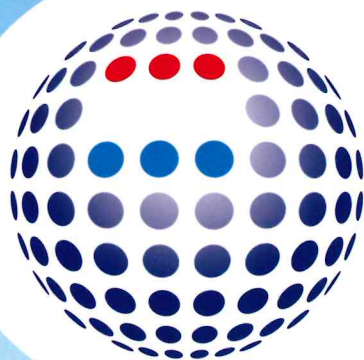


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Maritime by Holland. Magazine

Vessels highlighted
World Diamond
Sofia
Alice

The vision of
Mikael Hansen
Marketing & Sales Manager
COSCO Heavy Transport

Special
Marine Propulsion





When an owner comes back to the same builder for his third motoryacht, you know he is satisfied with the quality. But when he orders his third vessel at the delivery of his second yacht, you know he enjoys the building process as much as he does actually using the yacht. This is exactly what happened at Moonen Shipyards when the third motoryacht named *Sofia* was ordered two and a half years ago.

With extensive experience sailing his Moonen 84 (26 metres) and building his Moonen 97 (30 metres), the owner decided to push the builder of 'pocket superyachts' to the next level, and ordered a 42-metre custom motoryacht, entirely tailored to his personal preferences. From the very beginning, a submarine and its launching mechanism was one of the most important items in the design brief. During the course of the build however, the realisation came that the initially planned two-seater submarine would only seat a dedicated captain and a single passenger. For the owner, an avid diver himself, the most important aspect of the submarine was to share the underwater experience with family or friends. It came as no surprise that when U-Boat Worx, a Dutch builder of submersibles, launched their three-

person submarine C-Quester 3, with a diving depth of 100 metres and an autonomy of eight hours, the drawings needed to be modified to accommodate this larger submarine.

Launching crane

The change brought along a lengthening of the swim platform and an upgrade to 5,000 kg SWL of the launching crane, a piece of superyacht art in its own way. When not in use, the crane folds down to become an invisible part of the swim platform. Through a hydraulic accumulator, the crane is heave-compensated to avoid a slack lifting cable during launching or retrieval. The crane, built by Van Driel (Nieuw-Vennep, the Netherlands), is supported on the aft portside corner of the swim platform, which took some finite-element calculations to fine tune the structure.

SOFIA

42 METRE EXPLORER YACHT WITH SUBMARINE TO EXPLORE UP TO 100 METRES BELOW SEALEVEL

Builder

Moonen Shipyards, 's Hertogenbosch, the Netherlands

Owner

Undisclosed

Principal particulars

Length o.a.	41.78 m
Length waterline	38.60 m
Beam mld.	8.60 m
Beam o.a.	8.90 m
Draught	2.45 m
Displacement (full load)	360 ton
Gross tonnage	485 GT

Main engines	2 x Caterpillar C32 DI-TTA ACERT MHIII 746 kW
Auxiliary generators	2 x Onan e-QD 80 kVA and 1 Onan e-QD 50 kVA

Max speed	14.5 knots at 10% load
Cruising speed	12 knots at 50% load
Range	5,000 NM at 9 knots
Crew	7-8 persons
Passengers	12 persons

Fuel tanks	47,000 l
Fresh water tanks	10,000 l
Grey/black water tanks	5,300 l
Fresh lube oil tank	850 l
Sludge tank	850 l
Jacuzzi holding tank	2,100 l



Sofia at her launch in Groot Ammers

At an anchorage, the crane can be rotated 90 degrees towards the aft, to create a practical mooring pier for tenders or jet skis. When the 4,500 kg submarine is launched, the yacht's trim can be kept even by filling two fuel tanks located in the swim platform. During trans-oceanic crossings, the submarine will be shipped by commercial freight in a dedicated container, built by Moonen. This container has roll-out cradle to enable easy loading and unloading of the submarine. During such crossings, the trimming fuel tanks can be filled to push Sofia's range over 5,000 nautical miles at nine knots.

Design

For the design of this custom motoryacht, the owner called on a team with long-standing relations with Moonen Shipyards. Based on the

shipyard's concept, René van der Velden created the elegant styling for this vessel while paying respect to its explorer yacht status. The naval architecture and structural design came from the boards of Stolk Marimecs, with the steel hull ensuring excellent seakeeping characteristics. The interior features large curvaceous shapes, resembling organic forms, and was created by Art-Line. The abundant use of natural materials with contrasting textures makes you want to touch and feel each and every surface.

Finally, the owner's chef had significant input in the galley design, creating a completely stainless steel professional galley on one side, and a Caesarstone countertop opposite for food preparation and mise-en-place. Drainage was provided in the floor for easy cleaning.

Layout

From the swim platform, a door leads to the lazarette with storage of the water toys and access to the engineer's cabin, equipped with

"The submarine launching crane is a piece of superyacht art in its own way"

"The owner called on a design team with long-standing relations with Moonen Shipyards"

bunk beds. Forward of the engine room are two double guest cabins, and two twin cabins, all grouped around an oval staircase, bathed in light from a skylight on the sundeck. While convention keeps all guest corridors and entrances on starboard and services on port, on *Sofia*, the guest area was moved to port on the upper deck. The pleasing consequence is that from starboard on the main deck, where the oval staircase is an integral part of the main lounge, one can see up through the stairwell to the windows on portside on the upper deck. To create a B-15 fire division between lounge and stairwell, a roller shutter is hidden in the ceiling to come down and provide a sheltered stairwell in the case of fire.

500 GT

On the upper deck, the interior space is limited due to the constraints of staying under 500 gross tons. Aft of the wheelhouse is a gym room and a day head. The gym room can be easily converted to an extra cabin with a Pullman bed stowed in the wall, a welcome addition for long crossings as the captain's cabin is located on the lower deck. What would normally be called the sky lounge is here an 'open lounge' with windows which slide into a pocket forward were they are nearly invisible, thus creating a strong feeling of open atmosphere. The actual weathertight division is with sliding doors between the open lounge and the stairwell. The teak deck from the aft bridge deck continues into the open lounge without a break. With this 'open lounge' not part of the gross tonnage calculation, and with *Sofia's* two tenders and three jet skis stored on the outside decks, practically all of the interior volume is used for guest areas, crew areas and technical space, making *Sofia* probably one of the most spacious steel-hulled long-range vessels below 500 GT.

Stern thruster

For any motoryacht, manoeuvrability is extremely important to slip into a narrow berth without damages, independent of the wind direction. The owner spared no expense in this regards, and specified a 65 kW stern thruster in addition to the 100 kW bow thruster. These are powered by hydraulic oil, which is pressurised in load-sensing PTO pumps on the engines' forward side. For night-time navigation, an



The full beam master suite on the main deck forward



The main lounge, dining room, bar and central staircase are a single continuous volume on the main deck



The open lounge on the upper deck counts as exterior space, but can be entirely closed off from the elements

infra-red camera was mounted in the navigation mast. With the hydraulically powered thrusters absent on the electrical load balance, the generators could be sized somewhat smaller. *Sofia* has two 80 kW Onan generators and a third night generator of 50 kW. As they can all be synchronized, the number of generators can be precisely matched to the actual load, thus avoiding chronic underloading of the gensets. The gensets are mounted on Alivio 2000 air cushioned mounts to eliminate vibrations in the structure. Two ASEA 63Kw liquid cooled shore converters make sure *Sofia* can be plugged into shorepower worldwide.

The main engines are two Caterpillar C32s which are placed at a slight angle to the centreline, to be perfectly in line with the flow field under the hull. The reversing reduction gearboxes, type WAF 444 from Reintjes, have a ratio of 2.962 and take up the propeller thrust. The main engines' exhausts pass through dry silencers from Tio and exit overboard after water injection. Just aft of the forward engine room bulkhead are the stabilizers from Quantum, which have a zero-speed mode for stabilisation at anchor.

Exterior decks

The sundeck is in large part covered by the bimini. The part above the Jacuzzi is louvered, so the choice for sun or shade is open, and a rainshower is built into the bimini. A large dining table and a bar are forward, while the aft is occupied by three jet skis and a crane on



The wheelhouse is stylish yet functional

centreline, allowing for launching on either side of the yacht. The aft upper deck has a similar crane, and while most of the space is taken up by the small Novurania 460DL MOB tender and a seven metre Novurania Chase-23 guest tender, the larger tender will most often be towed when guests are on board. Forward of the bridge are two semi-circular seating areas, providing an outdoor area with privacy when the yacht is moored stern-to. Underneath is a large deck store, accessible from inside as well, with extra freezer capacity.

A notable feature is the Jacuzzi holding tank. When the yacht sails from one location to the next, the water can be stored in a composite tank in the double bottom, where an electric heater keeps the temperature at a constant 40 degrees. Upon arrival at a new destination it takes only eight minutes to fill up the Jacuzzi with water at the right temperature.

Entertainment

For onboard entertainment, the owner chose a state-of-the-art Vantage system with iPad



The swimplatform was lengthened to accommodate a 3-seater submarine



controls and integration of the climate control, blinds, lighting and of course audio and video on demand. An extra feature is the YachtEye software from Oculus, through which guests can see the yacht and the tenders visualised in 3D in Google-Earth, along with itinerary, weather and touristic information. In the main lounge, open lounge and sundeck, the TVs are mounted on rotating mounts, making them completely invisible when not in use.

Next step

Project manager Johan Dubbelman: "One of the preferred cruising areas of the owner is the Bahamas, where prevailing shallow waters limit the yachts draught to approximately 2.5 metres. Discussions with Moonen are already ongoing for a fourth *Sofia*, but as there is this size restriction, a new vessel will have to supersede the latest *Sofia* in other areas than merely size."

Moonen shipyards is currently finalising another yacht, the Moonen 100 Explorer, which is up for sale. Through the years, the build size of

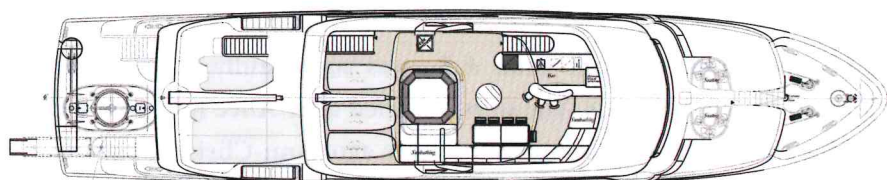
the shipyard has grown along with the appetite for larger yachts of its (repeat) customers. With *Sofia*, Moonen have demonstrated their capabilities to build full custom yachts up to 500 GT. Although *Sofia* will not charter and will be used purely as a private yacht, she was built to the same standards, including Lloyd's classification and MCA LY2 certification, for safety reasons and resale value.

Bruno Bouckaert

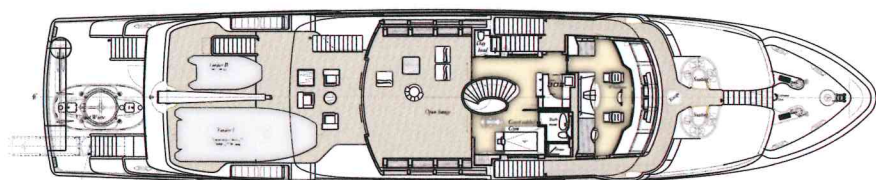
Subcontractors and suppliers of equipment fitted on board the *Sofia* - YN 194

Alfa Laval Benelux, Spijkenisse	: fuel separator
Art-Line Interiors, Arnhem	: interior styling
Asea, Salt Lake City, USA	: shore converter
Belkoned Marine Service, Best	: seatrails
Beuk Horeca, Utrecht	: stainless steel galley
Bosch Rexroth, Boxtel	: controls
Boucher Natuursteen, Amsterdam	: marble, granite, corian and tiles
Datema Nautical Safety, Delfzijl	: nautical equipment; safety equipment; fire fighting equipment
E-Stairs, Barneveld	: central stairs
Gianneschi, Italy	: pneumatic compressors; hydrofore
H.E.M., Antibes, France	: watermaker
Hamann AG, Hollenstedt, Germany	: sewage treatment system
Heinen & Hopman Engineering, Bunschoten	: HVAC installation
Hoogendoorn Experts, Enkhuizen	: commissioning
Inoferro, 's-Hertogenbosch	: illuminated ships name; railing; sliding doors; bollards and cleats; fairleads; engineering stainless steel; bimini and windscreen
Intersona, Heerde	: noise and vibration advice
Jong Scheepstofferij, De, Elshout	: upholstery
Klaver Yachtpainting, Vollenhove	: fairing and painting
Koning Schilderwerken, De, Oosterhout	: interior construction; inside tanks; sandblasting & coating internal and external
Lloyd's Register EMEA Marine, Rotterdam	: classification
Mammoet Europe, Schiedam	: launch and transport
Marron Jachtbouw, Medemblik	: teakdecks
MME Group, Ridderkerk	: supplied and commissioned the ICCP and ICAF system; aluminium sacrificial anodes
Moonen Shipyards, 's-Hertogenbosch	: engineering systems; engineering interior; interior joinery; engineering stainless steel
Multiplex GmbH, Bremen, Germany	: bimini and windscreen; boarding ladder
Nautical Structures, Florida, USA	: deck cranes; passerele
NMC Maritime Technology, Nieuw-Lekkerland	: hull construction
Noorloos Cascobouw, Van, Werkendam	: construction superstructure
Novenco, Bergschenhoek	: watermist system
Novurania, Florida, USA	: tenders and jetskis
Opem Sistem, Piraeus, Greece	: hydraulic steering gear; windlasses; capstans
OYS (Ocean Yacht Systems), Dorset, England	: bow & stern thruster
Phoenix Vibration Controls, Stellendam	: <i>Alvio 2000</i> mounts for generator sets
Pinta Nieuwburg, Ridderkerk	: insulation accommodation & engine room
Pon Power, Papendrecht	: <i>Caterpillar</i> engines and transmission
Quantum, Florida, USA	: hydraulic system; stabilizers
René van der Velden Yacht Design	: exterior styling
RFD Survitec Group, Sydney, Australia	: life rafts
Rossmark, Ede	: bilge water separator
Rubber Design, Heerjansdam	: shaft system, incl. flexible coupling and installation
Sim Holland, Papendrecht	: generators
SPX, Sweden	: <i>Johnson</i> pumps
Stolk Marimecs, Steenwijk	: naval architecture; engineering construction
Theunissen Technical Trading, Malden	: <i>Eltek</i> addressable fire detection system
Tijssen Elektro Oss, Oss	: engineering electrics; entertainment; basic main system; monitoring, control & alarm system
Tijssen Elektro Zeeland, Zierikzee	: <i>Sperry Marine</i> NAVIGAT gyrocompass system with console repeater; <i>Sperry Marine</i> NAVIPILOT autopilot; <i>Sperry Marine</i> NAVIGUIDE steering control system; <i>Sperry Marine</i> rudder angle indicator system
Tio, Krimpen aan den IJssel	: exhaust system
Tyco Integrated Fire & Security, Capelle aan den IJssel	: firefighting engine room
U-Boat-Worx, Breda	: submarine
Underwater Lights Limited, Kent, England	: underwater lights
Voorden, Van, Zaltbommel	: propellers
Vor Metaalbewerking, De, Harmelen	: fore peak hatch; hinged doors; transom door
Winkel, Assen	: WT doors
Wingerden & Zn, H K Van, Vuren	: windows and portholes in ss/hull
Winteb, Winschoten	: <i>Wko</i> ® gooseneck
Wortelboer, Rotterdam	: anchors and chaincables

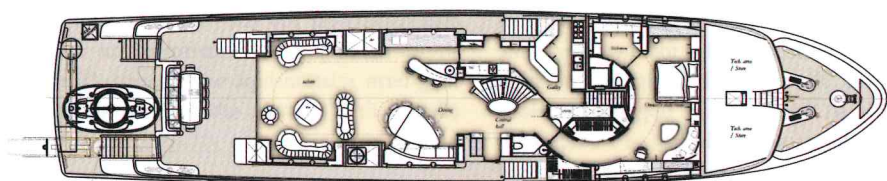
Sun Deck



Bridge Deck



Main Deck



Lower Deck

