NEW BUILD - 40m Deep Sea Research Vessel
Listing ID: 426908

DESCRIPTION: NEW BUILD - 40m Deep Sea Research Vessel
DATE LAUNCHED: 12 - 15 months from contract signing
LENGTH: 40.0m
BEAM: 9.8m
DRAFT: 2.8m
DISPLACEMENT: 500 ton
LOCATION: ex factory, China
BROKER: Geoff Fraser
PRICE: USD 10m ex shipyard

General Description

Remark
1. Designer and proven hull provider: Marcelo Penna Yacht Design Group of Spain, world-reputable design group with fruitful experience in serving Spanish Navy and Radaman Group, etc., for the design and engineering of governmental boats and already finished more than 300 designs for world-wide government authorities.
2. Classification: Germanischer Lloyd +100 A5 Research Vessel (+) MC AUT.

Design Purpose
The KINGTOUGH 40M Deep Sea Research Vessel is a modern high performance vessel to be designed on a basis of proven hull to operate as an platform and tool with advanced equipment/devices to carry oceanographic research operations.

TECHNICAL DATA
Length Overall: 40.00 m (equals 131.2)
Length Waterline: 39.90 m (equals 128.6)
Breadth moulded at DWL: 9.80 m (equals 32.8)
Design draught - Fully Loaded: 2.80 m (equals 7.5)
Displacement (fully loaded): 500 ton (equals 1058219 lb)
Operational speed: 10 knots
Maximum speed: 12 knots
Operational Surveying speed: 7 knots
Main Engine: MAN D-2862 LE 422- 1020hp/750kW @1300-1900 rpm

Standard Features
GENERAL
Main Particulars
Below listed dimensions are approximate figures subject to minor changes during the design process.
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Exterior & Interior Design, Naval Architecture: Marcelo Penna Yacht Design

Deadweight
The following is the required deadweight make-up to be carried at the maximum design (full load) draft.
Fuel: 70 t
Freshwater: 46 t
Lubricating oil: 1.9 t
Hydraulic oil: 1.9 t
Waste oil: 1.9 t
Grey/Black water: 5.0 t
Sewage: 5.0 t
Provisions and cargo: 30.0 t
Crew and effects: 3.5 t

Description
This specification is for a 40.00 m Research Vessel generally as laid out as shown on the General Arrangement AP-01 rev.01 and dated 22/11/11. The Vessel will be designed and built to the Rules and Regulations for the Classification of Germanischer Lloyd +100 A5 Research Vessel (+) MC AUT. The Vessel will be fitted with two variable pitch propellers driven by twin engines made MAN, through a in-line reverse/reduction gear. The Vessel will have two rudders, one tunnel bow thruster and a stern 360º steerable Pump Jet, to have Dynamic Positioning and Alternative/Surveying propulsion.
The hull shall be subdivided by watertight bulkheads in order to meet the regulations.
The vessel shall be arranged to accommodate the forepeak/chain lockers/bow thruster room, double bottom with integral tanks, crew and technician's accommodation, engine room and crew mess spaces generally as shown on the GA.
The forepeak/chain locker, the fore and aft decks and the sun deck will be self draining.
The Vessel shall be designed and laid out for following complement:
Scientists, Technician and trainee: 15 persons
Captain and Crew: 13 persons
Total: 28 persons in 6 single cabins and 12 double berth cabins
The Vessel will be divided in six decks: Tank deck (double bottom), Lower deck, Main deck, Upper deck, Bridge deck and Sun deck.
The general arrangement of the vessel is as follows (from aft to forward):

Tank deck (double bottom)
Ballast, Fuel, fresh water, grey and black water, sewage, lub oil, hydraulic oil and waste oil tanks, separateed by cofferdams.
Bow thruster cofferdam.

Lower deck
Fore peak:
Self draining chain lockers (x2) with strong chain padeyes (x2)
Access to bow thruster cofferdam
Crew accommodation:
Fore staircase to main & exterior fore deck, with fire doors
Crew corridor with WT/fire door
Twelve double berth cabins with ensuite head & shower with mirror lights and 24 VDC extractor fan, drawers under berth, wardrobe, bedside table, desk with chair, drawer and shelf, armchair, LED flexible reading lights 24VDC (x3), LED 24VDC ceiling lights (x2), opening portholes with mosquito net & curtain, 240/110VAC socket, door with key lock Ship's hospital with stretcher, ensuite toilet with mirror lights and 24 VDC extractor fan, closet for medical equipment and medicines, lower cabinet, chair, LED flexible reading lights 24VDC (x2), LED 24VDC ceiling lights (x2), opening portholes with mosquito net & curtain, 240/110VAC socket, door with key lock
Ship's laundry with two big capacity washer/dryers, sink, roller ironing machine, shelf and swing ironing board, LED 24VDC ceiling lights (x4), opening portholes with mosquito net & curtain, 240/110VAC socket, door with key lock
Main staircase to main, upper & bridge deck, with fire doors

Engine room:
Access/Escape stairs to main aft deck
Twin diesel engines
Two Generators
Anti-deflagrant fluorescent lights 24VDC (x6)
Fire-proof acoustic isolation throughout
Ventilators 24VDC (x2)
Extractors 24VDC (x2)
Small air compressor
 Electric switchboards
Automatic fire extinguishers over engines
Automatic bilge pumps (x2)
240/110VAC sockets
24VDC sockets
Non-skid aluminium removable floor

Dry cargo and technical rooms:
Top coat walls and ceiling finishes
Non-skid aluminium removable floor
WT hatch and doors
Anti-deflagrant fluorescent lights 24VDC (x3)
Steel ladder to main deck

**Steering room:**
Top coat walls and ceiling finishes
Non-skid aluminium removable floor
WT doors
Anti-deflagrant fluorescent lights 24VDC (x2)

**Main deck**

**Fore peak:**
Bosun’s locker with access hatch from fore deck with steel ladder
Crew accommodation:
Fore staircase to lower & exterior fore deck
Crew corridor
Six single berth cabins with ensuite head & shower with mirror lights and 24 VDC extractor fan, drawers under berth, wardrobe, bedside table, desk with chair, drawer and shelf, armchair, LED flexible reading light 24VDC (x2), LED 24VDC ceiling lights (x2), opening portholes with mosquito net & curtain, 240/110VAC socket, door with key lock

**Crew mess:**
Crew mess with fixed tables and chairs for 30 persons, pantry cabinet, shelves column, TV flat screen and upholstered corner sofa with coffee table. LED 24VDC ceiling lights (x2), opening windows with mosquito net & curtain, 240/110VAC sockets

**Main lobby:**
Access lobby with hanger and shoe’s rack 240/110 VAC socket
LED 24VDC ceiling lights (x3)
2x Day heads with mirror, door with lock, hot and cold water and extractor fan, LED 24VDC. ceiling lights (x2), 240/110VAC socket

**Main staircase:**
Main staircase to lower, upper & bridge deck, with fire door

**Main galley:**
Separate galley with stainless steel lower & upper cabinets, walk-in fridge/freezer, sink, electric cooking top and full size multi-oven WT door to exterior corridor Fire door to crew mess

**Drawing room:**
Technical room – arrangement to be defined

**Wet lab:**
Technical room – arrangement to be defined

**Emergency generator:**
Technical room, with fire proof acoustic insulation and ventilation

**Aft working deck:**
With hydraulic A frame 3m side clearance/ 7 m horizontal clearance/4 tonnes SWL, dry cargo hatch, one CTD electric winches (max. pull 3 tonnes/drum capacity 4000m of 16 mm conductor high tensile corrosion resistance steel cable, SWL 16 tonnes, and two electric traction winches with dual drum stowage and trawl, SWL 3 tonnes, drum capacity 4000m of 17 mm torque balanced wire rope and 16 mm high tensile, corrosion resistance steel cable. SOLAS throw-over self-righting container liferafts (4x25 pax). Deck cleats and hawse pipes for mooring

**Upper deck**

**Fore deck:**
Deck cleats and hawse pipes for mooring, two vertical or one horizontal windlass for two anchor lines and capstans, access hatch with coaming to the bosun’s locker, WT deck house for fore staircase, WT door to dry labs area

**Dry labs area:**
Technical room – arrangement to be defined, two day heads, main staircase to main deck, staircase to bridge, WT door to upper working deck

**Upper working deck:**
Free deck surface with handrail, stairs to bridge, stairs to main deck, tender cradle, telescopic boom crane, 8 m boom length, capacity 8 tonnes, clearance above deck 8 m, SWL at maximum reach 2 tonnes, flush fixing point for container lab 3x6 m

**Bridge deck**

**Bridge:**
Enclosed bridge with integrated dashboard console and working desks, pilot seats, lower cabinets and shelving. WT doors to bridge wings and deck, wings with engine levers, bow thruster and pump jet controls. Ladders to fore deck

**Comp. and electronic lab:**
Technical room – arrangement to be defined, ladder to sun deck, doors to exterior stairs aft

**Sun deck**
**Sun deck:**
Observation area with ladder to bridge, tempered glass windshield, handrails aft and antennas/instruments/lights mast

**Insulation**
All the accommodation to be fitted with approved fire proof, thermal / acoustic insulation for extreme summer heat Engine room to be fitted with approved fire proof thermal / acoustic insulation to comply with SOLAS Comfort levels. Minimum heights from finished floor to finished ceiling in each deck will be as follows:

**Rules, regulations & certificates**

**Registration**
The Buyer will choose a flag state for registration, if it is possible, prior to the commencement of the construction, so that applicable Regulations can be foreseen. Registration fees shall be at the expenses of the buyer.

**Classification**
The vessel is to be built and delivered following the Rules and Regulations for the Classification of Germanischer Lloyd +100 A5 Research Vessel (+) MC AUT.
The preliminary class notation is:

**Germanischer Lloyd +100 A5 Research Vessel (+) MC AUT.**

**Applicable Statutory Regulations**
The following rules and regulations, including all additions and amendments hereto in effect on the date of the building, should be observed, and certificates obtained where relevant to state compliance. The vessel to comply with relevant rules and regulations including, but not limited to the following:

* International Convention for preventing collision at sea, 1972 and amendments.

For the deliveries and work according to this specification the yard is to include, install and supply all necessary equipment, work and fees to satisfy above mentioned rules and regulations. The yard has to make sure that all certificates are available for all equipment. Copy of certificates has to be presented for the owner at the time of reception.

**Certificates**
The vessel is to be delivered with the following main certificates in force:
Classification Certificate (Interim Certificate with no notations except notes on the final delivery of the stability book or notations previously agreed with the Owner’s Representative, to be delivered by Builder on Acceptance with final Certificate to be delivered by Classification Society)

**Safety Certificate**
Safety Certificate by the Flag State
Letter of Compliance
Certificate Notation
Builder’s Certificate and Bill Of Sale
Certificates for Machinery from the Classification Society
Certificates for anchors and cables, navigation lights, safety equipment and safety radio
Compass Adjustment Certificate
International Load Line Certificate (ICLL)
International Oil and Pollution Prevention Certificate (IOPP)
International Tonnage Certificate, measured in accordance with the ICLL and ITC
International Radio and Communications Certificate
International Ship and Port Security Certificate
Marpol Annex 1, 2 4 5 6
SOPEP Certificate
Stability Booklet stamped and approved by the Classification Society
Suez and Panama Canal Certificates
International Sewage Pollution Prevention Certificate
All materials and equipments to be used in the construction are to be certified in accordance with the applicable rules, regulations and standards mentioned within the scope of the certificates above mentioned. All expenses in connection with the issuance of the certificates
are to be on shipyard account.
The buyer is to apply for registration, ship radio license and safe manning.

**Operation & instructions**

**Operation**
The vessel is intended for extended voyages, excluding ice zones, as a Research Vessel for up to 28 (twenty eight) crew members. Nevertheless, operational limits to distances covered and the worst intended conditions in which vessel operations are permitted may be imposed by this or other specifications to be provided. Only qualified persons to operate the vessel for the intended routes are to be employed. All drawings and specifications shall be amended "as built". Units on drawings and specification shall be in accordance with the metric system; language shall be English.

**Hull & Deck**

**Construction**
Hull: Steel Grade A
Superstructure: Aluminium 5083 for plates and 6061 T6 for stiffeners
Preliminary estimated weight: 160 tons of steel & 15 tons of aluminium

**Deck Equipment**
Deck/anchor freshwater wash fore and aft
Stainless steel handrails
8x stainless steel deck cleats
Stainless steel pulpit and guard rails
Curved tempered glass windshield in flybridge
Stainless steel bow roller with anchor lock and automatic launch
Bruce type anchor w/100 m of galvanised chain DIN 766
Electric windlass with capstan 2500 W/24V (deck, bridge and flybridge controls)
2x Electric mooring capstans aft 2000W/24V (deck control)
Bow, midship and stern fairleads (6x)
Anchor locker
4x bosun’s lockers forward (for fenders, ropes, cushions,...)
Sun beds forward and aft with closed cell upholstered cushions
Fore deck sofa with closed cell upholstered cushions
3x pantograph windscreen wipers 24 V with fresh water wash
Fuel fillers port and starboard
Fresh water filler
CE Navigation lights (LED)
Flag mast and socket
Teak or Kebony decking in bathing platform, aft twin stairs, main deck, forward sofa area and flybridge
24V remote controlled searchlight installed on the bow (bridge/flybridge controls)

**PROPULSION**

**Engine Room**
Soundproofing throughout the compartment
Watertight bulkheads and access door/hatch
Twin engines made:
MAN D-2862 LE 422- 1020hp/750kW @1300-1900 rpm – 24.24 ltr - IMO TIER II
Reinzjes/ZF reverse/reduction gearbox and elastic coupling
Engines flexibly mounted on integral engine beds
2x CAT C9 generator sets 150 kW @ 1500 rpm/50 Hz/440 V/3 phase
1x CAT C4.4 emergency generator set 69 kW @ 1500 rpm/50 Hz/440 V/3 phase
4x 24V electric fans (2x extraction, 2x impulsion) with high volume air intakes (side funnels) and remote controlled shut-off
Engines exhaust silencers and water-cooled exhausts
Water/gas separator for generator sets exhausts
Deviating valve to use engines as bilge pumps
High capacity identical bilge and fire-fighting pumps, with by-pass between them
Automatic/manual fire extinguishers with remote control and alarm in bridge & flybridge, together with the remote controlled shut-off
Separate double fuel filters/water separators for each engine/generator
Sea water strainers (2x) with manifolds for engines and ancillary equipment
Dripless shaft logs with spare seals
Fresh water outlet for cleaning
Anti-deflagrant sealed fluorescent ceiling lights 24 V

**Stern and Bow Gear**
Propeller shafts in Aquamet or Marinemet
Bronze V-brackets strongly bedded
4 or 5-bladed Nickel-Aluminum-Bronze variable pitch propellers
Stainless steel balanced rudders with power assisted rotary or dual-ram hydraulic steering gear
Dual single lever electronic engine controls in bridge & wings
Bow tunnel thruster 125 hp with joystick control in bridge & flybridge
Schottel Pump Jet SPJ 57 – 150 hp for surveying operational speed 7 kn
Valves on all underwater hull fittings

**Electrical System**

- 2x 400 Ah 24 V generator starting batteries
- 2x 1000 Ah 24V engine starting batteries
- 1x 200 Ah 24 V emergency generator starting battery
- 2000 Ah 24V service batteries
- 800 Ah 12 V emergency batteries on bridge
- 4x 100 A 24V automatic battery chargers
- 24V/240V Inverter 3000W
- Stabilized system: 2 set UPS 60/50 Hz
- Synchronizing panel
- Remote battery disconnecting switches
- Automatic circuit breakers for all the circuits (AC/DC)
- Cathodic protection with zinc anodes (including bow thruster, pump jet, shaft lines and rudders)
- 24V DC LED lighting throughout
- 240/110V AC sockets throughout
- Shafts, rudders, engines, thrusters, hull penetrations, tanks and main equipment earth bonded
- 1x 63 A shore connection inlet

**Other Equipment**

- Air conditioned (reverse cycle) throughout
- 2x Watermaker/desalinators (2x 5 m3/day)
- Scientific clean water generation
- Double freshwater pressure pumps
- Water heater boiler with 380V immersion heater
- 2x 380V Washer/dryers in laundry
- Aluminium boarding gangway
- Removable teak/stainless steel bathing ladder
- Hot and cold transom shower
- Hand-operated fire extinguishers in all the spaces
- Fire alarms in all the spaces
- Sprinkler fire fighting system throughout
- 8x fenders
- 4x mooring lines
- Oil-water separator
- Mini Hamann 5000 ltr or similar sanitary treatment plant
- Water ballast treatment plant
- Live fish container with airator
- Level gauges and inspection hatches in all integral tanks
- Electric or vacuum 24V toilets
- Electric or compressed air horn
- Light weight resilient double fender to be fitted across the full width of the bow
- Cleats (8) on bulwark, both sides, to attach portable fenders

**Bilge System**

- Bilge level alarm system in all compartments
- Automatic submersible bilge pumps on forward and aft ends of each compartment (double bottom, engine room, and steering compartment) with manual control and alarm panel in bridge
- Main high-capacity electric self-priming bilge pump with remote operated valves to select different area compartments (same as fire fighting one)
- Manual high capacity bilge pump on aft cockpit with valve manifold to select suction point (different area compartments)

**Navigation Equipment, Antennas**

- Single station autopilot
- Dual station VHF/DSC/intercom
- Marine radar display (X-band) with ARPA
- Marine radar display (S-band) with ARPA
- Gyrocompass with repeater
- Magnetic compass
- Two DGPS, RTK – DGPS (or) DGNSS
- Ship’s conning display unit
- Doppler speed log distance indicator
ECDIS (electronic chart display and information system)
AIS (automatic identification system)
Echo sounder
M/E Bridge panels including RPM indicators
Manoeuvring/Telegraph levers
Engine order telegraph logger
Control panel for public address system
Course recorder. Voyage data recorder VDR
Chronometer
SUMATRA software
Whistle controller
Fire detection panel
Smoke detection panel
Local fire fighting panel
Propeller shaft revolution indicator
Rudder angle indicator
Clinometer

**Metereological Equipment**
Sea temperature thermometer (hull sensor with remote indicator)
Meteorological thermometers (mercury-in-glass type), increment 0.2 K or 0.5 K
Psychrometer (Hygrometer) fitted with dry and wet-bulb thermometers, with its Psychrometric tables
Anemometer
Precision anaeroid barometer
Barograph, open scale
Rain-gauge adapted for use aboard a ship
Marine wind tracker, wind speed and direction, true and apparent, with alarm
Temperature and Relative Humidity tracker, with alarm and serial output
Type of clouds poster
Beaufort scales and tables

**Communication and Satellite Equipment**
Single-side band (SSB)
Marine VSAT system
Weather facsimile
VHF-MF and HF marine band transceivers
Emergency position indicator radio beacon (EPIRB)
Search and rescue transponder SART
NAVTEX receiver
Satellite cellular phone
E-mail portable VHF-FM transceiver
3x hand held VHF transceivers
Video conference and GMDSS

**Acoustics, Profiling and Surveying**
Color video sounder, Simrad EK-500 (12, 38 & 200 kHz)
Color scanning sonar
Sea surface mapping system
Side scan sonar, single beam 1000m, multi-beam 2000 m
Shallow seismic system, CHIRP sonar 4-24 Hz, 3.5 kHz shallow seismic profiler
Acoustic doppler current profiler
Silent ship operation
Movies + fishview sonar/software – Hypack & Hysweep/olex
Multi-beam hydrochat 5000 kelvin (portable)
Single beam deso 350 33 kHz (portable)

**Data Processing / Printing Equipment**
8x computers
8x laser printers
2x large scale charts plotter

**Tender**
4.20 m SOLAS rescue tender with 50 hp outboard
IMPORTANT: The Company offers the details of this vessel in good faith but cannot guarantee or warrant the accuracy of this information nor warrant the condition of the vessel. A buyer should instruct their agents, or their surveyors, to investigate such details as the buyer desires validated. This vessel is offered subject to prior sale, price change, or withdrawal without notice.

NEW BUILD - 40m Deep Sea Research Vessel Images