MAORI
YACHT

125ft

Technical Specifications

MAORI
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Guest Cabin

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Guest Cabin

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Main Salon

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Main Salon

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Owner's Suite

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Owner's Suite

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Beach Bar

MAORI
YACHT

Beach Bar

MAORI YACHT

Characteristics

Length overall	38.20 m
Beam moulded	10.60 m
Beam overall	10.60 m
Design Draft (full load)	2.50 m
Moulded Depth	4.42 m
Gross Tonnage	378 GT
Displacement (full load)	230 t
Structural fuel capacity	38.000 l
Daily tanks fuel capacity	3.200 l + 3.200 l
Fresh water capacity	5.000 l
Grey/Black water capacity	1.500 l + 1.500 l
Speed* - economic cruising (half load condition)	10.5 Knots
Speed* - cruising (half load condition)	15.0 Knots
Speed* - max (half load condition)	18.0 Knots
Range* at economic cruising	4200 nm

* speeds and range are calculated with current vessel specification; additional optionals may produce speed/range reduction (especially stabilizing system).

Brief Description

Type: 38 metres, twin screw, round bilge semi-displacement diesel motor yacht with blade bulbous bow.

Contruction

Glass fibres, infused with vinyl ester resin.
The whole boat will be built in sandwich, except for keel and chines and other local reinforcement.
The hull, the deck and the superstructures will be made in fiberglass infused with vinyl ester resin.
Hull and superstructures stiffeners will be reinforced on top with unidirectional fibres.

Engines

Genset: Two (2) genset, 55kw + 70kw @ 50 Hz.
Propulsion: Shaft line.
Two (2) diesel motors, MAN 1800hp V12 flanged with ZF 3050 A, in accordance with ZF requirements for pleasure duty operative profile.
Two (2) stainless steel shaft with proper diameter, in accordance with registry rules.
Two (2) 5-blade propeller, with proper diameter, in accordance with registry rules.

000 General Guidance and Administration

Purpose of the technical specification
The purpose of the Technical Specification and attached General Arrangement is to describe technical details relative to the construction of a luxury motor yacht hereinafter called the "Yacht". The specification has been detailed with the understanding that the Yacht will be registered under a pleasure/private flag (Malta or BVI or Jersey), in accordance with Pleasure Yacht Rules of RINa naval registry. The involvement of different other flags or registry will determine changes in the safety equipment required on board.
(OPTIONAL) RINA Commercial Rules compliance with class notation: C HULL MACH Ych ShortRange Navigation, plus Commercial Flag compliance (Malta or BVI or Jersey); including all related equipment supply/upgrade.
(OPTIONAL) Additional class notation RINa: Comfort Yacht; including all related equipment supply/upgrade.

001 General Administrative Requirement

The "Owner" used in the specifications, unless otherwise required by context, shall mean "purchaser" in the contract.
The Yacht shall be a twin-screw diesel semi-displacement Motor Yacht, with round bilge hull, transom stern and flared bow with blade bulbous bow.
The hull and the super structures will be built of glass fibres, infused with vinylester resin.
Where the word "or" is used in the specifications it is to indicate that the use of alternative items will be permitted, it shall be understood to mean "at the Builder option".
Except for those items of equipment supplied by the Owner, the Builder shall supply all items necessary for the normal operation of the Yacht.
The Yacht shall be built in accordance with the Specifications and attached Plans.
No modification can be made by the Builder without the agreement of the Owner.

Conflict between technical documents

The Technical Specification may be accompanied by the Drawings: due to the highly customized nature of the Vessel, there may be technical conflicts or ambiguities between the Technical Specifications and the Drawings; the Builder shall exercise its reasonable efforts to resolve these conflict or ambiguity.
In any case, the Technical Specification shall prevail.

Copyright

044 Ship Operation

The Yacht and its equipment will be suitable for ambient sea and atmospheric conditions, which normally can occur in Mediterranean or Tropical waters. See section 514 for additional details.
As ambient conditions will be considered:

- Maximum seawater temperature 32°C
- Minimum seawater temperature 5°C

070 General Requirements for Design and Contruction

Standards, Units, languages

Vessel to be designed by the metric system. As far as not otherwise specified, international Standards will be the basis for standards, dimensioning, quality of materials and performance. All plans, drawings, instruction manuals etc. will be written in English. Nameplates, notice-boards etc. Will be written in English. Ship's name and port of registry will be in Latin letters.

Workmanship

All components of the structure of the boat shall fit together properly in accordance with good marine practice. All defective workmanship shall be replaced. Care should be taken to have all hull and exposed lines fair, and all joints tightly fitted and well fastened.
Generally metric units will be used and all calculations and calibrations are to be based on the following units and the appropriate abbreviation used:

- Length: metre, millimetre
- Area: square metre
- Capacity (volume): cubic metre, litre
- Weight: tonne, kilogram
- Force: tonne force, kilogram force kilo Newton, Newton
- Power: kilowatt/metric horsepower
- Energy: kilowatt hour
- Voltage: Volt
- Current: Ampère
- Frequency: hertz
- Capacity (electric): Ampère per hour
- Speed: knots (nautical miles)
- Distances (at sea): Nautical miles
- Temperature: degree Centigrade
- Heat: British Thermic Units
- Pressure: bar (absolute)
- Illumination: lux

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Design and construction class and regulations

The yacht, including its machinery, equipment and material are manufactured in accordance with the laws and regulations of the RINa Pleasure Yacht Code (STANDARD) or RINa Commercial Yacht Code + Flag commercial compliance (OPTIONAL).

071 Access to Compartments

Arrangements for access and for cleaning and painting shall be provided to all compartments and to all parts of the Vessel wherever practical.
Flooring shall be fitted with opening or removable hatches to insure proper access to bilges under the floor.
Access to equipment that may require service of any kind shall be provided by developing joiner work, etc., which can be removed for systems maintenance. Where it will be necessary to have access behind joiner works, concealed removable panels shall be fitted utilizing concealed fixings.

073 Noise and Vibration

Particular attention will be given to the construction of the Yacht to minimise the impacts of vibrations and noise transmitted by the main sources. The hull general design and the construction details will be such as to limit vibrations tending to cause damage to the hull structure and equipment as well as to limit the interfere with the proper functioning of equipment and to assure the best comfort on board.
Care will be taken to provide adequate scantlings and seating continuity of the main engines and reduction gears. The structure in way of shafts and shafts seats will be adequately strengthened to avoid undue vibrations. The calculation of the torsional vibrations of the propulsion system could be carried out in order to analyse the critical torsional frequencies of the rotating parts of the shafts and propulsion system.
The Builder will make every effort to locate and correct undue vibration arising during tests and trials of the hull as a whole and to items of structure, panelling, outfit and equipment.
Sound isolation treatment will be provided as necessary to keep noise to an acceptable level.

Noise level requirements:

During navigation (1400-1600 RPM):
- Open decks 75 dB(A) max
- Aft Guest cabins 66 dB(A) max
- Fore Guest cabins 64 dB(A) max
- Saloon 63 dB(A) max
- Owner's cabin 57 dB(A) max

At berth:
- All living spaces 48 dB(A) max

Vertical vibration level requirements, between 5-100 Hz, measured on the floor level during official seatrials, with a tolerance of ±0.5mm/s:
- 1.5mm/s in Owner's Cabin and all Guest Cabins
- 2.0mm/s in common closed living spaces
- 2.5mm/s in the open decks:

073 Noise and Vibration

Generators

Beyond the above mentioned requirements for noise reduction for engines, a sound acoustic enclosure is to be fitted around the generator, easily removable for service operations.
Will be installed on antivibration mounts.

Fans

Fans are to be mounted on anti-vibration rubber mountings. Ducts, where necessary, are to be adequately insulated.

Pumps, compressors, etc.

All other auxiliary machinery and fittings are to be mounted on anti-vibration mountings.
All rigid pipes connecting to vibrating machinery to be via flexible pipes or bellows.
Mounting shall be adequate so as to limit the movement of the machinery and avoid disconnection between coupling flanges and pipes. Pipes are to be adequately hung, without being too stiff.

Engine room

A combined system of thermal, soundproof and fire-fighting insulation will be used.
All the surfaces will be treated with a special damping compound, rock wool and an exterior aluminium or steel covering plate, all in accordance with registry rules.
Furthermore a particular care will be reserved to the air and exhaust gas ducts insulation.
The main engines are to be carefully elastically mounted. Engine foundation is to be of high stiffness.

Partitions

Inter-cabin privacy is particularly important and it shall be reached a good sound insulation quality.
Doors must insure a sound insulation quality as for the surrounding bulkheads.
Doors at privacy boundaries are not to have direct passage grills for air ventilation.

078 Materials

Generalities

All materials and items of equipment installed in or delivered with the Yacht will be new and of first class Yacht quality, suitable for the purpose intended.
All equipment will be of the latest proved design, manufactured by well-known international suppliers. Equipment will be capable of withstanding local ambient temperatures for long periods without lose its efficiency.
The Builder will provide all items of material and equipment that are appropriate or necessary for the proper operation of the Yacht, with the exception of those items specifically included in the list of items supplied by and at the expense of the Owner.
Where proprietary and company names are mentioned in the Specification, these are not in all cases intended to be restrictive in the supply of equipment, but may be substituted with an equivalent one in design, performance materials and suitability.
Items which are not specified "of acceptable manufacture" or by trade mark or name will be at the Builder's option unless otherwise agreed. However the readiness with which service and spare parts can be obtained will be taken into account in the choice of material and equipment.
All workmanship shall be first class in every respect and in accordance with the best marine practice for a motor Yacht of this size and type.

The work will be carried out by qualified and skilful workmen under regular and competent supervision.

The workmanship will be to the satisfaction of the Owner and to the Classification Society (Registry).
A high standard of cleanliness will be maintained throughout the Yacht during the whole period of construction.
The Builder will provide suitable facilities and exercise proper diligence in connection with the storage, handling and installation of both Builder-furnished and Owner-furnished materials and equipment going into the Yacht. Machinery and other components susceptible to damage or deterioration from exposure to weather or excessive heat, cold or humidity, will be placed in a suitable covered storage.

All equipment shall be installed in accordance with the manufacturers' installation manuals. Appropriate measures will be taken, where necessary, avoid wear and damage to components under construction and to prevent corrosion or other deterioration, especially to unpainted, polished and moving parts.

Equipments identified by supplier or maker

Unless otherwise specified, contractor is entitled to substuitute an equipment identified in the specification with another one by a different supplier/maker of equivalent performance and quality. Any modification to the equipments identified in the specification should be notified in time to the client and PM. All materials showing defects will be rejected.

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

100 Hull Structures

General

The ship structure will be laminated using vinyl ester resin matrix and the raw materials listed in the following pages; in any case all materials used will be an approved type by one IACS registry.

Structural lamination materials:

Hull bottom skin laminate: EBXS, E-glass, stitched fibres 0/90°.
Hull bottom skin laminate: EBX, E-glass, stitched fibres ±45°.
Hull side skin laminate: EBXS, E-glass, stitched fibres 0/90°.
Hull side skin laminate: EBX, E-glass, stitched fibres ±45°.
Deck skin laminate: EBXS, E-glass, stitched fibres 0/90°.
Deck skin laminate: EBX, E-glass, stitched fibres ±45°.
Superstructures skin laminate: EBXS, E-glass, stitched fibres 0/90°.
Superstructures skin laminate: EBX, E-glass, stitched fibres ±45°.
Stiffeners web laminate: EBX, E-glass, stitched fibres ±45°.
Stiffener crown laminate: Uni-directional fibres.

Sandwich core materials

Hull bottom: Cross linked or linear PVC foam, min. 140 kg/m3 density.
Hull side: Cross linked or linear PVC foam, min. 100 kg/m3 density.
Maindeck and superstructure: Cross linked or linear PVC foam, min. 80 kg/m3 density.
Some areas: Coremat; single skin; marine plywood reinforcements.
Hull Stiffeners: PVC foam, min. 60 kg/m3 density
Other Stiffeners: PU foam, min. 35 kg/m3 density

Laminate detail

Changes in laminate thickness will be gradual, typically the length of the taper will be at least 1:20. Changes from sandwich laminate to solid laminate will have a typical core taper of 1:3. Framing and stiffener sections will be built up layer by layer. Particular attention will be paid to achieve a satisfactory bond and structural continuity at the ends and intersections with other structural members.

Discontinuities and hard points in the structure will be avoided, and where the strength of a stiffening member is impaired by any attachment of fittings, openings, drainage arrangements, etc., compensation by way of additional lamination is to be provided.
Secondary bonding onto existing laminates is to be carried out after suitable preparation of the laminate. This includes sanding, degreasing and drying as applicable to form high quality secondary bonds.

Suitable fillets and radii will be provided in way of changes in laminate direction.
Exposed edges of laminate cut in solid laminate will be sealed with resin, if the edge is in direct contact with seawater a capping of reinforcement will be provided.
Exposed edges of laminate cut in sandwich panels will generally be sealed with a reinforcement of weight equal to that of the outer skin of the sandwich laminate unless otherwise specified.

Limber holes

Limber holes will be arranged to provide drainage of any areas likely to accumulate liquids.
No limber holes will be fitted in way of junctions of internal structure unless specified.
No limber holes will be fitted under engines or other big machinery to avoid oil leakage in other compartments due Pollution Prevention.
All limber holes cut in the structures will be reinforced with half tube laminated to the hull or an equivalent arrangement.

110 Shell and Supporting Structure

All structural scantlings will be determined for the maximum full load draft in accordance with the requirements of the registry Rules and Regulations. The hull and deck panels will be stiffened by longitudinal and transversal stiffeners, as appropriate.
The structure is composed by longitudinal girders and beams with proper spacing in order to guarantee the necessary both longitudinal and transversal rigidity and keep within acceptable limits the strength of the panel according to the Classification Society Requirements.
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.
Local stiffeners will be fitted where necessary, in way of deck openings, deck machinery, bollards etc.
Local stiffeners 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 hull in accordance with machinery and firefighting system requirements.

One bow-thruster will be fitted. The thruster tube will be constructed in GRP.
All decks will be built in sandwich, 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 Maindeck will be stiffened and/or fitted with local reinforcement for the capstans, bollards and deck equipment.

111 Shell Plating

Mould
The hull shell will be produced on a mould suitable for infusion consolidation of the hull core.

Resin preparation
The Builder will be responsible for the resin preparation and to respect all the manufacturer's instructions.

Hull lamination
The hull lamination has to be made to reduce the slamming loads and to be in accordance with Registry rules.
A primary longitudinal stiffening will be provided as following:
- hull bottom: sandwich with glass skin, bi axial, with longitudinal girders and PVC core,
- hull sides: sandwich with glass skin, bi axial, with longitudinal girders and PVC core.

116 Framing

Longitudinal framing
The framings to be in accordance with the Registry rules requirements and generally made with Eglass stitched fabric at +/-45° and unidirectional fibres at 0° on top.

Transverse framing
The framings to be in accordance with the Registry rules requirements and generally made with Eglass stitched fabric at +/-45° and unidirectional fibres at 0° on top.

122 Transverse Structural Bulkheads

Watertight & structural bulkheads

To be in accordance with the Registry rules requirements, in sandwich with skins in E-glass stitchedfabric +/-45° and 0°/90°, and PVC core min. 100 kg/m^3.
Capping and reinforcement around holes and penetrations.
Where girders or other sectional members are stopped on watertight bulkheads, care will be taken in the alignment 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.
A watertight door with electric sliding movement is installed in Lowerdeck, between guest and crew area, make ALLUFER TEMPESTA or similar.
Watertight cofferdams, as per rules, will also be provided for through hull passages as propeller shafts, stabilizers fins, bow and stern thrusters.
Hull cofferdams and technical spaces will be accessible through watertight hatches.

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

123 Truncks and Enclosures (structural)

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 will be designed and constructed of steel or nibral (to be defined), in accordance with the Classification Society requirements and to reflect good hydrodynamic design to minimise vibration. They will be bolted to a special foundation incorporated in the hull construction. Twin spade rudders to be made of stainless steel or nibral (to be defined) ensuring good steering capabilities at low speed. Filling and drain plugs to be provided; rudders to be pressure tested. Design Classification Society approved.
The rudder tubes will be designed and constructed in accordance with the Classification Society requirements. The stocks (material to be defined) will be supported by water lubricated synthetic rubber sleeve bearings.

Tanks

Tanks will be arranged as shown on the General Arrangement drawing. All tanks, cofferdams andvoid 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, structural tanks will be constructed as part integral of the hull structure such as :

- fuel tanks
- fresh water tank
- grey/black water tanks
- ballast tanks

All internal structure will be thoroughly cleaned and coated in accordance with the Paint Specification and Classification Society requirements. Potability certificates will be provided for Fresh Water Tanks. Dip tubes for draining will be fitted at the lowest point of all structural tanks, deep tanks, cofferdams and void spaces. Laminations, 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.

Fuel tanks

Located according to GA and structural layout plan; approx. total capacity 38.000 litres.
Fuel tanks to be made as structural tanks; all tanks will be 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 column of water pressure as per Classification Society requirements.
Two fuel filling box will be provided on maindeck, one for each side. The box will be closed with a flush mounted hinged door. Tanks' suction lines to be equipped with shut-off valves, with local and remote control.

Fuel day tanks

Located according to GA structural layout plan. Two daily tanks, approx. 3.200 litres each, made of stainless steel, to be mounted in engine room, provided with swash plates, properly stiffened, manhole, fill and ventilation pipes, sounding system, water drain off valve with hand-pump or connected by stripping line.
Tanks' suction lines to be equipped with shut-off valves, with local and remote control.

Fresh water tanks

Located according to GA structural layout plan. Structural tank, approx. total capacity 5000 litres. Tanks provided with swash plates, manhole, fill and ventilation pipes, connection pipes to water pressure system and sounding system.

Grey & black water tank

Located according to GA structural layout plan. Structural tanks, approx. total capacity 1500 litres + 1500 litres. 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 for cleaning.

Trunking

All bulkheads or longitudinal sections will be provided with holes to facilitate systems passage and will be provided with structural collars, capping and/or additional local lamination as necessary to maintain the structural continuity.

Bulwarks & Bulwarks doors

Open bulwarks will be fitted to the Maindeck and the Foredeck with a minimum height of 1 m. A stainless steel railing will be fitted where necessary to comply with this minimum height, as shown on the General Arrangement drawing.
The Maindeck bulwarks will incorporate stays and freeing ports in accordance with the requirements of the Classification Society. Freeing port openings may be finished with stainless steel and fitted with stainless steel safety bars where required by the Flag Administration. The structure of doors will be equal to the strength of the adjacent bulwark. All doors will be fitted with sea water resistant hinges and fittings. Means will be provided for securing the doors in the open position.

131 Maindeck

The maindeck and as well for the other decks, will be in sandwich, 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.
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 primary longitudinal and secondary transversal stiffeners.
Deck panels will be suitably reinforced under local loads. 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. Fuel day tanks Located according to GA structural layout plan. Two daily tanks, approx. 3.200 litres each, made of stainless steel, to be mounted in engine room, provided with swash plates, properly stiffened, manhole, fill and ventilation pipes, sounding system, water drain off valve with hand-pump or connected by stripping line.
Tanks' suction lines to be equipped with shut-off valves, with local and remote control.

Storage for fire and deck wash hoses

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

Shore Connections

On maindeck will be fitted:
- Shore power connection
- Fresh water connection with pressure reducing valve

167 Hull Structural Closures

Openings for engine removal
The engine room ceiling contains a removable panel of a suitable dimension to allow the passage of machinery parts (including engines).

171 Mast

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

195 Stabilizer System

(OPTIONAL) Stabilization underway and at anchor system, with two (2) hydro-dynamically efficient fins, make CMC MARINE model LR290 with actuators LR150 11kw each, or similar.

200 Propulsion Plant

General requirements
The propulsion system shall consist of twin marine diesel engines with reduction gears, axes and propellers in A-configuration.
All propulsion plant components shall be rated for not less than the full power and torque of the installed engine and shall be capable of transmitting the full power, torque, and thrust of the propulsion system in the ahead and astern directions.

233 Propulsion Internal Combustion Engines

Propulsion diesel engines
Two (2) MAN diesel engines type V12 1800hp, with a rated power of 1324 kW at 2300 RPM shall be installed and to be used for propulsion purpose. Main engines will be provided with control panels and full installation kit.
Each of them to be connected, through an elastic coupling to a gearbox of suitable manufacture and design (see 241).
The two main propulsion systems will drive the two shaft-lines fitted with 5-blade propellers.
Diesel engines to be fitted on resilient mounts of suitable size.
The propulsion system shall be designed and installed in accordance with manufacturer recommendations and guidance. The Builder shall obtain certification letters from the manufacturer, verifying that the particular equipment installed on this craft is in compliance with all manufacturer requirements.

241 Propulsion Reduction Gears

Reduction gearbox
Two (2) gearboxes, make ZF, type 3050 A, in accordance with ZF requirements for pleasure duty, single speed with transmission ration suitable for driving the propellers.

242 Propulsion Clutches and Couplings

Clutches and couplings
To avoid undue vibration and noise engines and gearboxes will be coupled with a proper size visco-elastic joint; between shaft and reduction gear will be fitted a thrust bearing and main engines and other rotating machinery will be elastically mounted with proper resilient mountings, make VULKAN or similar.

243 Propulsion Shafting

Shaft line
Two (2) shaft-lines to include: propeller shafts, coupling flanges, stern tubes, shaft brackets and water lubricated shaft seals.
Intermediate support bearings and joints, if required, to be provided as per anti vibration and torsion results study.
Copper carbon brushes will be fitted to the propeller shafts for eathing.

245 Propulsors

Propellers
Two high skewed, 5-blades propellers, made in Nibral or in other material as requested by classification societies will be provided. Each propeller will be statically balanced. Make CJR or similar.

252 Propulsion Control System

Engine monitoring and alarm panels
The propulsion monitoring and control system will be in general compliance with the main engine supplier requirements, showing:

- Rev. counter
- Hourmeter
- Voltmeter
- Cooling water temperature and pressure
- Engine oil temperature and pressure
- Gear oil temperature and pressure
- Exhaust gas temperature
- Sound/visual alarm for engine water temperature and engine oil pressure
- Alarm history.

Engine control panels

Main control panels will be located in engine room, for engine start/stop, alarms and servicing. Monitoring and alarm panels will be installed in wheelhouse.
One panel with “emergency STOP” command will be fitted in the outside harbour manoeuvring area.

259 Uptakes (Inner Casing)

Exhaust system
Each exhaust will have a separate line to the bottom. Where necessary, big radius turns will be used to limit the backpressure. The exhaust gas system shall be of the seawater injection type into the exhaust gases at the interface point with the GRP bottom outlet. Seawater shall be used for the cooling of the exhaust gas, the reduction of emission of harmful components to the atmosphere from the exhaust gas and to increase the safety on board the vessel.
The water injection will also reduce the noise level of the exhaust gas improving the exhaust system efficiency. The surface temperature of the exhaust gas ducting system shall not exceed 70° at the outlet. Material used in all exhaust gas ducting will be steel 3mm, 304L.
A vibration damper will be installed between engine and exhaust duct and between exhaust duct and underwater discharge, to prevent vibrations. Bellows will be installed where necessary into the running pipe. The whole exhaust will be stiffened at hull structures with resilient hangers to reduce noise transmission. Particular care to be taken with the thermal insulation of the ducts and with the protection from high temperature of the exhaust connections.

300 Electrical Plant

General requirements
The whole of the electrical installation will be designed, installed and tested in accordance with the Classification Society requirements and will be of a type proven satisfactory for marine use. The installation will be splash proof in the interior and totally waterproof at the exterior. All cables will be numbered and marked on a proper drawing. All the metal frames for the panels, sub-panels, electrical motors, the electrical equipment in the galley and all the AC equipment shall be earthed.
The performance/rating of electrical equipment that will be determined on the basis of:

- Sea water temperature <32 °C
- Engine room ambient air temperature <45 °C

Consideration will be given, in the selection of electrical/electronic equipment, to the ambient temperatures to be encountered when the Yacht is not in use and without power. Care will be taken with the selection and location of electrical equipment to ensure adequate protection against damage in service from water, steam, oil, humidity, vibration. Equipment should be arranged so as to facilitate easy access for maintenance.
Details of the entire system shall be discussed and reviewed during the Construction Drawing Approval process. Such review shall include load balances, shore power lines, battery banks capacity, charger capacity, switchboard specifications, frequency converter capacity and all other system main issues.

Distribution boards to must have an appropriate enclosure.
Each individual circuit to be protected by miniature easy access case circuit breaker.

304 Electric Cables

All cables used will be in accordance with Classification Society requirement and suitable for marine service. In general, for power circuits, cables will be insulated and provided with a sheath of an appropriate material with long time fire resistance.
Cables within the hull area will be installed on galvanized steel tray and secured with plastic/metal cable clips.
Where cables penetrate watertight bulkheads or decks, the watertight integrity of the bulkhead or deck will be preserved by use of watertight single or multi-cable glands.
Cables glands far equipment terminal boxes will be suitable for the reception of wire braid protected cables. Types of gland shall be discussed with Owner representative.
It will be the responsibility of the Builder to ensure that all cabling and equipment in the Yacht is screened or suppressed, as necessary, to minimize the interference with operation of navigation and communication equipment to a level in accordance to the Regulaments.

306 Voltage

The system will have the following rated voltage:
- 400V, AC 3-phases, 50 Hz, for main electrical power, for appliances and various.
- 230V, AC 1-phase, 50hz, for main electrical power, for appliances and various (taken from 400v system)
- 24V, DC, from service battery, for lighting, electronics, control systems and alarms.

311 Ship Service Power Generation

Generator sets

Two (2) diesel generators, make KOHLER or ONAN, rated 55 kw + 70 kw, 50 Hz @ 1500 RPM will be provided, starting 24V DC.
Diesel generator fitted with soundproof casing.
The diesel engine shall be equipped with original heat exchangers, water cooled exhaust pipes and flexible engine mounts as well as a sea water pump of self-priming, centrifugal design.
All electrical equipment on the diesel engine, such as starter-motor, alternator and all sensors will be fully insulated.

Shore Power connection

One (1) 90A, 400V AC 3-phases shore power connector shall be installed in aft maindeck area, with a switch in an insulated junction box, (waterproof IP 65) in accordance with EEC regulations.

Isolation Transformer

One (1) 88kvA isolation transformer will be installed on shore power line for ship protection.

313 Batteries and Service Facilities

Batteries
The accumulators, maintenance free, will be installed on board and divided as follows.

Service batteries, make SONNENSCHEIN or similar, composed by 2V gel units:
- two (2) service battery banks (800Ah C20 + 800Ah C20)
- one (1) emergency battery bank (800Ah C20)
- one (1) radio battery bank (200Ah C20)

Starting batteries, make HAZE or similar, composed by 12V agm units:
- for each main engine, one (1) starting battery bank (262Ah C20)
- for each genset, one (1) starting battery bank (262Ah C20)

314 Power Conversion Equipment

Battery chargers and inverters
Battery chargers for all the batteries will be, for example, as follow:
- two (2) battery chargers dedicated to service batteries
- one (1) battery charger dedicated to emergency batteries
- one (1) battery charger dedicated to main engine batteries
- one (1) battery charger dedicated to genset batteries

The battery systems will be normally charged by the diesel engines alternators.

332 Lighting Fixtures

Deck lighting
External lighting, composed by recessed watertight led lights (spots or linear lights), will be provided in all external areas including: fore cockpit, aft cockpit, stern beach area, side passageways, mooring areas, upperdeck terraces.

Underwater lighting
Onoard arrangement for potential installation of underwater lighting system (not included).

400 Control, Navigation, Surveillance

412 Data Processing Group

Data network system
System to be composed as follows, or similar:
- PEPLINK Router with 4G connection (two antennas) and WiFi Port (two antennas)
- Sliding/rotating rack unit 60x60
- One (1) switch 48 ports, UBIQUITI NETWORKS or similar
- Ten (10) PoE access point to cover all vessel's areas, UBIQUITI NETWORKS or similar
- UPS 1 Kw, APC or similar

421 Non Electrical / Non Electronic Navigation AIDS

Magnetic compass
One (1) permanent magnetic compass, capable of compensation for deviation, to be fitted in front of the helmsman, in wheelhouse, provided with lighting, make RIVIERA, or similar.

422 Electrical / Navigation AIDS

Navigation lights
Navigation lights to be installed in accordance with current international rules for the Prevention of Collision at Sea (COLREG 72). Lights of type approved by the Certifying Authority will be LED, make LOPOLIGHT or similar.

423 Electronic Navigation Systems

Navigation system FURUNO

Two (2) display touch 24", HATTELAND HD24T22 or similar
navigation system NAVNET black box with internal echosounder
radar antenna X-Band DRS6A 6kw
transducer B744VL
control unit MCU-005
GPS antenna GP330B
MEGAWIDE Electronic Chart

Miscellanea

Ethernet hubs
NMEA 2000 hubs
PSU Rectifiers (DC 24v, AC 230v) FURUNO

431 Internal Telephone Systems & TV CC Systems

Intercom

Loudhailer FURUNO LH-5000 to be installed in Wheelhouse
Five (5) speaker ISP-5000 to serve: maindeck external maneuvering area, stern technical area with emergency steering, engine room, Captain's cabin, crew mess

CCTV

System to be composed as follows, or similar:

- HD digital video recorder
- One (1) PTZ camera on mast
- Six (6) cameras for external areas: one (1) in maindeck fore area, two (2) in maindeck side passageways, two (2) in maindeck aft area, one (1) upperdeck aft area
- Six (6) cameras for technical areas: two (2) in engine room, one (1) in technical room, two (2) in garages, one (1) in stern technical area
- Network switch POE
- Remote control in Wheelhouse, view on dedicate display touch 24", HATTELAND HD24T22 or similar

SAT-TV system

Satellite TV antenna, INTELLIAN T80W (dish Ø83cm)
LNB worldwide
control unit (rack mount)
Multiswitch
UPS

Miscellanea

Ethernet hubs
NMEA 2000 hubs
PSU Rectifiers (DC 24v, AC 230v)
Cables

434 Entertainment Systems

A high quality audio/visual system will be provided, to be composed as follows, or similar:
- AV server, rack mount, QNAP or similar
- External watertight 8" Speakers, make BOWERS&WILKINS or similar: two (2) in maindeck fore area, two (2) in maindeck aft area, four (4) in beach area, two (2) in Owner's terrace
- Internal speakers, make BOWERS&WILKINS or similar: two (2) in each guest cabin, esix (6) in saloon, two (2) in beach bar, four (4) in owner's cabin, two (2) in owner's bathroom
- TVs for owner & guest areas, make LG or SONY or similar: one (1) 55" in Owner's Cabin, one (1) 70" in Saloon, one (1) 42" in beach bar, one (1) 42" in each Guest Cabin
- One (1) tv 42" for crew mess, make LG or SONY or similar.
- Audio amplifiers in all external areas, guest & Owner's areas (not in crew area), with App for Android and Apple.

A home automation system will be provided to locally control lights and curtains/blinds of all guest areas, Owner's areas, external areas (not crew areas nor technical areas).
The system will be controllable also with an App for Android and Apple.

436 Alarm, Safety, and Warning Systems

Watch Alarm System FURUNO
BR-500 control unit
BR-520 processor unit
BR-560 motion detector
BR-570 flash beacon
BR-530 timer reset
Four (4) BR-540 in crew cabins and captain's cabin

Smoke/fire detection
Smoke and fire detectors will be installed in the cabins, galley, saloon and engine room.

437 Indicating, Order, and Metering Systems

Rudder indicator

440 Exterior Communications

AIS FURUNO
AIS FA170/GPA017S
transponder FA-170-E-5-GPA
VHF & GPS antennas

Radio VHF and FURUNO
VHF FM8900S, DSC, Class A, installed in Wheelhouse
VHF FM8900S, DSC, Class A, installed in crew area
Antennas

V-SAT
Satellitar V-sat INTELLIAN V80G (dish Ø83cm)
control unit (rack mount)
UPS

Navtex / weahter
FURUNO NAVTEX NX700B with antenna
Weather station AIRMAR WX220

Miscellanea
Ethernet hubs
NMEA 2000 hubs
PSU Rectifiers (DC 24v, AC 230v): 1x PR-850
Cables

491 Onboard Monitoring and Automation

The system is designed to acquire data from several onboard sensors and equipment, show them on dedicate displays, produce alarms and automate certain activities.
The system is composed by several PLC nodes installed inside electrical panels, connected through a network backbone. Each node is connected to the sensors/equipment in the related area of the vessel, ad can operate independently from the others.
Four (4) display touch 15" will be installed to control the system: two (2) in wheelhouse, one (1) in captain's cabin, one (1) in crew mess.

500 Auxiliary Systems

Each system will be provided with sufficient valves and cocks to allow adequate control of flow and to provide satisfactory isolating for maintenance of equipment, piping components and instrumentation. International standard shore connections will be provided for the filling of fuel and water and for the discharge of sewage. Relief or safety valves will be provided as necessary to protect system from damage due to excessive pressure. Systems will be designed such that pipe lengths and fittings can be removed with minimum disturbance to other equipment, system or fittings.

503 Pumps

All pumps, if not specified otherwise, will have a bronze body and stainless steel axis. Anodes will be installed before and after the pumps, where applicable.
All pumps and rotating machinery will be installed on antivibration mountings.

505 General Piping Requirements

The piping will be run with minimum number of bends as practicable. Piping will be so designed to allow for stress due deflection due to Yacht's working and to be adequately protected against mechanical damage.
Pipes, valves, cocks, joints, etc. which will be fitted throughout the vessel will be subject to acceptance of the Classification Society.
Piping and fittings used to be in accordance with maker's standards, subject to Classification Society approval.
The bulkhead piece in way of insulated work will have sufficient length to permit access to the joint without disturbing insulation.
Bending work on pipes will be by cold bending (press-fit) or high frequency induction heating or by welded fabricated bends.
Pipes are not to be bent to a centre-line radius of less than 1.5 times the nominal diameter of the pipe.
Small radius bending may be fabricated with welded elbows, having a radius of approximately equal to the nominal diameter of the pipe.
The bending radius of copper pipe will be about 3 times the nominal diameter.
Where galvanised steel pipes are used, all work on the pipe will be completed before the pipe is galvanised.
Galvanising destroyed by welding on board will be touched up with zinc rich paint.
Acceptable supports and hangers will be used to prevent undue stress on pipes and fittings by the normal movement of the on-board plant.
Particular care will be taken to ensure cleanliness of the system. Plugs and seals shall be used over opened pipes when not being worked upon.

All piping will be securely fixed, preventing vibrations.
All rigid piping will be flanged or with "Straub" type connections to allow easy disassembly.
The tanks, valves and manifolds are to be built in accordance with the standard table of ddp of metallic material.
Correct functioning of the systems to be insured even with the hull at 10° angle of heel.
All the installed pipes will be appropriate for their use, according to the Flag Administration and Classification Society.
All the pipes will be fixed to the vessel structure by appropriate means to prevent vibrations and possible breaks.
The penetration of pipes through watertight bulkheads shall comply to the requirements of the Classification Society.
All the pipes with direct connection to the sea (bilge, exhausts and similar), shall comply to the requirements of the Classification Society and certified.

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 black steel.
All the pumps and other components will be installed with silent blocks 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 applied. Direction of the arrow will indicate flow direction and colour of the arrow or valve the type of fluid with a minimum distance of 600mm .
Continuous reading tank's levels with 4-20 mA output (VEGA or equivalent) will be installed

511 Compartment Heating System

Heating system
The heating system is part of the air conditioning system, which is composed by two units make CONDARIA or similar, capable of a rated heating capacity of 225.000 Btu/h each (calculated at 0° external temperature, 70% external relative humidity, 15° seawater temperature; different conditions may produce lower capacity).

512 Ventilation System

Engine room ventilation system

This system is designed to ensure a maximum average engine room temperature of 45°C.
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 totally internally silenced. All fans will be installed on anti-vibration fittings. All fans are frequency controlled.
The combustion air for the diesel engines is drawn from the engine room according to engine manufacturer recommendations. Fans will be switched off from E.R. fire suppression system according to Classification Society approval.
The system will be provided with automatic control system, with pressure/heat sensors and engine rpm measurement, to keep a light constant pressure in the E.R.
Make GIANNESCHI or similar.

Demister filters (make MUNTERS or similar) will be installed on air intake ducts. Fire dampers are
fitted to close the air ducts in case of fire.
The position of inlets and outlet have been defined in order to have a proper air circulation.
All system shall comply with registry rules.

Galley additional ventilation

The extraction system for the galley will have a separated fan located in the galley area with the outlet on the deck coaming or on superstructure stbd side, away from guest areas.
The system should be provided with appropriate coal filters and a firedamper will be fixed in the extraction duct.

Ducts, air inlets, filters and valves

In general, the ducts and air inlets will be made of PVC, with the exclusion with that one related with the fire suppression system.
All the air conditioning and ventilation ducts will be insulated with rubber neoprene, rock wool or similar material of a suitable thickness.
Quick shut down fittings manual or automatic, filters, nets, grids and valves shall be installed where necessary.
The air inlets will be positioned in such way as to avoid the entrance of contaminated fumes.

514 Air Conditionig System

The system is designed with capacity to achieve ideal temperature-humidity conditions in summer
environmental conditions in Mediterranean sea, according to the following parameters:

- Outside temperature 35°C at 65% Humidity
- Inside temperature 23°C
- Sea temperature <28°C

The system can be upgraded for tropical sea condition (OPTIONAL) according to the following
parameters:

- Outside temperature 45°C at 65% Humidity
- Inside temperature 23°C
- Sea temperature <32°C

To permit these parameters will adopted a system with sea water circulation treated with centralized unit.
The circulation system will be fill up with ethylene glycol. The main components will two centrifugal pumps and suitable piping rubber thermally insulated to supply the fan coils for air heating / cooling.
In any ambience a remote thermostatic controller will be positioned. The remote controlling will manage the fancoils speed.

General description

The air conditioning system will work on a loop base concept.
At the same the air condition is a dual effect machine, and we can consider to reverse the refrigeration capability.
The fan coils were chosen in number and type depending on the criteria of performance, size and weight compatible with the relevant destinations.
The change of temperature in the various rooms will be constantly monitored by the thermosta (one or more for each room).

Conditioning units:

Two (2) air conditioning unit modular model functioning both hot and cold, indirect-expansion (with circulation of treated water), up to 180,000 BTU each, heater pump, make CONDARIA or similar.

Pump fresh water (fan coil) and sea water:

Two (2) centrifugal electric, open impeller, for fresh water circulation
Two (2) centrifugal electric, open impeller, for continuous sea water

Fan coils circuit

Two (2) Expansion tank in steel 20 lt.
Air separator, including gauge circuit fan coil, air bleed valve and automatic centralized water filling with non-return valve.
Insulated manifold for parallel chiller on fan coil circuit.
Fancoils in each internal area, made of painted aluminium white, insulated internally.

UTA

System of pre-treatment of the outside air (U.T.A.) for all internal accommodation areas of all decks (excluding Beach Bar and technical areas), make CONDARIA or similar, in synergy with the extraction system. It has the purpose to provide an air supply and extraction to grant an adequate air exchange. Each U.T.A. regardless of the potential, it is equipped with a barrier with high filtering power for retaining solid particles present in the air, a radiating element connected to the circuit of central conditioning through dedicated line, a high prevalence centrifugal fan at variable speed, and a digital controller for monitoring the temperature of the air introduced into the environment.

Air extractor

Air extractors that are intended to evacuate from the interior of the boat a variable amount of air in order to ensure (in synergy with openings and/or the UTA system) the complete spare of air changes per hour required.
Extractors for accomodations areas are located in technical volumes and/or insulated boxes, to ensure a low-noise functioning.
Extractions outboard for accomodations areas are located in topmost parts of maindeck and upperdeck superstructures leves (eventually in the mast).
Galley has a dedicate extractor.
Technical spaces have independent extractors, with outlet on hull side or on upperdecks.

517 Auxiliary Boilers and Other Heat Sources

Hot water system
Two (2) heaters of capacity of 250 litres and 3+3 kW will be located in the engine room or in other technical spaces. All the heaters will work electrically.
A closed circuit, with circulation pumps, will be arranged to provide instant hot water.

520 Sea Water System

The sea water system will be composed of two sea chests giving sea water to a distribution manifold. The sea chest filters will be of approved type for their installation under sea waterline. The manifold will supply the main engines, generators, firefighting system, air conditioning system, sewage plant, grey/black tanks cleaning pump and any other equipment as needed. All pipe lines carrying sea water to be made of CU-NI 90/10 (with min. 1% iron), with flanged or 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 common manifolds.
All outboard discharges will have security valves and goose necks with siphon break pipes as required from registry.

521 Fire and Flushing (Sea Water System)

A firefighting system will be provided in accordance with Classification requirements. The main line will be connected with one pump, make GIANNESCHI, powered by 400v AC 3ph system. A bypass valve system allow using also the bilge pump as fire-fighting pump in case of need.

An additional self-priming battery-powered pump GIANNESCHI, or other devices, will satisfy the emergency conditions; switch valves located outside engine room.
Five (5) hose boxes and hydrants guns will be fixed on board to allow fire extinguishing; at least one (1) will be provided with fast fit hose connection.
One (1) international fire-fighting flange will be installed on maindeck.
Pipes according to the Flag Administration and Classification Society..

523 Washdown 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
- Stern platform starboard and port side, or inside garages
- Maindeck fore and aft
- Upper deck

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.
Firefighting hoses must have a length more than 15m.

Three (3) dedicated fresh water washing connections for deck washing will be provided.
Location of washing stations normally will go together with the hydrants guns agreed during Construction Drawings Approval process.

526 Scuppers and Deck Drains

The open cockpits on deck will have adequate drainage capability of self-draining in upright, heeled and in sailing condition, according to registry rules.
There will be scuppers installed port and starboard, in suitable position with drain overboard above the DWL, according to registry rules.
All the scuppers/overflow discharges will be made through screw down non return valves with open/closed position indicators.

528 Plumbing Drainage

Grey & Black water system

The grey and black water system will be composed by a 1500 lt grey water tank and a 1500 lt black water tank, located in the engine room.

Sewage system general

When a gravity system is not applicable, sinks and showers will run to proper collecting reservoirs, make TECMA, type Sanisplit or similar, and then be discharged through the waste system into proper grey water tank.
Tank vent pipes will be brought to the highest point of the upperdeck and will be provided with carbon filter. Besides the line shall be provided of one anti-smell filter (Matrix). Galley discharges will directly go to the grey water tank.

Ten (10) marine WC, integrated with multifunctional bidet (or with external bidet, as per General Arrangements), will be provided with inlet solenoid valve and outlet waste pump to black water tank, make TECMA or similar.

A sea water high pressure cleaning system will be arranged connect to service pump.
The black water tank will be unable to discharge automatically outboard.
An international flange discharge will be fitted in a maindeck locker.
All the necessary non-return valves shall be installed, preventing black water and gray water to return to the system.
The pipes will be polyethylene (PEH) o polyvinylchloride (PVC).
Adequate filters in the drains of sinks and showers shall be installed to avoid solid objects entering in the discharge pumps. Also a non-scent filters shall be installed on the return of grey waters.
The Tanks will have separate vent line running to superstructures. To prevent smells the vent of these tanks will be taken through carbon filters.

529 Bilge Drainage and Liquid Ballasting System

Main bilge system
The bilge arrangement to be in accordance with the requirements of registry and classification. Each watertight compartment will have one ore more strum boxes connected to bilge manifold main line, which passes through the watertight compartments from the main and emergency bilge pumps.
Each suction line will be provided with a valve with electric actuator (with remote control in wheelhouse and manual local control); each suction line will be provided with a strum box with a non-return valve, with an easy access for inspection and cleaning.
Pipes according to the Flag Administration and Classification Society.
The main bilge pump, make GIANNESCHI, powered by 400v AC 3ph system, is installed inside engine room. A bypass valve system allow using also the fire-fighting pump as bilge pump in case of need.
The emergency pump, make GIANNESCHI, powered by 24v DC system, is installed outside engine room. A group of valves is installed outside engine room, to switch from main pump to emergency pump.
Pumps will be fitted with vacuum and pressure gauges, and capacities are calculated to meet requirements of registry and classification.

Each watertight compartment is provided with alarm system composed of level gauges and sound/visual monitoring panel in wheelhouse and sound alarm in crew mess. Level gauges also
activate automatically the bilge system.

The forepeak bow thruster compartment to be drained by dedicated bilge pump and an emergency hand pump, while the forepeak chain locker compartment has gravity overboard drainage.

Ballast system
Two (2) structural tanks in the engine room and a structural tank in the bow area are provided, in order to manage the sea water ballast to maintain the proper static longitudinal trim and transversal heel. Water flow will be managed by remote-controlled electric-driven valves (with local manual override).

530 Fresh Water Systems

Fresh water structural tank, with capacity of 5000 lt, to be built integral with the hull structure and to be fitted with sounding devices and appropriate calibrations. Provision to be made for access to all parts of the interior of the tanks for cleaning, maintenance and repairs.
Tank will have a system of internal coating appropriate for drinking water (Jotun specifications or similar).
The tank will be thoroughly cleaned prior to filling or connecting to the system. Fresh water to be used for hot and cold water system and sanitary purposes throughout the accommodation. The tank will vent above the bulkhead deck with atmospheric valve or similar device. The load of fresh water to the tank will be made through mesh 20 micron filters and a charcoal filter.
One fresh water pressure system double pump, make GIANNESCHI, 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.
The hot water will be supplied as described in point 517.
Sufficient manifolds and valves will be located in order to correctly isolate the different areas of the ship.
All hot water pipes will be lagged and insulated.
Carbon filters in line will be use for the supply of fresh water for all sinks.
The washing machine will be installed on silent blocks to reduce to minimum the vibration on board.
Wheel house glasses will be rinsed with fresh water.

531 Distilling Plant

Water-maker
Two (2) water-makers, make SCHENKER or similar, with approx. capacity of 150 litres/h each, that give supply to tank through the inlet manifold. Complete with pre-filter on linlet, UV sterilizer and charcoal filter on outlet.
To be mounted on silent blocks to reduce vibrations on board.

541 Ship Fuel and Fuel Compensating System

The diesel oil system will be composed of the following elements.
One structural tank with approx. total capacity of 38.000, litres plus two daily tanks with approx.
Total capacity of 3.200 + 3.200 litres.
The vent pipes must be larger than the inlets and increased as they join for a common vent line.
Dailt tanks will be made in stainless steel, and will also serve as overflow tank for the diesel purification circuit.
All tanks will have inspection manholes and electronic sounding system. Daily tanks will also have visual level gauge.
The sounding system of the tanks will have indicators in wheelhouse and connection to the system of monitors through level of continuous reading (VEGA or equivalent).
The suction points in the tanks will be approximately to 50 mm above of base of the tank.
There will be a primary 400v AC 3ph electrical pump, a secondary 24v DC electrical pump, and a hand pump to secure the transfer of tanks and filling of the daily tank.
One diesel oil separator of 760 lt/ hr capacity, make ALFALAVAL model MIB 303, or equivalent will be supplied and installed between the main tanks and the daily tank.
Four (4) filters, one for each consumers (engines and gensets), make RACOR or SEPAR or similar.

Return lines of fuel to the daily tanks. All pipes will be black steel, or another material approved by Classification Society for this service.

Fuel inlet system

Fuel supply is to be by four (4) deck fillers (two for main tank and two for daily tanks) located in two (2) lockers on port side and stbd side of superstructure near side passageways. The filler to be equipped with fuel intake, vent pipe and draining for incoming water. Fuel intake to be labelled or engraved in accordance with Classification Society.

555 Fire Extinguishing Systems

Fixed gas fire-fighting system

A fire suppressing system will be installed, capable of extinguishing fires in the machinery space compartment and designed on the maximum capacity of this spaces and taking into account the air volume as well as the normal cubic meters of the air contained in the receivers. The system will be operated from outside the engine room.
From the same position it will be possible to switch off all the equipment as required by the Classification Society before releasing the agent inside the engine room. In case of automatic release of the extinguishing agent, the system will be capable of shutting off main engines, diesel engine generators and engine room ventilation system. Monitoring and system override panel to be fitted in the wheelhouse.
Suppressing agent will be CO2 or NOVEC 1230 or FM200.
Machinery spaces will be be provided with a smoke/fire detection system, divided in loops approved by the main surveying register.

Portable extinguishers

Portable fire extinguishers to be fitted on suitable supports next to the specific areas, in accordance with Classification Society requirements.

561 Steering Control Systems

General

One single wheel will be installed in the wheelhouse to drive the proportional servo assisted hydraulic steering system connected to two rudder blades. Make TWINDISC or similar.
Steering gear with two hydraulic cylinder connected to rudder stocks. Rudder angle to be ±35° with mechanical stoppers on rudder tillers at ±37° degrees.
All steering stations will have a rudder angle indicator, approved by Classification Society.

Automatic pilot

An automatic pilot will be installed and be integrated to work with the steering system, make SIMRAD, model AP70, plus remote keypad QS80 for pilot seat armrest.

562 Rudder

General

Two (2) twisted type rudder blades, of approx. 0.75 m2 area each, made of AB2, stainless steel or allowed metal alloys and rudder tubes made of stainless steel, GRP or other allowed metal alloys as per Classification Society request.

565 Trim and Heel Systems

Trim tabs system

To reduce the drag and to trim the boat under the different loads and sea conditions a trim tabs system with proper size will be installed on the transom. Make TWINDISK, model MY4000/4-24 or similar.

568 Manoeuvring Systems (Thrusters)

Electrically driven bow-thruster, with:
- Fiberglass tunnel Ø412, laminated to the hull
- Electric motor with two 3-blade propellers, 700kgf thrust, make SIDEPOWER or similar.
- Two (2) operating panel with joystick, for on-off and proportional control; main control in wheelhouse and one outside for harbour manoeuvring

Electrically driven stern-thruster, with:
- Fiberglass tunnel Ø386, bolted on transom.
- Electric motor with two 3-blade propellers, 460kgf thrust, make SIDEPOWER or similar.
- Two (2) operating panel with joystick, for on-off and proportional control; main control in wheelhouse and one outside for harbour manoeuvring.

581 Anchor Handling and Stowage Systems

Chain locker

Side parts of fore peak are arranged as separate chain locker. Double plies of reinforced rubber material used as lining material for the inner surface of the locker.
Suitable coating system to be employed.

Anchor windlasses

Two (2) electrically driven vertical anchor windlasses will be provided, make ITALWINCH model SUN-E, or similar, with a power of 5.5kw 400v AC 3ph, with AISI 316 L drum and shaft.
Provision to be made to manual recovery of anchor in the event of electric motor failure.
The speed and direction will be controlled by a remote control complete with a cable of enough length to the bow manoeuvring; windlasses have proportional control.
A chain stopper with polished stainless steel hand-wheel will be fitted.
A set of stainless steel devil's claws with stainless steel adjusting bottle screws will be provided for each chain.
Each windlass will be mounted on GRP reinforced foundation. Around the foundation will be stainless steel scuppers to above the waterline.
The chain stopper with rollers and devil's claws will be installed on one foundation plate, which will be mounted on the windlasses foundation.
The windlasses will be approved by the Classification Society.

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 wash down system will be installed (integrated in the bilge/fire fight system).

Anchor and chain

Two (2) steel anchors, super high holding power, pool type, 219 Kg weight each in compliance with Registry rules, will be installed.
Make POSIDONIA or similar.

Chains: 100 meters plus 120m, 16 mm size, grade Q2 steel, 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 approved by Classification Society. Connection between anchors and chains to have swivel shackle.

582 Mooring and Towing Systems

General

Stainless steel mooring cleats, with appropriate scantling approved by Classification Society, make SOLIMAR or similar, will be installed on the deck; four (4) in the fore area (4) in aft areas.

Fairleads

Polished stainless steel fairleads will be installed, to serve all cleats.
Two (2) additional fairleads, with horn shaped built-in bollards or two (2) up-down cleats, will be installed in side passageways at midship.

Mooring lines

Four (4) electric mooring capstans, make ITALWINCH model MILOS, or similar, with a power of 4kw
400v AC 3ph, to be fitted on fore deck and aft deck, with motor below deck and foot operated
flush mounted push button.
Lines' length and diameter according to Classification Requirements (Equipment number) but in
any case not less than:

- Four (4) mooring lines, each 25 m length, 30 mm diameter nylon, with eye on one end.
- Two (2) mooring lines, each 15 m length, 30 mm diameter nylon, with eye on one end.
- Three (3) mooring lines, each 85 m length, 30 mm diameter nylon, with eye on one end.
- A towing line of floating type in polypropylene of appropriate length as required by Classification Society, 30 mm of diameter about.

583 Handling and Stowage System of Tenders, Toys and Liferaft

The tender garages will be able to fit up one diesel tender 4.15mt long and several toys. All these items are owner supply.

Crane

One crane will be provided for tender and toys handling in port side garage only; make OPACMARE or similar.

Garage door hatches hydraulic pistons

An advanced hydraulic system will be studied and provided for garage hatches opening; make ALLUFER TEMPESTA, or similar. The system will be equipped with 2 hydraulic pistons on each door, dedicated hydraulic unit, calibrating sensors, remote control and emergency shut-down and manual pump for emergency opening.

Life rafts and safety equipment

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

- One (1) Life Rings with automatic light/smoke device, with name and hailing port engraved, fitted recessed in the maindeck's side or upperdeck's side or inside storage
- Two (2) Life Rings with automatic light, with name and hailing port engraved, fitted recessed in the maindeck's side or upperdeck's side or inside storage
- Two (2) Life Rings with buoyant line, with name and hailing port engraved, fitted recessed in the maindeck's side or upperdeck's side or inside storage
- Life jackets for children and adults, as required, will be provided. Solas approved type.
- Parachute flares and smoke signals.
- E.P.I.R.B unit fitted on upperdeck,
- Two (2) SART units fitted in wheelhouse
- Two (2) 10-pax life-rafts, flat-shaped rigid containers, with hydrostatic release and survival kit (Solas approved package A).
- One (1) searchlight installed on mast.

600 Outfit and Furnishing

601 Stainless Steel Furnishing

General
The following furnishing will be produced in stainless steel and installed aboard according to GA position and an appropriate scantling and dimensioning, if required, approved by Classification Society. Following items list to be considered preliminary:

- Anchor pocket covering
- Anchor side protective plate
- Bulb protection cover
- Maindeck handrails
- Upperdeck handrails
- Internal handrails, where necessary
- Fore, midship and aft fairleads
- Maindeck pillars
- Mast for radars and antennas (see 171)
- Interiors steel furnishing
- Exteriors steel furnishing
- Various protective/adaptive plates

611 Hull and Deck Fittings

Fenders

Fenders will be supplied by Owner.

Flag pole

Flag pole on upperdeck, made of stainless steel or carbon, make SWISS CARBON or similar, 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.

621 Non Structural Bulkheads

Cabin subdivision panels
Non-structural panels made in okumè sandwich with insulation core make BELLOTTI Laricross® and Lariphon® as needed (or equivalent). Solid timber frames in correspondence of doors, openings and corners. Construction finished with wood veneer, upholstered with leather and fabric or lacquered finish, as per the agreed interior decoration.

622 Floor Plates and Gratings

Cabin sole

Floor PVC Infusion laminated

Engine room floor plates and gratings

The flooring in the engine room shall consist of chequered aluminium sheets 3mm thick, built on aluminium modular strut profiles, arranged in such a way as to support the weight of the heavy machinery without being deformed.
The grids and flooring shall be easily removable for maintenance purpose.

623 Ladders and Gangways

Automatic beach stepladder

Automatic retractable telescopic and rotating type, hydraulically operated, fitted on transom, central position, make OPACMARE model 1102.46. Equipped with double handrails and stanchions in stainless steel AISI 316. A remote control will be supplied to operate the in-out and up-down movements; control panel in locker with door recessed in the aft area.

Emergency swimming ladder

A swimming ladder, manual, made in stainless steel and teak will be provided and fitted in the fixed part of the aft platform.

Transformer (OPTIONAL)

Model 3384.40 XL, 4 steps, make OPACMARE, with structure painted in black.
A remote control will be supplied to operate the in-out and up-down movements; control panel in locker with door recessed in the aft area.

624 Non-Structural Closures

External doors

Door will be built and installed according to Classification Society; removable coaming of proper height will be provided where necessary.
The following doors will be installed:

- A linear door for aft saloon access, weathertight, make OPACMARE or similar
- A linear door with inflatable gasket for fore saloon access, weathertight, make OPACMARE or similar
- A linear door for owner cabin access, weathertight, make OPACMARE or similar
- A double pantograph door for beach bar access, watertight, make OPACMARE or similar
- Three (3) manual pantograph doors, watertight, one for lateral saloon access and two for wheelhouse access.

Hatches

Means of escape and other hatches for technical areas will be provided, fitting with the Classification Society requirements.

Engine room door

The engine room is provided with an external watertight and fire-rated door.

625 Airports, Fixed Porthlight, and Windows

Hull and decks windows
Natural light will be provided to the living spaces under maindeck through windows, flush to the hull surface. Those windows will follow the outboard design plan and normally will be of fixed type.
The windows of the superstructure will provide natural light to living area. The wheelhouse front and side windows will be clear.
All glass panels will be of tempered and/or stratified reinforced glass, of adequate thickness according to Classification Society and Flag requirements.
All glass panels will be glued to the window frames as per Sika standard approved by Classification Society. No window is openable.

631 Painting

General

Paint to be suitable gelcoat and vinyl ester matrix system. The paint system must comply with the specifications stated by the supplier. Paint is to be sprayed and each layer hand polished if required.
The entire hull shall be faired with the best quality materials when superyacht levelling standard is not achieved with gelcoat.

Painting and finishes: outside topsides

External surfaces above waterline is finished in gelcoat; can be painted (OPTIONAL) with primer plus top coat, DUPONT MARINE or ALEXSEAL or similar. Colour to be defined.

Painting and finishes: outside bottom

The bottom hull under waterline and appendages shall be perfectly smooth and fair. An antifouling coating system shall be applied to the underwater body. The antifouling system shall consist of a primer and an anti-fouling paint. At least two coats of INTERNATIONAL Interspeed Ultra (or equivalent) paint shall be applied.

Painting and finishes: inside hull

The inside of the hull will be completely painted without fairing prior to fitting out.
Finishing colour for internal surfaces shall be poliurethanic white paint for the bilges, the entire forepeak and garage.
The under deck surfaces on sight will be also white; black for the rest of the inside hull.
Care shall be taken in painting the bilges and each of them, according to the kind of liquid contained, shall be treated with an adequate product.

Metal finishing

Metal parts shall be treated as follows:

- Stainless steel: weldings and components to be semi gloss finished.
- Aluminium: to be carefully etched and primed before eventual painting with poliurethanic products, applied in strict accordance with manufacturer's recommendations.

633 Cathodic Protection

Sacrificial anodes and lightning rod
Sacrificial zinc anodes of adequate size and number to be installed to give adequate cathodic protection for a salt water environment.
The ship will be equipped with a lightning rod, in accordance with Registry rules.

634 Deck Covering

Teak deck

Exterior decks and stairs, as per General Arrangement will be planked with special selected high quality quarter sawn aged naturally-grown, farmed Asian Teak of 10 mm finished thickness. The planks with an overall width of 70 mm will be selected of uniform colour and grain and will have a maximum length of 4m. The margin plank will have a width of 50 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 deck will be uniformly gauged out. 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. Where needed, vacuum bagging technology could be adopted.

635 Insulation (Thermal and Acoustical)

General

According to Classification Society and Flag rules.

Sound insulation

All the surfaces (bulkheads, ceilings and shell) will be lined where necessary with adequate soundproofing materials.
The type and characteristics of the sound insulation will be determined on the basis of accurate calculations to reduce the noise (airborne and structural) to the contractual values.
The sound insulation will be described in a 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 high-density paint, MASCOAT or similar, that at the same time reduce sound propagation and provide thermal insulation.

The following main materials will be used:
- Rockwool of different thickness and density
- Composite panel with different core materials
- CDM microelastic material
- Damping materials for hull plating
- High density paint, like MASCOAT or similar.

Insulation of engine room

The insulation of the engine-room will be carried out very carefully so that all surfaces will be covered with white net finishing and continuous white aluminium panels all over the ceilings. Materials in direct contact with engine-room or with surface facing engine-room will be selfextinguishing and will not produce not toxic gases in case of fire.

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.
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 Okumé plywood/rubber panels 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 fitted 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.

640 Interior and Exterior Accomodations

641 Crew Area

The Crew Area means:
- Crew Mess with Laundry area (or separate Laundry)
- Crew corridor
- Crew cabins and bathrooms
- Captain's cabin and bathroom
- Galley
- Storages

Interior Designer for Crew Area will be Maori Yacht.

All materials and accessories selection will be made according to the Shipyard Standard.

All partitions will be made by marine plywood combined with approved insulating material. Decorative materials and fixtures will be mounted on these partitions. All partitions, deck heads and floor supports will be elastically connected to the ship's structure using resilient mountings.

Built-in furnitures will be made of marine plywood panels using a combination of solid wood and veneer. Built in furniture will be made according to the Contractual General Arrangement. Hull sides, superstructures sides and bulkheads will be lined with glued plywood panels, stiffened where required and with removable sections where necessary to access technical equipment or accessories (valves, electrical junction boxes etc.).

Cabinet doors and drawers will have positive latching mechanism where necessary. Small cabinet doors and small drawers will have magnet or stopper. All cabin doors will have key lock (Yale type) on external side, nottle on internal side as per rules. One Master Key set will be provided.

Following decorative hardware will be provided:
- Furniture knobs
- Door handles
- Door stoppers

Ceilings will be made of plywood panels fitted with screwed hidden plates or similar fixings and will be removable where necessary. Panels of linings and furniture will have a balancing and sealing coat on the reverse side, to avoid distortion. Doors which are not fire doors, will be made of double plywood sandwich panels.
Wall linings will be veneer or lacquered, covered with fabric, leather, according to the Interior Designer's specification. Lacquered panels will be fitted in showers and bath walls.
Ceilings panels will be veneer, lacquered, lined with fabric or leather. Satin transparent varnish or lacquer will be selected within the allowance specified in the "Allowance list (10)".
Fabrics and leathers for walls, ceilings panels, furniture will be selected within the allowance specified in the "Allowance list (10)".
Doors which are not fire doors will be painted or veneered, selected within the allowance specified in the "Allowance list (10)". Interior of cabinets will be lined with formica or similar
Storage walls, ceilings, built-in furnitures and doors will be lined with formica or similar.
Vinyl floors will be fitted according to the Contractual General Arrangement.

Polished stainless steel pipe handrails will be fitted on crew staircases and in the corridors where required by the Classification Society.

Internal fit out of cupboards, drawers, etc. will be provided with dedicated storage supports in clear acrylic for the following items:
- Glasses
- Crockery
- Cutlery
- Chinese

The Owner will supply, according to the Owner's approval schedule, a list of all materials to be stored with a sample of each item.
This arrangement will be worked out together with the Owner's Representative.

Mattresses will be provided as per the Contractual General Arrangement; they will be rubber foam, custom made, thickness 150mm, bed covers and synthetic pillow will be supplied for each bed. Mattresses dimensions will be in accordance with rules.
Decorative curtains will be of fabric and vertical folding.

Showers, wash basins and sinks will be provided as per the Contractual General Arrangement.

Taps and bathroom accessories will be provided as per the Contractual General Arrangement, selected within the allowance specified in the "Allowance list (10)".
Isolation valves will be fitted on manifold serving hot and cold waters of each bathroom.

The following taps will be supplied for each bathroom and services areas:
- n.1 Column shower for each shower
- n.1 Mixer for each wash basin or sink

The following accessories will be supplied for each bathroom:
- n.1 Glass holders
- n.2 Towel rails
- n.1 Toilet brush
- n.1 Toilet paper holder
- n.1 Soap dishes
- n.2 Clothes hook
- n.1 Toilet garbage bin.

Domestic appliances will be selected within the allowance specified in the "Allowance list (7)".

The following equipment will be supplied in the Lowerdeck:
For the Beach bar area:
- n.1 Wine cellar
- n.1 Fridge
- n.1 Fridge or freezer or ice-maker
- n.1 Garbage macerator

For the Lobby:
- n.1 Fridge

For the Galley:
- n.1 Induction cooking top
- n.1 Hood
- n.1 Oven
- n.1 Microwave oven
- n.1 Garbage macerator
- n.1 Dish washer
- n.1 Fridge full height
- n.1 Freezer full height

For the Laundry area inside Crew Mess (or separate Laundry):
- n.2 Washing machine
- n.2 Dryer machine

The following equipment will be supplied in the Maindeck:
For the Bar area:
- n.1 Ice maker
- n.1 Wine cellar under the worktop
- n.1 Fridge under the worktop

The following equipment will be supplied in the Owner Deck:
For the Lobby:
- n.1 Fridge

Spotlight, reading lamps, step light will be fitted according to the Shipyard Standard. All lights to be either 230V AC 50Hz or 24V DC. Where required by the Flag State authority or the Classification Society, 24V DC lights will be installed for emergency lighting. All lighting circuits will be protected by circuit-breakers fitted on distribution panels as described in the above section.

642 Owner's Area, Guest Area and Wheelhouse

All materials and accessories selection will be made according to the Interior Designer selections and Owner's approval within the allowances specified in the "Allowance list".

All partitions will be made by marine plywood combined with approved insulating material. Decorative materials and fixtures will be mounted on these partitions. All partitions, deck heads and floor supports will be elastically connected to the ship's structure using resilient mountings. Honeycomb structures can be used if deemed necessary by the Yard in substitution of plywood panels.

Built-in furniture's will be made of marine plywood panels using a combination of solid wood and veneer. Built in furniture will be made according to the Contractual General Agreement. Hull sides, superstructures sides and bulkheads will be lined with marine plywood panels fitted with screwed hidden plates or glued, and with removable sections, where necessary, to access to technical equipment or accessories (valves, electrical junction boxes etc.). Cabinet doors and drawers will have positive latching mechanism where necessary. Small cabinet doors and small drawers will have magnet or stopper. All cabin doors will have key key lock on external side, nottle on internal side as per rule, and Master Key. Decorative hardware will be selected within the allowance specified in the "Allowance list (3)".

Ceilings will be made of plywood panels fitted with screwed hidden plates or glued, and with removable sections, where necessary, to access to technical equipment or accessories (valves, electrical junction boxes etc.).
Panels of linings and furniture will have a balancing and sealing coat on the reverse side, to avoid distortions.

Doors which are not fire doors will be made of double plywood sandwich panels.

Wall linings will be veneer or lacquered, covered with fabric, leather, according to the Interior Designer's specification. Lacquered panels will be fitted in showers and bath walls, except where marble is specified. Ceilings panels will be veneer, lacquered, lined with fabric or leather. Interior of cabinets will be veneered with tanganika, cherry, maple, wengè, lacquered according to the exterior finishing. Satin transparent varnish or lacquer will be selected within the allowance specified in the "Allowance list (1)"Fabrics and leathers for walls, ceilings panels, furniture will be selected, within the allowance specified in the "Allowance list (4)". Doors which are not fire doors will be painted or veneered. Wood veneer type will be selected from the list specified in the "Allowance list (0)".

Floors will be selected within the allowances specified in the "Allowance list (9)". Carpets, if any, will have underlay and will be stretched.

Internal fit out of cupboards, drawers, etc. will be provided with dedicated storage supports in clear acrylic for the following items:
- Glasses
- Crockery
- Cutlery
- Silver ware
- Pantry galley utensils / equipment
- Food items

The Owner will supply, according to the Owner's approval schedule, a list of all materials to be stored with a sample of each item.
This arrangement will be worked out together with the Owner's Representative.

Mattresses will be provided as per Contractual General Arrangement; they will be provided of the spring type, custom made, double season (winter/summer) padding; thickness 200mm. Bed covers will be provided for each bed as per the Contractual General Arrangement. Synthetic pillows will be provided for each bed. Fabrics for bed covers will be selected within the allowance specified in the "Allowance list (5)".

Decorative curtains will be of fabric horizontal or vertical folding. Fabric for decorative curtains will be selected within the allowance specified in the "Allowance list (5)". Blinds will be made by commercial roller shades.

Stones and marbles will be mounted on honeycomb when installed on wall and floors, for a total thickness of about 20mm. For tops and other surfaces where solid slabs may be used, maximum thickness of the slab will be 20mm. Slabs will be selected together with the Interior Designer, maximum of 20% of rejected material from the slabs has been considered in the allowance. Marble type will be selected within the allowance specified in the "Allowance list (8)".

Stones and marbles will be mounted on honeycomb when installed on wall and floors, for a total thickness of about 20mm. For tops and other surfaces where solid slabs may be used, maximum thickness of the slab will be 20mm. Slabs will be selected together with the Interior Designer, maximum of 20% of rejected material from the slabs has been considered in the allowance. Marble type will be selected within the allowance specified in the "Allowance list (8)".

The following taps will be supplied for the Owner's Bathroom:
For the shower:
- n.2 Wall mounted mixer with diverter (or separate units)
- n.2 Hand-shower
- n.2 Shower head

For the washbasin:
- n.2 Mixer

For the bidet:
- n.1 Mixer

The following taps will be supplied for each Guest bathroom:
For the shower:
- n.1 Wall mounted mixer with diverter (or separate units)
- n.1 Hand-shower
- n.1 Shower head

For the washbasin and bidet:
- n.1 Mixer each

The following taps will be supplied for each sink or washbasin in services area, if any:
- n.1 Mixer

The following accessories will be supplied for each Guest and Owner bathroom:
- n.2 Towel rails
- n.1 Toilet brush
- n.1 Toilet paper holder
- n.2 Towel rings
- n.1 Soap dishes
- n.2 Clothes hooks
- n.1 Toilet garbage bin

Spotlight, reading lamps, step light will be fitted according to the allowances specified in the "Allowance list (2)". All lights to be either 230V AC 50Hz or 24V DC. Where required by the Flag State authority or the Classification Society, 24V DC lights will be installed for emergency lighting. All lighting circuits will be protected by circuit-breakers fitted on distribution panels as described in the above section.

643 External Areas

Maindeck fore area will be equipped with two fixed chaise longue with a central sunbed, with storga eunderneath. Maindeck stern area will be equipped with two small fixed sofas.
Two (2) removable column showers will be installed at stern, make ELKA or similar, with rapid connection.

(OPTIONAL) All external areas can be equipped and outfitted as desired, with additional fixed or movable furniture.

650 Allowance List

In general, materials and equipment will be purchased according to the present specification. For selections by the Owner or the Interior Designer different or in addition to what specified or not named in the present specification, Recommended Retail Prices will be compared with the following total allowances.

(0) WOOD RANGE for solid wood or veenered panels: max 80€/sq.m.
- Acero, Acero/frisè
- Betulla
- Mogano
- Noce italiano, Noce tanganika
- Noce Canaletto
- Rovere
- Tanganika light, tanganika dark
- Tulipiè
- Zebrano
- or equivalent (price range)

(1) LACQUERED
Lacquered finishing fof wall panels, ceiling panels and furniture: max 120€/sq.m.

(2) INTERNAL LIGHTS
Supply of internal lighting fixtures: brand PROMOTECH or similar (price range)

(3) DECORATIVE HARDWARE
Supply of interior decorative hardware, handles and knobs: brand OLIVARI or similar (price range)

(4) INTERIOR UPHOLSTERY
Interior upholstery, mattresses, pillows, curtains, blinds (including building and installation costs):
50.000 €

(5) FABRIC AND LEATHER
Supply of fabrics and leather for wall panels, ceiling panels and furniture: max 80€/sq.m.

(6) TAPS, SANITARY EQUIPMENT AND BATHROOM ACCESSORIES
Supply of bathroom accessories, taps: brand GESSI top series, or similar (price range)
Supply of toilets and bidets: TECMA top series, or similar (price range)

(7) DOMESTIC APPLIANCES
Supply of domestic appliances for galley, pantries, bars and laundry areas: brand MIELE and VITRIFRIGO, or similar (price range)

(8) STONES
Marbles and granite: max 200€/sq.m.

Marble range:
- Arabescato vagli
- Bianco Carrara
- Botticino classico, Botticino fiorito
- Crema marfil
- Emperador chiaro, Emperador dark
- Limestone persiano
- Nero marquina
- Port laurent
- Rosso Verona
- Travertino walnut V.C.
- Verde alpi
- or equivalent (Price range)

Granite range:
- Aran white
- Baltic brown dark
- Bianco sardo
- Giallo veneziano
- Imperial white
- Labrador blue pearl
- Nero angola
- Rain forest brown, Rain forest green
- Rosa sardo beta
- Sapphire blue
- Vedre tunas
- or equivalent (price range

(9) FLOORS
Interior carpets, wood and vinyl floors: max 150€/sq.m.

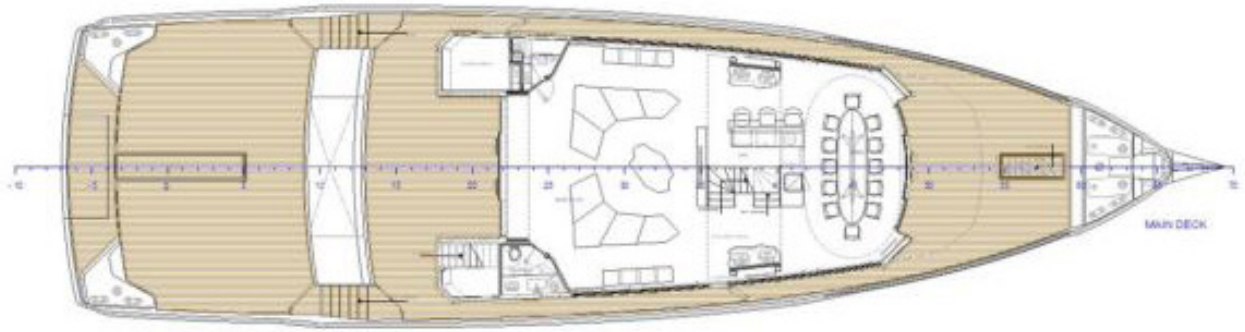
(10) CREW AREA
Solid wood or veenered panels: max 40€/sq.m.
Lacquered finishing for wall panels, ceiling panels and furniture : max 60€/sq.m.
Fabrics and leather for wall panels, ceiling panels and furniture: max 40€/sq.m.
Supply of bathroom accessories, taps: brand PONSI, or similar (price range)
Supply of toilets and bidets: brand TECMA intermediate series, or similar (price range)

MAORI
YACHT

PROFILE

TOP VIEW

OWNER'S DECK



MAIN DECK

LOWER DECK