke with Gianpaolo Lapenna, Project Manager, asking him whether the Owner had any specific requests. His answer was that the Owner gave the shipyard considerable freedom when it came to the development of all the technical issues, but was more involved in the interiors where a very classic layout and furniture were requested. In addition to this, the Project Manager showed us the many solutions calculated to reduce vibration and noise, such as the choice of materials which were always paired with silent blocks or insulating materials, including on vertical elements like the bulkheads.

Looking at the external layout, before we consider the propulsion systems, we can say that this is certainly an entirely original line. The forward section has been developed based on a wide body concept, so that the main deck is almost entirely available for the interiors. This leads to an upper deck capable of offering a very large, protected open air relaxation area in the forward section, in addition to a further open air relaxation area in the aft section of the second upper deck. Consequently, there is considerable emphasis on the interiors, but with a careful design of the areas for open air living, which all enjoy considerable privacy.

When it comes to the interiors, the large Owner's suite in the forward section of the main deck stands out, featuring a private office, a relaxation area, a bathroom with two areas for the bath and shower and of course a private access. The main salon occupies the aft section of the main deck and is divided into two areas, a sofa area and a dining area; the former is connected to the wheelhouse to aft.

In relation to the lower deck, the forward section is entirely for crew use, with four two-person cabins in very comfortable, highly finished spaces, offering the utmost comfort even during the most demanding cruises. The aft section of this deck is for guest use, with four guest cabins: two of these are doubles and two are twins, all with a private bathroom and access.

The engine room is a good-sized, well-ordered space where each system is easy to inspect in spite of the complexity arising from the presence of electric propulsion (from Siemens), in addition to conventional propulsion. The garage provides space for a RIB tender that can be launched and hauled in quickly and above all easily, thanks to an efficient handling system specially designed for this vessel. ➤



▲ The foyer ▼ The Owner's office





*These pages show some images of the Owner's suite, especially the sleeping area, which is generous in size thanks to its position on the main deck and the exploitation of the entire beam. A strong impact also derives from large side windows that always guarantee contact with the marine environment.*

## Columbus Sport Hybrid 40m



When it comes to the interior fittings, we spoke to their designer, Antonio Romano of Hot Lab Yacht & Design Studio, who described a very careful selection of materials focused on the consistency of the design, and one that was therefore environmentally sustainable. The layout and style were developed by a team consisting of the shipyard, the designer and the Owner, seeking to achieve maximum comfort but also warm environments obtained with a combination of natural materials and light colours.

To obtain a balanced contrast between the various materials used, woods and claddings were selected that range from valuable wood varieties to coloured leathers and details in polished stainless steel. We should now spend a moment or two on the complex, efficient hybrid propulsion system, in which the electrical elements were produced by Siemens. The system consists of two electric motors each with power of 60 kW, with which Palumbo's 40 S Hybrid can travel at a top speed of 7.5 knots thanks to the power produced by the generators. The two conventional engines are from MTU, each supplying 1,432 kW, allowing speed performance to increase to as much as 23 knots – this was the top speed recorded during tests but was also planned in the project design.

The two electric motors are connected directly to the gearbox via specially made control systems, managed from the bridge. The result is that when navigating at 7.5 knots, a range of 5,000 nautical miles is available, while with diesel propulsion the electric motors take on the function of generators, thus lengthening the life of these systems. The low consumption arising from this diesel-electric combination together with the high hydrodynamic efficiency of the hull offer highly attractive ranges – at 15 knots, the range is 1,500 nautical miles, and at 12 knots this goes up to 2,000. Naturally, as the generators are designed to power the electric propulsion units, they are of a suitable size, and specifically these are two units each supplying 80 kW, plus a further backup of the same power, for simultaneous use of electrical navigation and very demanding hotel accommodation use. An interesting point to note is that this hybrid propulsion system was developed and subsequently adopted on military vessels, which results in a very high level of reliability.

This is undoubtedly a yacht that breaks with the past, capable of uniting the modernity of cutting-edge technological systems and solutions, alongside lines that are equally innovative and original, with utterly classic, welcoming interiors.

All of this has been achieved with professionalism and aesthetic skill at the highest level. The level of care that the shipyard's personnel put into their work in the construction phases struck us immediately, especially when it comes to all the solutions to limit vibration and noise, and the installation of the systems.

Many of the technical solutions are typical of larger builds, and the interior spaces also feel as though they are in a bigger ship.

The Palumbo Group is certainly making its mark on Italian yachting, something that has never just been about aesthetics, but which nowadays perhaps even more than in the past offers qualitative levels of reliable excellence.

As Italians, we can only be proud of the fact that the 40 S Hybrid is a yacht devised, planned, designed and built entirely by Italians in Italy.

*Angelo Colombo  
Photos by Thierry Ameller*



▲ The Owner's cabin ▼ The Owner's bathroom



Columbus Sport Hybrid 40m



*These images allow you to appreciate the other spaces aboard this yacht.  
Many elements of furnishing deserve attention, for example the deck heads made of darker concave wood in the VIP cabin, which can also be converted into two double guest cabins.  
As can be seen from the image on the bottom right, the crew quarters are very well appointed.*



▲ The guest bathroom    ▲▼ The convertible Vip cabin



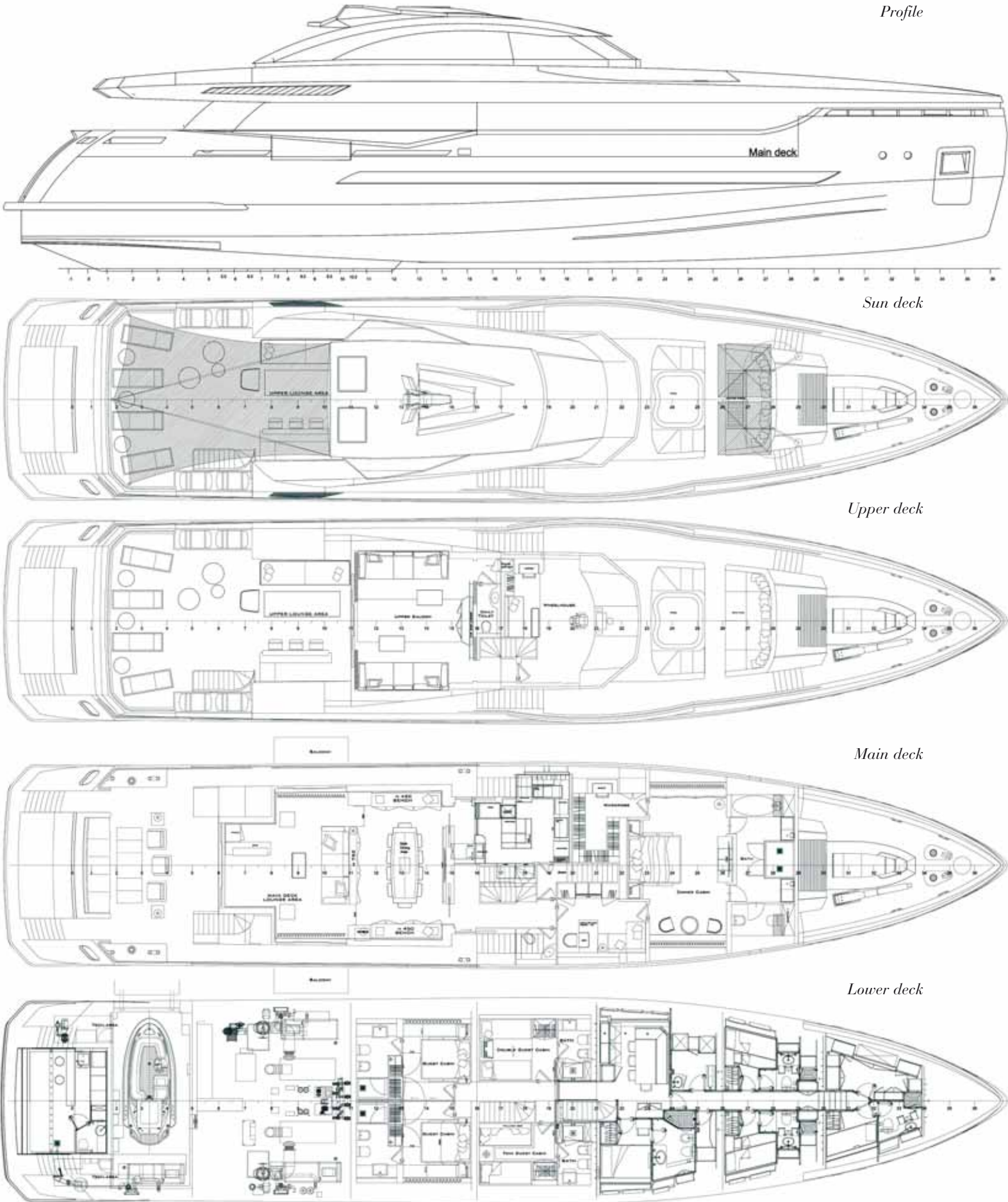
▲ The twin cabin    ▼ The crew mess





The general plans permit an immediate understanding of the originality of this yacht, created with very clearly defined objectives such as performance and the attainment of obtain maximum efficiency plus internal volumes calculated to provide maximum livability. The plan of the lower deck also highlights the dimensions of the engine room, which although downsized to provide larger living space, still has adequate dimensions and leaves room for the stern garage.

## Columbus Sport Hybrid 40m



TECHNICAL SPECIFICATIONS	
LOA	40 m / 131'23" ft
LWL	38,45 m / 126'15" ft
Beam (max)	8,20 m / 26'90" ft
Draught (loaded)	1,75 m / 5'74" ft
Construction (including structural features such as ice reinforcement)	Full aluminum with carbon fiber details
Displacement	203 tons (full load)
Gross tonnage	395 GT
Main engines	2 x MTU 12V2000M94 2 x 1432 kW @ 2300 rpm
Hybrid propulsion	2 x Siemens 2 x 60 kW
Gearbox	2 x Reintjes WAF 542APS Gear Ratio 3.955:1
Propellers alternative propulsion	2 x Shaffran five fixed blades
Speed (maximum / cruise)	23 knots
Fuel capacity	44,600 litres / 11,782 US gallons
Range at cruising speed	2500 nautical miles @ 15 knots
Fuel burnt at the cruising speed stated above (excluding generators)	250 L / h
Stabilisers	CMC - One pair of electrical no retractable fins, including zero speed stabilization 2.2 sqm
Bow / stern thruster(s)	CMC - fixed bow thruster, power Abt 55 kW
Water capacity	5,700 litres / 1,505 US gallons
Watermakers	2 x Idromar, MC200duo, 1660 LITERS
Sewage system	Hamman AG HL CONT PLUS 02 SLIM
Electricity generation	3 x Khoeler 80 kW
Interior furniture manufacturer(s)	Palumbo Shipyard
Galley equipment	Miele, Gaggenau 'household'
Class and LY2 compliance	RINA Type C HULL, • MACH Ych Compliance LY2 EFP Compliance LY2, Hybrid Propulsion (Y), AUT CCS (Y), Green Plus (Y)PLATINUM
Number of owner / guest cabins	(3 guest cabins – 1 double convertible cabin + Owner's cabin)
Number of crew cabins	7 + 1 (3 twin bunked cabins plus double captain cabin)
Tank testing	Yes, St Petesburg – RussiaPresence of special environmental technology Hybrid propulsion and generation system, Noise and vibration levels achieved Owner's / VIP cabin 52 dB (A) 40 dB (A) Guest cabins 54 dB (A) 45 dB (A) Saloon / Dining 58 dB (A) 45 dB (A) Sky Lounge 60 dB (A) 40 dB (A) Bridge 60 dB (A) 40 dB (A) Captain's cabin 55 dB (A) 40 dB (A)
Naval architect	Hydro Tec
Exterior stylist	Hydro Tec / Palumbo Shipyards
Interior designer	Hot Lab Yacht and Design / Palumbo Shipyards
Builder	Palumbo Shipyards www.palumbo.it cantierenapoli@palumbo.it