VIUDESYACHTS

# PRELIMINARY SPECIFICATION

For the construction of a

DISPLACEMENT YACHT

# VIUDES 45

Project Id. P-215

VIUDESYACHTS

# INDEX

VIUDESYACHTS

# *1. General*

## 1.1 Dimensions and general specifications

| | | |
|---|---|---|
| Length overall | 45 | m |
| Beam moulded | 9,5 | m |
| Beam overall | 9,7 | m |
| Draft (scantling extreme) | 2,55 | m |
| Design draft (maximum load) | 2,47 | m |
| Depth | 4,5 | m |
| Gross Tonnage | 498 | GT |
| Displacement (approx. medium) | 394 | tonn |
| Range at economical speed (14,5 knots) | 3000 | nm |
| Fuel capacity | 72000 | lts |
| Fresh water capacity water capacity | 12000 | lts |
| Grey/black water capacity | 3000+3000 | lts |
| Speed - cruising (approx. at load condition 50% water and 50% fuel) | 14,5 | knots |
| Speed - max. (approx. at load condition 50% water and 50% fuel) | 15 | knots |

Notes:

- cover image is not contractual, only descriptive.
- Some of above items subject to revision after project is fully defined

## 1.2 Brief description

TYPE: 45 m displacement twin screw diesel motor yacht

CONSTRUCTION: Welded steel hull and main deck, aluminium superstructure and mast. Material to be used is "Marine Grade A Steel " and "Marine Grade" alloy 5083-H111 and 6082 extrusions

PROPULSION: (2x) CAT C32 Acert (970kW@2100rpm) diesel engines with two five –blade Nibral or equivalent propellers

ENGINEERING: Isonaval Naval Architects

## 1.3 Units and Standards

In general metric units are to be used throughout, and all calculations and calibrations are to be based on the following units and the appropriate abbreviation used:

| | | |
|---|---|---|
| Length: | metre, millimetre | m, mm |
| Area: | square metre | $m^2$ |
| Capacity (volume): | cubic metre, litre | $m^3$, l |
| Weight: | tonne, kilogram | t, kg |
| Force: | tonne force, kilogram force | tf, kgf |
| | kilo Newton, Newton | kN, N |
| Power: | kilowatt/metric horsepower | kW/hp |
| Energy: | kilowatt hour | kWh |
| Voltage | Volt | V |
| Current | Ampères | A |
| Frequency | hertz | hz |
| Capacity (electric) | Ampères per hour | Ah |
| Speed: | knots (nautical miles) | kn |
| Distances (at sea) | Nautical miles | nm |
| Temperature: | degree Centigrade | ºC |
| Heat: | British Thermic Units | BTU |
| Pressure: | bar (absolute) | bar (a) |
| Illumination: | lux | lux |

## 1.4 Design and construction class and regulations

Design: Isonaval Naval Architects

Construction: Viudes Shipyard

Class: The yacht will be designed and built in accordance and in compliance with:

- The **SSC Rules of Lloyd's Register of Shipping** current at the time of signing of the Agreement and will be suitable for unrestricted navigation with following class notation: **+100 A1 SSC Yacht Mono G6 MCH**
- The **Code of Practice for Safety of Large Commercial Sailing & Motor Vessels' (LY2) of the MCA.** current at the time of signing of the Agreement.

Regulations: The vessel shall be built as a commercial, charter yacht registered in U.K. flag.

The vessel shall comply with the following rules regulation sand codes:

- UK Maritime & Coastguard Agency (M.C.A.) "The Large Commercial Yacht Code (LY2).
- ICLL / Int. Convention on Load Lines 1966 & 1988 Protocol as amended by the relevant Flag Administration Code.
- Int. Regulations for preventing collisions at sea COLREG 1972

edition and amendments.

- The vessel will be built according MARPOL 73/78 preventing of pollution of ships, protocol 1973 and 1978, as far as applicable.
- USCG Regulation for foreign vessels only as regards Pollution Prevention & Sanitation Device regulations, without certificates and inspections and with exception of any requirements conflicting with the General Arrangement plans
- GMDSS as applicable
- Int. Tonnage Measurements of Ships 1969

At delivery the yard will issue the following certificates:

a) Builders certificate
b) Class certificate
c) Flag authorities certificates for this type of vessel
d) Certificates of materials & equipment used in construction & fit out, as may be requested by Class & Flag, except items of Owner's supply
e) Statement of compliance to "The Large Commercial Yacht Code (LY2)" issued by Lloyd's Register of Shipping or MCA
f) International Tonnage certificate (ITC 69)
g) International Load Line certificate (ILLC 66/88) as amended by the Code of Flag Administration
h) Suez and Panama Tonnage certificates.
i) International Radio Safety certificate + GMDSS (A1+A2+A3)
j) International oil prevention certificate (incl. SOPEP) (MARPOL 73+78 Protocol + Amend)
k) Compass deviation cards
l) Certificates of nautical instruments including: lantern certificates, compass certificates.
m) Certificates of fire fighting equipment
n) Test certificates for all corresponding items indicating SWL
o) Certificates of anchors, chains, windlasses and warping winches
p) Navigation lights certificates

The builder may request derogation for any of the above listed certificates.

## 1.5 Ambient conditions

The Yacht and its equipment will be suitable for ambient sea and atmospheric conditions, which normally can occur in cold and tropical waters.

As ambient conditions will be considered:

| | |
|---|---|
| maximum outside air temperature | 45ºC |
| minimum outside air temperature | - 5ºC |

| | |
|---|---|
| relative humidity outside air | 80% (35 ºC) |
| maximum seawater temperature | 32ºC |
| minimum seawater temperature | 0ºC |

## 1.6 Vibrations & Noise

The design and construction of the yacht are specially made in order to minimize the vibrations and noise levels. Care will be taken to provide adequate scantlings, continuity of seating of the main engines and reduction gears and other machinery. The yard will appoint a Specialist Consultant in noise and vibration design, in order to optimize the whole project.

The acoustic comfort on board is reached by the combined effect of a suitable mounting system of the engines, gear- boxes, generators and other noisy equipment, the selection of fans , the adoption of silencers for the fans, the correct type and number of mufflers for engine exhaust lines, the plumbing supports, the elastic mounting and insulation of walls, bulkheads, ceilings and floors. Everything following the Consultant design and instructions.

Here below, we indicate the foreseen noise levels:

During navigation at cruising speed (14,5 knots) and at anchor with zero speed stabilization active (air conditioning , primary air and fan coils at medium speed , and one generator operating discharging at water level).

| ***Areas*** | ***Cruising speed*** | ***At anchor*** |
|---|---|---|
| Crew cabins | 68 dB(A) | 50 dB(A) |
| Crew mess | 65 dB(A) | 50 dB(A) |
| Main galley (exhaust fan at low speed) | 60 dB(A) | 56 dB(A) |
| Guest suites | 58 dB(A) | 48 dB(A) |
| Owner's suite | 55 dB(A) | 45 dB(A) |
| Dining room | 55 dB(A) | 48 dB(A) |
| Main saloon | 58 dB(A) | 48 dB(A) |
| Lounge | 58 dB(A) | 48 dB(A) |
| Captain's cabin | 55 dB(A) | 48 dB(A) |
| Wheelhouse | 55 dB(A) | 48 dB(A) |
| Control room | 85 dB(A) | 75 dB(A) |
| Exterior maindeck aft | 76 dB(A) | 60 dB(A) |
| Exterior bridge deck aft | 70 dB(A) | 60 dB(A) |
| Sundeck middle | 70 dB(A) | 60 dB(A) |
| Cabin to cabin acoustic privacy: better than | | 35 dB(A) |

Noise levels in sanitary spaces located in or adjacent tomeasured area's shall not be more than 3 dB (A) above the stated level of the corresponding spaces

## 1.7 Materials and workmanship

Articles and materials supplied by the builder shall be new, of the best quality available and suitable for the marine installation of the purpose intended.

All steel used for construction will be Marine Grade A .

All aluminium to be used for construction will be seawater resisting aluminium alloy, according requirements 5083-H321/H116 or 6082 for Decks and Superstructure.

Aluminium 6082 for extrusions to be used in superstructure. Welding shall be performed to the requirements of LRS by experienced and qualified welders with modern welding tools and equipment.

Stainless steel to be of AISI 316 L quality.

The wood to be used shall be sound, clear and free from moisture, knots, checks, splits, shakes or sap. It shall be well seasoned and of a kind and quality well suited for the work intended.

The moisture content of the wood will not exceed 15%.

Deck planking will be selected on uniform colour and straight grain.

Where veneers are used, they will be glued for tropical condition.

All plywood to be of the best quality, marine type,waterproof grade.

All wood exposed to weather shall be Burma or Moulmain teak.

Light alloy materials to be seawater resistant quality, free from defects such as cracks and lamination.

All materials showing defects will be rejected.

The workmanship, in detail and finish, in all particulars and in all departments, shall be first class in all respects and suitable for the purpose intended.

The workmanship and materials may be inspected by the Owner's Representatives.

In order to judge the suitability of the equipment or of any part to be built into the yacht the Builder will supply technical details of the equipment or of these parts to the Owner or his Representative.

## 1.8 Progress of works and decision schedules

Builder shall prepare within an agreed timeframe with the Owner after signing of the contract, progress schedules covering the work under these specifications and will give copy of the progress schedules to the Owner also within the agreed timeframe, after signing of the contract and co-operative with the Owner in this respect in order that both parties may be thoroughly familiar with the progress made and to be made, in order that the yacht may be completed within the contract time.

The builder will furnish the owner with progress photographs taken at various stages during the construction of the yacht.

After the approval of the initial design the preparation of the shop drawings will start. All details are to be finalized on the yard's layout drawings. This will be done between owner, designer and yard.

The following layout drawings will be presented for approval:

- Lowerdeck layout
- Maindeck layout
- Upperdeck layout
- Sundeck layout

## 1.9 Project management and logistics

A Project Manager will be involved by the yard as the only interface with the Owner.

The communication language will be English.

The Owner can appoint only one Representative acting on his behalf.

Owner's consultants involved, have to refer to the Owner's Representative.

The yard will also supply an office with phone and fax if required by the Owner.

Communications will be billed and reimbursed monthly.

Selection of materials or equipment items by the Owner and/or his representative must be done well in advance that the particular items are sent to production.

The Shipyard will timely inform the Owner of these critical dates.

## 1.10 Changes

The Owner may request in writing any reasonably practicable modifications, which don't imply significant deviation from the basic design and the present specifications.

Any modification of the design, the construction, the interior, the equipment, etc. which might imply a correction on price, weight and/or delivery time shall only be carried out after such modifications have been agreed in writing between Owner and builder, as provided in the purchase agreement. The builder will be entitled to refuse any requests in the last four months before vessel delivery date.

## 1.11 Plans

The following plans will be furnished by the builder and will form a part of these specifications of the contract, as

- Profile plan
- General arrangement drawings of all decks

In case of discrepancy between these specifications and the General Arrangement Plans, the General Arrangement Plans shall prevail.

The following drawings and or files will be delivered by the builder after signing the contract, and form a part of these specifications and contract after written approval of the owner. In addition to this list a copy of all class drawings will be sent to the owner's representative for review.

- Midship section
- Scantling plan
- Lines and laying down plan
- Table of offsets
- Double bottom tanks, bilges, manholes, plugs, frames & floors between peaks
- Engine seatings
- W.T. bulkheads, fore and aft peak framing
- Details of rudders, bearing and quadrant
- Details of shaft tubes, shafts and bearings
- Superstructure, deckhouse and details
- Engine-room and technical spaces machinery's arrangement
- Engines & generators exhaust systems
- Engine room and technical spaces ventilation system
- Docking plan
- Workshop drawings and cutting files needed for the construction (NOT essential)
- Mooring plan
- Scupper plan
- Hydrostatic and stability study
- Mast Construction
- Capacity plan
- Arrangement of tanks, bilge vessels, manholes, plugs
- General interior arrangement
- Exterior joinery work
- Interior joinery work (1:20 drawings will be sent for approval)
- Galley layout and galley equipment list
- Wheelhouse arrangement
- Diagrammatic arrangement of piping system and "as fitted" plan
- Bilge and fire fighting system
- Sea water cooling system
- Air vent and sounding pipes
- Sea chests
- Fuel oil system
- Hot and cold fresh water system
- Compressed air system
- Stabilizers system
- Bow-thruster system
- Steering gear system
- Hydraulics diagram
- Sanitary system (black and grey water system)
- Arrangement of boat cranes
- Electrical wiring diagrams and cable list
- Electronic wiring diagrams
- Arrangements of antennas
- Safety plan
- Docking plan

- Insulation arrangement
- Air conditioning and primary air treatment system
- List of equipments with suppliers

## 1.12 Instruction books

On delivery of the vessel the following manuals and instruction books will be delivered in duplicate.
All manuals and instruction books will be in the English.

- Manuals and instruction books for engine room machinery, deck equipment, air conditioning installation, etc.
- List with addresses of suppliers of all major items of equipment, outfit and machinery.
- Reports of shop tests of main engines and generators if available.
- All drawings as per above in paragraph 1.4

## 1.13 Articles supplied by owner and builder

The owner will supply to the shipyard c.i.f. all equipment below specified and Builder will install this equipment in the yacht. Builder will be responsible for and store the equipment in his warehouse on Builder's account, caring for it like it were his own deliveries.
Especially vulnerable personal items like crystal, silverware, etc. must be stored and locked with limited access. The owners deliveries once in builders warehouse will be insured by the Builder.

- Pots, pans and cooking utensils.
- Silverware, cutlery, glassware and china,
- Table and bed linen,
- Loose interior furniture and exterior deck chairs, as part of the allowance for loose furniture. (see 7.2.8.)
- Decorative table lamps and other decorative light fixtures, such as wall sconces, art lights and swing arm lamps (or per PC sum).
- Artwork and decorative items
- Towels and robes, amenity items
- Specialised design glasswork
- Interior design (if required)
- Uniforms, charts, pilots, almanacs, chart table equipment etc.
- Tools, except those delivered with equipment,
- Main tender in aft garage
- Tender at the foredeck, to be used as MOB boat
- Jetski's and diving equipment,
- Spare parts.
- Exercise equipment

## 1.14 Tests & Trials

During the building period, all systems and equipment are to be subject to appropriate tests and trials, according Test Memoranda list to be sent to the Owner and the Classification Society prior tests commencement.

All work accomplished under this specification will be thoroughly tested as specified or directed to demonstrate satisfactory workmanship and suitability for the purpose intended and also that all requirements of the specifications have been satisfactorily fulfilled. A test protocol and schedule will be prepared by the yard in consultation with the owner's representative.

Any defects which may develop during tests or become apparent during the life of the contract in connection with the work covered herein for which the builder is responsible, shall be corrected by the builder without any charge to the owner.

All tanks and pipelines shall be tested and made tight before delivery.

All fully closed void constructions such as bulwarks, trim tabs, rudders and box keel will be pressure tested and made tight before delivery.

All decks, bulkheads, hatches, windows, portholes etc. shall be hose tested where not subject to pressure tests in adjoining tanks, window pockets, etc., shall be based on requirements of overflow connections.

All testing, where possible, shall be executed before the launching of the vessel.

All tests and trials will be executed in the presence of the representative of the Owner and the Classification Society where required .

Dock and sea trials programme will be submitted to Owner and Classification Society two weeks before trials starting.

The following tests and trials will be carried out:

1. Speed:
   1.1. Max speed measured with DGPS
   1.2. Speed at 85% of max power
2. Consumption by means of calibrate test fuel tank
   2.1. at max speed
   2.2. at 85% of max power
   2.3. at 12Kn
3. Bow-thruster.
4. Steering gear.
5. Manoeuvring.
6. Stabilizers.
7. Anchoring and mooring.
8. Electrical panel.
9. Fire fighting.
10. Fire detection.
11. Air conditioning and ventilation.
12. Refrigerating rooms.
13. Radio telecommunication and wheelhouse equipments.
14. TV, video, entertainment, communication equipment.
15. Sanitary system.
16. Galley equipment.
17. Desalination plant (the test will be carried out during sea trial in clean sea)

18. Inclining equipment.(see below)
19. Stern gangway.
20. Cranes and launching equipments.
21. Aft Platform, Side Platform and Doors
22. Lighting.
23. Engine auxiliaries.
24. Tanks and piping pressure test.

All costs in connection with the trials will be born by the Builder.
Fuel oil, lubricating oil and greases for Builder's account will be bought in consultation with the Owner.
After delivery of the vessel, remaining fuel oil and lubricating oil in tanks will be bought by the Owner at prices current at time of trial.

## 1.15 Inclining experiment

The technical department of the yard will issue a Preliminary Stability Calculation booklet to be submitted to the Classification Society for provisional approval. After the launch and when the yacht has been practically completed, an inclining experiment will be made by the shipyard, conducted by the Owner's Naval Architects and witnessed by the corresponding LRS representative. The builder will furnish all necessary labour and material to perform the experiment.

## 1.16 Dock trials

When the work specified herein has been sufficiently completed, the builder will conduct at his expense an eight hours dock trial, during which all main and auxiliary machinery supplied installed shall be thoroughly tested. Any defects that may develop during the dock trials, for which the builder is responsible, shall be promptly corrected by him and at builder's expense.

## 1.17 Sea trials

When all work specified herein has been practically completed, the builder will conduct a series of sea trial under normal weather conditions, during which the operating of the vessel including all machinery and equipment will be examined.
The schedule and list of sea trials must be previously submitted for approval to LRS Surveyor and to Owner's representative.

All machinery and systems usually operating under service conditions will be put into operation simultaneously and continuously so far as practicable.

This will involve the operation of all hull engineering installation, deck machinery and miscellaneous equipment. The builder will provide for adjusting compasses during the sea trial and for putting the vessel through the usual turning, backing, navigating and anchor tests as may be required by the owner.

During this all systems will be tested for the acceptance of LRS and the owner's

representative.

## 1.18 Performance trials

Separate performance trials will be held to determine max. speed, cruising speed and range of the vessel . These trials will be held in Mediterranean waters with wind force of 2 or less.

## 1.19 Care of vessel

The yacht will be built under a permanent roof or alternative arrangement if proven to be adequate and will be launched by and at expense of the builder. The builder shall take all reasonable precautions to protect in every way the vessel from fires, or from the elements of nature. During the progress of the work all parts of the vessel shall be kept in a clean and sanitary condition.

All toilet and lavatory spaces, in which work is not actually being done shall be locked up. Proper measures shall be adopted to protect plumbing fixtures and fittings, tiles, painting of varnished surfaces from damage.

The builder shall keep clean and drained all pipelines, fixtures, traps, tanks, water jackets, etc. throughout the vessel to avoid damage by freezing, while at builder's yard or during trials.

## 1.20 Delivery

After completion of sea trial and acceptance of the yacht by the Owner in International Waters outside the EC. The Yacht will be considered accepted after signature of a Delivery and Acceptance Protocol, signed by parties.

# *2. General construction*

## 2.1 Materials

Hull, double bottom, tanks, main deck & bulkheads of Marine Grade A steel

Superstructure and mast of seawater and corrosion resisting alloy, plating 5083/H111 and extrusions 6083 all to meet LRS requirements.

## 2.2 Hull & Deck Structure

All structural scantlings will be determined for the maximum full load draft in accordance with the requirements of the LRS Rules and Regulations.
The hull and deck plating will be stiffened by bulb plate or angle frames as appropriate.

The structure is of the type composed longitudinal / transversal with longitudinal girders and beams with proper spacing in order to guarantee the necessary transversal rigidity and keep within acceptable limits the strength of the panel according to the Classification Society Requirements.

The connections are exclusively welded, with the procedure indicated and approved by the Classification Society.

Designing the structure, it has been kept in the maximum consideration the necessity to obtain a final weight reduced within acceptable limits with the maximum resistance of the structure either locally or of the whole hull, in every sea condition up to the most critical.

Special care shall be taken to produce a very fair and smooth hull and to eliminate stresses set up during the welding process.

Distortion from thermal stress due to the welding should be limited as far as possible by appropriate construction. The hull shell plating topsides, from top of bulwarks to 1 m below the water line, is to be fair and smooth and free from welding stresses, with a maximum tolerable deviation of ± half the thickness of the plate, but in general not more than 4 mm, any three frames spaces.

All external welds above the waterline shall be ground smooth where allowed by Classification Society Surveyor. Prior to the assembly of any parts, all rough and sharp cutting edges are to be ground smooth so paint can adhere properly.

Insert plates, and/or increased plate thickness, with local stiffening will be fitted where necessary, in way of deck openings and under deck cranes, deck machinery, bollards and masts etc.

The hull plating thickness will be increased for 10m on the waterline at the bow to provide additional protection against striking of flotsam.
Insert plates of increased thickness with local stiffening will be fitted in way of anchor pockets, sea suctions and discharges, bow-thruster unit, stabiliser units and all other openings in the shell to Classification Society requirements.

Polished stainless steel insert plates will be fitted in way of the anchor pockets to protect against damage and rusting from anchor and chain cable chafing.

A polished stainless steel doubler plate will be fitted to the stem to provide protection against damage from floating objects and chain cable chafing.

All through hull fittings will be in accordance with Classification requirements.

Sea inlet boxes will be arranged in the shell plating in accordance with machinery and fire fighting system requirements.

One bow-thruster will be fitted. The thruster tubes will be constructed from steel.
The connection between the thruster tubes and the shell will be chamfered at an angle of 45°.
Bolted grids will be fitted.

All decks will be plated in steel, with scantlings in accordance with Classification Society requirements.
All openings cut in decks will have radiuses corners. Structure in the way of breaks and

openings in the decks will be adequately compensated for loss of strength and continuity.

The Main Deck plating will be stiffened and/or fitted with heavy insert plates in way of the mast, capstans, bollards and deck equipment.

The connection superstructure/deck will be obtained with a metallic joint type Detacouple.

The structure and the connections of the superstructure are entirely welded with MIG process, following the Classification rules.

### *2.2.1 Watertight & structural bulkheads*

Steel watertight bulkheads will be fitted as shown on the General Arrangement drawing, including the collision bulkhead.
The bulkheads will be located to provide the correct damage stability criteria.
They will be of flat plate construction with vertical stiffeners.
Where girders or other sectional members are stopped short each side of watertight bulkheads and bracketed-off, care will be taken in the alignment of the brackets on each side to maintain continuity of strength.
Where pipes and cables are carried through watertight bulkheads they will be fitted with penetrations to the approval of the Classification Society and the Flag Administration.

All access openings through watertight bulkheads will be protected by watertight doors to the approval of the Classification Society and the Flag Administration.

Watertight cofferdams, as per rules, will also be provided for through hull passages as propeller shafts, stabilizers fins, bow and stern thrusters.

All internal structure will be thoroughly cleaned and coated in accordance with the Paint Specification.

### *2.2.2 Stern tubes, Shaft brackets & Rudders*

The stern tubes will be designed and constructed in accordance with the Classification Society requirements.
The stern tubes will be fitted with water lubricated shell bearings.
The inboard end of each tube will be machined to accept a Deep Sea seal.

The shaft brackets (A-Brackets) will be designed and constructed of steel, in accordance with the Classification Society requirements and to reflect good hydrodynamic design to minimise vibration. They will be welded to a special foundation incorporated in the hull construction.

Twin spade rudders to be made of stainless steel ensuring good steering capabilities at low speed, made of double plating with horizontal web, all welded. Filling and drain plugs to be provided; rudders to be pressure tested. Design LRS approved

The rudder tubes will be designed and constructed in accordance with the Classification Society requirements.

The stocks, made of AISI 316L Stainless steel, will be supported by water lubricated synthetic rubber sleeve bearings

### *2.2.3 Tanks*

Tanks will be arranged as shown on the General Arrangement drawing. All tanks, cofferdams and void spaces will be fitted with access manholes, drain holes, vent holes, filling, transfer, suction and overflow connections, air escapes and sounding pipes as considered necessary by the Classification Society.

Above the keel double bottom tanks will be constructed as part integral of the hull structure such as :

- water tanks
- fuel tanks
- lube oil tank
- sanitary tank
- bilge tank
- sludge tank

All internal structure will be thoroughly cleaned and coated in accordance with the Paint

Specification.

Potableness certificates will be provided for Fresh Water Tanks.

Stainless steel drain plugs will be fitted in the shell at the lowest point of all double bottom tanks, deep tanks, cofferdams and void spaces.

Drain plugs are to be made flush with the outside of the shell plating.

Drain plugs to oil fuel tanks are to be 38mm diameter and to water tanks and dry spaces to be 32mm diameter.

Drain plugs for water tanks and oil tanks will have a different head. The plug will be square for water tank and slotted for fuel tank.

Two spanners for each type of head will be supplied by the yard and stowed onboard the vessel.

Weld bead letters 50mm high will be applied to the hull adjacent to each drain plug to identify which tank it serves.

Two spare plugs of each type will be provided.

Welding, material treatment, quality control, insulation, painting of the hull and superstructure will be made in the best workmanship tradition and according to the requirements of Classification Society.

All tanks will be submitted to the Buyer's Representative for inspection prior to final closing.

### *2.2.4 Fuel tanks*

Located according to GA and structural layout plan. Fuel tanks to be made as double bottom tanks, aprox. capacity 72 m3 (including fuel day tank). All tanks provided with swash plates, properly stiffened, manholes, fill pipes, ventilation pipes, connection pipes to manifold,

sounding system etc. Tanks to be tested with pressure corresponding to a coloumn of water pressure as per LRS requirements.

One fuel filling box will be provided on main deck.
The box will be closed with a flush mounted hinged door and a drain pipe to overflow tank.

Tanks to have shut off valves (on the transfer manifold).

Adequate stripping lines for fuel drainage will be provided and all fuel tanks will be connected to a pump discharging into the sludge tank, as per LR rules.

### *2.2.5 Fuel day tanks*

Located according to GA structural layout plan. Two steel day tanks to be mounted in engine room, provided with swash plates, properly stiffened, manhole, fill and ventilation pipes, sounding system etc.

Water drain off valve, with hand-pump or connected by stripping line

### *2.2.6 Fresh water tanks*

Located according to GA structural layout plan. Double bottom tanks, approx. total capacity 12,0 $m^3$. Tanks provided with swash plates, manhole, fill and ventilation pipes, connection pipes to water pressure system and sounding system.

### *2.2.7 Grey & black water tank*

Located according to GA structural layout plan. Double bottom tanks. Tanks provided with swash plates, manhole, ventilation pipes, connection pipes to grey water and black water systems and sounding system. Easy access to be provided through lower deck interior to manhole for cleaning.

## 2.3 Watertight doors

All access openings through watertight bulkheads will be protected by watertight doors to the approval of the Classification Society and the Flag Administration.

Hull cofferdams and technical spaces will be accessible through watertight hatches.

## 2.4 Transom door and swim platform

A large transom door/platform having a width of 5,8 m approx will be provided.

It will be hydraulically operated and, while down, door will be used as swim platform and will be covered with teak planks 15 mm thick.

The door/platform will be equipped with two foldable bollards to secure the tender /jet-skis

when floating and a electrohydraulic stainless steel bathing ladder.

A swim/boarding ladder hydraulically operated will be incorporated into the transom door structure.

When closed the door will be locked to the transom by means of dogs hydraulically actuated to guarantee the strength.

Manual operation in case of failure of hydraulic systems will be possible.

One watertight door on the starboard side of the transom will give access from the swim area to the below deck aft area.

## 2.5 Side hull port door

A watertight door, hydraulically operated, will open on port side aft of the hull for tender and jet-skis launching.

Two (2) foldable bollards to be installed on side platform for tender/jet-skis mooring when afloat.

When closed the door will be locked to the hull by means of dogs hydraulically actuated to guarantee the strength and the water tightness.

## 2.6 Stairway to main deck

A large (1,8 m approx) stairway, structural with transom, with steps teak covered, gives access to main deck when platform is open. Stair will be totally concealed when platform closed.

## 2.7 Bulwarks & Bulwarks doors

Open bulwarks will be fitted to the Main Deck and the Foredeck with a minimum height of 1 m. They will be fitted with a painted stainless steel top plate. Teak capping rails will be fitted where shown on GA drawing.

A stainless steel railing will be fitted where necessary to comply with this minimum height, as shown on the General Arrangement drawing.

The Main Deck bulwarks will incorporate stays and freeing ports in accordance with the requirements of the Classification Society.

Freeing port openings will be finished with painted stainless steel and fitted with painted stainless steel safety bars where required by the Flag Administration.

Flush closing, inboard opening bulwark doors will be arranged in the Main Deck bulwarks port and starboard in way of the main deck side entrances (guests starboard and crew port).

The structure of doors will be equal to the strength of the adjacent bulwark.

Recessed into the bulwarks, port and starboard, storages for Marquipt type foldable,

aluminium, 7 steps boarding ladders (one each side).

All doors will be fitted with sea water resistant hinges and fittings. Means will be provided for securing the doors in the open position.

## 2.8 Superstructure

The superstructure will be of steel for the main deck and all welded aluminium construction for the other decks, as above specified.
The continuity of main structural members will be maintained whenever possible.
Where continuity is unavoidably broken, compensation will be provided, to the requirements of the Classification Society.

As specified above, the maximum tolerable deviation in the exposed superstructure, including bulwarks, will be of ± half the thickness of the plate, but in general not more than 4 mm, any three frames spaces. Particular attention will be paid to obtaining a high standard of fairness requiring a minimum of filler.

All structural scantlings will be determined in accordance with the requirements of the Classification Society.
Transverse bulkheads and/or web frames will be arranged to provide racking strength and support. The decks will be stiffened by transverse beams in conjunction with girders and pillars.

Deck plating will be suitably reinforced under local loads such as Jacuzzi tub and masts, etc. The air inlet and exhaust openings for the engine rooms will be integrated into the design and arrangement of the deckhouse structure.

Structural bulkheads will be arranged (in line with watertight bulkheads where possible)to satisfy the strength requirements of the Classification Society and the structural fire integrity requirements of the Classification Society and the Flag Administration.

Where pipes and cables are carried through structural bulkheads they will be fitted with penetrations to the approval of the Classification Society and the Flag Administration.

All flooring inside the line of the deckhouses will be flat and without camber. Outside the line of the deckhouses, all decks will be cambered. The camber will be parabolic and 200mm at the centreline.

## 2.9 Rubbing strake

Structural fenders, of half-round box shape, to be fitted at main deck and upper deck level as shown on the General Arrangement and profile drawing, respectively made of steel and aluminium.

## 2.10 Teak decks

Exterior decks and stairs, as per General Arrangement will be planked by means of a pre-fabricated system with special selected high quality quarter sawn aged naturally-grown, farmed

Burma Teak of 18 mm before finished thickness.

The planks with an overall width of 60 mm (effective approx. 54 mm) will be selected of uniform colour and grain and will have a length not less then 4 m.The margin plank will have a width of approx. 120 mm.

The planks will be inserted into the margin planks (king planks) with rounded-off nips at the ends. Nips are necessary when planking reaches an inclined angle of less than 60 degrees. The margin planks are detailed around the perimeter of the fixed furniture. Planks selection before laying the decks. And given to the owner's representative with opportunity for witness.

The deck will be uniformly gauged out and will have a width of 60mm and a depth of 7mm. They will be cleaned with Acetone and primed with Sikaflex primer or equivalent and filled with black rubber compound make Sikaflex 298 DC or equivalent. Special primer Sika Cleaner 205 or equivalent will be used where seams runs against stainless steel and surfaces.

Teak stairs as per General Arrangement will be glued on the structure and executed with an overhang and shaped in such a way that water will fall down and not run along the raisers

A teak Caprail (see paragraph 4.12) will be mounted on top of bulwarks as per General Arrangements. Joints in rail to be scarfed and mounted with stainless steel fastenings, plugged where necessary.

## *3. Hull and superstructure fittings*

### 3.1 Portholes

Stainless steel, cilindrical portholes spiggots, with flange, welded to hull sides, supplied from the same manufacturer of the portholes, oval or rectangular type as shown on general arrangement plan. Stainless steel bolted flanges, hinged portholes, openable glass frame with safety glass, storm shutter, of LRS & MCA approved type (ie SCM or equivalent). Remouvable mosquitos screens.

### 3.2 Windows

Stainless steel and aluminium window frames shaped as shown on profile drawing. The window's glass will be of tempered and/or stratified reinforced glass, of adequate thickness according to LRS and MCA requirements.
The window glass will be tinted to interior designer's specifications or Owner's choice. Samples of colour to be presented to owner before ordering.
The wheelhouse front and side windows will be clear.
The window glasses will be glued to the window frames as per Sika standard approved by Classification Society.

No window is openable.
All windows panels on the main deck to be tempered type in conformity with class requirements.
The Builder will supply storm shutters for the window on the main deck and upper deck according to LRS & MCA requirements. (TBC)

## 3.3 Side struts (fashion plates)

Shown on profile drawing. Into the inner face of aft fashion plates will be recessed the life-saving rings.

## 3.4 Hatches in main deck

Stainless steel watertight hatches, shown on deck plan, for anchor chain locker and bosun's locker forward.

On the main deck, forward of the windlasses station, as per GA, will be built three lockers, respectively for:

- Service (rescue) tender, with telescopic hydraulic crane; hatch hydraulically operated, folding and side sliding ("Mc Gregor" type)
- Jet ski or fenders storage, with hatch hydraulically operated ("Mc. Gregor" type)
- Fenders, lines, ropes etc storage locker with two hinged hatches.

Hatches all teak covered, 15 mm thick, as per GA.

Escape hatches, where requested as per LRS & MCA

## 3.5 Drain ports and pipes

Drain ports and sides in bulwark.
Drain pipes shall be installed to provide proper drainage of all outside decks.
Number and size of ports and pipes as per LR rules and shown on deck plan.

## 3.6 Stairs outside

Number of outside stairs: shown on the general arrangement.
All stairs to be easy going.
Steps teak covered.

## 3.7 External doors

One (1) Stainless Steel sliding door main deck, aft bulkhead, electric operated, as per G.A. Maker Opac Mare or equivalent. Operable in dead ship condition as per MCA

One (1) Stainless Steel door main deck, side entrance starboard.

One (1) Stainless Steel door main deck, side entrance port.

One (1) aluminium W.T. door main deck port, access to E.R..

One (1) aluminium W.T. door to Garage area and Control Room.

Two (2) Aluminium doors at wheelhouse, with window.

One (1) Aluminium doors at bridge deck day toilet, with window.

One (1) Stainless Steel sliding door upper deck, aft bulkhead,with 4 panels, 2 electric operated and 2 manual operated, as per G.A.

All external doors to LRS requirements.

All alluminium doors treated and painted like the superstructure.

All stainless steel doors polished finish.

The door frames will be in painted stainless steel or aluminium.

## 3.8 Chain locker

In lower part of fore peak separate chain locker. Removable wooden boards used as lining material for the inner surface of the locker.

Suitable coating system to be employed.

## *4. Deck fittings and equipment*

### 4.1 Anchor windlasses and capstans

Two (2) vertical windlasses with wildcat gypsy and capstan driven by an electric motor, AISI 316 L drum and shaft.
Provision to be made to manual recovery of anchor in the event of electric motor failure.
Voltage 400V/ 3PH/ 50HZ. Two speed with maximum speed as per Classification requirements.
Maker Sanguineti or equivalent

Two (2) electric capstans to be fitted on aft deck with motor below deck and foot operated flush mounted push button (On, as long pushed). Drums of chromed bronze, shaft in stainless steel.
The rotation will be right-handed.
Voltage is 400V / 3 PH / 50 Hz and the power is 4 kW abt. each.
Maker Sanguineti or equivalent

### 4.2 Hawse pipes and chaffing plates

Hawse pipes of stainless steel to lead chain and anchors to winches will be installed with stainless steel chaffing plates in anchor recesses starboard and port. Anchor chain washdown system will be installed (integrated in the bilge/fire fight system).

### 4.3 Anchor and chain

Two (2) steel anchors, HHP (High Holding Power), 400 Kg weight to LRS rules, will be installed.

Chains: 2 x 165 meters 20.5 mm size high tensile steel stud link chains, galvanized.
Anchor warps of nylon or according to Classification Society rules.
Last link of chain and end of rope are to be fastened securely in chain lockers with an emergency quick-release for both anchors.
Devil claws for tightening anchors will be installed. Complete system to be LRS approved.
Connection between anchors and chains to have swivel shackle

### 4.4 Bollards and cleats

Special designed stainless steel bollards will be installed, four (4) on fore deck, four (4) on aft deck and two (2) amidships (cleats type one on each side). Places of bollards as per general arrangement, on pedestal 30 mm above main deck level.

Necessary cleats for fender lines to be mounted.

Two (2) foldable bollards to be installed on swimming platform for tender /jet-skis mooring when afloat. Two (2) foldable bollards to be installed on side platform for tender /jet-skis mooring when afloat.

## 4.5 Fairleads

Polished stainless steel fairleads, 4 on aft deck with rollers and 4 on fore deck.
Two additional fairleads located midship with horn shaped built-in bollards will be installed.
Position as per GA.

## 4.6 Mooring lines

Length and diameter according to Classification Requirements (Equipment number) but in any case not less than:

- 8 mooring lines, each 40 m length, 30 mm diameter nylon, with eye on one end.
- 1 towing line of floating type in polypropylene of appropriate length as required by Classification Society ,30 mm of diameter about.

Colours of mooring lines and towing line can be black or white at Owner's Representative choice.

## 4.7 Boat garage with boat launching system

Access from lower deck aft corridor with sliding whether tight door.

Storage arrangement for:

- One (1) rigid keel, inflatable tender (Castoldi or equivalent) with hydro jet diesel engine, max length 6,30 m approx.
- Two (2) jet-skis

One special cradle on wheels and rails, with electric winch and pivoting system for tender's launching will be installed. Maker Sanguineti or equivalent

One special retractable crane, manually operated, with electric winch, will be installed for jet-skis launching. Maker Sanguineti or equivalent.

## 4.8 Service tender

One (1) rigid keel, inflatable tender (Castoldi or equivalent) max 4.20 m will be fitted inside bow locker, secured on adequate cradle with nylon straps. (see 3.4). One hydraulic crane of adequate size, will be installed for tender launching.

## 4.9 Side ladders

Two (2) aluminium, removable, 7-steps (or of adequate number) folding ladders (Maker Marquipt or similar) will be provided to be secured in way of bulwark doors (port or starboard) for boarding when yacht is moored along side the quay. Each ladder to be stored recessed into the bulwarks.

## 4.10 Stern Gangway

Automatic retractable telescopic type, hydraulically operated, fitted on transom, starboard side, recessed into main deck structure. Type model "Sirius" , maker Sanguineti or equivalent

Bulwark door openable with pantographic leverage, hydraulically operated.

Back up manual pump for hydraulic system.

Extended length aft transom as per the GA.

Walking width: 650 mm.; teak planks on walking surface with lighting system, led type.

The gangway will have lifting movement 10° up and 15 ° down and pivoting 60 degrees ( 30 each side).

Gangway to be of painted aluminium with handrails in stainless steel AISI 316 with stanchions of the same material.

Access bell push button at the end of the gangway.

A remote control will be supplied to operate the in out and up down gangway movements; control panel in locker with door recessed into the longitudinal portion of bulwark aft.

## 4.11 Life rafts and safety equipment

A Safety plan will be carried out according the Flag Registration Authority . The following items will be incorporated:

No.2 Life Rings with automatic light/smoke device , with floating lines with name and hailing port engraved, they will be fitted recessed in the bridge deck fashion plate superstructure

2 Life Rings with automatic light with floating lines with name and hailing port engraved, they will be fitted recessed in the main deck fashion plate superstructure.

2 Life Rings 30 floating lines with name and hailing port engraved, they will be fitted on sun deck bulwark

Life jackets installed in every cabin (one for each bed) of hard foam standard type, Solas type approved

Life jackets for children and adults , as required, will be provided. All of them approved type. Solas type approved.

Parachute flares and smoke signals.

No.-1 E.P.I.R.B fitted on sun deck

2 SARTS fitted in wheelhouse

2 x 25 people liferafts, rigid containers of cylindrical type, with hydrostatic release and survival kit (Solas approved package A).

1 line throwing device.

Fire man apparatus including breathing device

## 4.12 Deck Railings

All bulwarks will have teak capping rail installed approx. 200x 50 mm with rounded edge. On bulwark around upper deck and flybridge deck stainless steel stanchions and teak upper rail of 190 x 50 mm. Stainless steel stanchions Ø 50 mm. Height 1000mm above deck.
Removable stainless steel railing will be installed at swimming platform.

## 4.13 Fenders holders

12 stainless steel fender holders, leather covered, to fit on teak capping rail fitted with cleats and line eyes, movable, different sizes.

Fenders storage into main deck locker forward.

## 4.14 Fenders

No. 8 of 600 mm. diameter, sausage type, white with nylon tails 4 mt, No. 4 of 800 mm diameter balloon type fenders will be supplied.
Maker Poliform or equivalent

## 4.15 Flag pole

Flag pole on upper deck, made of stainless steel, with truck, halyard sleeve, cleat etc.
Nylon flag halyards, also from tips of mast signal yards.
Cleats to be fitted where required, for flags etc.

## 4.16 Antenna Mast & Hardtop

Aluminium rigid mast of special design will be installed according to general arrangement.
Platform for radar and aerials, combined with signal halyards and masthead light platform. The mast layout according the General Arrangement Plan may change as a result of technical interference study (radars / sat TV / satcom).
A hardtop as per General Arrangement plans will be installed.

## 4.17 Covers

Dacron or equal covers will be supplied for anchor winch, capstans, horn.
Covers for all outdoor seats and tables.
Cover for pilot house windows.

## 4.18 Storage for fire and deckwash hoses

Suitable places for storage of hoses to be provided on fore and aft deck, at owner's agreement.

## 4.19 Shore Connections

On aft port transom bulwark will be fitted:

-Shore power connection
-Fresh water connection with pressure reducing valve
See also paragraph 9.17

## 4.20 Deck inventory

The following items to be supplied and installed or stowing arrangements to be provided for:

- Mooring ropes
- Warping rope
- Fenders
- Boat hooks : Two (2) boat hooks telescopic type to be installed at an easy position on main deck. Length to be 12'

## 4.21 Windscreen

Windscreen as per plans on sundeck of toughened glass with polished stainless steel pipe on top. Height as per G.A.

# *5. Machinery*

## 5.1 Main engines

Two (2) CAT C32 Acert. Rating B (970kW at 2100rpm) with standard equipment:

- Air Inlet System: Corrosion resistant sea water/separate circuit aftercooler, air cleaner/fumes disposal system (closed)
- Control System: Electronic governor, Mechanically actuated, Electronically controlled Unit. Injection (MEUI) fuel system, A4 Electronic Control Unit (ECU), programmable low idle, momentary start/stop logic: ECU controlled prelube, cranking and cooldown.
- Cooling System: Gear-driven centrifugal auxiliary sea water pump, gear-driven centrifugal jacket water pump, titanium plate heat exchanger with coolant recovery system or keel cooler with expansion tank, engine oil cooler.
- Exhaust System: Watercooled exhaust manifold and turbocharger, round flanged outlet.
- Fuel System: Fuel priming pump, fuel transfer pump, fuel filter – RH or LH service.
- Instrumentation: Marine Power Display of: engine speed and hours; engine oil pressure and temperature; engine jacket water temperature; fuel pressure, consumption, and temperature; transmission pressure and temperature; 24-pin connector; on/off keyswitch; backup ECU ready and active light; overspeed shutdown and remote stop notification lights.
- Lube System: Crankcase breather, oil filter – RH or LH service, oil level gauge – RH or LH service, oil filler, deep center sump oil pan.
- Mounting System: Adjustable front support.
- General: Vibration damper, lifting eyes, RH or LH service options, literature, side access block, single groove U-bolt crankshaft pulley

## 5.2 Gearboxes

Two (2) marine reverse-reduction gearbox ZF 3050 reduction 2.952:1

## 5.3 Engines Controls & instruments

Main engines and gearboxes to be controlled from wheelhouse, wing stations with electronic control units make ZF type Smart Command or equivalent.
Engines instrument panels situated in front of steering wheel in wheelhouse with CATERPILLAR monitoring included in the main monitoring system of the yacht
Repeaters for side wings.

## 5.4 Generating sets

The installation to be a 3-wire system, three-phase, 230/400 Volt, 50 cycles. The following generators will be installed, with sound shield boxes:

- One (1) Main generator Kholer mod. 125EFOZD – 125 kW/152 kVA
- One (1) Auxiliary generator Kholer mod. 100EFOZD – 100 kW/125 kVA

- One (1) Night/emergency generator Kholer md. 50EFOZD – 50 kW/62,5 kVA

## 5.5 Exhaust lines

The exhaust system drawing will be submitted to LR for approval. It will be divided into:

***Main engine***

- One exhaust silencer.
- One injection water.
- One butterfly valve with quick-acting
- Sensor and alarm of temperature.
- All dry pipe will be steel and it will be isolated with thermal lagging. The diameter and thickness of pipe will depend on the temperature according to the made calculation.
- The pipes will be fixed to the structure through elastic support.
- The exhaust will be made with underwater, main outlets, with by pass direct outboard through hull side above flotation with electric automatic valve operated by the monitoring system.
- The installation will be validated by the supplier of the engine, in terms of counter-pressure.
- The system will complete with all the requirements imposed by the classification society.

***Generators***

- One exhaust silencer.
- One water separator.
- One butterfly valve.
- Sensor and temperature alarm.
- Approved pipe for its purpose shall be used
- The system will comply with all the requirements imposed by the classification society.
- The installation will be validated by supplier of the engine, in terms of counter-pressure.
- The exhaust will be made above flotation.

***Emergency/night generator***

- The emergency generator will be located as per LR and MCA rules.
- One exhaust silencer.
- One water separator.
- One butterfly valve.
- Sensor and alarm of temperature.
- All components will be together with double bands.
- Approved pipe for its purpose shall be used
- The system will comply with all the requirements imposed by the classification society.
- The installation will be validated by supplier of the engine, in terms of counter-pressure.
- The exhaust will be made above flotation.

## 5.6 Shafting and Propellers

Minimum shafts diam. to LRS rule material AISI 316 or equivalent. Propellers approx diam 1.2m five blade Nibral or similar. They will be dynamically balanced and will have a surface finishing according to ISO S class.

## 5.7 Steering-gear arrangement

Steering gear with two steering rams connected to rudder stocks and connecting rod.

Rudder angle to be 2 x 35 degrees with mechanical stoppers on rudder tillers at 37° degrees.

Maker BCS or equivalent

The power pack fitted in the aft peak will supply oil to the system; it will have two electric pumps in the oil tank equipped with filters, solenoid valves, relief valve oil pressure and level gauges and a tank low level alarm with warning light in the wheelhouse.

The remote control of the system consists in a electronic actuator located in the wheelhouse, two electric tillers on bridge wings and hand pump with relevant steering wheel in the aft peak (for emergency).

Rudder angle indicators to be installed at all steering positions.

The piping connecting the various parts of the system will be high pressure resistant material.

The steering wheel will be of modern design built in aluminium or stainless steel with wooden rim.

## 5.8 Stabilizer system

Quantum stabilization underway and at anchor system, Model QC 1800 stabilizer installation including stabilization at anchor, with:

- 2x 4 m² hydro dynamically efficient fin with NACA 0015 profile and 316 stainless steel tapered shaft insert. The fins include an integral force-enhancing tip fence.
- 2x Fin Actuator Assembly with reinforced cast and machined housing, and accessories.
- 2x Steel welded structural inserts to mount the QC 1800 actuator assembly to the hull.
- 2x Hydro-pneumatic accumulator for high flow demand with safety block.
- 1x Independent Quantum QuitPack hydraulic power-pack, with 150 ltr oil reservoir, with return filter, filler/breather. Electronic combined oil level and temperature gauge.
  Electric motor of 18,5 kW at 970 rpm. Voltage 3x 400 V at 50Hz, TEFC.
  Flexible coupling.
  Bell housing with vibration-damping ring.
  Low noise variable delivery axial piston pump with Load-sensing pressure control.
- 1x Frequency inverter for variable speed and for low-load/low noise operation
- 1x DATUM Motion Sensor Package with rugged Military grade roll rate and roll angle sensors.

1x DATUM digital, Can-bus based three-term electronic Control Module.
1x DATUM LCD graphical display with multiple software “pages”, multi-function pushbuttons
1x Stabilization at Anchor software

## 5.9 Bowthruster

Rodriquez electrically driven bow-thruster type TMS100, with:

1x Steel tunnel with machined foundation for electrical motor provided with both transverse and longitudinal stiffeners. A stainless steel wear-ring with a thickness of 5 mm is welded inside the tunnel at the propeller location.
Tube length 1.000 mm with a diameter of approximately 630/660 mm (D int / D ext).
1x Hydrodynamically efficient underwater drive unit from cast iron with heavy duty spiral bevel gears. Shaft power approximately 100 kW. 4 blade pushing type propeller, material Ni-Al Bronze.
1x Electric motor of 100 kW, building form B3 for horizontal mounting with constant velocity coupling.Voltage 3x 400V at 50 HZ. Protection class IP 55, with condensation heather. Fexible coupling on the input shaft
1x Lubrication header tank, with level glass and filler cap / breather.
1x Proportional thruster central PLC assembly enclosure with integral power supply
3x Operating panel with joystick and Hold-button for On - off and Proportional controls. (Main control in wheelhouse and two for side wings)

Tunnel and installation to be to LRS approval.

## 5.10 Impressed current galvanic protection system

Fixed galvanic current protection system by Eco-cell (or Cathelco or equivalent).

# *6. Mechanical and Piping systems*

## 6.1 Pipework - Generals and qualities

All the installed pipes will be appropriate for their use, according the flag administration and classification society LRS

All the pipes will be fixed to the steel structure by appropriate form to prevent vibrations and possible breaks. Direct connection between the brackets and metal will be avoided by means a softwood supports.

The penetration of pipes through watertight bulkheads shall comply to the requirements of the classification society LRS.

All the pipes with direct connection to the sea (bilge, exhausts and similar), shall comply to the requirements of the classification society LRS.

All fuel and lubricating oil pipes will be made of black steel tubes with fittings according to system drawings.

The cold forged high pressure type pipes will be used only for high pressure hydraulic system. The related connection will be high pressure fittings.

Fuel and lube oil systems will be of and black steel.

All the pumps and other components will be installed with silentblocks and non-vibration compensators in their connections with the pipes.

All valves, cocks, filters, pumps, electrical components, etc. to be clearly identified in the English language by suitable engraved plates of metal or thermoplastic.

Operating positions of valves, switches etc. to be marked.

The standard piping systems colour code will be used.

Direction of the arrow will indicate flow direction and colour of the arrow or valve the type of fluid.

Continuous reading levels with 4-20 mA output (VEGA or equivalent) will be install.

All the pumps and filters will be provided with trays to avoid the spills over other machinery in engine room.

## 6.2 Fresh water system

The fresh water system will be composed of the following elements:

Two Fresh water tanks in the forward area with total approx capacity of 6.000 Liters each. These will be incorporated to hull structure and they will have a system of internal coating appropriate for their use as drinking water (Jotun specifications or similar).

The tanks will vent above the bulkhead deck with atmospheric valve or similar device.

One drinking water tank built in Stainless Steel 316 L, with capacity of 200 liters.

This tank will be placed in the engine room with service to the ice machine, dedicated galley and pantries taps.

The load of fresh water to the tank will be made through mesh filters, a charcoal filter and declorinator filter.

Two Water makers IDROMAR model MC9s with approx. capacity of 375 liters/h, that gives supply to both tanks through the inlet manifold. The watermakers will be installed into the technical room of underlower deck forward, port side.

The Water makers and hydrophore groups shall be mounted on silent blocks to reduce vibrations on board.

Between fresh water tank and hydrophore group will be located quartz and carbon filter (IDROMAR).

Two pressure pumps in parallel will be placed with cumulative membrane tank of 300 liters and pressure switch. Maker Gianneschi P&B Model 2 Jet 518, 230/400V 3ph (or equivalent); a main pump and second one acting as complementary unit. These pumps will supply to sinks, galley, showers, stern shower, appliances, deck wash.

One UV sterilizer IDROMAR U.V. 5000 will be installed immediately after the hydrophore supply.

The design condition of the circuit and hydrophore group will be such to provide optimum flow of 14-18 liters/min when 3 showers are used simultaneously.

Two closed circuit rings will be installed for hot water circulation with a circulation pump in each one of them.

The toilet system will take its fresh water supply from independent lines (Vacuum system).

Sufficient manifolds and valves will be located in order to correctly isolate the different areas of the ship.

Carbon filters in line will be use for the supply of fresh water for all sinks.

Water heaters: 3 units. Two heater of capacity of 300 liters and 3+3 kW will be located in the forward area. Both heaters will be heated electrically. These will be to supply the owner and guest zone.

The other heater of capacity of 300 liters and 3+3 kW will be located in the forward area and will supply the crew zone, galley and captain zone. This heater will be heated electrically.

The controls will be located in main electric panel in engine room.

The water pipes will be adapted to their purpose.

The washing machine will be installed on silentblocks to reduce to minimum the vibration on board.

All hot water pipes will be lagged and isolated.

The preliminary estimation of diameter of pipes will be:

- Main pipes, fill and discharge of tanks: 50 mm
- Intermediate pipes: 38 mm
- End pipes to washbasin: 16 mm
- End pipes to showers: 20 mm
- End pipes to sink: 16 mm
- End pipes to bathing tub: 20 mm
- End pipes to appliances: 16 mm

## 6.3 Sea water system

The sea water system will be composed of the following elements:

Two sea chests will give sea water to manifold that extends side to side.

The sea chest filters will be of homologated type for their installation under flotation

The manifold will supply the main engines, generators, fire fighting system, air conditioning system, sewage plant, grey/black tanks cleaning pump and any other equipment as needed.

A second seachest with valve, manifold etc. will be installed next to the forward technical area of underlower deck, for watermakers, Hamann system, chain wash pump etc.

All pipe lines (including the cross-over) carrying salt water to be made of CU-NI 90/10 (with min. 1% iron), with flanged and flexible (Straub) connections.

Butterfly valves to be used for the large pipes.

In the case flexible pipe is installed at the end of pipes lines, this will be type approved and will be securely fixed to valves, engines etc… with double clamps.

Alarms of flow restriction will be installed for main engines and generators.

Sea water discharge of main engines and generators will be through exhaust pipes. The other components will discharge to a common manifold.

All outboard discharges will have security valves and goose necks with siphon break pipes as required from registers.

Discharge to be under the floating line.

## 6.4 Grey & Black water system

The grey and black water system will be composed of the following elements:

1 grey and 1 black water tank approx 3000 liters each. These will be located forward of the fore fuel tanks.

The vacuum system will be composed of EVAC or JETS pumps or similar. The toilets will discharge directly via the pumps, while grey water will be gathered in smaller local tanks with a level sensor that will order their casting to the pumps.

A sewage plant HAMANN MINI L-FRAME with Sludge Pump.

The tanks will be cleanable with sea water through a connection to the general service pumps.

In no case shall the tanks be able to discharge automatically outside of the ship.

A deck discharge through international flange, located into a technical locker located on the main deck in the port side of the superstructure.

All the necessary non-return valves shall be installed to prevent during sailing that grey water returns to the system.

The pipes will be polyethylene (PEH) o polyvinylchloride (PVC) in accomodation areas or galvanized steel in engine room.

Adecuated filters in the drains of sinks and showers shall be installed to avoid solid objects entering in the discharge pumps. Also shall be installed non-scent filters to avoid scent of return of grey waters.

The sanitary tank and the sewage tank to have two separate vent line running to the top of the

mast. The vent of these tanks will be taken to the antenna mast through carbon filters to prevent smells.

The tanks will be provided with on/off levels according to HAMANN plant specification.

## 6.5 Bilge and sea water fire-fighting system

The bilge system is designed in accordance with LR and MCA rules.

The bilge suction system incorporates the following components:

***Main bilge system.***

Each underwater tight compartment to have strum box connected to bilge manifold in E.R. Manifold connected to pumps.

One bilge tank inside the engine room with approx. capacity of 2000 liters.

Two electric self priming pumps for bilge and fire fighting 380 V / 3 ph 50 Hz capacity as per Classification rules. (Gianneschi Pumps & Blowers)

One emergency diesel engine driven centrifugal self priming pump as for MCA requirement will be fitted.

Pumps will be fitted with vacuum and pressure gauges.

A bilge water separator is also fitted in engine room, to comply with U.S.C.G. regulation with a flow rate of .5 cum/h.

The above pump arrangement can be modified to suit the Classification Society requirements.

It will have a submersible suction direct pump in each bilge of the engine room, with discharge into the bilge tank.

All suction boxes of the bilges shall have a grill and non-return valves.

All suctions of the bilge will be placed with an easy access for inspection and cleaning.

***Emergency system***

Each one of the main engines will use their sea water pumps as an emergency pump. The control valve of the emergency system shall be 460 mm above the engine room floor.

The portable diesel engine driven pump will share its function with the fire-fighting system.

***Fire–fighting sea water system***

The fire manifold will be connected to the anchor hawse pipes to supply water for chain washing.

There shall be hydrants placed in:

- Engine room.
- Port side and starboard side of main deck.

- Port side and starboard side of upper deck.
- Sundeck.

Allowing to arrive the jet of water to all the points of the ship, and the pumps providing a jet of more than 12 meters.

***General notes***

There shall be on/off level alarms in all the bilges.

All the side discharges will be made through screw down non return valves with open/closed position indicators.

Pipe material is hot dip galvanized seamless steel.

## 6.6 Permanent ballast system

One ballast tank in bulb peak has been considered.

## 6.7 Diesel oil (fuel) system

The diesel oil system will be composed of the following elements:

Six double bottom tanks with approx. total capacity of 72000 liters ( including diesel oil day tank) and with sounding system and manholes.

All tanks connected to a central vent line just below main-deck level leading up to the top of the mast with the opening covered with mesh sheet.

The vent pipes must be one pipe size larger than the inlets and increased as they join for a common vent line.

A stripping system will be provided.

Two steel daily tanks located in engine room. The tanks will be non structural, and externally it will have an eyeglass level & an automatic level indicator.

Additionally on main deck near the tender garage there shall be one jerry can store tank with approx. capacity of 200 liters (outside engine room), to give service to jet-skies.

In the engine room there will be an overflow diesel oil tank and that will have two direct vents above the bulkhead deck as well as one level alarm and sight glass. The daily tanks will also serve as overflow tank for the closed diesel purification circuit.

All tanks will have inspection hatches.

The sounding system of the tanks will have indicators in wheel-house and connection to the system of monitors through level of continuous reading with outlet 4-20 mA (VEGA or equivalent).

The suction points in the tanks will be approximately to 50 mm above of base of the tank.

Two diesel oil filters located between storage tanks and the transfer pumps.

There shall be one electrical pump and one hand pump to secure the transfer of tanks and filling of the daily tank.

One diesel oil separator of 900lt/ hr capacity, Alfa Laval model MAB 103 B will be supplied and installed between the main tanks and the daily tank. Discharge into the sludge tank.

One filter system and water separator following the recommendations of the engine supplier between the fuel manifold, the main engines and generators (Racors or equivalent).

Return lines of fuel until the tank of daily service.

All pipes will be black steel, or another material approved for this service.

## 6.8 Lubrication oil system

The lubricaton oil system will be composed of the following elements:

One clean oil storage tank with approx. capacity of 750 liters and another dirty oil storage tank with approx. capacity of 1300 liters, located in engine room.

The circuit will allow the supply of clean oil and the storage of the dirty oil for 800 hours of complete operation of the engine room.

One pump for the suction of dirty oil of the different engines as well as for the discharge of oil outside of ship. For clean oil another pump of the same properties shall be installed.

## 6.9 Hydraulic system

The hydraulic system will give supply to the different elements:

- Cranes and launching equipments
- Gangway.
- Mechanism of the stern door.
- Mechanism of the side garage door.
- Mechanism of the bow hatches

The hydraulic system power will be supplied from a power pack (BCS or equivalent) including double pump, solenoid valves, pressure gauges and oil reservoir.

The hydraulic power pack will be installed in one of the below deck technical spaces, according to the GA:

## 6.10 Sludge system

One sludge tank will be built structural into the doubel bottom of the underlower deck forward compartment. Capacity of approx 600 lt. Manhole for inspection and venting as per fuel tanks.

Into the sludge tank will be collected the liquids from the stipping system, from water separators of fuel and bilges.

A pump for discharge to dock system, with international flange on main deck will be provided.

## 6.11 Fire-Fighting system

According to the area of the ship, the following classes are considered:

- Machinery spaces: Category 'A'
- Kitchen: Category 'B'
- Other spaces: ---

Gas fire-extinguishing systems are to comply with the requirements of IMO MSC/Circ.848 ANNEX 2 and LRS & MCA rules.

A FM200 system to the requirements of the Flag & Classification Society (gross volume of the engine room = 170 m3 approx).

All pipes will be in steel.

One heating or smoke sensor will be fitted in each cabin and more dangerous in technical space, while main saloon and engine room will have two or more based on the local arrangement.
They will actuate an audible and visible alarm in wheelhouse.
Five manual alarm push buttons will be fitted all around the vessel and connected to the fire alarm system
Maker: Autronica . Model BS60 or equivalent

Portable fire extinguishers, foam, powder or CO2 according to the rules, will be placed in all technical and accomodation spaces.

The galley will have a fan shut down and duct flap to close automatically. A CO2 system will be installed in the galley hood extraction duct.

Fire hoses with nozzles, fire axes, fire blankets, a breathing apparatus and a fire suit will be delivered and stored in a suitable place, as required by Classification Society.

## 6.12 Airconditioning and heating system/ accommodation ventilation

***Design criteria***

The system has adequate capacity for achieving ideal temperature-humidity conditions.

The system is based on the following criteria:

| | | | |
|---|---|---|---|
| Summer | outside air | 35 degr. C. 95F | R.H. 90% |
| | inside air | 22 degr. C. 70F | R.H. 55% |
| Winter | outside air | 0 degr. C. 32F | |
| | inside air | 22 degr. C. 70F | |

The insulation materials for the yacht to be suitable for the condensation hazard resulting from the high temperature differential when on cooling mode.

The supplier will develop the entire project. As indicative figure the capacity of the system will be of 480.000 BTU.

***General description***

The yacht will be air conditioned with individual temperature control in all accommodation spaces with fresh air from air handling units and fancoil units (being supplied with cold water from the central compressor plant).

Each fancoil unit to have a very quiet fan with speed control and a condensation drip tray of ample dimensions not leaking when moving at sea.

Ample size S-traps placed in an accessible way are to be adopted connected to condensation drains leading to scupper pipes or to separate tanks for condensation collection or sump tanks.

Condensation drains of lower deck fan coils will be connected with dedicated vacuum tanks to prevent any possibility of smells and than through vacuum system to the waste tanks.

The fancoil layout is such that at maximum capacity operation, their noise level stays within the specified limits at anchor operation.

The system is made of chiller unit with inverter starter .

Air circulating and re-changing system is separated for cabins and living areas.

In the cabins the charge of air is approximately for 3 times the volume of the room per hour, in saloons the amount of air flow rate will be stated based on the maximum crowding of room.

For crew area and Captain cabin separate air treatment unit will be installed in such a way the main air units will be stopped with no guests on board.

The chilled water will be run by twin bronze pumps, one as stand by to the other, to allow that all system works when a pump is out of use for maintenance.

Independent switch thermostat controls for every cabin and public space, each fan coil will be provided with a motorized three way valve and will be properly insulated with 10mm Armaflex material to avoid condensation .

The central compressor unit will be installed in the engine room and consists of no. 2 Carrier freon compressors, heat exchangers, circulating and sea water pumps, condenser, etc.

Plant and pumps to be flexibly installed.

Laundry to be sufficiently air ventilated.

All the dryers on board will be connected to one lint trap collector in the blower discharge.

Heating of the yacht will be performed by the same fancoil units which will be supplied with hot water from dedicated heater of the air conditioning plant and individual electric resistence in the fancoils.

Hotwater pipes will be insulated

Chilled water pipes will be insulated with Armaflex material or equivalent of 25mm in

diameter in engine room and 19 mm out of engine room.

Air conditioning ducts will be made in aluminium and will be insulated with Armaflex of 9 mm. Air balancing dampers will be installed in the air ducts.

***Accommodation Ventilation***

This system is divided into separate systems:

A. Mechanical ventilation extraction

B. Fresh air supply

C. Galley

D. Laundry

A. Mechanical ventilation extraction:

All toilets and technical spaces are connected to a central ducting system with centrifugal exhaust fans to equilibrate fresh air supply.

B. Fresh air supply:

A ducting system with a complete air handling unit that shall maintain fresh air supply of minimum 25 m^3/h per person.

C. Galley will be connected to equal supplier fan and a kitchen hood fan. Executed with extinguisher system (see above). The galley ventilation will be separate from other air-extractor channels and of adequate capacity, in order to prevent cooking smell as much as possible.

D Laundry will be connected to equal supplier fan and extractor fan. The laundry ventilation will be separate from other air-extractor channels and of adequate capacity, in order to prevent laundry smell as much as possible.

## 6.13 Engine room ventilation system

This system is designed to ensure a maximum average engine room temperature of 55ºC and based on an overpressure system with outside temperature of 29ºC. The engine room ventilation will be extremely efficient according to the engine manufacturer's requirements.

Two supply fans near fore engine room bulkhead and two exhaust fans near aft engine room bulkhead. They are arranged with generous supply and extraction ducts.

All fans will be installed on anti vibration dampers. All fans are frequency controlled.

The combustion air for the diesels is drawn from the engine room according to engine manufacturer recommendations.

Demister filters (Munters or equivalent) will be installed on air intake ducts.

Fire flaps are fitted to allow insulation of E.R. in case of fire.

Fans, fuel pumps and other machinery to be switched off from FE 200 starting system according to Classification Society approval.

All system shall comply with LRS rules.

If possible in the E.R. coolers maker Heinen & Hopman or equivalent will be installed

## 6.14 Compressed air system

One electric air compressor of 2,2 Kw and flow rate 360 l/min at max 9 bars.

Maker: Abac B2900/100 CT (or equivalent) with its own receiver tank of 100 litre of capacity.

Start stop of compressor will be by pressure switched set at 5 and 9 bar.

The receiver will have an automatic condensation discharge valve.

The system will supply compressed, air through a pressure reducing valve, to the following equipment:

- no.1 outlet on main deck
- no.1 outlet in bosun's locker
- horn
- no. 1outlet in engine room near work bench
- no. 1 outlet in tender garage
- no. 1 plug for each sea chest
- no. 1 outlet for each main engine exhaust by pass valve
- no. 1 outlet for each main engine exhaust main valve

## 6.15 Fridges and freezers system

Two cold rooms, fridge and freezer will be built in underlower deck storage area forward. Compressors in technical room of the same area. Temperature gauges and thermostatic controls outside cold rooms, with alarm for high temperature in crew mess.

Adequate thermal insulation and internal finishing of stainless steel. Shelves and bottle holders of stainless steel.

Floor covered of grating, with drainage for washing and condensation water discharge, connected to the grey water system.

## 6.16 Garbage system

The sink of the galley will have crusher (In Sink Erator, or similar) with connection to grey water tank.

A garbage compactor tank (8251 model series In Sink Erator or similar).

### 6.17 Thermal Insulation

According to LRS & MCA rules

## *7. Engine room various*

### 7.1 Flooring

Of aluminium knocked plating on steel angle bar supports; angle bars serving as a rim around floor perimeter.

Neoprene gasket will be mounted between the steel angle and the aluminium deck plates.

Where necessary removable sections to be made in way of valves, filters, etc.

### 7.2 Guards and handrails

Guard plates to be positioned in way of revolving machinery and current carrying parts, especially starting motors.

Handrails: Around engines and pathways removable handrails made of anodized aluminium or stainless steel pipe of suitable size.

### 7.3 Lifting eyes

Lifting eyes will be installed in the engine room. The positions of these lifting eyes have to be decided in an early construction stage in agreement with the owner representative

### 7.4 Work bench and equipment stowage

Work bench to be fitted with top of metal, drawers underneath, stowage for toolboxes, etc.

Near bench a connection box for 220 V AC and 24 V DC.

An ample stainless steel sink with hot and cold water flexible spout will be supplied and installed near work bench.

A suitable space compatible with engine arrangements, will be provided for store oil cans and engine spare parts.

## *8. Insulation and Sound proofing*

The reference sound levels should be achieved are reported in the paragraph n° 1.4,:

The noise and vibration installation will be defined in order to achieve the above.

## 8.1 Sound insulation

All the surfaces (bulkheads, ceilings and shell) will be lined where necessary with adequate soundproofing materials.

The total mass of sound insulation will allow a sound deadening effect consistent with noise levels in paragraph 1.4.

The type and characteristics of the sound insulation will be determined on the basis of accurate calculations to reduce the noise (airborn and structural) to the contractual values.

The sound insulation will be described in a longitudinal plan with a booklet in which each insulated surface will be described by a detailed drawing.

The shell bottom, in particular, will be covered with sound damping material mainly:

- over propellers for damping the impulsive pressure forces induced on the hull by the rotating propellers.
- under engine foundations and on the tank top ahead of the engine room for damping structural noise propagation ,due to engine alternative motions

Before starting with the insulation of the vessel all internal surface where it is necessary will be treated with an anti-wetting paint.

The following main materials will be used:

- Rockwool of different thickness and density
- Massive layer of different specific weight per square metre
- Composite panel with different core materials
- CDM microelastic - material
- Damping materials for hull plating

## 8.2 Insulation engine room

The insulation of the engine-room will be carried out very carefully so that all surfaces will be covered.

The sound /heat insulation thickness and weight will be chosen according to the simulation study as described in paragraph 8.1

Materials in direct contact with engine-room or with surface facing engine-room will be self extinguishing and producing not toxic gases in case of fire.

## 8.3 Insulation accommodation

The shell, decks, bulkheads in hull and superstructure will be insulated with rockwool and insulation materials of adequate thickness and weight as described in the insulation plan/(see paragraph 8.1

The interior wooden floor in the accommodation area is carefully separated from the ship's structure by the adoption of floating floors and rubber vibration absorbers for walls and floors, to avoid transmission of noise.

Acoustical plywood panels with 24 mm thickness will be fitted on a frame structure fixed on the deck.

Between panels and frame structure will be fitted acoustical rubber strips or silent- blocks according to the location.

Hatches, traps and removable sections will be made where necessary.

On the above floating floors will be erected partitions and linings which will be connected to the vessel structure through rubber vibration absorbers.

### 8.4 Partitions

The partitions will be done by double 5 mm plywood panels with internal stiffenings and insulation.

Overall thickness will be in general 68 mm into the guest accommodation.

The crew partitions overall thickness will be in general 50 mm.

The internal volume of partitions will be cored with rockwool in order to maximize the acoustic comfort and the guest privacy.

All piping, cables penetrations will be filled with foam.

## *9. Electrical installation*

### 9.1 General

The electrical installation over all, such as equipment, wiring and cables, fixtures, etc. is to be

in acceptance with LRS rules.

All electrical equipment is to be proven satisfactory for marine use. During dock trials, after the yacht has been finished and launched, the installation and generator sets are to be tested under full load conditions.

### *9.1.1 Data Management System*

System consists of one (1) PLC unit, with I/O racks in the engine room and in the wheelhouse. This PLC unit will be used to connect the following systems to a Local Area Network with eight data connections.

-Ships power system (visualisation and control)
-Generator engine parameters (visualisation only)
-Ships battery system (visualisation only)
-Tank layout with:
-Fuel tank sounding system (visualisation only)
-Fresh water tank sounding system (visualisation only)
-Status of fuel pumps (visualisation only)
-Fuel counter (visualisation only)
-Status of bilge and firefight pumps (visualisation and alarm control)
-Engine room ventilation (visualisation and control)
-Air pressure (visualisation only)
-Potable water system pressure (visualisation only)
-Ships alarm system incl. fire alarm system (visualisation only)
-Porthole alarm
-Anchor chain counter
-Steering pumps (visualisation and control)
-Camera system (visualisation and control)
-Navigation lights (visualisation and control)
-Outside lights (visualisation and control)
-Status circuit breakers in main panel (visualisation only)
-Position of watertight doors (visualisation only)

Monitoring and/or control of above mentioned systems is possible via a supervisory control and data acquisition system, which has two touch screen network stations on the bridge and one 1touch screen network station in the main switchboard in the engineroom. Further there are two text displays near the electric sub panels, which gives information by alarms and which can also be used as read out for the steward call system.

## 9.2 Electric cable and wiring

All cables and wiring to be suitable for marine use and to meet the specifications of LRS, type DRAKA Vusk, Vuso or equal. All feeder cables for electronic equipment will be screened Vuso or equal.

Special attention to be given to prevent radio interference. For special system, in other works radar, radio equipment etc., special cables, specified by the manufacturers of the system, to be used.

Cables passing through watertight bulkheads and decks will be made watertight by means of stuffing boxes. Cables to be fixed to cable trays and fastened with metal clips and tie-rap bands.

The grounding circuit to be attached to electrical fixtures of fittings, to form a continuous metallic system between all the electrical parts, switch board and panels.

## 9.3 Main electrical system Volt, 50 Hz

The installation to be a 3-wire system, three-phase, 230/400 Volt, 50 cycles. The prime movers are two generator sets, each with a capacity of (see paragraph n° 5.4):

Generator n° 1: Kohler 125 kW

Generator n° 2: Kohler 100 kW

One night generator Kohler with a capacity of 50 kW to supply energy in night condition too.

One shore power frequency converter which automatically converts any dockside power source (50 Hz, 60 Hz, 208V, 240V, 380V, 480V, single or three phase), anywhere in the world, into power tailored to specific power requirements (Atlas, Asea or similar). Power: 90 kW.

## 9.4 Low voltage system 24 Volt DC

The low voltage system to be 24 Volt DC, bipolar insulated with the necessary Volt/Amp. meters and earth fault indication lamps.

## 9.5 Batteries and charging

See also paragraph 9.13

Start batteries

Total 2 sets of 24VDC starting batteries. Charging via generator alternation and via a charger in the main switch board.

Service batteries

One general service battery set 24VDC gel type or equal to be arranged for navigation lights, auxiliary circuits, electonic/nautical equipment and 24VDC lighting. Charging via the two alternators of the main engines and via a charger in the main switchboard.

The battery charger to be self regulating and to be so arranged that in no way the output can be more than 27.6 Volt DC.

Emergency batteries

One Radio/emergency battery set for radio and emergency service, gel type, with battery charger. The battery charger to be self regulating and to be so arranged, that in no way the output can be more than 27,6 Volt DC.

In any case it will be necessary that batteries assume a minimum night consumption:

-Nocturnal light

-Emergency lighting

-Navigation lights
-Cameras
-T.V, video and music
-Normal vessel services at anchor situation

## 9.6 Main switch board 230/400 Volt, 50Hz

There will be provided a main switch board of plate steel in the control room. All devices are to be accessible from the front executed with description plates.
The distribution system of the main switchboard consists of one main busbar system supplying all primary consumers and distribution boards. Normally one generator is connected to the busbar system; in the event of higher power demands the second generator has to be connected in parallel. This will be done by motor operated circuit breakers controlled by Deif synchronising units or similar, where after load sharing is automatically performed. The operation of the system should be self-explanatory, also in emergency conditions, and the design should contribute to keep the supply of the electrical power intact with several sub-system out of order.
Monitoring and control of generators and shore-power through ships LAN.

## 9.7 Outgoing circuits

The outgoing circuits to be protected by circuit breakers (make Merlin Gerin Bi-polar), the starters for electric motors to be of the magnetic type.

## 9.8 Distribution panels

The main switchboard is located in the E.C.R.; it contains instruments, breakers and controls to perform all necessary operations on generators and shore supply.

Sub-switchboards will be installed mainly in the following areas:
- lower deck accommodation,
- crew's accommodation,
- main deck accommodations,
- wheelhouse ,
- galley,
- aft peak

They will contain automatic circuit breakers on every line or circuit.

They will be built in a light alloy box for large panels and in painted steel ,colour RAL 9010, for small panels and have to be covered by a decorative door matching with the surrounding joinery.

For technical spaces industrial type box will be used.

Main panel and sub panels will be drip proof type as Classification Society requirements.

In the wheelhouse sub panel will be fitted AC and DC circuit breakers of the navigation and electronic users and all external lights.

Distribution panels, with exception of main switch board, will be wired from bottom

Execution in accordance with electrical diagrams.

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## 9.9 Lighting - General

Generally the vessel will be well lighted inside and outside.

Dimmers will be fitted for:

- Ceiling spotlights in Owner's bedroom /dressing/study/bathroom,
- Wheelhouse
- Salons

Inside all lighting will be installed as per detailed decoration list and according to yard standard, manufacturer Cantalupi, BCM, Metalstyle , Palagi or equivalent.

Outside: ample watertight lights to be installed on the ceilings around superstructure.

Low intensity red lights will be installed in wheelhouse for safety running of the yacht during night navigation.

Lighting to be 220 V AC., 50 Hz and where needed 12 V AC or 24 V D.C. (emergency lighting).

Each distribution box contains breakers for final sub-circuits. Fixtures mounted outside the accommodation and in the service areas to be suitable for marine use.

Outside fixtures to be earthed by an earthing conductor in the supply cable.

Lighting fixtures to be selected in such a way, that wiring chamber temperature does not exceed temp. rating of ship's wiring.

All light switches and equipment to be selected by the interior decorator and approved by Owner's Representative.

## 9.10 Main Lighting

The position and the type of the light fittings, sockets, switches etc. will be shown on the light plans.

Decorative spotlights in guest areas and Owners accommodation and normal fittings in other spaces and exterior decks.

- Owner's and guest's cabin salons, Captain's cabin, lobbies and stairs:
  Indirect lighting for ceiling/curtain box/bed/safe/desk/shower/wash basin, reading lamps table lamps, wall appliques. Switches and 220 V sockets where needed
- Crew's mess: Ceiling lights, wall lamps, or indirect lighting switches, 220 sockets where needed.

- Wheelhouse: Ceiling lights with a white and a red bulb, lights over chart table, over equipment where necessary, switches and 220 V sockets where needed.
- Galley an laundry: Ample fluorescent lighting, 220 V sockets where needed
- Crew's cabin: Ceiling light, bed lights, two 220 V sockets,
- Engine room: Lighting to be split in two groups, each to be controlled from either entrance. Near workbench sockets for 24 DC and 220 V AC.
- Stores: bullseyes, fluorescent fixtures and watertight sockets to be provided in fore peak, aft peak and stores as will be directed.
- Wardrobes: In all wardrobes of Owner and guests a trip light with door switch;in crew's wardrobes a light and switch fitting.

## 9.11 Emergency Lighting

In each cabin, near stairs, corridors, in wheelhouse,in the crew's mess in engine room and external decks emergency light will be provided.

They will switch on automatically in case of failure of the main AC power source.

Radio-room emergency lights to work from radio batteries.

In the engine room four lights of minimum 15 W.System to be to Classification Society satisfaction. These lights will be incorporated in the existing fixtures, if possible. In wheelhouse and engine room a 24 V outlet socket will be provided.

## 9.12 Navigation and signalling lights

Navigation lights according to international regulations and LRS rules.

Navigation lights in "double light" execution will be provided.

They will conform both for position and type to the international regulation Colreg 72.

They will be fed by two separate 24 V DC source of power (service system and emergency batteries).

Control of navigation lights in the wheelhouse console, with audible and visual alarm in case of failure.

All instrument and pilot lights in wheelhouse console will be provided with dimmers.

## 9.13 Emergency source of power

One emergency battery bank of suitable capacity will be provided

Two wire 24 V DC system with negative not earthed and with earth fault indication through lamps and push-button.

Banks of 24 V DC batteries to be installed: two for engine starting, according to engine manufacturer instructions two for gensets starting according to gensets manufacturer

instructions, one for radio operation and one for emergency operation.

Momentary and fixed parallel between each engine starting bank of batteries and service batteries is possible for emergency engine starting.

The radio battery will be fitted at bridge deck level for the emergency operation radio equipment.

Service 24 V DC section can be connected to one bank of engine starting batteries by means of a selection switch in the main switch board in case that service batteries break down.

One rectifier for auxiliary purposes (electronics, governors, controls, pilot lights, etc. ) will be installed

## 9.14 Audio-Video system

The Audio - Video systems will use top quality equipment brands like , Denon and Samsung plasma and LCD TV sets.
For the remote control of the various areas will use the Philips Pronto Pro RF remote control system.
The whole systems will be set and acoustically optimized with professional-grade digital testing equipments and it will be extremely user friendly.

**Sundeck**
n° 10 waterproof speakers
n° 01 audio/video receiver denon 2308
n° 01 yamaha cdr hd1500 cd-r/rw + hdd digital audio recorder
n° 01 apple i-pod dock
n° 01 philips pronto pro touch panel tsu-9400 + extender

**Upper deck – saloon**
n° 01 lcd 40” samsung
n° 01 up/down lift for 40” plasma and lcd tv set
n° 01 denon dvd player 1740
n° 05 outline loudspeakers
n° 01 audio/video receiver denon 2808
n° 01 satellite receiver
n° 01 subwoofer klipsch rpw10
n° 01 apple i-pod dock
n° 01 philips pronto pro touch panel tsu-9400 + extender

**Upper deck – external dining**
n° 04 waterproof speakers

**Upper deck – external fore seating area**
n° 03 waterproof speakers
n° 01 multichannel power amplifier ecler mpa4-80r
n° 01 in-wall ir-controlled stereo volume control.

**Upper deck – wheelhouse**
n° 02 outline loudspeakers
n° 01 audio/video receiver teac drh300

**Upper deck – captain's cabin**
n° 02 outline loudspeakers
n° 01 lcd samsung 19"
n° 01 denon dvd player 1740
n° 01 satellite receiver
n° 01 philips pronto pro touch panel tsu-9400 + extender

**Upper deck – gym**
n° 01 lcd 26" samsung 16:9 hdmi
n° 02 outline loudspeakers
n° 02 waterproof speakers
n° 01 denon dvd player 1740
n° 01 audio/video receiver denon 2308
n° 01 satellite receiver
n° 01 apple i-pod dock
n° 01 philips pronto pro touch panel tsu-9400 + extender

**Upper deck – study/play area**
n° 02 outline loudspeakers

**Main deck – owner suite + bathroom**
n° 01 lcd 40" samsung
n° 01 up/down lift for 40" plasma-lcd tv set
n° 01 denon dvd player 1740
n° 07 outline loudspeakers
n° 01 audio/video receiver denon 2308
n° 01 subwoofer klipsch rpw 10
n° 01 satellite receiver
n° 01 apple i-pod dock
n° 01 philips pronto pro touch panel tsu-9400 + extender

**Main deck – owner study**
n° 01 lcd 26" samsung 16:9 hdmi
n° 02 outline loudspeakers
n° 01 denon dvd player 1740
n° 01 audio/video receiver denon 1508
n° 01 satellite receiver
n° 01 apple i-pod dock
n° 01 philips pronto pro touch panel tsu-9400 + extender

**Main deck – galley**
n° 02 outline loudspeakers
n° 01 sony dvd-cd receiver with i-pod connection

**Main deck – saloon + dining**
n° 01 lcd 40” samsung
n° 01 up/down lift for 40” plasma-lcd tv set
n° 01 denon dvd player 1740
n° 07 outline loudspeakers
n° 01 audio/video receiver denon 2808
n° 01 satellite receiver
n° 01 subwoofer klipsch rpw 10
n° 01 apple i-pod dock
n° 01 philips pronto pro touch panel tsu-9400 + extender

**Main deck – external aft**
n° 04 waterproof speakers
n° 01 multichannel power amplifier ecler mpa4-80r

**Lower deck – vip cabin + bathroom**
n° 01 lcd 26” samsung 16:9 hdmi
n° 01 denon dvd player 1740
n° 04 outline loudspeakers
n° 01 audio/video receiver denon 2808
n° 01 satellite receiver
n° 01 apple i-pod dock
n° 01 philips pronto pro touch panel tsu-9400 + extender

**Lower deck – vip cabin lounge**
n° 02 outline loudspeakers

**Lower deck – guest cabins (4)**
n° 04 lcd 26” samsung 16:9 hdmi
n° 16 outline loudspeakers
n° 04 satellite receivers
n° 04 audio/video receivers denon 2308
n° 04 denon dvd player 1740
n° 04 apple i-pod dock
n° 04 philips pronto pro touch panel tsu-9400 + extenders

**Lower deck – crew mess**
n° 01 lcd samsung 19”
n° 02 outline loudspeakers
n° 01 denon dvd player 1740
n° 01 satellite receiver

n° 01 philips pronto pro touch panel tsu-9400 + extender

**Lower deck – crew cabins (4)**
n° 04 lcd philips 15”
n° 08 outline loudspeakers
n° 04 satellite receivers
n° 04 sony dvd-cd receivers with i-pod connection
n° 04 universal remote controls urc rf10
e Audio - Video systems will use top quality equipment brands like , Denon and Samsung plasma and LCD TV sets.
For the remote control of the various areas will use the Philips Pronto Pro RF remote control system.
The whole systems will be set and acoustically optimized with professional-grade digital testing equipments and it will be extremely user friendly.

For the audio/video system the allowance is …€ 150.000,00…….

## 9.15 Security Camera System

A security camera system (CCTV) colour type, will be fitted. Maker Panasonic or equivalent

Fixed cameras will be installed on the main deck port side, starboard side, aft deck, engine room and mast. Additional cameras may be installed to comply with ISPS code

The master monitor will be fitted in the wheelhouse and the slave in the crew mess

For the security camera system the allowance is € 25.000,00

## 9.16 Telephone and intercom system

The yacht shall be equipped with a central telephone/intercom system.

Promelit PABX Switchboard or equivalent suitable for n° 08 external input lines and n° 24 internal extentions, including n° 5 cordless phones

For the telephone/intercom system the allowance is € 10.000,00

## 9.17 Shore connections

On aft ship the following shore connections for:
-One TV.
-Two telephones.
-One outlet 3 phase 400 Volt /50 Hz, shore power connection make Cee-form.
-One shore cable 25 mtr. including male plug and female plug make Cee-form.
-Two shore cables 15 metre for telephone -One shore cable 15 metre for television

## 9.18 Tank sounding system

Tank sounding system and floating system for fuel tanks, fresh water tanks, sludge tank and bilge.

For the fuel and fresh water tanks there will be installed a sounding system with gauges through ship's LAN.

## 9.19 Alarm system

Delivery, mounting and programming of the alarm system, connected and integrated in the data management system.

## 9.20 TV antenna  system

n.1 antenna TV SAT Seatel 5004
n. 1 antenna onmidirectional TV/FM active
n. 1 multiswitch 8 in 12 out

For the TV antenna system the allowance is € 30.000,00

# *10. Navigation and communication*

The following list of equipment is intended as the yard proposal and is subject to revision following to Owner's requests.

## 10.1 Navigation

*10.1.1 Radar section*

n° 1 radar sperry decca ata 251/6mk/fs
- x-band
- 19" high resolution colour flat panel monitor
- 6 feet antenna

n° 1 radar sperry decca ata 253/9/mk/fs
- s-band
- 19" high resolution colour flat panel monitor
- 9 feet antenna

n° 1 sperry decca interswitch 2x4 way 65842a

n° 2 sperry decca x/s-band radar ata to arpa field upgrade kit

*10.1.2 Gyrocompass & compass section*

n° 1 gyrocompass c-plath navigat x mk1 mod. 10

n° 1 gyro console repeater (bridge)

n° 2 gyro bulkhead repeater watertight (wings)

n° 1 magnetic compass jupiter for overhead mounting

n° 1 sperry-plath navitwin iii – compass monitor system

n° 1 sperry navistar gps satellite compass

***10.1.3 Rudder's controls & autopilot section***

n° 1 navipilot c-plath v hsc

n° 1 steering mode selector switch 4 position

n° 3 consolle rudder angle indicator (wings/main station)

n° 1 rudder angle indicator (steering lazarette)

n° 3 nfu steering tiller 74753 (wings-main station)

***10.1.4 Speed & depth section***

n° 1 em speed log c.plath naviknot 350

n° 1 echosounder jrc jfv-130 with monitor

n° 1 b&g hydra system 3000 version with 3 graphic display
speed/log/temp.sensor,depth sensor ,metereological sensors

### *10.1.5 Positioning section*

n° 1 navtex receiver furuno nx700b

n° 1 gps leica 420/8

n° 1 ais system leica mx 535 i

### *10.1.6 Chart plotter section*

n° 1 software transas ns 3000
n° 1 transas arpa/radar interface

n° 1 hatteland computer with monitor
For the navigation section the allowance is € 180.000,00

## 10.2 Communication systems

### *10.2.1 Satellite section*

n° 1 satcom inmarsat standard c sailor

n° 1 satcom vsat seatel 4006

n° 1 sailor h3000m ssas- ship security alert system

### *10.2.2 Hf/ssb section*

n° 1 ssb sailor programme re 5000 250w

### *10.2.3 Vhf section*

n° 1 vhf sailor rt 5020 gmdss-dsc cl.a-duplex-

n° 2 vhf sailor rt4800

n° 2 vhf portable sailor sp 3520 gmdss

n° 3 vhf portable icom ic-mv1

### *10.2.4 Gsm section*

n° 3 gsm ericsson f251m

n° 1 infotec if3050 laser-fax-printer-scanner-copy

### *10.2.5 Safety section*

n° 1 epirb sailor se406 ii with automatic hydrostatic release bracket

n° 2 sart sailor

For the communication section the allowance is € 120.000,00

## 10.3 Network system

The communications system will use different technologies to provide a consistent and effortless internet and communications system at the highest standards today available:

- VSAT for the areas covered by the service (at flat rates subscription) see paragraph 10.2.1
- UMTS for under coasts navigation (at flat rates subscription)
- Integrated network including desktop computer, Router Wireless 3G/UMTS and WiFi access points

For the network section the allowance is € 10.000,00

# *11. Wheelhouse equipment*

## 11.1 Wheelhouse instrument panels

The central console shall contain the steering panel with radars, gyro-pilot, rudder indicator, time-dependent and follow-up rudder controls, bow thruster panel with controls and pilot lights, remote control system for engines and gearboxes, plus start- and stop-buttons and the monitoring instruments for the propulsion units (CAT system) for main engines.

The central console shall contain also the five 19' monitors for navigation equipments

Further controls for the window washers, wipers and demisters and other instrument panels and apparatus as will be directed, such as control station selectors (wheelhouse- or wing-).

All instruments, also the electrical meters, to be lit and dimmed evenly, and to have black rims and black scales with white lettering. The total number of dimmers to be minimised through modern electronic engineering. At night the whole wheelhouse to be dark with a single switch operating all relevant illuminated displays and lights. In principle pilot lights should only light up in an abnormal situation.

## 11.2 Wheelhouse electrical control panel

The electrical panel to contain 'on' lights for the generators and the shore power, the control switches for the stand-by generator (on/off) and for the general service (chain wash-) pump.

The electrical panel will include also the general monitoring and alarms system and the navigation lights section.

## 11.3 Bridge wing control stations

On the bridge deck at P&S sides a wing control station to be installed containing: remote controls for the propulsion units, pilot lights for forward and reverse, thruster speed and circuit breaker controls and lights, a direct-acting steering tiller and a rudder indicator, a horn button plus repeater of depth sounder. Tachometers of both main engines to be installed. Some of the above functions are combined in the CAT remote control bridge wing panel.

A watertight 24 VDC socket for a hand-held spot light to be installed.

The panels to be covered by a hinged watertight aluminium (or perspex) cover, as will be directed.

The wing stations will be equipped with a heating element to avoid condensation and will be naturally ventilated.

## 11.4 Horn

Chromium plated pneumatic horn complete with automatic fog signal unit, 3 tones. Inland and offshore fog signal selection. Horn make: Kahlemberg .

Air pressure type with solenoid valve connected to the main air pressure system.

To be mounted on forward side of the hardtop.

### 11.5 Windscreen wipers and washers

An heavy duty electric window wipers will be fitted for each forward wheelhouse window suitable for marine use and to yacht standard (fully rust-proof) with selector switch for two speeds and intermittent running. 24 VDC electric motors and switches. Maker : Speich (or equivalent)

Fresh washer jet-spray one for each of the front windows, operated by push-button controlled solenoid valve 24 VDC to be operated by wheel house console, connected to the ship's fresh water system.

Water jets to be adjustable.

### 11.6 Search light

Sanshin Type RCL 100 or equivalent electric operated 24 VDC search light will be installed. Control panel to be installed in the wheelhouse

## *12. Paint & Finish*

### 12.1 Painting - General

Painting specifications to be according to existing yard practice to produce a high class yacht finish and according to the scheme and under supervision of paint manufacturer. The main colour of hull is Flag Blue and superstructure is Matterhorn white. Floating line is Matterhorn white
The paint specification is based on Boero, International and Awlgrip products

All interior and exterior finishes are to be painted and protected in keeping with the best yacht standards and practices including inside and outside hull and superstructure. The program and the method of application of paint will follow the manufacturer's recommendation.

External painting, with the exception of final touch up, will always be applied under cover.

### 12.2 Surface Preparation

All steel plating will be ordered primarized. After cutting and welding, all external steel surfaces will be sand blasted to SA-2.5. Internal all surfaces interested by welding will be wire-brushed and touched-up.

During the painting process all items not to be painted shall be covered for protection.

## 12.3 Engine room bilge & internal visible surface/void spaces

- 1 interprime 820 65 micron
- 1 interprime white 820 125 micron

The hull internal surface will be totally washed by light sandblasting . Sandblasting up to SA 2 ½ will be done in way of welding joints to ensure a much better adhesion of the painting materials and, subsequently, to minimize the risk of detachment during the life of the vessel. Primer application as per International specification.

To obtain a good result, all the internal welds needed to carry out the outfitting of the hull (like stern-tube welds, pumps and machinery foundations welds, pipe supports welds, etc.) will be carried out much earlier in the building schedule, and in any case before the internal sandblasting starts.

The void spaces with a difficult access will be filled with light cement covered on the top with a resin layer.

## 12.4 Underwater hull

- 1 interprime 820 grey 65 micron
- 1 interprime high buil white 820 125 micron
- 1 antifouling international color black 250 micron

## 12.5 Hull topsides

Boero cycle up to under coat . Top coat by Awl Grip

## 12.6 Internal hull surfaces under lining

- 1 interprime 820 65 micron
- 1 interprime white 820 125 micron

## 12.7 Fuel tanks – internal treatment

No coating; cleaned and treated with oil.

## 12.8 Fresh water tanks – internal treatment

3 coats of epoxy paint (not toxic)80 my each, by Migliorini or similar

## 12.9 Sludge, Sewage and grey tanks – interior treatment

The internal treatment of the waste and grey tanks interiors is carried on with particular attention to corrosion protection by adopting the following criteria:

- fully epoxy 3 coats treatment by Migliorini or similar.

## 12.10 Superstructure external paint

Before applying the first coat, all surfaces have to be treated with light brushing according to paint manufacturers's instructions.

Boero cycle up to undercoat. Top coat by AWL Grip

## 12.11 Superstructure internal

Anti noise / Anti condensation treatment.

## 12.12 Exterior wood varnished (where requested)

1 coat of 707 Varnish for Teak (2-comp) or equivalent, and

7 coats Epiphanes Varnish for Teak 1 pack

## 12.13 Pipes coating

- Steel: galvanized and painted
- Stainless steel: polished or painted
- Plastic: not coated
- Copper: not coated
- Cu-Ni : painted

## 12.14 Zinc anodes (cathodic protection)

Zinc anodes to be flush mounted in accordance with the yard standard.

Zinc anodes protection plane will be submitted to Owner's Representative.

# *13. Interiors Construction*

## 13.1 Non accommodation spaces underlower deck.

Accessible from crew quarters, by a stairway.

### *13.1.1 Bow thruster compartment*

A watertight compartment containing the bow-thruster with a watertight access door and a water level alarm conforming to the Rules to be arranged in the foreship. Electrical control apparatus to be outside this compartment. The area has to be continuously ventilated, if not possible by coupling the ducting to the existing ventilation system then by means of a very quiet separate small fan.

### *13.1.2 General storage*

Arrangements to be made, as will be detailed, for storage of equipment, spare parts and luggage, for dry stores, etc. Easy access to bilges and tank tops to be provided. Each storage area will be fitted out with shelving, straps and floor coverings and lighting if possible to the Owners representatives requirements.

### *13.1.3 Cold rooms*

See paragraph 6.16

### *13.1.4 Technical spaces*

The technical space port side is a compartment, with continuos ventilation, noise isolated, containing the Hamman waste treatment, chain washing pump, etc.

On starboard side there are the water makers, hydrophores, water heaters, etc.

### *13.1.5. Stabilizers cofferdams*

Aft of technical spaces, a corridor between tanks gives access to the cofferdams containing the stabilizers rams and power packs. The cofferdams are watertight.

## 13.2 Non accommodation space lower deck (cabins deck)

### *13.2.1 Fore peak*

As shown on construction drawings. Also spaces to be arranged as chain lockers In the fore peak the control boxes of the anchor winches and the switch for the chain washing general

service pump to be mounted. Area to be made suitable (with shelves, racks, etc) for most fore-deck equipment. Forced ventilation to be provided.

Lighting by 2 marine bulleyes; also a watertight socket to be fitted.

### *13.2.2 Engine room*

Situated in the aft part of the yacht. Including also the control room, with main switchboard.

### *13.2.3 Aft. SPA*

Head room with shower.
Sauna
Corridor and stairway to main deck
Access to aft swim platform.

### *13.2.4 Garage*

Storage facilities for tender, jet-skies, diving equipment and tools.

### *13.2.5 Stowage space in general*

Maximum possible stowage space to be provided below deck seating and wherever shown on drawings. Interior stowage area's to be lined with plywood: means to be provided to keep stores, parts, suitcases, etc. secure in heavy seas.

## 13.3 Accomodation spaces and decks

### *13.3.1 Lower deck – Crew Quarters*

Access from main deck.
Four double berth cabins
Four headroom with showers
Crew mess
Laundry (see chapter 14 for equipment list)

### *13.3.2 Lower deck – Guests area*

Access from main deck lobby
Guest cabin lobby with lockers for storage.

### *13.3.3 Guest cabins aft*

Access from guest lobby.
Two queen size bed rooms aft, wardrobes and vanity desk

Two bathrooms with double wash basins
Medicine cabinets with mirror
Two headrooms with door and equipped with toilet & bidet
Two showers with glass door

### *13.3.4 Guest cabins middle*

Access from guest lobby.
Two guest cabins with two single bed each
Two headrooms with vanity and washbasin, toilet and shower with glass door
Medicine cabinets with mirror

### *13.3.5 VIP Guest suite forward*

Access from guest lobby.
On portside, living room with L-shaped sofa, desk & lockers
Large wardrobes, lockers with drawers and shelves
A sliding door gives access to bed room
King size bed & night tables
Vanity desk
Bathrooms with twin washbasins, shower cabin with door
Headroom with door, toilet and bidet

## 13.4 Main deck

### *13.4.1 Main lobby*

Access from starboard main deck corridor
Day headroom with washbasin and toilet
Stairs to lower deck and to upper deck

### *13.4.2 Owner's suite*

Access from main lobby
Owner's study with desk, arm chairs, sofa, lockers with storage for files, concealed safe
Owner's bedroom, with king size bed & night table
Two walk-in wardrobes ("her" and "his")
At port and starboard side of bedroom, two living bays ("bow-window"), with coffee table and chairs. Side panoramic windows
At port side, aft of bedroom, large bathroom with
- Two individual showers "her" and "his", with glass doors
- Large tub with SPA system (Jacuzzi)
- Double washbasin vanity
- Headroom with toilet and bidet

### *13.4.3 Main Galley and pantry*

Located at port side of main deck. Access from main deck port by watertight door.
For equipment see paragraph 14.1

### *13.4.4 Main dining room*

Access from main lobby, main saloon and service pantry through sliding doors
Large dining table with n° 14 chairs
Two armchairs
Large piece of furniture for chinaware, silverware and other tableware.

### *13.4.5 Main saloon*

Access from aft main deck with large stainless steel & glass door and from main dining room
Living area at port side with large four seats sofa, two-2 seats sofas, two coffee tables
Living area at starboard side with 2-seats sofa, arm chair and coffee table
To the aft starboard side bar corner, with sink, fridge, icemaker, bottle storage and three stools

### *13.4.6 Main deck external aft area*

Weather resistant external pieces of furniture, tables and arm chairs, selected by Owner's

## 13.5 Upper deck

### *13.5.1 FWD external living area*

Built-in settee outside of wheelhouse with close-cell foam cushions and back-rests, upholstered with fabric, colour at Owner's choice.
Two L-shaped settees at fwd sides of the area, with cushions and back-rests as above
Three small coffee table with telescopic stainless steel base, fixed to the deck

### *13.5.2 Wheelhouse*

Large instrument console (for equipment see chapter 10)
Large settee in front of helm, facing forward, for captain, Owner & guests
Back section of the settee, chart table, with charts drawer and other equipment
At the sides aft, two desks with chair, for communication and boat management.

### *13.5.3 Captain cabin*

Access from wheelhouse

Fully equipped with bed, wardrobe, headroom with washbasin, toilet and shower.

### *13.5.4 Upper deck lobby*

Lockers for storage
Day guests headroom with washbasin, toilet and shower

### *13.5.5 Upper deck saloon and living area*

Access from UD lobby and from aft UD external area.
From lobby, on starboard side, study or play & games table with two armchairs
To port side, health room with gym machines, runner & bike (Make Technogym or equivalent)
Saloon with large L-shaped sofa & coffee table
On starboard side large bar with four stools, icemaker, fridge, sink, glasses and bottles storage.

### *13.5.6 Upper deck external living area*

In the center of the deck, large round table with stainless steel column base and teak top
Chairs for 12 peoples
On starboard side, built-in the structure, L-shaped settee, with cushions and back rests, similar to the FWD area.
Two armchairs and fixed, small round table

## 13.6 Sun deck

Access stairway from upper deck
Large raised, structural platform including a round mini-pool with SPA system; sun bathing mattress and settee facing backward. Small round coffee table
Large round dining table, with 12 chairs, similar to the upper deck one.
At the two sides, port and starboard, structural settees with cushions and back rests, similar to the FWD area.
Just forward the settees, four skylights recessed into the deck, giving light to the upper deck gym and studio/play room..
In the middle, large bar unit, structural, six stools, fridge, icemaker, sink, storage for bottles and glasses.
Large structural settee facing forward, coffee table and chairs
At the sides of the forward section of the sun deck, two sofas with sunbathing mattresses, on raised base

## 13.7 Joinery and outfit

### *13.7.1 General*

Design: Owners Interior Designer

Generally, all internal joinery work will be executed by the yards cabinet making and yacht outfitting department, or alternatively by a subcontractor. Quality and detailing of the interior will be according to Yacht standards, according perspective drawings of designers.

The material selection will be carried out by the designer, and will be presented to the Owner for approval prior to the construction of the relevant area of the interior whereby it is understood that same quality and finish as that of the ongoing project at Monty North Shipyard that the Owner has knowledge of, is the basis. In the event that the Yard has any doubts or queries about materials, standard of finish etc., it is imperative that the interior designer be immediately consulted.

The minimum clear headroom above wooden floors to finished ceilings in principal area is to be:

Lower deck 2.15 m(crew area 2.0m)

Main deck 2.15 m

Upper deck 2.15 m

All interior joinery work will be made and fitted in accordance with best yacht practice, and only first class materials will be used. Interior joinery work is to be arranged wherever possible for removal, to provide access to the main structure and to equipment, wherever necessary, for maintenance and inspection.

All wood fixings are to be of bronze, brass, stainless steel. Appropriate precautions are to be taken regarding compatibility of such materials.

Cabin interiors will be isolated from the metal structure by noise absorbing fittings, and mineral wool insulation, or added mass layers in the panels, as may be recommended by the Builder's acoustic specialist.

Discrete hatches are to be allowed in floors and soles wherever required for access.

Ceiling panels will be mounted so as to be removable wherever possible.

All soft furnishings and carpets are to be fibre sealed prior to hand over, if required.

### 13.7.2 *Bulkheads*

Joinery bulkheads will generally be constructed of waterproof marine plywood.

Partition bulkheads will be of a sandwich type, if necessary, to meet the noise criteria laid down elsewhere in this specification. The sandwiches may be ply/mineral wool/ply, or as may otherwise be dictated by the Builder's nominated acoustic specialist or possibly incorporating proprietary products for this purpose.

Wood panelling, where so described, will be formed in a way that represents traditional methods of construction.

The boundary bulkhead around the main galley will comply with the B 15 fire standard, to LRS

& MCA rule.

The Owner's and guest bathrooms and visitors' toilets will be finished in marble, tiles or panels, or a combination of marble and Corian panels or tiles.

Joinery bulkheads, walls, ceilings and other exposed areas in the crew's quarters will be finished in Formica or vinyl with oak, mahogany, cherry or teak trim, cabinets and bed fronts.

### *13.7.3 Dumb Waiter*

An electric lift will be installed for service purpose and it will connect the main deck pantry to the upper deck and the sun deck. The lift trunk will be structural and part of aluminium superstructure. It will be built in accordance with LR requirements The lift will have electric motor with safety braking system. Doors with safety stop switches.

### *13.7.4 Wall finishing and ceiling finishing*

All visible walls and ceilings will be finished according the designs as prepared by Owner’s designers. This includes delivery and installation of a combination of selected veneers, lacquered surfaces, decorative leathers, fabrics, mirrors and marbles. All finishing fixed and installed invisible as far as possible. Where due to installations a removable panel or access hatch is necessary, this will be integrated in the construction. The basic construction of the wall finishing panels shall be marine type plywood.

### *13.7.5 Doors*

All doors are to be flat, matching adjacent woodwork, lacquered panelling or fabric-faced panelling. Door frames and thresholds shall be finished with appropriate materials to complement the decor of the spaces served, in accordance with the Designer's requirements.

Generally, doors are to 40 mm in thickness, and to be fitted with anti-vibration marine quality, with bronze or stainless parts. All internal doors shall be of the warp free, hollow core type appropriately insulated with "Rockwool" or similar, in the internal cavity to the same fire standard as adjacent partition divisions.

All cabin doors are to be fitted with stops for holding the doors in an open position.

Doors are to have sheet-type closing gaskets, which ensure an acoustic seal.

Doors are to be complete with all furniture (anti-rattle), as dictated by the Designer.

Where decorative finishes allow, doors will be fitted with grilles for return air ventilation or, otherwise, return air paths may be achieved by provision of spaces under doors, or slots through heads of door frames, or as otherwise agreed with the Designer.

Lights with automatic switching will be provided on doors to larger lockers and wardrobes.

A lock system is to be provided in consultation with the Owner for all external and internal doors. The lock system is to incorporate master keys and sub-master keys.

### 13.7.6 Hardware

Interior hardware and furniture for doors, drawers, cupboards, including hat and coat hooks etc. are to be of plated bronze, stainless steel or polished anodised aluminium, of high quality make, and complete in all respects.

Wardrobes are to be fitted with chrome plated, aluminium or wooden clothes hanging rails etc.

### 13.7.7 Stairs

Interior stairways, as shown on the general arrangement to be constructed of selected hardwoods or are to be of steel or aluminium construction, faced in selected woods, lacquered or carpeted materials.

All stairs are to have necessary hardware, in the way of polished stainless steel balustrade supports, where appropriate.

All stairs are to have easy going treads and risers, generally carpeted, and with concealed lighting under each tread.

External stairways are to have teak treads, visually compatible with the external decks in way, and at external stairways, handrails are to be recessed within the superstructure locally.

See paragraph 9.9 regarding stairway lighting, and emergency lighting facilities.

### 13.7.8 Dressers, cabinets, and wardrobes

The finish and style of dressers and cabinets is to be as per interior designer, specifications of finishes. All drawers are to be of the self-closing type, and are to run on guided, glides, and to be constructed of selected woods.

Drawers are to be fitted with bronze or chrome pulls, as may be selected, and cabinets are to have locks and catches as directed.

Where dressers or cabinets enclose equipment of a technical nature, e.g. refrigerators, safes, icemakers etc., this equipment is to be built-in, in accordance with manufacturers' technical information and recommendations, and sufficient insulation, ventilation etc. is to be provided as appropriate.

### 13.7.9 Berths /beds

Berths or beds in Owners and guest accommodation will be so arranged as to accept good quality mattresses.

Generally, bed bases will be vented to avoid mildew problems, and all mattresses will be of fire retardant materials.

Berth and bed fronts will be designed in accordance with the interior Designer's specification of finishes.

Under beds, there will be sufficient large drawers for storage of bed linen, and covers.

Bed heads will be as per the Designer's requirements.

### *13.7.10 Bathrooms and toilets*

The Owner's guest bathrooms and toilets will be finished with marble floors and walls or a combination of Corian and marble tiles (or similar to be agreed with Owner), according to the interior design scheme.

All bathrooms etc. will be complete with washbasins, bath and shower, mixer taps and decorative accessories (e.g. towel rings, glass holders, etc.) all to a high standard.

Shower doors or screens are to be of clear glass.

Bathtub and shower pans will be decided by Designer in co-operation with owner's interior decorator.

Provision is to be made for a pull-out dirty linen hamper in each bathroom

### *13.7.11 Mirrors*

Mirrors are to be placed in: The Owner's stateroom, all guest staterooms and bathrooms. All mirrors are to be 4 mm glass and especially protected for tropical use. There will be two mirror faced cabinets provided in each bathroom, located over each washbasin. All guest and owner cabins have a full length mirror installed inside of the door of the hanging locker

### *13.7.12 Furniture and furnishings*

The location and type of will be as indicated on the general arrangement plan and as described in the later descriptions and in descriptions of accommodation. This may change as the detailed design progresses but the general character and intent will not alter. The furniture, where fixed or loose, will be of high quality.

Where air conditioning and ventilating outlets are incorporated into furniture, these are to match the furniture and general decorative style.

Curtains, night blinds and louver drapes are to be manual operated.

### *13.7.13 Marbles and granites*

To be agreed between yard, owner and interior designer, light weight scheme.

### *13.7.14 Decorative metalwork*

All decorative metalwork, such as gratings, handrails or other decorative work, will be manufactured to high luxury standards of quality in polished stainless steel.

### *13.7.15 Lighting (see also 9.9, 9.10, 9.11)*

Best quality manufactured spotlights, down lights and indirect lamps will be supplied in accordance with the approved interior design scheme and lighting layout.

Dimming and switching arrangements are to be agreed between yard and owner and interior designer.

### *13.7.16 Safes*

Large digital safes are to be provided in the Owner's suite, VIP suite and wheelhouse
Small digital safe will be provided in the Guest’s cabins and captain's cabin.

# *14. Household equipment list*

## 14.1 Galley, pantry and bar equipment list

The present list is indicative only and must be confirmed by Interior Designer.

***Galley***

The galley will be fitted with stainless steel working surface, cupboards and drawers as per General Arrangement plan

The following equipment will be fitted :

- A 6 burner electric range with oven maker Zanussi or equivalent included standard securing arrangement for rough sea
- Steam oven maker Miele or equivalent
- Exhaust hood over range with two speed fan and filters Custom made
- One microwave oven with frame Miele or equivalent
- One trash compactor ISE or equivalent
- One garbage macerator ISE or equivalent
- A two doors refrigerators/freezers Zanussi or equivalent
- One dish-washer Zanussi or equivalent
- One ice-maker Scotsman or equivalent
- One double sink in stainless steel
- Drawers for cutlery, etc.
- Two food warming lights

***Main pantry***

- One wine cellar 60 bottles Foster or equivalent
- One sink in stainless steel
- One ice maker Scotsman or equivalent
- One dish-washer Zanussi or equivalent

***External and internal bars***

For each bar will be fitted:

- One sink in stainless steel
- One ice maker Scotsman or equivalent
- One day fridge Miele or equivalent
- One electric barbecue on the sundeck

***Owner study***

- Mini-fridge Whirlpool or equivalent

***Guest Lobby***

- Mini-fridge Whirlpool or equivalent

***Crew dinette***

- One sink in stainless steel
- One day fridge Miele or equivalent

- One dish washer Miele or equivalent
- One micro wave Miele or equivalent
- One trash compactor ISE or equivalent
- One garbage macerator ISE or equivalent

***Laundry***

- Two washers and two dries (Miele) professional type.
- Ironing roller machine (Miele)
- Folding ironing board
- Steam iron (Polti)

Lockers and storage for laundry and products
The back of the washing machines and dryers will be accessible for maintenance

## 14.2 Sanitary equipment

Models, material and colour of sinks, wash basins, bath, faucets, shower fixtures, etc., will be:
Standard finish : chrome
Taps will be chosen among Ideal Standard, Jado, Grohe or equivalent.
Bathroom's accessories will be chosen between VIP, Jado or equivalent.
Toilets will be Evac, Jets or equivalent.
Wash basins, baths and bidets will be Cesame or Ideal Standard

## 14.3 Bathroom accessories

Numbers, models, materials, colours and places of towel bars, glass holders, soap dishes, toilet paper holders, robe hooks, etc., are to be decided on by owner and Designer.
The following accessories will be supplied for the bathrooms and will be chosen between VIP, Jado or equivalent:

Grab bars

Soap holder
Glass holder
Towel rail
Toilet brush
Toilet paper holder
Towel ring
Soap dishes
Clothes hooks
Toilet garbage bin
Tooth brush holders

All drains are positioned so that water drains away with the vessel in a normal running condition.

## 14.4 Loose Furniture

Loose chairs, armchairs, tables, stools, sofas, etc. will be supplied and installed by the Builder in accordance with the General Arrangement plan within the following allowances:

| | |
|---|---|
| Esternal teak chairs each | € 800,00 |
| Internal chairs, each | € 800,0 |
| Internal armchairs and sofas, per seat | € 800,00 |
| Internal dining table | € 10.000,00 |
| Upper deck external dining table | € 6.000,00 |
| Sun deck external dining table | € 4.000,00 |
| Internal coffee table, each | € 1.500,00 |
| Internal game table, each | € 2.500,00 |
| External coffee table, each | € 1.600,00 |
| Bar stools, each | € 1.000,00 |
| Fabrics for sofas, bedspread, pillows, curtains | € 150,00 per linear m, high 1.3 m |

## 14.5 PC Sums

In addition of what has been above specified, othe allowances will be stated for the following items:
Counters top of Marbles / Corian And Stones
Tapeware and bath accessories
Floor Covering: carpets, marble, parquet
Upholstery, leather and fabrics
Galley And Pantry Equipment
Laundry Equipment
Light Fittings, decorative lights
Gym equipment
Security Systems