

# SILENT-YACHTS

## Technical Specifications

### SILENT 80



# SILENT-YACHTS



## 1 General Information

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The following technical specifications ("Specifications") describe in detail the technical elements of the construction of the Solar Yacht SILENT 80.

All components are marine grade and have a CE certificate. SILENT 80 has been designed and is built in accordance with the ISO rules and in compliance with the safety standards according to the 94/25/CE directive.

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## 2 Main Technical Characteristics

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### 2.1 Dimensions and Capacities

Concept	Michael Köhler   Silent Yachts	
Naval Architecture	Enrique Castilla   Insenaval	
Exterior & Interior Design	Marco Casali	Too Design

Length overall	24,30 m	79,8 ft
Length of waterline	24,20 m	79,4 ft
Beam overall	10,92 m	35,8 ft
Draft	1,20 m	3,93 ft
Deck to waterlevel (bow)	2,70 m	8,86 ft
Deck to waterlevel (cockpit)	2,02 m	6,63 ft
Bridgedeck height	1,20 m	3,93 ft
Height over all	5,50 m	18,0 ft
Light displacement *)	48 tons	
Water *)	1.000 Liter	264 gal
Waste-water *)	4x 500 Liter	4x 132 gal
Fuel *)	2x 1.500 Liter	2x 396 gal
Standard motors (electric)	2x 80 kW	
Battery capacity	240 kWh	
CE Certification	A: 12; B: 18; C: 24; D: 40	

\*) Light displacement and performance predictions subject to change due to specification of vessel.

### 2.2 Engines and Performance

2 x 80 kW electric motors

Cruising speed 8-10 kts

Top speed 12 kts

High-efficiency propellers on shafts.

### 2.3 Tests before Delivery

Before the delivery the manufacturer will carry out the following test:

- + Preliminary test of the electrical system
- + Preliminary test of the hydraulic system

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- ✦ Preliminary test of propulsion system
- ✦ Test for maneuvering
- ✦ Test of speed at different rpm
- ✦ Test and commissioning of electronics systems
- ✦ Control and check of the correct installation and operation of all components
- ✦ All surveys required for CE must be passed successfully

## 3 Construction Characteristics

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Light weight glass/foam composite construction, resin infusion / vacuum bagging for strong and lightweight structure high quality and osmosis resistant vinylester resin

Watertight bulkheads in several sections and collision-compartments for ultimate safety

Reinforced stub keel protecting propeller and rudder

Impact reinforcements at the bow and along the keel and the waterline

Gelcoat color acc. RAL for all glass fiber reinforced plastic parts

Built in accordance with CE regulations. USCG and MCA on request.

### 3.1 Noise and Vibration Insulation

The insulation system has the purpose to ensure maximum comfort on board and to increase the efficiency of heating and cooling systems

#### **Accommodation**

Foam sandwich structure of boat acts as thermal and sound insulation

In all cabins and the salon there is an additional thermal insulation between hull and furniture/wall and ceiling covers, 50 mm + aluminum moisture barrier - all around the hull and superstructure.

#### **Engine room**

All components of the exhaust system (hose, water lock, gas-water-separator, muffler) are supported by visco elastic elements / rubber supports.

All components of the cooling system of AirCon, E-motors, inverters and others are supported by visco elastic elements / rubber supports, in particular all cooling pumps are mounted in a way that they do not create vibrations on the hull.

Sides, ceilings and bulkheads are covered with thermal insulation sandwich secured with needles finished with aluminum tape as a moisture barrier.

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## 4 External Layout and Standard Fittings

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### 4.1 Fly-Bridge

- (a) On choice of the customer either
  - 64 solar panels + 1x sunbed 3.100 x 3.150 mm, behind flybridge with foldable backrests, weathertight storage underneath the sunbed (with drainage), lids supported by gas pistons
  - 70 solar panels – no sunbed at the fly
- (b) 1x molded U-shaped sofa with backrests and cushions
- (c) 1x GRP table and height adjustable manual table pedestal, can be lowered and used as a daybed
- (d) 1x storage cabinet, fridge and sink with foldable faucet
- (e) 1x mast acc. specification of nav. equipment for Radar, Antennas and lights
- (f) 1x flagpole at center
- (g) 1x flybridge stairs with s/s base, teak stairs and s/s handrail
- (h) All deck hinges with hidden bolts, heavy duty, polished
- (i) All hatches lockable, larger ones equipped with gas pistons
- (j) Switches for all consumers on the fly (lights and 2 main switches for nav. instruments, horn)
- (k) Helm console retractable according to the drawings

### 4.2 Main Deck

- (a) 2x molded side deck sofas
- (b) Lockers all around the deckhouse, each with drainage and gas supported lid - intended to be used for ropes, fenders, life jackets
- (c) s/s handrail all around the deck, horizontal pipe min. 40 mm, vertical stanchions min. 30 mm
- (d) Fixed windows in laminated, shatterproof glass, bended in one direction, tinted, heat reflecting with a slight mirror effect

#### 4.2.1 Fore Deck

- (a) 1x moulded U-shaped sofa with backrest
- (b) 2x sunbed left and right of U-sofa
- (c) 2x deck hatch to crew cabin

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- (d) 1x 24 V 2.000-3.000 W electrical anchor winch, vertical type for chain and rope with anchor stopper and 320 mm steel bollard, controls both locally and from the steering stations
- (e) 2x forepeaks / storage with access hatch, LED light + switch inside and s/s ladder, 1000 mm long bar of 25 mm diameter to fasten fenders and ropes
- (f) 1x weathertight deck hatch to anchor winch and chain locker, LED-light in the chain locker
- (g) Access to the anchor chain to connect the bridle
- (h) Hose pipe (chain guide) and see-saw for anchor
- (i) 2 strong padeyes or rings on the inner side of the bowtips for a bridle
- (j) 9 x 400 mm steel bollards with engraved Silent-Yachts logo

## 4.2.2 Aft Deck

- (a) 1x molded sofa on port side, can be upgraded to a bar with fridge and sink
- (b) 1x molded U-shaped sofa with backrest on stb.
- (c) 1x teak table for 10-12 persons, optionally in carbon
- (d) 1x stern sofa with foldable backrest
- (e) 2x roof support poles
- (f) 4x 400 mm AISI 316L bollards with engraved Silent Yachts logo
- (g) 2x roller fairleads
- (h) 1x sliding saloon door/window, s/s, same glass as for the salon and hull windows / portlights, all parts blockable, safety lock for the entrance door,
- (i) 2x sliding windows (as a wind and rain protection) at the cockpit sides, can slide out or be hidden in a pocket in the GRP of the sidewall of the deckhouse.
- (j) Molded box with GRP lid in the cockpit ceiling as storage for an (optional) persenning
- (k) Optional bar block partly replacing the molded sofa on the port side with storage, electric grill, acrylic stone sink and worktop, fridge, lockable
- (l) LED spotlights + mood light in ceiling, both separately dimmable
- (m) Switches for the cockpit lights
- (n) 2x2 weathertight sockets 230V + 2x USB socket
- (o) Molded lateral fiberglass stairway (first 4 steps), all other steps inox + teak top with handrail to fly bridge
- (p) 2x molded fiberglass stairs from aft deck to stern platform, hydraulically liftable to access the stern garages
- (q) 1x locker for 2 x 220V sockets (shore supply for onboard services and air conditioning) located on the transom;
- (r) 1x locker for dock water connection tap
- (s) 1x hot/cold hand shower on each aft platform

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- (t) Swimming ladder support installed on platform (#1 x removable manual swimming ladder in stainless steel and teak included) + CE emergency ladder
- (u) 2x light bollards on stern platform
- (v) Dedicated storage for two liferafts for 8 persons each, lockable

## 4.2.3 Windows and Port Lights

- (a) Deck hatches Lewmar flush3G
- (b) All glass in hull and superstructure of same appearance, slight mirror effect, heat reflecting
- (c) Glass in glass windows, 2 in each cabin
- (d) Sliding stern door stainless steel frame, heavy duty, manually sliding from center to outside, 1 retractable window (moving down), one fixed window

## 4.3 Lower Deck

### 4.3.1 Tender Garage

The garage is placed in the port hull, access through a deck hatch and s/s ladder with teak steps. The tender launch / recovery system will be guaranteed by a system consisting of:

- (a) Weathertight deck hatch with s/s stairs and a weathertight hydraulic stern hatch with a power pack for both hatches linked to power-pack of (optionally retractable) flybridge roof
- (b) Electric windlass to pull the tender in
- (c) Sliding rollers and lashing system when the tender is inside the garage
- (d) waterproof light with switch
- (e) 1x 230 VAC socket in waterproof box, suitable to recharge an electric tender
- (f) 1x fresh water hand-shower with cold/hot mixer
- (g) Radio remote control + switches for opening the stern hatch and the electric windlass

The garage will be set up to receive a tender with a maximum length of 4,50 x 2,10 m e.g. Williams Sports tender 440 (supplied by the customer). This garage is expressly a wet storage.

**Technical Compartment** underneath the tender bay

Access through a watertight door / hatch in the tender bay

- (h) s/s stairs,
- (i) waterproof light with switch
- (j) 2 automatic bilge pumps and alarm
- (k) Access to the rudder system

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## 4.3.2 Storage for Toys and Generator Room | Technical Compartment

The Toy Garage is located in the port stern compartment.

- (a) Weathertight deck hatch with s/s stairs and a weathertight hydraulic stern hatch with power pack for both hatches linked to power-pack of (optionally retractable) flybridge roof.
- (b) waterproof light with switch
- (c) 1x 230 VAC socket in waterproof box, suitable for air pump, recharge batteries of an electric outboard motor
- (d) 1x fresh water hand-shower with cold/hot mixer
- (e) Radio remote control + switches for opening the stern hatch

The garage will be set up to accommodate diving bottles, bicycles, water toys or optionally an amphibious car. This storage is expressly a wet storage.

**Technical Compartment** underneath the compartment for water toys Access through a watertight door / hatch in the toy-compartment.

- (a) Short s/s stair from the stern compartment down to the technical compartment
- (b) waterproof light with switch
- (c) 2 automatic bilge pumps and alarm
- (d) Access to the rudder system and div. technical components

## 4.3.3 Storage Under the Cockpit

Access through flaps in the transom behind the cockpit and two large hatches in the cockpit floor. This is expressly a wet storage and intended to be used for watertoys, SUPs, kajaks.

- (a) 4 LED lamps of ca. 10 W + switch
- (b) 10 padeyes to fix the stored items
- (c) Drainage holes in the bottom



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## 5 Interior Decoration and Fittings

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### 5.1 Main Deck

#### 5.1.1 Saloon | Dining | Galley

- (a) Wooden furniture with drawers and doors according to GA and drawings
- (b) 1x wooden dining table for 10 persons
- (c) 1x U -shaped dining sofa
- (d) 1x C-shaped lounge sofa in the stern part of the salon
- (e) Wooden sofa-table
- (f) **Galley** build with characteristic as below:
  - Door finishing in wood or lacquered
  - Acrylic solid worktop
  - All galley appliances Miele, Bosch, Siemens or similar
  - 1x 80 cm induction cooktop
  - 1x dishwasher
  - 1x 60 cm oven
  - 2x Hans Grohe or Kohler tap or similar
  - 1x stone sink Blanco or similar
  - 1x Fridge-freezer side by side Samsung (WLH) 900 x 750 x 1780 mm, 550-600 L, A+, chilled water, ice cubes
- (g) Side exit on Stb behind the helm station, weathertight door + glass, sliding to the back
- (h) Built-in stairs with handrail descending into the Crew cabin area (see General Arrangement for reference)
- (i) Built-in stairs with handrail descending into the Guest / VIP and Master cabin area (see General Arrangement for reference)
- (j) LED ceiling spotlights and LED stripes – 6 dimmable circuits
- (k) Light switches and 10 x *VIMAR* power sockets + 4 x USB sockets
- (l) Ceiling panels in wood covered in synthetic leather
- (m) Wooden floor or carpet flooring

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## 5.1.2 Pilot Station

- (a) 1x ergonomic synthetic leather or fabric helm bench, min. 1300 mm wide, foldable armrests, foldable front part to lean on while standing, e.g. Besenzoni
- (b) Control dashboard and central panels in wood or carbon including:
  - ✦ Steering wheel
  - ✦ 1x twin engine control throttles
  - ✦ 1x motor and battery display
  - ✦ thruster, navigation lights, winch, wipers and horn controls ✦ alarm panels
- (c) Ceiling LED spotlights type A
- (d) Ceiling panels in wood covered in synthetic leather
- (e) 2x VIMAR power sockets and panels light switches, 2 x USB sockets (f) 4x windshields wipers

## 5.2 Lower Deck

### 5.2.1 Master Cabin

- (a) Access from saloon/dining area via internal stairway
- (b) 1x double bed with 4 base drawers and upholstered headboard, with high quality mattress (2.100 x 1.800 mm size), "Froli" aeration system
- (c) Furniture in wood with drawers and doors (see General Arrangement for reference)
- (d) 1x office/vanity desk with chair
- (e) Walk in wardrobe with sliding door with 3 x full-height closets
- (f) 1x built-in sofa with cushions
- (g) Ceiling panels in wood covered in synthetic leather
- (h) Valances with folding curtains or Oceanair "Day and Night" blinds and shades
- (i) 2x reading lights, one on each side of the bed
- (j) LED ceiling spotlights (dimmable), indirect mood lights on the ceiling and under cabinets and bed, 2 dimmable circuits
- (k) VIMAR power sockets (6) and panels light switches (4), 4 x USB sockets
- (l) Wood or Carpet flooring

### 5.2.2 Master Bathroom

- (a) Wood furniture with acrylic solid top
- (b) 1x wash-basin- porcelain or bamboo
- (c) 1x WC in a separate room, light and air extraction with switches inside the WC-room
- (d) 1x shower cabin separated from the bathroom, min. height inside 2100 mm,

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- (e) glass door, inox hinges, walls in white GRP, tiles or artificial stone, non-skid flooring in shower and LED spotlights
- (f) Wooden walls and furniture panels
- (g) Lacquered wood ceiling panels
- (h) 1x porthole curtain suitable for bathroom
- (i) LED ceiling spotlights
- (j) 2x VIMAR power sockets and panels light switches
- (k) Interior wood flooring
- (l) Mirror and mirror light
- (m) Taps:
  - + 1 shower mixer tap
  - + 1 adjustable height handheld shower head and rain shower (300 x 300 mm) inserted into the ceiling
  - + 1 wash basin mixerBathroom accessories:
  - + 1 shower soap basket
  - + 3 soap dispensers
  - + 2 towel rails, 1 x small electric towel dryer
  - + 1 toilet brush holder + 2 bathrobe hooks
  - + 1 toilet paper holder
  - + 1 glass holder for 2 glasses

## 5.2.3 2x VIP Cabin (for each cabin)

- (a) Access from saloon/dining area via internal stairway
- (b) Double bed or 2 x single beds with 4 base drawers and leather upholstered headboards, each with mattress (2100 x 90 mm)
- (c) Furniture in wood with drawers and doors (see General Arrangement for reference)
- (d) Ceiling panels in wood covered in synthetic leather
- (e) Valances with folding curtains or Oceanair "Day and Night" blinds and shades
- (f) 2x reading lights, one on each side of the bed
- (g) LED ceiling spotlights (dimmable), indirect mood lights on the ceiling and under cabinets and bed
- (h) VIMAR power sockets (4) and panels light switches (6), 4 x USB sockets
- (i) Wood or Carpet flooring

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## 5.2.4 VIP Bathroom (for each cabin)

- (a) Wood furniture with acrylic solid top
- (b) 1x white porcelain or bamboo wash-basin
- (c) 1x WC, air extraction
- (d) 1x shower cabin, min. headroom 2100 mm, with full width glass wall and glass door with s/s hinges and lock, non-skid flooring in shower and LED spotlights
- (e) Wooden walls and furniture panels
- (f) Lacquered wood ceiling panels
- (g) 1x porthole curtain suitable for bathroom,
- (h) LED ceiling spotlights
- (i) 2 x VIMAR power sockets and panels light switches
- (j) Interior wood flooring
- (k) Mirror and mirror light
- (l) Taps:
  - + 1 shower mixer tap
  - + 1 adjustable height handheld shower head and rain shower (300 x 300 mm) inserted into the ceiling
  - + 1 wash basin mixer
- (m) Bathroom accessories:
  - + 1 shower soap basket
  - + 3 soap dispensers
  - + 2 towel rails, 1 x small electric towel dryer
  - + 1 toilet brush holder + 2 bathrobe hooks
  - + 1 toilet paper holder
  - + 1 glass holder for 2 glasses

## 5.2.5 Day Head (if applicable)

- (a) Wood furniture with acrylic solid top
- (b) 1x white porcelain or bamboo wash-basin
- (c) 1x WC
- (d) Wooden walls and furniture panels
- (e) Lacquered wood ceiling panels
- (f) 1 porthole curtain
- (g) LED ceiling spotlights

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(h) Interior wood flooring

(i) Mirror

(j) Taps:

+ 1 wash basin mixer

+ 1 soap dispensers

+ 1 toilet brush holder

+ 1 towel rail, 2 towel hooks + 1 toilet paper holder

## 5.3 Crew Area

Entrance via stairs from the salon and via a (removeable) s/s ladder with teak steps from the front deck.

### 5.3.1 Crew Cabin

- (a) 1x bed with mattress (200 x 140 cm), 4 drawers, slats underneath the mattress, can be lifted (hinges and gas pistons) for access to the storage under the bed
- (b) 1x pullman bed (200 x 90 cm)
- (c) 1x hanging locker
- (d) LED ceiling spotlights, 2x reading light above the bed
- (e) TV-set 30"
- (f) Ceiling panels in wood covered in synthetic leather
- (g) 2x VIMAR power sockets and panels light switches, 2x USB sockets
- (h) Wood or carpet flooring
- (i) 1x hatch with mosquito net and blind (Oceanair "Skyscreen Roller Recessed")

### 5.3.2 Crew Utility Room

- (a) Furniture in wood with drawers and doors (see General Arrangement for reference)
- (b) Dedicated space for washing machine and separate dryer, with all required connections + aeration for both
- (c) Dedicated space for optional Fridge/freezer
- (d) L-shaped sofa and dining table
- (e) Ceiling panels in wood covered in synthetic leather
- (f) 6x VIMAR power sockets and panels light switches
- (g) Wood or carpet flooring
- (h) 1x hatch with mosquito net and blind (Oceanair "Skyscreen Roller Recessed")

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## 5.3.3 Crew Bathroom

- (a) Separated facilities with
  - 1x sink
  - 1x WC
  - 1x adjustable height shower head;
- (b) Furniture, wall and ceiling fixtures in laminated material;
- (c) Wooden ceiling panel
- (d) Laminate teak flooring (e) Bathroom accessories:
  - + 1 soap dispenser
  - + 2 towel rails
  - + 1 glass holder
  - + 1 toilet brush holder + 3 bathrobe hooks
  - + 1 toilet paper holder

## 5.4 Entertainment System

Optional - on request

## 5.5 Systems and Material Specifications

The following technical specifications ("Specifications") describe in detail the elements of the SILENT 80.

- (a) Headroom in the cabins, bathrooms and corridors 2.10 m
- (b) Headroom in the crew area 1,95 m, front-cabin bathrooms 1,95 m
- (c) Headroom in the saloon / pantry: approx. 2.20 m
- (d) Width of door openings (final opening inside of the installed doorframe) min. 600 mm
- (e) Large port lights and two glass in glass portholes in all cabins,
- (f) Deck-hatches in all cabins incl. crew area integrated 'flush deck' with mosquito net and blind (Oceanair "Skyscreen Roller Recessed")
- (g) Natural aeration and forced aspiration-system in all cabins / bathrooms, slow turning + silent fan
- (h) Interior furniture built in lightweight materials, light plywood, balsa, foam core or honeycomb where applicable
- (i) All walls lacquered or covered with wood, vinyl leather or Alcantara materials
- (j) Standard interior with mix of modern veneer with white lacquered surfaces and wooden floors.  
Decor wall panels will be in vinyl leather optic. Stainless steel / carbon optic / leather applications inside
- (k) Wooden floor
- (l) Hand rails in s/s, covered with leather at stair cases

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- (m) All cabin- and bathroom doors in light weight material, high quality, soft closure, magnetic fixation
- (n) Shadow blinds for all windows (OceanAir)
- (o) Skyscreen for all deck hatches incl. Moskito net and blind (OceanAir)
- (p) Shower door handle, Hafele: 988.19.992 (or sim.)
- (q) Towel holder, Hafele: 988.14.512 (or sim.)
- (r) soap container, Hafele: 980.60.012 (or sim.)
- (s) Tooth brush glass, Hafele: 980.60.022 (or sim.)
- (t) Toilet brush, Hafele: 980.60.312 (or sim.)
- (u) Toilet paper roller, Hafele: 980.60.302 (or sim.)
- (v) Grab rail, Hafele: 980.64.432 for shower (or sim.)

## 5.5.1 Upholstery, blinds and fabrics

All the sofas, chairs, armchairs and bed heads can be selected by the customer amongst the standard decor and material samples or similar present at the shipyard showroom. All leather or artificial leather parts with double stitch at all edges and corners.

- (a) Folding curtain's fabric: FOCUS LAB 753 Décor Panama 200cs or similar
- (b) External covers in fabrics: ITALVIPLA mod. Tropical fabrics water resistant or similar
- (c) Synthetic leather: ITALVIPLA art. Ultraflex Z3 or similar
- (d) Internal fabrics: ACRO coll. Chiara art. 5306 -or similar
- (e) Crew quarter fabric: ACRO coll. Chiara art. 5342 -or similar

## 5.5.2 Floors

The floors are covered with:

- (a) Floor carpets: synthetic carpet in all guest areas BESANA mod. 8 Silk prestige line or similar
- (b) Interior wood: plywood in mahogany or teak with maple strips floor
- (c) Exterior synthetic teak: planks 45 mm wide (at least 7 mm thick) - optional

## 5.5.3 Mirrors

All mirrors provided and installed are in smooth glass as in the General Arrangement.

## 5.5.4 Door Handles

Door handles can be selected by the customer from *FORESTI E SUARDI* mod. 260A.CC or similar, and cylindrical locks and hinges.

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## 5.5.5 Bathroom Fitting and Accessories

- (a) Taps and shower kit are provided and installed in chrome finishing *FORESTI ESUARDI* mod. LEMANS art. 4280.C - or similar
- (b) Accessories *FORESTI E SUARDI* mod. CARMEL - or similar
- (c) Sinks are supplied and installed *FORESTI E SUARDI* mod. FUORI CORNER QUADRO art. L010.BCO - or similar
- (d) Top in Acrylic solid surfac
- (e) The shower floors in non-skid flooring

## 5.5.6 Woods and Laquering

- (a) Woods can be selected by the customer amongst the standard decor and accessories samples at the shipyard showroom;
- (b) Lacquered surfaces are to be considered in RAL 9010 color with 50-gloss finish

## 5.5.7 Toilet Units

Toilets PLANUS mod. Artic plus 24V white

## 5.5.8 Electric System AC

All kitchen appliances Miele Marine, Simens, Bosch or similar

- (a) Oven - t.b.s.
  - (b) Induction cooktop - t.b.s.
  - (c) Side by side refrigerator (Samsung or LG) - t.b.s.
  - (d) Dishwasher - t.b.s.
  - (e) Washing-dryer - t.b.s.
  - (f) AC Sockets inside - 4 x each cabin, 2 x each bathroom, 8 x salon
  - (g) AC main distribution box
  - (h) DC main distribution box
  - (i) Capacity indicator for all tanks and batteries with LCD screen
  - (j) Grounding plates 230 V
  - (k) Shore connection/socket - Marinc socket/Bipolar, single phase, 3 wire, stainless steel, IP 54
  - (l) Polarity detection for shore power - detection and change
- Interior Decoration and Fittings



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## 5.5.9 Electric System DC

- a) Navigation light Stb + Port - FORCATO, Hella or similar
- b) Navigation light steam toplight - FORCATO, Hella or similar
- c) Navigation light stern - FORCATO, Hella or similar
- d) Navigation light anchor - FORCATO, Hella or similar
- e) Emergency red flash light
- f) LED stern light min. 20 W Hella or similar
- g) Interior Ceiling light: "LED - Sextans Q", F&S 5080.C.3200 or similar
- h) Electric light dimmer (circuits) – 14 (cabins 5, salon 4, cockpit 2, deckshouse downlights 1, flybridge 2)
- i) Reading and chart lights - 12 units, F&S or similar
- j) LED strip - 28 m total length
- k) Generator-, tender- and technical compartments light LED, Hella (>IP65) or similar
- l) Exterior ceiling lights at cockpit and fore deck (F&S 6031.I.3200)
- m) Beauty lights at mirrors in each bathroom
- n) Linear drive console Flybridge - gas spring activated manually
- o) Windlass vertical
- p) Windlass footswitch (veer)
- q) Windlass footswitch (haul)
- r) Anchor remote control radio controlled
- s) 2 switches on fly and inside helm incl. automatic fuse
- t) Light switches, 230V sockets and USB sockets - VIMAR Units of 2, 3, 4 throughout the boat
- u) 2 x grounding plates
- v) Magnetic compass at main helm and at fly helm
- w) Windscreen wipers s/s with water spray set, rubber wiper blades
- x) Generator starter battery - 105Ah 24V GEL - Starter Genset
- y) Battery switch
- z) Battery box and installation material
  - aa) Fuse box
  - bb) ATO fuses
  - cc) ANL fuses
  - dd) Carlingtech switches at helm or similar
  - ee) Fanfare

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- ff) Electric valves for blackwater tanks, operated from main panel
- gg) All lights high quality LED by Forresti & Suardi, Cantalupi or similar
- hh) Bilge pumps with switch and fuse panel (vv) Bilge alarms with switch and fuse panel
- (ww) Pumps for black tanks with switch and fuse panel
- (xx) Tank sensor and alarm panel

## 5.5.10. Detailed description of the lights:

All lights in the same light color of about 3.000 K

Type A *SEXANT* BIG S P-LED 3.6W 10/30VDC 3200/4000° K main spot light ceiling

Type B *MIRA* TT P-LED 1, 2 W 10/30VDC 3200/4000° K shower, mirror and external ceiling IP65 spot light

Type C *ANDROMEDA* G2 LED 1,2W 10/30VDC 3200/4000° K courtesy light IP67

Type D *VEGA* W P-LED 2W 10/30VDC 3200/4000° K reading light

Type E *ELETTRA* T LED 0,5W 10/30VDC 3200/4000° K external courtesy light IP67

## 6 Energy Production and Storage

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High voltage DC Battery for main storage, MPPT- charge regulators, solar panels, inverters, e-motors, generator

### 6.1 Solar Power

64/70 high-efficiency *Sunpower* X22 solar-panels in total for propulsion and household each 1560 x 1046 mm | Total 114,1 m<sup>2</sup> | 1.229" square foot

MPPT solar charge regulators

### 6.2 Electric Power Storage

High voltage DC Battery 400 V for main storage with a capacity of about 200 kWh.

Battery compartment cooling system

### Battery Management System

Each battery module comes with an integrated battery management system (BMS). This is an intelligent electronic module, that measures all cell voltages and temperatures to control balancing on both battery cell and module level. The battery modules communicate by a galvanic isolated CAN-Bus with the Master BMS, which collects and monitors the status of all

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battery modules. If the measured values from a battery module exceed the limit, the Master will automatically act to protect the connected battery modules.

Monitoring and control EM-Display monitors and controls all battery systems. The high-resolution display with integrated touch screen shows all important battery parameters at a glance. The integrated Wi-Fi-module will connect the display to the cloud and makes it possible to remotely monitor your systems with our Energy Portal.

## 6.3 Range Extender

Generator as range extender 100 kW (*Volvo D3 4 Cylinder/ UQM generator*)

In order to reduce the noise, it is fitted with water lock, silencer and special silencer blocks

## 6.4 Service Batteries

24 V service batteries, Lithium High energy, 10 kWh including BMS

## 7 Navigation Control Systems and Electronics

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### 7.1 Wheelhouse

- (a) Steering station control panels including:
- (b) Start/stop engine switches
- (c) 1x electronic twin engine control handles
- (d) 1x display Engines and battery
- (e) *Riviera* Magnetic compass - or similar
- (f) Navigation, position and dashboard light switches
- (g) Horn control
- (h) Filters alarm
- (i) Bilge alarms
- (j) Windshield wash/wipers controls

### 7.2 Flying bridge steering station

- (a) 1x display Engines and battery
- (b) Winch and anchor washing controls;

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- (c) Magnetic compass
- (d) Horn control
- (e) Electronic twin engine controls

## 8 Fresh Water and Sewage System

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### 8.1 Fresh Water System

- (a) Fresh water tank 1,000L, structurally integrated in the hull with man-hole
- (b) Fresh water tank 50L, man-hole for potable water
- (c) Water pump + filter acc. to small flow to fridge / 2nd tap at pantry sink
- (d) Water pump for pantry / separated from bathrooms and stern shower
- (e) Water pressure system - 1x pump (Giannesci or sim. 50l/min), 1x Tank 5L inox
- (f) 5x small electric water heater - 230 V heating: max. 20 L, for each bathroom
- (g) 2x small electric water heater - 230 V heating: 10 L, for pantry and stern shower
- (h) Shower mixer tap with shower head + rainshower in all bathrooms
- (i) 2x transom shower (warm/cold)
- (j) Integrated stern shower on tender bay hatch when opened with mixer unit
- (k) Acrylic worktop sink for galley
- (l) Sink bathrooms, top mounted, t.b.s
- (m) Taps at bathrooms - all armatures and showers Hans Grohe, Kohler or similar
- (n) Shower drains at bathrooms hidden under acrylic / stone cover
- (o) Deck filler for water
- (p) Tank ventilation and filters
- (q) Maintenance free plastic water hose (Whale or similar)
- (r) Hose clamps all high-quality s/s, For pressurized water, fuel, blackwater and under the waterline all clamps double.

### 8.2 Grey and Sewage Water System

- (a) 4x ca. 500 liters grey water tanks, manhole with aluminum lid, level sensor, all tanks located under the bathrooms
- (b) 4x self-priming 24V Giannesci pump ECO MV 44E for automatic or manual tank discharge
- (c) 3-way valve for deck discharge

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- (d) Deck fitting waste water acc. EN ISO for discharge
- (e) Grey water system connecting tank with washbasins, sinks, showers, bidets, dishwasher and washing machine
- (f) Shower drain kit
- (g) Waste water hoses marine grade, anti-smell type (SeaLand or similar)
- (h) Anti-odor filter on tank's vent

## 9 Bilge System

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- (a) Self-priming electric bilge pump units at hulls (6x)
- (b) Bilge alarms next to the bilge pumps
- (c) Manual bilge pump at stern cockpit
- (d) Skin fittings with ball valves
- (e) Control panel (touch screen monitor) at salon helm

## 10 Fire-fighting and Fire Protection Systems

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- (a) Fixed fire extinguisher: 1x generator and aux. installation, 1x at battery compartment, suitable for net space (SEAFIRE)
- (b) Fuel shut-off remote control at helm
- (c) Fire extinguishers in each cabin and salon (7)
- (d) Fire detection units in each cabin and salon (6)
- (e) Fire blanket for galley

## 11 Steering System

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- (a) Rudder shaft stainless steel massive stock
- (b) Rudder stock
- (c) Lower and upper rudder bearing
- (d) Gaiter sealing
- (e) Rudder tube
- (f) Steering pumps on fly helm and salon helm
- (g) Steering pump flange

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- (h) Venting valve for steering pump
- (i) Balance valves with bypass function
- (j) Hydraulic rudder cylinders
- (k) Steering wheel - stainless steel polished at flybridge
- (l) Steering wheel - carbon fiber optic at saloon
- (m) Steering wheel - additional brand logo in wheel center
- (n) Hydraulic tube
- (o) Hydraulic tube support sleeve
- (p) s/s rudder arm and misc. components
- (q) Emergency tiller acc. to CE

## 12 Grounding Systems

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4-6 Grounding plates for AC and DC systems

## 13 Fuel and Oil Systems

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- (a) Fuel deck fill station in-molded in superstructure, covered with a lid
- (b) Fuel tank s/s, manhole: ca. 2 x 1,500 Liters with inspection tubes at tank
- (c) Splash-stop for fuel
- (d) Rising pipes
- (e) Ventilation with smell filter
- (f) Fuel manifold valve
- (g) Diesel pre-filters and 2 x interchangeable generator filter
- (h) Fuel transfer pump with filter
- (i) Electronic level gauge at main dashboard and at deck fill station
- (j) Fuel hose - marine fuel acc. ISO
- (k) Double hose clamps s/s heavy duty

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## 14 Deck Hardware

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- (a) Fender profile for hull outside and platform- Tessilmare Sphera (60 mm height)
- (b) Fender profile end fitting
- (c) Anchor bow roller with secure pin
- (d) Padeyes for anchor bridle
- (e) 12 cleats main deck: s/s, 400 mm customized t.b.s.
- (f) Anti-chafing-protection plate s/s at side sill
- (g) Retractable cleats at platform (Seasmart)
- (h) 6x fender pad eyes at aft platform