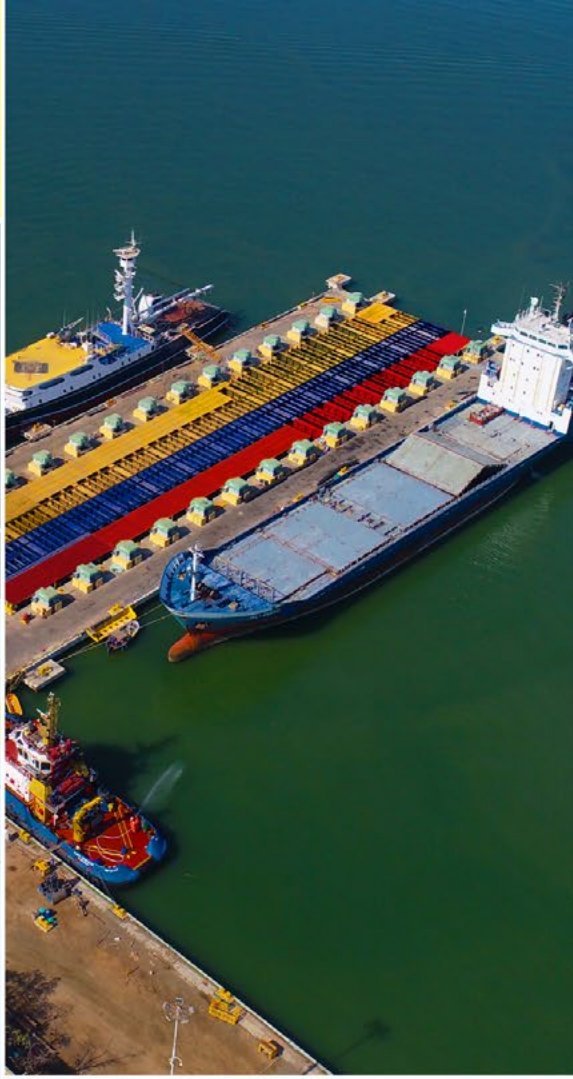
COTECMAR



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#WeKeepMoving

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PRODUCT AND **SERVICE** CATALOG

COTECMAR

INDEX

SCIENCE AND TECHNOLOGY CORPORATION FOR THE DEVELOPMENT OF THE NAVAL, MARITIME AND RIVERINE INDUSTRY

CORPORATION

We are an organization that generates and transfers knowledge from its processes of applied research, development and innovation, leading the technological evolution and competitiveness of the naval, maritime and river industry

LOCATION

Strategically located in Cartagena de Indias, Colombia, 280 miles from the Panama Canal, easily accessible from the most important maritime routes of the Caribbean.

WHAT WE DO

Our product and service offering considers life cycle management based on support from the definition of requirements, design and construction, to after-sales monitoring, maintenance and revamp of vessels and naval artifacts.

INDUSTRIAL SERVICES

Also, our installed capacity and experience in the shipyard sector allows us to offer services and solutions tailored to the industry, which makes us a key player for the support of industrial companies in Colombia.

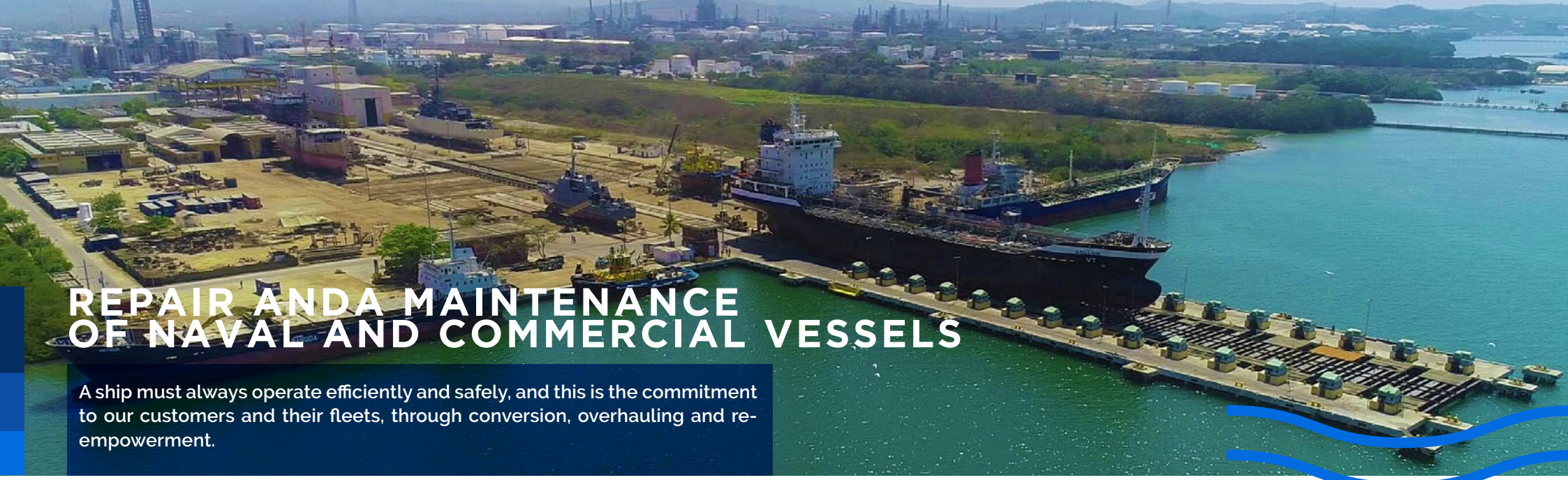
REPAIR, MAINTENANCE AND TESTING

- Manufacture of metal structures and containersSpecialist welding for production and maintenance SMAW, GTAW, GMAW and FCAW.
- Machining and manufacturing of parts.
- Lathes, folding machines, rollers and cutting tables, 6 meters long.

- Electricity shops authorized by SIEMENS And WEG.
- Equipment calibration laboratory with ONAC accreditation, effective to date, through accreditation code 14-LAC-011, under NTC ISO/IEC 17025:2017.
- External surface preparation in waterjet tanks using automated equipment.

- Diesel Engine Maintenance, MTU, MAN, Carterpillar, Detroit, Cummins, among others, of up to 5,000 hp with dynamometer testing for engines up to 2,500 hp.
- Construction of parts and containers in fiber and composite materials.

- Maintenance of heating, ventilation and air conditioning systems (HVAC).
- Non-destructive testing and inspection using Ultrasound, magnetic particles, positive material analysis, and ultra-sound airtightness.



REPAIR ANDA MAINTENANCE OF NAVAL AND COMMERCIAL VESSELS

A ship must always operate efficiently and safely, and this is the commitment to our customers and their fleets, through conversion, overhauling and re-empowerment.

WORK ON MECHANICAL SYSTEMS

- Maintenance and repair of controllable pitch and fixed pitch propeller lines.
- Maintenance of azimuth-based and Voith- Schneider propulsion systems.
- Disassembly, assembly, servicing and repair of steering systems.
- Laser axis verification and alignment.
- Maintenance of hydraulic systems.
- Valve testing on 250 and 700 bar test benches.
- Disassembly, assembly and maintenance of heat exchangers
- Repair and maintenance of air conditioning and heating systems.

WELDING AND TESTING

- Hull repairs in steel, aluminum and stainless steel
- Repair of McGregor type cargo hold covers
- Construction, manufacture and revamping of pipes
- Ultrasound thickness measurement.

BLASTING AND PAINTING

- Surface preparation with sandblasting, hydroblasting, gritblasting and water jetting (44,000 psi).
- Conventional and silicon-based paint schemes.
- Surface preparation and tank painting.

ELECTRICITY

- Maintenance and repair of low voltage AC and DC single and three phase electric motors.
- Maintenance and repair of electric generators.
- Maintenance and repair of transformers and converters.

ELECTRONICS

- Electronic equipment integration.
- Propulsion control.
- Sensor assembly and maintenance.

DIESEL ENGINES

- Maintenance and Overhaul of MTU, DETROIT, CATERPILLAR, CUMMINS, WÄRTSILÄ, MAN and DEUTZ Engines.
- Test bench (dynamometer) up to 2,000 hp
- Vibration measurement and testing

FACILITIES

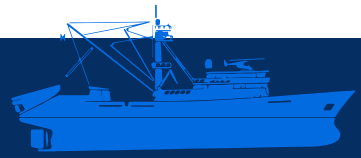
MAMONAL | Syncrolift System

Lifting capacity	Length	Draft	Breadt	Dry-docking positions	Docking positions
3,600 t	**120 m**	**5,8 m**	**22 m**	**8**	**4**

BOCAGRANDE | Slipway System

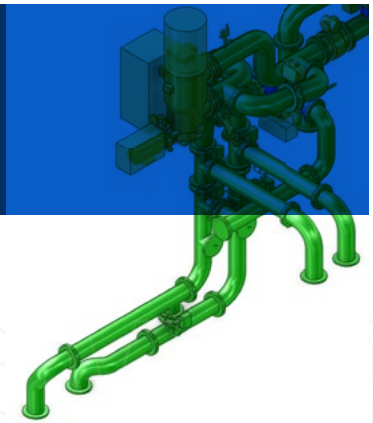
Lifting capacity	Length	Draft	Breadt	Dry-docking positions	Docking positions
1,200 t	**66,5 m**	**4.3 m**	**14 m**	**2**	**3**

We specialize in overhaul and revamping for tuna-type vessels:



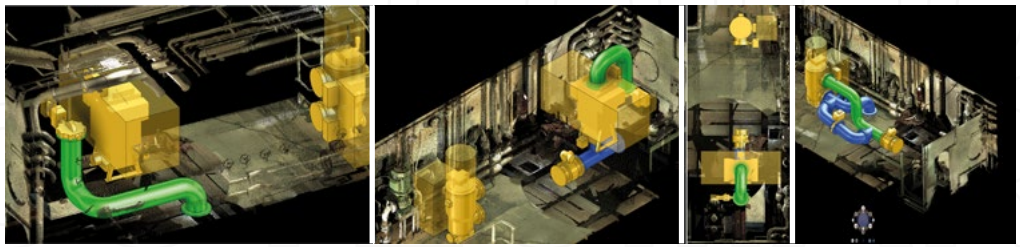
- Steel in tanks
- Thermal insulation and polyurethane
- Manufacture and installation of coils
- Maintenance of motors and generators
- Conveyor belt
- Prefabricated or traditional woodwork
- High scope works on pipes, winches, davits and fishing systems
- Vessel design modifications and functionality changes
- Mechanical protection for main piping systems
- Design and installation of electrical systems

We design basic and detail engineering projects for ballast water treatment systems (BWTS) approved by IACS Classification Societies.



3D scale modeling with the vessel's engine room scanned models ***enables the routing of pipes and the drafting of construction drawings for their implementation on the vessel without affecting its operations.***

Shipowners and Engineers can anticipate the system's final location and check available spaces for maintenance and crew transit.



SCIENCE, TECHNOLOGY AND INNOVATION ACTIVITIES

COTECMAR makes available to society all the tools, knowledge and experience of the human capital at our Science, Technology and Innovation Division in order to structure systems and processes that help organizations manage and materialize innovation in terms of products, processes, marketing and organizational growth.

DESIGN AND ENGINEERING

We have an office dedicated to the design of ships and naval artifacts, specialized consultancies, and development of projects for the naval, maritime and river industries.

Our results are based on the long experience of our innovative, creative and highly qualified team.

Our technological capabilities include cutting-edge digital tools, and, within our processes, we apply state-of-the-art methodologies in naval design, which allow us to materialize projects at different stages of the design process, from the initial definition of the design concept to production-oriented engineering, installation, training, life cycle support and business management assistance.

The customer is our most important asset!

We offer permanent and customized support, advise customers on their needs, and evaluate how effectively we meet their requirements.

Our services range from requirements in engineering, commissioning, testing and life cycle support, which lead to a more solid relationship with our customers and provide a complete array of services. In addition, we are actively involved in Cotecmar's research projects and scientific production.

This is how we have positioned ourselves as one of the most complete and innovative naval design offices on the continent.

SERVICES

FEASIBILITY STUDIES

Comprehensive project study and evaluation that meet the needs of our clients.

MARINE ENGINEERING

We have a group of experts with a broad overview of the naval, marine and river industry with excellent training and experience.

SPECIALIZED CONSULTING

Our staff offers a wide range of consulting services specialized in the naval, maritime, river, industrial and energy industries.

EXPERIENCE IN VIRTUAL ENVIRONMENTS

Development of experiences in virtual, augmented and/or mixed reality settings that facilitate the integration of design and construction processes.

DESIGN OF SHIPS AND NAVAL ARTIFACTS

Our mission is to design ships and naval artifacts to the highest standards of quality.

PRODUCT ENGINEERING

We develop through basic design by using CAD technologies and smart electronic models to generate production-oriented engineering.

RESEARCH AND DEVELOPMENT

We develop innovative solutions geared at the generation of new products and/or services, to provide our customers with solutions according to their needs.

TECHNOLOGY AND INNOVATION MANAGEMENT

DEFENSE AND SECURITY SECTOR

SERVICES | SOLUTION DEVELOPMENT

- Development of Command, Control and Communications Systems for
- components of various military forces and security agencies.
- Integration of communications, systems and sensors for positioning, monitoring, surveillance, command and control, among other functionalities.

PRODUCTS

- Tactical Network for Military Applications
- Tactical Network for Security Applications
- Unified Command and Control Systems
- Integrated Communications Systems
- Cryptographic systems

INDUSTRY

SERVICES | DEVELOPMENT OF INDUSTRY SOLUTIONS

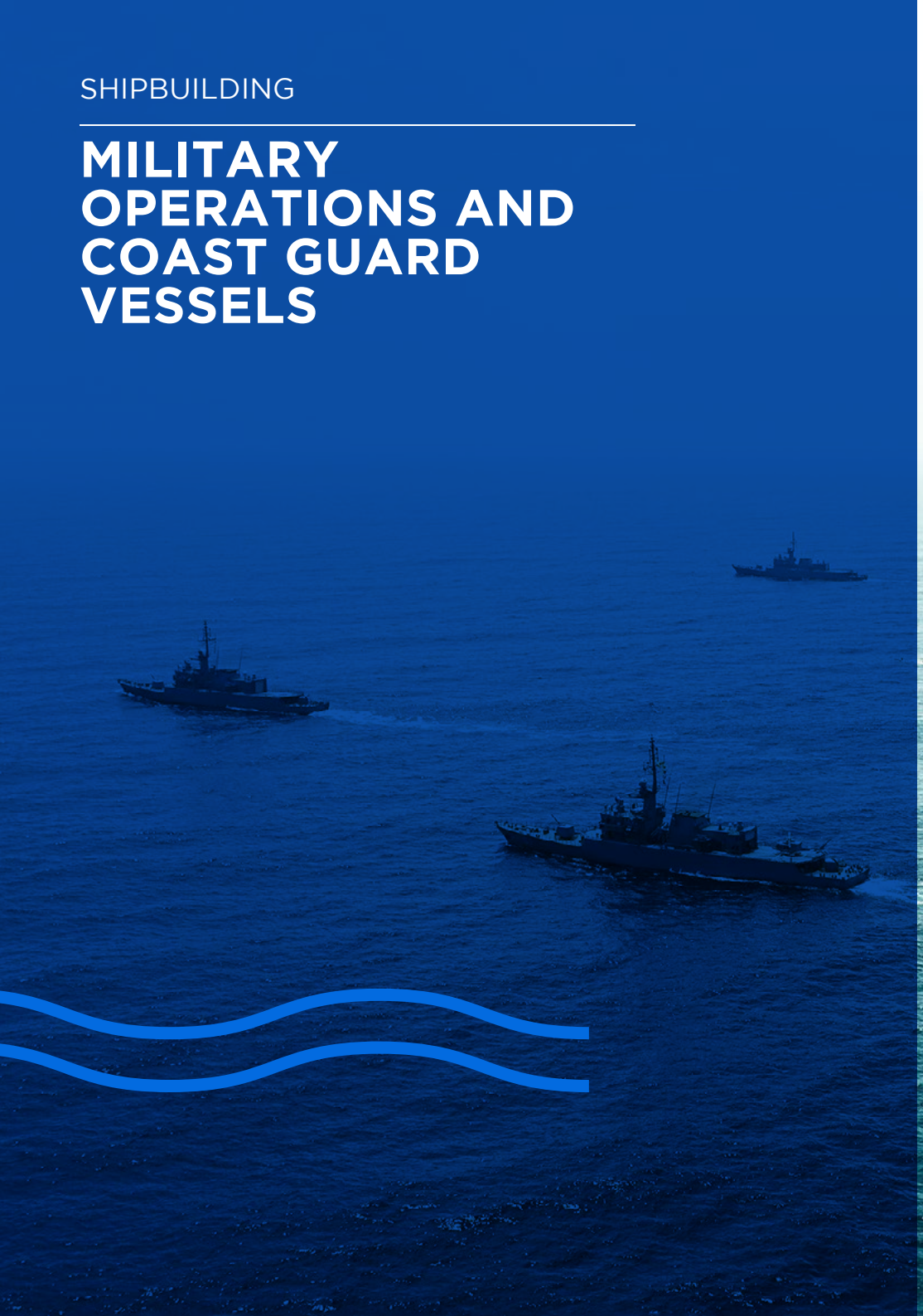
- Development of Command, Control and Communications Systems
- Development of surveillance, monitoring and decision support systems.
- Software development, integration of systems, sensors and data.
- Development and application of methodologies for structuring
- ICT Project Requirements and Validation.
- Consultancy and Support in Data Systems.
- Training in systems operation and maintenance.
- Consultancy in Knowledge and Innovation Management

PRODUCTS

- Monitoring & control systems
- Systems for data integration
- Graphic interfaces for specific solutions.

SHIPBUILDING

MILITARY OPERATIONS AND COAST GUARD VESSELS



OPV

OFFSHORE AND EXCLUSIVE ECONOMIC ZONE PATROL VESSEL

Modern patrol vessel functionally adapted and built with outstanding performance in sea conditions for long-term missions, helicopter operations and fast boats.

This unit's advanced design provides the crew with perfect sailing qualities for marine interdiction, maritime traffic safety and control, search and rescue, environmental control, peacekeeping operations and humanitarian aid.

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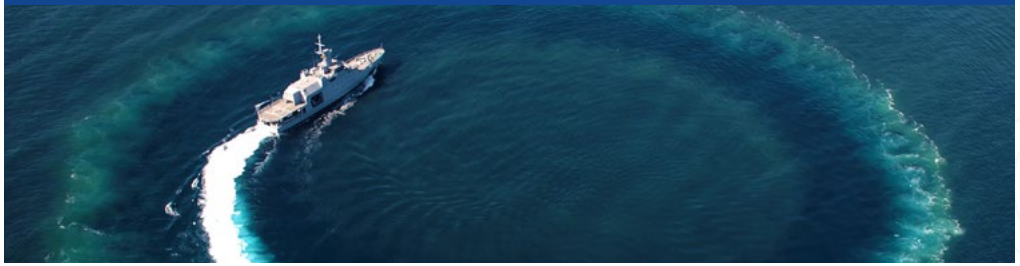

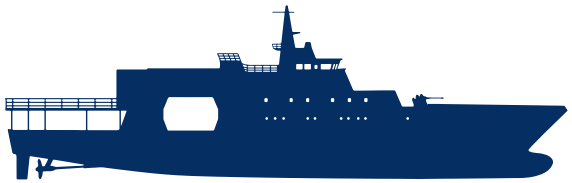

MAIN DIMENSIONS

Total length:	80,6 m
Total breadth:	13,6 m
Depth (to first deck):	6,5 m
Design draft (at maximum load):	3,8 m
Displacement:	1814 t

PERFOMANCE

Maximum speed:	21 knots (2 x 4080 kW) 18 knots (2 x 2040 kW)
Range:	up to 4,500 mn (config. 21 knots) up to 10,000 mn (config. 18 knots)
Endurance:	40 days @ 64 people

CAPABILITIES

Fuel (diesel):	200 m³
Helicopter fuel (JP5):	19 m³
Interceptor boat fuel (Gasoline):	12 m³
Fresh water:	48 m³
Complement:	64 crew + 36 passengers (optional)

PROPULSION

Main engines:	2 x Wärtsilä 6L26B2 (up to 18 knots) 2 x Wärtsilä 12V26 (up to 21 knots)
Installed power:	2 x 2040 kW @ 1000 rpm (up to 18 knots) 2 x 4080 kW @ 1000 rpm (up to 21 knots)
Propellers:	2 controllable pitch propellers
Bow pusher	1 x 280 kW

ELECTRICAL SYSTEM

Main Generators:	3 x 360 kW, 440V @60Hz
Emergency Generator:	1 x 105 kW, 440V @60Hz

PROJECTION CAPABILITIES

Flight deck and hangar for 1 medium-sized helicopter with refueling capacity.

Stern ramp for deployment of an interceptor boat.

SPECIAL FEATURES

Roll Stabilization System (U-tank).
Deck crane SWL 4 t to 11,6 m.
Rescue Bay.

CLASSIFICATION

GL-DNV: *100 N5 Aux - NH "Long Range Patrol Vessel" + MC AUT AUX - NM.

OPV 93

SEA PATROL VESSEL

Patrol and military support vessel developed to increase the operational capabilities respect the current up to 80 m OPVs in order to meet the requirements from Modern Navies.

The unit has outstanding performance features and incorporates the operational experience of the Colombian Navy, plus the challenges it has faced in fulfilling its mission. The vessel's capabilities are as follows:

Maritime interdiction, control and protection of maritime traffic, search and rescue, humanitarian aid, environmental control and protection, implementation of sovereignty and strategic deterrence.

100% Colombian design

MAIN DIMENSIONS

Total length:	93 m
Total Breadth:	14 m
Depth (to first deck):	7 m
Draft (at maximum load)	4,1 m
Displacement	2665 t

PERFORMANCE

Maximum speed:	18 knots
Range:	up to 10,000 nautical miles (at 12 knots)
Endurance:	40 days @64 people 20 days @109 people

CAPABILITIES

Fuel (Diesel):	392 m³
Helicopter Fuel (JP5):	44 m³
Interceptor Boat Fuel (Gasoline):	13 m³
Fresh Water:	67 m³
Complement:	64 Crew + 45 passengers

PROPULSION

Power:	4 x 2200kW (CODAD) 2 x 4800kW (+2 x 630 ekW CODELOD)
Propellers:	2 controllable pitch propellers
Bow pusher:	> 1 x 390 kW

ELECTRICAL SYSTEM

Main Generators:	4 X 375 kWe (CDAD) 4 x 740 kWe (CODEDO)
Emergency Generator:	1 X 200 kWe

DRIVE CAPACITIES

- Flight deck for a helicopter up to 11 tons and an Unmanned Air Vehicle (UAV). With Hangars.
- RAS, FAS, HIFR, and VERTREP Replenishment.
- Stern door and ramp to deploy interdiction boat up to 14 meters.
- Side launch system (DAVIT) to deploy interdiction support boats up to 7 meters.
- Two 40' Mission Containers (Modularity 2 TEU).

SPECIAL FEATURES

- Roll Stabilization System (U-tank).
- 1 Deck Crane SWL 5 t to 10 m.

LANDING CRAFT UTILITY

A vessel capable of developing humanitarian aid operations along In riverine and coastal areas, providing assistance for disaster-response operations and logistical support from the National Navy bases ashore through the transport of troops, containers and general cargo.

The vessel also has the ability to deploy rapid response boats with its crane designed to operate in a Sea State Nato 02.

MAIN DIMENSION

Total length:	49 m
Molded Breadth:	11 m
Depth (to main deck):	3,10 m
Design draft:	1,75 m
Displacement:	574,6 t

PERFORMANCE

Maximum Speed:	9 knots
Autonomy:	20 days@51 people 40 days@15 people
Range:	1500mn@9 knots 2500mn@6 knots

CAPABILITIES

Diesel:	75 m³
Fresh Water (FW):	55 m³

ACCOMMODATION

Officers:	3
Petty Officers:	12
Troops:	36 Marines

SISTEMA DE PROPULSIÓN

Main engines:	2 X Caterpillar C18 ACERT Rating 412 kW @ 2000 rpm

ELECTRICAL SYSTEM

Main Generators:	2 x CAT C44. ACERT 123 kVA @60 Hz

CARGO CAPACITIES

Transport on deck (5 t/m2) maximum 210 t.
Capacity of up to 10 containers (includes 2 reefers).
10 ton @12m hydraulic crane on main deck.

COMMUNICATIONS

The vessel is outfitted with communications equipment that enables the unit to operate as a center for emergency and disaster management, and also perform as a communication platform for joint operations ensuring interoperability with military bases or other types of fleet units.

COASTAL PATROL VESSEL

Modern ship developed for interdiction, patrol and surveillance operations in coastal maritime areas. The unit has an automatic identification system (AIS) with navigation and communication capabilities to ensure the accomplishment of its missions. This vessel develops search and rescue assignments as an independent ship or with other ships, aircraft and/or shore bases

TECHNICAL SPECIFICATIONS

Total length:	46.25 m
Total breadth:	7.09 m
Depth (to first deck):	4.30 m
Draft (at maximum load):	2.12 m
Displacement:	326.00 t

PERFORMANCE

Maximum Speed:	19 knots
Scope:	2000 mn@12 knots
Autonomy:	17 days @ 23 people

CAPABILITIES

Crew:	18 crew
Fuel Diesel:	30 m³
Gasoline:	5 m³
Fresh Water:	22 m³

PROPULSION

Main engines:	2 x 1680 kW @ 2000 RPM.

ELECTRICAL SYSTEM

Main Generators:	02 Generadores diesel de 99 kW (123 kVA) @ 60 Hz

WEAPONS

One fore 25 mm gun; stabilized and remotely operated from the bridge and two 6,37 mm mounted machine guns to the sides. Optional optronic 12,7 mm gun to aft over bridge.

ADDITIONAL CAPACITIES

Stern door and ramp for 1 Zodiac boat deployment of up to 5.5 meters.

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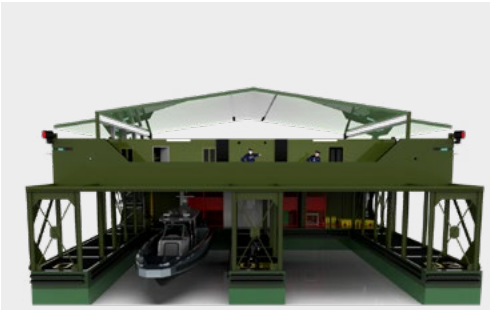
CLASSIFICATION

LR ✠ 100 A1 SSC MONO HSC G4 PATROL
✠ LMC UMS

ADVANCED COAST GUARD PLATFORM

Non-propelled naval craft, whose mission is to perform as a platform to support the projection of coast guard operations from sheltered waters. It has capacity for berthing 4 boats of up to 12,5 m in length, accommodation for 11 people in cabins and 14 people in a multipurpose room. The craft can provide fuel at boats as a gasoline supply station.

Autonomy for 40 days (food storage), 16 people (8 crew + 8 people in transit) and electric power generation. 20-day freshwater autonomy for 16 people (20 m^3 in tank + rainwater collection capacity).



MAIN DIMENSIONS

Total length:	19.20 m
Breadth:	15 m
Depth:	1.50 m

AUXILIARY EQUIPMENT

Diesel Electric Generator:	120/240 VAC, 60HZ, 125A
Shore connections:	120/240VAC 60Hz 50A
Bilge system:	Submersible pumps
Wastewater system:	biological treatment plant for 20 people
Drinkable water system:	Pump and hydro accumulator
Fuel system:	Supply by hand pump
Air conditioning system:	Air-cooled A/C units

TANK CAPACITY

Fresh Water:	20 m^3
Gasoline:	5 m^3
Diesel:	6 m^3

ACCOMMODATION

Single commander cabin (with bathroom)	1
Double female cabin (with bathroom):	1
Quad cabin:	2
Multipurpose cabin (14 hammocks):	1

FACILITIES

Galley:	1
Offices:	2
Mess:	1
Communal bathroom:	1

ACCESSORIES

12" Cleats:	8
6" Bits:	6

PROTECTION

The second level of the platform has a bulwark that functions as a shield in armored NIJ Level III Special Steel with a thickness of 3/16" on the outer perimeter of the accommodation zone. At the corners of the second level, the unit has 4 sentry stations with gun muzzles to provide the platform with defense capability.

SHIPBUILDING

RIVER OPERATION VESSELS

PAF-P

LARGE RIVERINE SUPPORT PATROL VESSEL

This vessel is designed to operate in sheltered waters and major rivers as a mobile logistics support platform to facilitate longer performance times and deployment of river operations.

This unit has helicopter-landing capabilities. The medical facilities serve both crew, troops and civilians.

The flat hull botton without appendages and is optimized to install a jet pump propulsion system with less draft allowing for navigation in shallow waters.

This ship is designed to serve as logistical support in assault, security and control operations with the capability to install technical intelligence equipment.

MAIN DIMENSIONS

Total length:	40.30 m
Breadth:	9.50 m
Depth (to first deck):	3.10 m
Draft (at maximum load):	1.26 m
Displacement:	373 t

PERFORMANCE

Speed:	9 knots (16.7 km/hr)
Autonomy:	20 days @30 people
Scope:	2900km @9 knots

CAPABILITIES

	32.5 m³
Diesel:	7.5 m³
Jet A-1:	21.1 m³
Gasoline:	22.2 m³
Fresh Water:	

ACCOMMODATION

	30 people
Fixed crew:	4.1 people
Floating crew:	4 hospital beds
Remarks:	

WEAPONS

Four M60 machine guns
3 x 12,7 mm double barrel machine guns in armored casings. Remotely operated MK 19 grenade launchers

PROPULSION SYSTEMS

	2 x 450BHP@1800 rpm
Main engines:	2 X Schottel SPJ 82 RD
Propellers:	

ELECTRICAL SYSTEM

	2 x 76 kW @ 60 Hz
Main Generators:	

NAVIGATION AND COMMUNICATIONS

Communications: VHF, UHF, HF, Satellite radios. Navigation: Radar 24 nm, GPS, Echosounder.

INTELLIGENCE

Tactical intelligence room

PAF-L

LIGHT RIVERINE PATROL SUPPORT VESSEL

This vessel is designed to operate in sheltered waters, major and low draft rivers as a mobile platform for communication, intelligence and logistical support systems for river combat fast boats.

The hull is built with ballistic steel plate, and gun stations with high firepower.

The flat hull botton without appendages is optimized to install a pump jet propulsion system with less draft allowing for navigation in shallow waters.

MAIN DIMENSIONS

Total length:	30 m
Total breadth:	7 m
Depth:	3.1 m
Draft (at maximum load):	1 m

PERFORMANCE

Speed, deep/shallow waters:	9.6 knots (17.7 Km/hr)
Autonomy:	12 days @11 people
Scope:	1560km@9 knots

CAPABILITIES

Diesel:	13.24 m³
Gasoline:	5.29 m³
Water:	3.78 m³

ACCOMMODATION

Fixed crew:	11 people
Floating crew:	36 people

WEAPONS

2 X Mount Machine Gun Cal 0,50
2 X M60E4 machine gun (7,62)
Night vision and target locking system (SCORPION)

PROPULSION SYSTEMS

Main engines:	2 X 340 BHP @ 1800 RPM
Propulsion:	2 X SPJ 57 RD

ELECTRICAL SYSTEM

Main Generators:	2X CAT C4 4 ACERT x58 kVA @60 Hz

COMMUNICATIONS

Radio:	2xHF + 3xVHF + 1xUHF + laptops
Phone:	Satellite

INTELLIGENCE

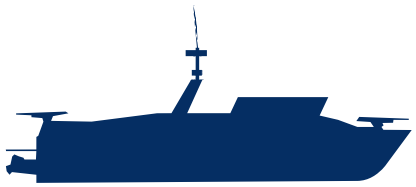
Tactical Operations Center

LPR
40 MKII

FAST RIVERINE PATROL BOAT

Armored patrol boat that performs as a command unit for the tactical river combat boat group operated by the Colombian Marine Corps. The boat is equipped to develop surveillance, intelligence, communications, command and control operations.

The hull is built with materials made up of sandwich panels designed to prevent damage caused by groundings. The shape of the gliding hull has been optimized to maximize the performance of the propulsion system in shallow water.



MAIN DIMENSIONS

Total length:	12.7 m
Breadth:	2.8 m
Depth (to first deck):	1.53 m
Draft (at maximum load):	0.65 m
Displacement:	11 t

PERFORMANCE

Maximum speed:	32 knots
Range @ 25 knots:	500km@25 knots
Autonomy:	5 days@6 people

CAPABILITIES

Fresh water:	25 Gal
Fuel (Diesel):	1,74 m³ (460 Gal)

ACCOMMODATION

Crew:	06 crew

WEAPONS

1 fire point for machine guns of up to 12,7 mm (double) at bow.
1 fire point for machine guns of up to 12,7 mm (single) or grenade launcher at bow.
2 fire points on each side for machine guns of up to 7,62 mm.

PROPULSION SYSTEMS

Main engines:	2X 500 HP KW@2500 RPM
Propulsion:	2x Type Water jet

ELECTRICAL SYSTEM

Generators:	1x7,8kW@60Hz
Air conditioning:	1 X 16,000 BTU/h

SYSTEMS

Firefighting:	CO2 engine room, 3x ABC portable
Anchor:	Danforth Type
Bilge pumps:	4x 2000 GPH

NAVIGATION AND COMMUNICATIONS

Radar 10 mn Echosounder
VHF, UHF, HF Communication frequency
IR camera system

PAF A

AMAZONIC PATROL VESSEL

Military river ship with capabilities for border control, river security, search & rescue, environmental control and humanitarian aid operations.

MAIN DIMENSIONS

Total length:	53.10 m
Molded breadth:	9.5 m
Design draft:	1.5 m
Depth:	3.10 m
Displacement:	465.17 t

PERFORMANCE:

Maximum Speed:	15 knots
Range:	5556 km @ 10 knots
Autonomy:	20 days, 61 people

PROPULSION:

Engines:	02 diesel engines x 1081bkW@2100 RPM
Propellers:	03 water jet propellers 1000bkw@1030 RPM

POWER GENERATOR

Main generator:	Two 118 kW Generators -230VAC@60Hz
Emergency generator:	One 105kW Generator -230VAC@60Hz

CAPABILITIES:

Diesel Fuel:	58 m³
JP5 Jet Fuel:	5 m³
Gasoline:	11 m³
Fresh water:	25.5 m³
Container Cargo:	1 TEU

ACCOMODATION AREA:

Fixed crew:	43 people
Floating crew:	22 people
Hospitalization:	04 people

WEAPONS:

Main deck - Bow:	One 25 mm gun
Deck 02- Bow:	01 M19 Grenade Launcher
Deck 02- Stern:	Two .50 Machine guns
Main deck - Bow:	One .50 Machine gun

LOW DRAFT RIVER COMBAT ELEMENTS

Aluminum hull design vessel with ballistic material protection (NIJ III) for the development of military operations in secondary and tertiary rivers with carrying capacity of 05 passengers and 400 kg of cargo. The unit is equipped with outboard propulsion that enables its transit in very shallow waters with protection at the bottom of the propeller.

MAIN DIMENSIONS

Total length:	8.68 m
Breadth:	2.42 m
Depth:	1.03 m
Design draft:	0.48 m
Design displacement:	3.73 t

PERFORMANCE

Maximum Speed:	44 km/h (24 knots)
Range:	300 km
Tactical diameter:	not exceeding 20 meters

CAPABILITIES

Crew:	4 people
Cargo:	5 people + 400 kg cargo
Fuel:	Gasoline, 120 gal

PROPULSION

Engine:	02 X Mercury 90 Hp 4 stroke
Power:	02 x 90HP
Steering:	Hydraulic 110 dB to ambient

ELECTRICAL EQUIPMENT

Batteries:	03 x 75Ah a 12VDC

NAVIGATION AND COMMUNICATIONS

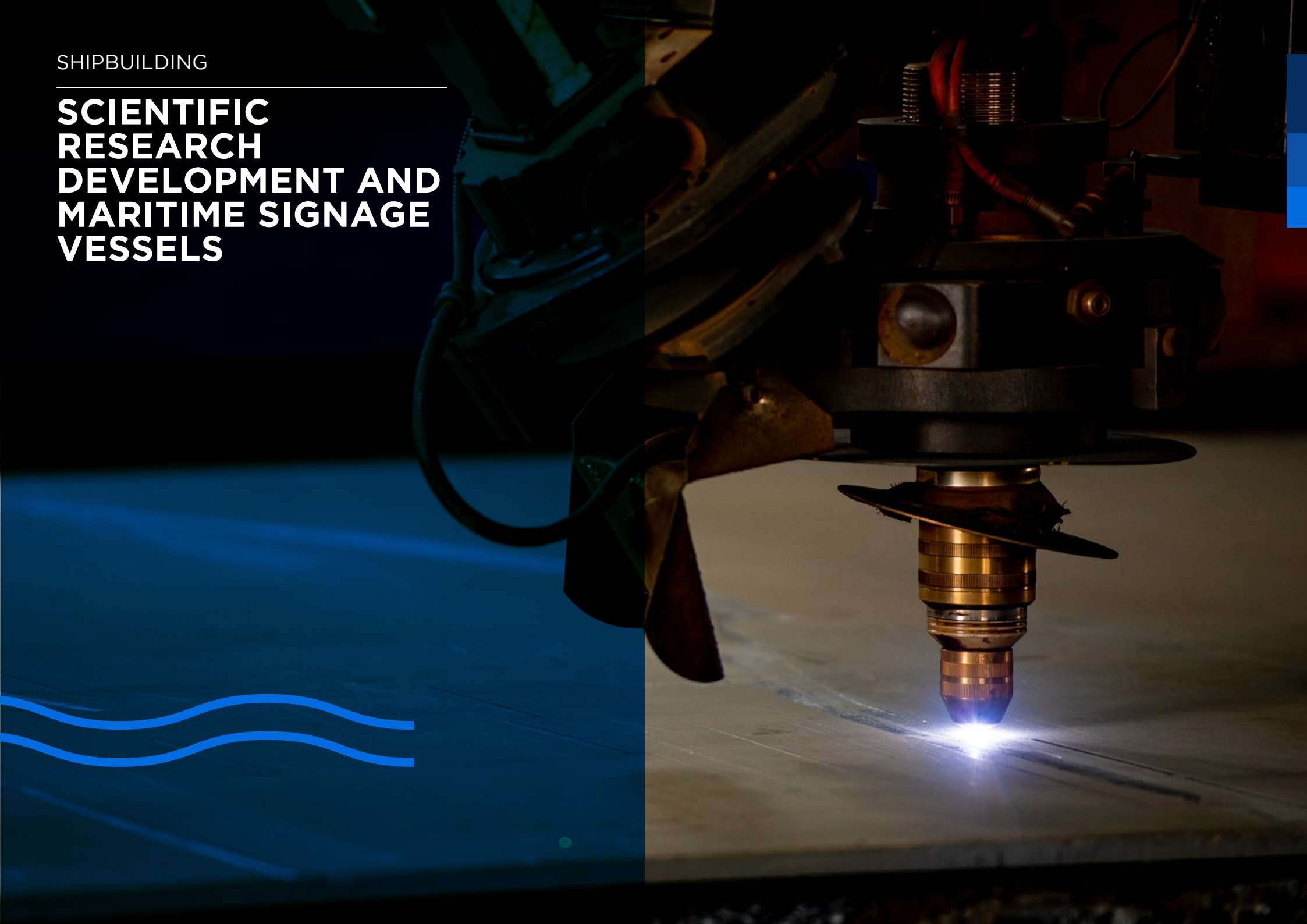
Radios:	01 x VHF marino
Magnetic compass:	01 x Ritchie SS-1002
GPS:	01 x Furuno GP-39
Lights:	De navegación + Reflec. búsqueda

GUN CARRIAGE/ARMORING

M240B machine gun:	02 at stern
M2HB machine gun:	01 at bow
Armored area:	Air draft on sides and shields

SHIPBUILDING

SCIENTIFIC RESEARCH DEVELOPMENT AND MARITIME SIGNAGE VESSELS



Basic DAMEN license

BICM

SCIENTIFIC MARINE RESEARCH VESSEL

Designed to develop missions in the fields of Oceanography, Hydrography and Geophysics, protection of human life at sea, support for navigation aids, humanitarian assistance, logistical support and protection of the marine environment.

The vessel is designed to comply with underwater noise emission requirements under lifting conditions, as specified for the DNV GL class (A) STEALTH notation.

The ship is designed with a dynamic positioning system that meets the requirements of IMO DP Class 1, as per the LRS DP(AM) class notation.

The ship is designed to meet the requirements of the LRS Ice Class 1C FS notation for sailing in light ice conditions (0,4 m) during the Antarctic summer.

CLASSIFICATION AND CERTIFICATES

LRS Class Notation: ✠100A1, ICE CLASS 1C FS, MCH, UMS, DP(AM)

Water Radiated Noise: Stealth (A) of DNV GL (lifting speed of up to 9 knots)

MAIN DIMENSIONS

Total length:	83.00 m
Depth:	7.20 m
Displacement @design draft:	3245.87 t @4.25 m
Breadth:	16.00 m
L.A.D Draft:	4.25 m

PERFORMANCE

Maximum Speed:	13 knots
Range:	@ 11 Knots
Autonomy:	45 days@ 60 people 30 days@ 90 people

CAPABILITIES

Crew and Science staff:	60 passengers
Flight deck and hangar:	Dauphin / Bell Helicopter 412
Survivors:	30 people

TANK CAPACITY

Ballast:	552.05 m³
Fresh Water:	237.08 m³
Fuel:	773.8 m³
AVCAT (Aviation Fuel):	15 m³

PROPULSION

Engines:	2 x CAT 3512E, IMO Tier II, Rating A
Power:	2 x 1491kW@1600rpm
Reducers:	2 x Reintjes LAF 1173, 74. 29:1
Propellers:	2xcpp Ø 2600 mm/5 blades/NiAl-bronze

ELECTRICAL POWER GENERATION

Main Generators:	3xCAT C18, 565 ekW, 706 kVA, 60Hz, 3 phases
Emergency Generator:	1xCAT C9.3, 224 ekW, 280 kVA, 60Hz, 3 phases

NAVIGATION AND COMMUNICATIONS

- GMDSS: A
- Integrated Bridge System: Multipurpose workstations
- Integrated automation system: Alarm monitoring and machine control
- Radar: X-band, S. Radar Ice Detection (X-band radar functionality)

SAMPLE ANALYSIS, DATA AND SAMPLE STORAGE

Laboratories: Geology; Wet; Dry; Hydrography and Geophysics / Data analysis room

MULTI-PURPOSE BEACON SHIP

Vessel designed in naval steel to meet the needs of beaconing/buoying missions, displacement type single hull with a 100 m² work deck area, accommodations for 15 people and duty crane.

MAIN DIMENSIONS

Total length:	24 m
Breadth:	8 m
Depth:	3.50 m
Design draft:	2 m
Design displacement:	246 t

PERFORMANCE

Maximum Speed:	9 knots
Autonomy:	10 days
Action radius:	2000 Nm@ 7 knots

CAPABILITIES

Crew;	7 people
Passengers:	8 Persons
Cargo on deck:	03 buoys 9 m long or 02 buoys 13 m long or 01 buoy 15 m long
Fresh Water:	13.00 m³
Fuel:	36.00 m³
Gray water:	3.00 m³
Sewage:	3.00 m³

PROPULSION

Main machinery:	02 x 209 kW @ 2300 RPM
Propellers:	02 x Rudder Propeller FPP/Azimuth R 2.783:1

ELECTRICAL EQUIPMENT

Generators:	2 X 75 ekW, 440V, 60 Hz
Batteries:	Battery packs @ 24VDC Dry
Transformers:	type – 440/230 VAC & 440/120 VAC

NAVIGATION AND COMMUNICATIONS

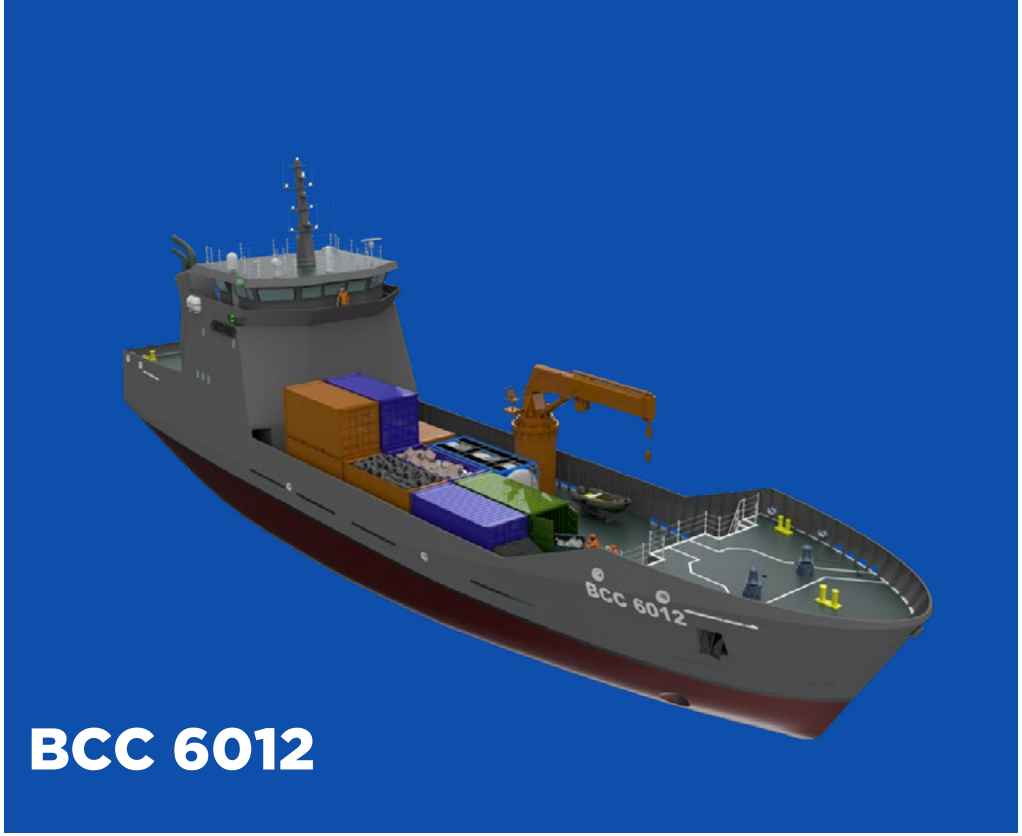
Radar:	Navigation X-band
Echosounder:	DGPS
GPS:	AIS
AIS:	Navigation + Search selection
Lights:	ECDIS
Electronic chart:	VHF - HF
Radios:	

AUXILIARY EQUIPMENT

Crane:	01 x 8 t @10 m
Winch:	01 x 5.5kW@ Electrical
Anchor:	01 x HHP

SHIPBUILDING

LOGISTICAL AND OFFSHORE OPERATION VESSELS



BCC 6012

CARGO AND COASTAL TRADE SHIP 6012

Boat designed in naval steel, displacement type single hull with marine navigation capability. Accommodations for 19 crew and 60 passengers in transit. 300m² cargo deck area and duty crane, 40m² internal multi-purpose cargo hold.

The deck can carry containers, bulk cargo, and solid waste. The vessel's internal tanks can carry drinkable water, fuel and oily waste. It is outfitted with a bow propeller.

MAIN DIMENSIONS

Total length:	60 m
Breadth:	12,50 m
Depth:	3.60 m
Draft at maximum cargo:	2.70 m
Maximum displacement cargo:	1380.00 t

PERFORMANCE

Maximum:	12 knots
Speed:	40 days@19 people
Autonomy:	15 days@79 people
	2500 Nm@ 10 knots

CAPABILITIES

Crew:	19 people
Passengers:	60 people
Cargo deck / hold:	(20 TEU) 200 / 100 t.
Fresh water Consumption / Loading:	22.00 / 200.00 m³
Fuel Consumption / Loading:	100.00 / 190.00 m³

CARGO CAPACITIES

Total Load (DWT):	706 t
General load (combined):	590 t

PROPULSION

Engines:	02 x Heavy Duty, IMO TIER III
Power:	02 x 746kW@1800RPM
Propeller:	02 x FPP Ø 1700mm, NiBrAl, 5 blades
Bow propeller:	01 x FPP 125KW

ELECTRICAL EQUIPMENT

Generator:	Emergency only gen: CAT C44 - 73 kW
Port Generator:	Gen Emergency/port: CAT C7.1 - 163 kW

NAVIGATION AND COMMUNICATIONS

Navigation lights, Magnetic compass, GPS gyrocompass, echo sounder, log, X-Band RADAR, AIS, GMDSS A3, Indoor and outdoor communications systems.

AUXILIARY EQUIPMENT

Crane:	01 20 t @10 m/ 01 x 1.5 t @4,0m
PTAR:	01 x for 80 people
Desalination system:	01 3000Ltr/day
Winch:	02 x A bow, electric for anchors
Anchor:	01 X HHP, bow

Basic Robert Allan license

OFFSHORE TUG

MULTI-PURPOSE LOGISTIC SUPPORT TUGBOAT

Designed with excellent maneuverability and seagoing capabilities. Equipped for assistance to other vessels, long-haul towage, fire suppression, anchor handling, cargo management and other offshore support services.

The unit is equipped with state-of-the-art machinery and equipment, radio and navigation devices, safety and rescue gear, monitoring and control of equipment on board, spaces with high level of comfort for crew members and specialized work equipment.

MAIN DIMENSIONS

Total length:	37, 47 m (123 ft)
Total breadth:	13.50 m (44.2 ft)
Depth:	6.08 m (19.9 ft)
Summer load draft (on baseline):	4.93 m (16.17 ft)
Fixed point pull:	70 t
Displacement:	1488 t
Gross registered tons:	745 .1 t
Net Registered tons:	224 t
Maximum Speed:	12 knots (without towage)

CAPABILITIES

Fuel (Diesel):	300 m³
Fresh Water:	70 m³
Ballast:	205 m³
Oily waters:	150 m³
Foam:	12 m³
Lifting crane:	10 t a 12 m
Free deck area:	150 m²
Crew:	17

PROPULSION

Main engines:	2 x Cartepillar 3516C HD B Rating
Installed power:	2 X 2240 KW (6000HP) @ 1800 RPM
Reducers:	2 X Twindisc MCD-3000-8-HD
Propellers:	2 X Z drive Schottel SRP 1515FP
Propulsion and Steering:	1 X 200 KW

ELECTRICAL SYSTEM

Port Generator:	2 X 150 kW
Emergency Generator:	1 X 95 Kw

FEATURES MANEUVER AND FIRE FIGHTING EQUIPMENT

- Anchor system with 2 anchors 765Kg each, with high stopping power.
- Maneuver winch with capacity of 185 tons and pull line or 15 tons at 22 m/min and 4 tons at 44 m/min.
- Anchorage and support winch with capacity of 150 tons and pull line or 65 tons at 5 m/min and 10 tons at 35 m/min.
- Deck Crane, 10 t to 12 m capacity.
- Tow pins and Shark jaws with capacity of 200 tons and handling of lines and chains up to 90 mm diameter (optional).
- Stern roller 1.1 m diameter, 3 m long, 150 tons SWL cargo.
- Deck Winch with capacity of 15 t, 50 m of steel wire or 28 mm diameter and pull line from 10 t to 0-20m/min.
- FIFI firefighting system, classified "Fire-Fighting Ship 1".

CLASS NOTATION

✠100A1 Tug, Fire-Fighting ship 1 (2400 m³/hr) with waterspray, ✠ LMC, UMS

LOGISTIC SUPPORT AND COASTAL TRADE VESSEL

Vessel with capacity to develop humanitarian operations along riverside and coastal areas. Multi-functional platform that allows its adaptation to different tasks such as logistical support, humanitarian aid and commercial cargo transport.

Its design enables access to low-draft areas without port facilities.

MAIN DIMENSIONS

Total length:	49 m
Total breadth:	11 m
Depth (to first deck):	3.1 m
Draft (at maximum load):	1.75 m

PERFORMANCE

Maximum Speed:	9 knots
Range:	Up to 1500 mn (at 6 knots)
Autonomy:	Up to 40 days (15 people)

CAPABILITIES

Fuel (Diesel):	775.8 m³
Fresh Water:	25 m³
Outfit:	15 crew+ 36 passengers

PROPULSION

Power:	2 x 412 kW @ 2100 rpm
Propeller:	2 Pump Jet

ELECTRICAL SYSTEM

Main Generators:	2 x 99 kW, 220V @60Hz
Emergency Generator:	1 x 90 kW, 220V @60Hz

CARGO CAPACITIES

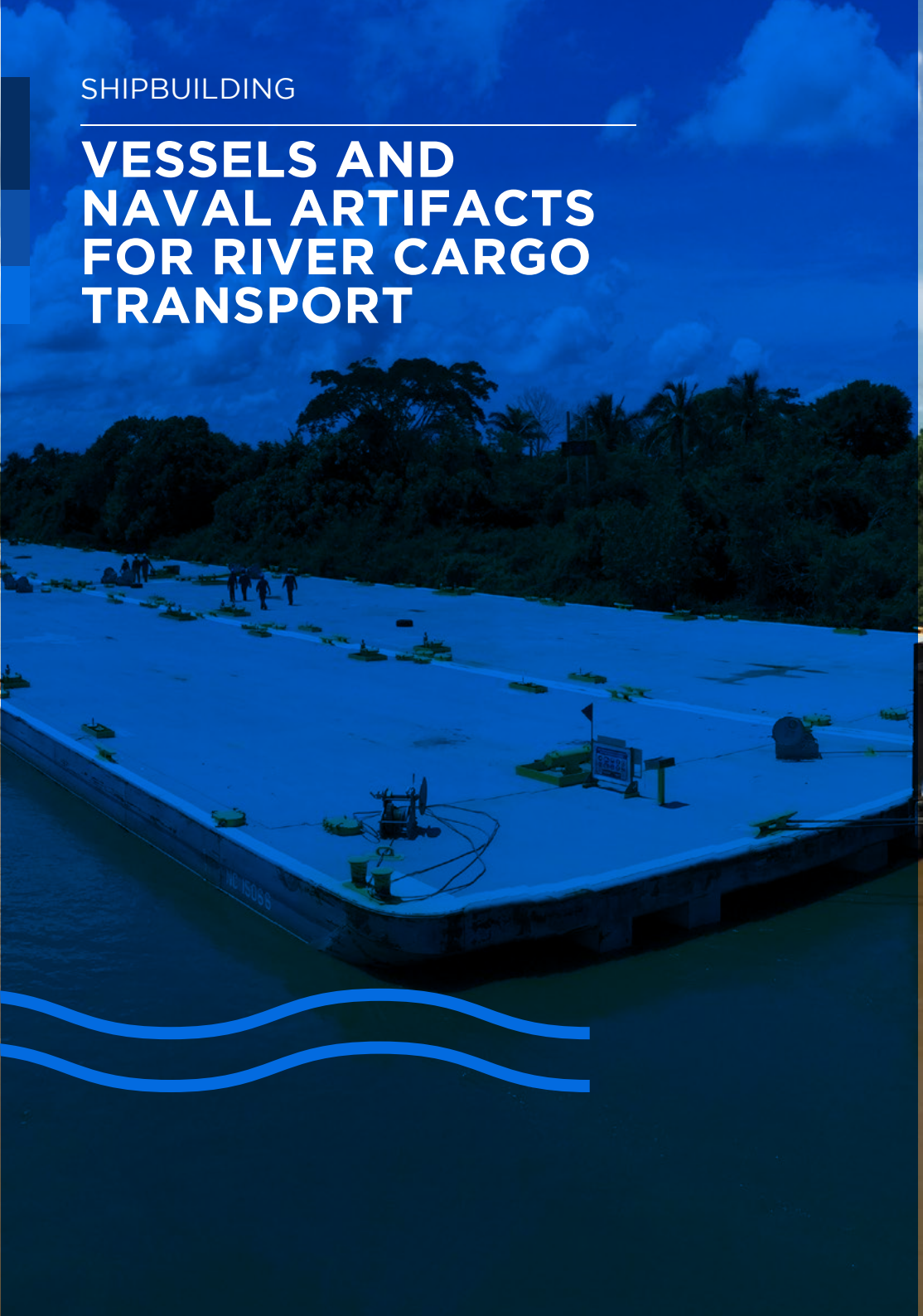
Transport on deck (5 tons/m2) maximum 210 t.
Capacity of up to 10 containers (includes 2 reefers).
8 ton @10m hydraulic crane on main deck.
Transport of 29 m3 of drinking water

SPECIAL FEATURES

Access ramp for vehicles, materials and personnel.
1 deck crane, 10 tons to 12 meters.
Water transport 25 m³
Transport of up to 15 m³ of gasoline

SHIPBUILDING

VESSELS AND NAVAL ARTIFACTS FOR RIVER CARGO TRANSPORT



RIVER PUSHER CRAFT

River vessel designed for maximum performance, maneuverability and thrust in shallow waters with features suitable for transport maneuvers for 8-barge multi-purpose convoys in 1E+2B+2B+2B+2B arrangements, as well as supply of tug support services.

MAIN DIMENSIONS

Total length:	33.00 m (123 ft)
Total breadth:	11,50 m (44,2 ft)
Depth:	2.90 m (19.9 ft)
Design draft:	1.50 m (16.17 ft)
Air draft:	10.00 m
Displacement:	367.77 t
Towing capacity:	15000 t
Maximum Speed:	13.5 knots (without tug)

CAPABILITIES

Fuel (Diesel):	71 m³
Fresh Water:	3.8 m³
Wastewater:	2.0 m³
Gray water:	1.8 m³
Oily waters:	1.7 m³
Sludge:	1,5 m3 m

PROPULSION

Main engines:	3 X CAT C32 ACERT TIER IIID
Installed power:	3 X1000 BHP) @ 1800 RPM
Reducers:	3 X zf marine W3350
Propellers:	3 x Kaplan diameter 1400/5 blades/FPP

ELECTRICAL SYSTEM

Diesel Electric Generator:	2 X CAT C44, 220VAC, 60Hz, 76kW
Wastewater:	1x ALPHA LAVAL, MAB 104
Air compressor:	1x DETEGASA , BIOSTPN 250 1X Ingersoll rand, 2340L5-V

SPECIAL FEATURES

Crew:	13, Expandable 21
Cabin No. 1:	4
Cabin No. 2:	4
Cabin No. 3:	2
Cabin No. 4:	2
Captain's Cabin:	1

MULTICARGO RIVER BARGE

Designed to transport hydrocarbons/gasoline or container cargo on deck in protected waters or rivers.

This vessel has four discharge tanks and eight 20-foot container bays or four 40-foot container bays.

MAIN DIMENSIONS

Total length:	60 m
Length between perpendiculars:	58.50 m
Breadth:	14.90 m
Center depth	345 m
Design draft:	240 mm

CARGO CAPACITIES

LIQUID CARGO:

Tank 5 EB (@98%):	373,2 m³
Tank 5 BB (@98%):	373,2 m³
Tank 6 EB (@98%):	373,2 m³
Tank 6 BB (@98%):	373,2 m³

DRY CARGO:

20' BAY (18TM)	64 TEU
Bulk cargo on deck	2.3 ton/m²

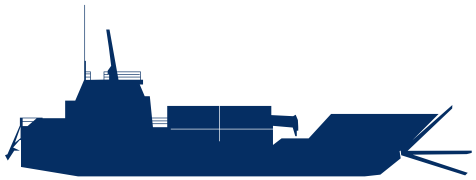
SHIPBUILDING

SOCIAL WORK OPERATION VESSELS

BAL-C
HEALTH

LOGISTIC SUPPORT AND COASTAL TRADE VESSEL

The ship has the capacity to meet the technical-scientific conditions for the development of health activities through medical offices and spaces particularly suitable for the supply of medical and surgical services up to Level II of complexity. This adaptation allows for brigades to be implemented in areas of difficult access.



MAIN DIMENSIONS

Length:	49 m
Molded Breadth:	11 m
Mean Draft:	1.60 m
Depth:	30 m

DESEMPEÑO

Maximum Speed:	9 knots
Autonomy:	40 days/ 15 people
	20 days/ 51 people
Range:	4500 km @ 6 knots

ACOMODACIONES

15 crew
36 medical staff / 06 nurses
04 Hospitalization

PROPULSIÓN

02 DIESEL ENGINES 552 BHP @ 2100 RPM
02 Propellers SPJ 82 RD SCHOTTEL

AUXILIARES

Hospital waste management.

10 Containers suitable for working spaces in the area of healthcare and crew readiness.

SISTEMA ELÉCTRICO

Primary Generator	2 x 99 kW, 220V @60Hz
Emergency Generator	1 x 90 kW, 220V @60Hz

PERFIL OPERACIONAL

Level II Medical and Surgical Services: Surgical, Recovery Area for 1 Patient, Specialized Outpatient Care, Neonatal Room, Hospitalization for 04 Patients, Pediatric Offices, gynecology/obstetrics, General Medicine, Dentistry/Dental pediatrics, internal medicine/urology, radiology/other diagnostic media, neurology/orthopedics and trauma, cardiology, hemodynamics/pneumology, ultrasound/ cytology, low complexity lab and pharmacy. Capacity in containers for physical medicine and rehabilitation, social work, ENT/ophthalmology, general medicine, intra and extramural actions of promotion, prevention and control.

LATAM

TAM-TYPE AMBULANCE BOAT

Boat for the medical transfer of critical patients with high level gear providing timely care during travel under the requirements established by the NTC 5211 Colombian technical standard. The boat has the capacity to operate in inland waterways and protected waters.

MAIN DIMENSIONS

Total length:	12.20 m
Molded Breadth:	2.80 m
Depth:	1.53 m
Design draft:	0.53 m

PERFORMANCE

Maximum Speed:	46 km/h (25 knots)
Range:	230 km @ 25 knots

AUXILIARY SYSTEMS

Air conditioning:	1x15.00 btu/h

PROPULSION

Engines:	02 FB engines, 4-stroke 250HP @5000 RPM

ELECTRICAL SYSTEM

DC Power generator:	Batteries 100 AH@12 VDC
AC Power generator:	Generator 7.5 kW, 120 VAC

NAVIGATION AND COMMUNICATIONS

Eco sounder
Marine VHF radio
GPS
Set of siren lights for marine-type ambulance Loudspeaker system
AIS Blowhorn

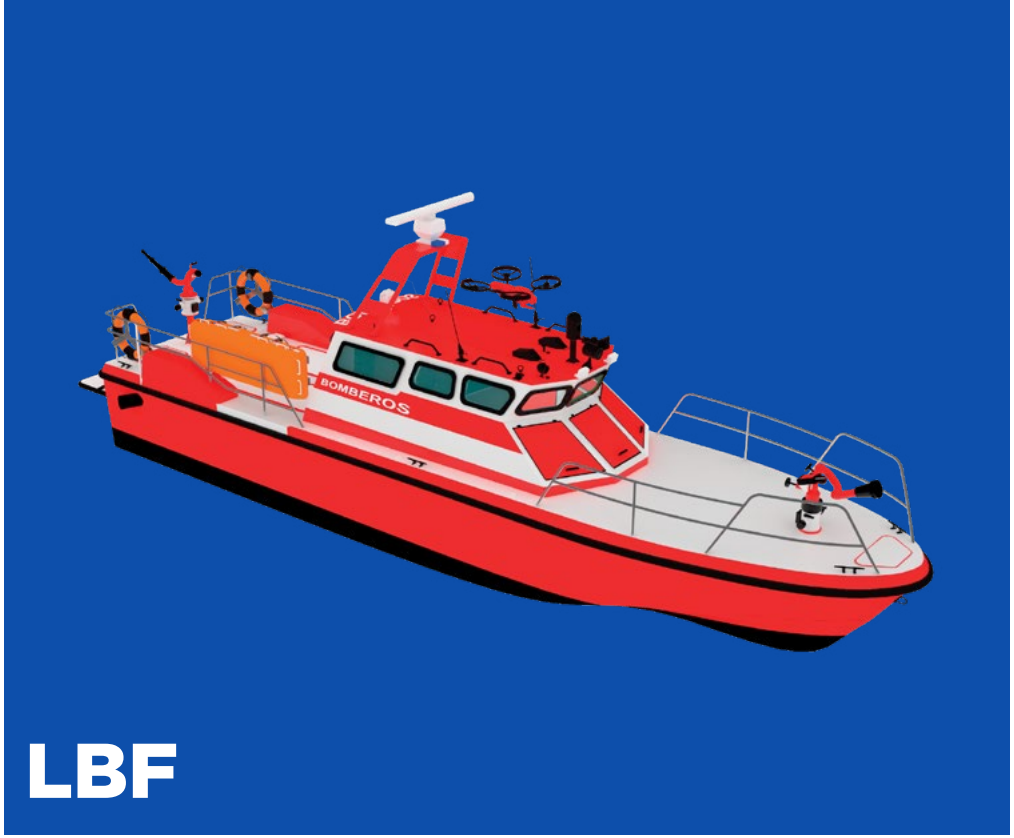
ACCOMMODATION

02 Crew
02 medical staff
02 patients
02 Companions

OUTFIT:

The boat will be equipped in accordance with its scope of service (TAM) as per resolution 3100 of 2019, Ministry of Health.

As an option, the gear and capacity of the boat can be estimated according to the service area (TAB), as per the requirements of the client.



LBF

RIVER FIREFIGHTING BOAT

Boat specialized in management of fire incidents properly equipped for firefighting in river zones of difficult access with the objective of safeguarding human life and natural resources.

The boat is equipped with fire extension systems through water shooting monitors or by attaching flexible hoses.

MAIN DIMENSIONS

Length:	12.70 m
Molded Breadth:	2.80 m
Depth:	1.53 m
Mean Draft:	0.64 m

PERFORMANCE

Maximum Speed:	46 KM/H (25 knots)
Autonomy:	1 day
Action radius:	500 @ 25 knots

ACCOMMODATION

02 Crew / Firefighters
04 Firefighters

PROPULSION

02 Diesel Engines 350 BHP
02 Water Jet Propulsion Units

AUXILIARY SYSTEMS

Two 300m³/hr / 60m bow fire monitor

ELECTRICAL SYSTEM

Power Generator DC Batteries 360 A/h@12 VDC
Power Generator AC Generator 4kW, 120VAC

NAVIGATION AND COMMUNICATIONS

Echo sounder, GPS, FIJR camera, lights and fire siren, marine VHF radio, HF radio

LAR

SUPPORT AND RESCUE BOAT

This boat specializes in search and rescue operations with capacity to transport equipment and highly trained personnel to deal with emergencies in difficult-to-access river areas, also facilitating the evacuation of personnel.

MAIN DIMENSIONS

Total length:	12.20 m
Molded Breadth:	2.80 m
Depth:	1.53 m
Draft at maximum cargo:	0.80 m
Maximum cargo carriage:	8.50 t

PERFORMANCE

Maximum Speed:	46.3 KM/H (25 knots)
Range:	250 km @ 25 knots

ACCOMMODATION CAPACITY

Crew:	02 people
Rescuers:	04 people

PROPULSION

Engines:	02 x 250HP
Propulsion:	Outboard
Fuel:	Gasoline

AUXILIARY EQUIPMENT

01 Diesel pump	80kW 500gpm @10bar
01 fi-fi Monitor	500 gpm @ 8 – 10 bar
04 bilge pumps	1 x 48 gpm, 3 x 27 gpm
01 Davit	200 Kg
01 Drinking water pump	3 gpm @ 14 bar

ELECTRICAL SYSTEM

DC Power generator	105AH@12VDC

NAVIGATION AND COMMUNICATIONS

Navigation system:	Echo sounder, GPS, magnetic compass, VHF marine radio, public
Communications:	address equipment
Navigation lights and signals:	Rescue siren, searchlight and camera with night vision.

TANK CAPACITY

Gasoline:	150 gal
Drinkable Water:	25 gal
Diesel:	25 gal

FLOATING TOURIST SERVICE CENTER

River and lake craft with flexible design and capacity to hold up to 10 people on a permanent basis with spaces on its first deck for the layout of offices, medical facilities, classrooms or other environments of citizen and tourist interest.

MAIN DIMENSIONS

Length:	16.20 m
Breadth:	4.80 m
Maximum	13 KM/H (7 knots)
Speed:	24 hours
Autonomy:	0.85 m
Draft at maximum cargo:	45.70 ton
Maximum cargo carriage:	10 people
Crew:	

PROPULSION

Engines:	2x100HP
Propulsion:	Outboard
Fuel:	Gasoline

CAPACITIES

Fresh water:	500 Gal
Gasoline:	360 Gal
Wastewater:	360 Gal

NAVIGATION AND COMMUNICATIONS

Navigation system:	Radar, echo sounder, GPS, Magnetic Compass (optional)
Communications:	Marine VHF radio, public address equipment (optional)
Navigation lights and signals:	As per Resolution No. 666 of 1999, Ministry of Transport. Blue police type flashing light, spotlight.

AUXILIARY EQUIPMENT

Power Generator:	1x14kW @ 120/240VAC 60Hz.
Electrical System	Banks 12/ 24VDC. Submersible pumps.
Bilge system:	Gray water grease trap.
Wastewater system:	Pump with hydro-accumulator and filter systems.
Drinking water system:	Air conditioners and extractors.
Environmental control system:	Ability to accommodate inflatable boat and jet ski.
Stowage system:	
Shore connections:	120/240VAC 60Hz 50A

SHIPBUILDING

FLOATING ARTIFACTS FOR SOCIAL WORKS

FLOATING
CLASSROOMS

FLOATING LABS

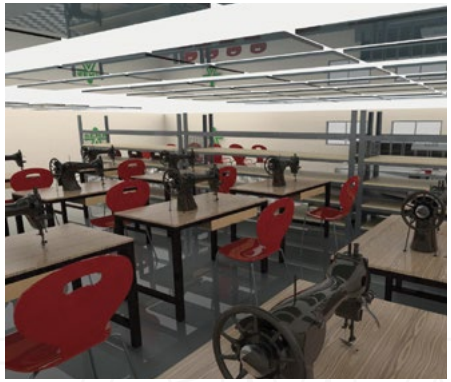
The floating classroom solution is designed to resolve emergency situations not only in terms of the physical availability of classrooms, but also regarding access to education and technology by becoming a fixed or mobile alternative for rural riverside areas.

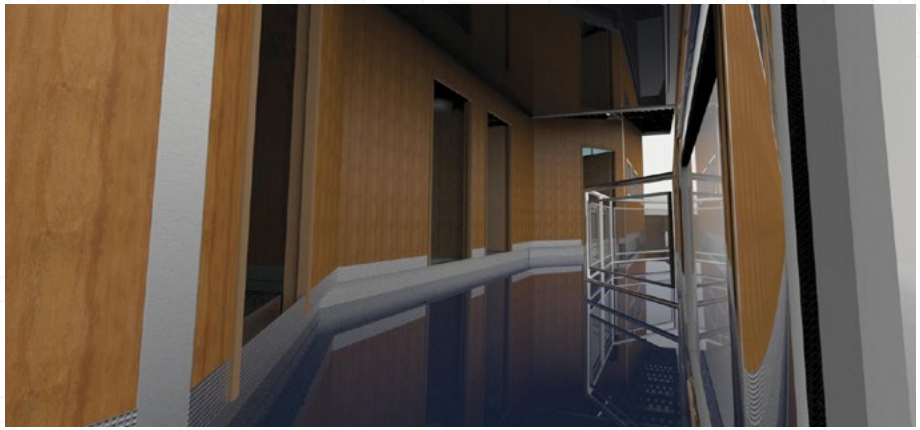
MAIN DIMENSIONS

Length:	30 m
Breadth:	15 m
Depth:	1.3 m
Design draft:	0.75 m
Displacement:	280 t

CAPABILITIES

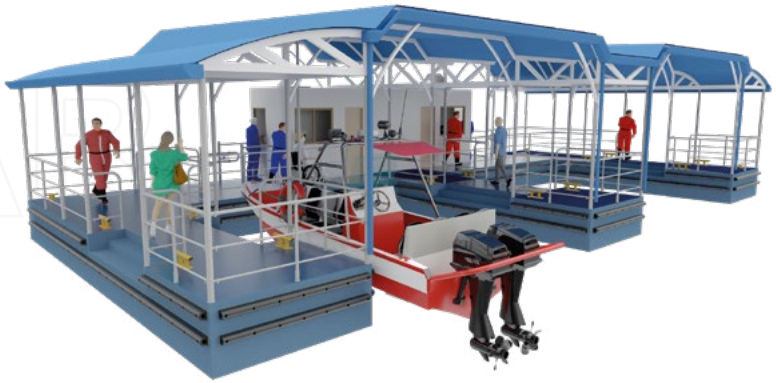
Total fuel:	18,00 m³ m
Fresh Water:	53,00 m³ m
Wastewater:	1,50 m³ m
Oily waters:	1,50 m³ m

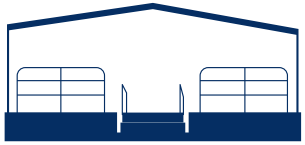




RIVER BERTHS

Modular structures designed for berthing smaller river boats, as well as for boarding and disembarking people and light cargo in riverside areas, where variable water levels and strong currents may occur.





TYPE A BERTH

MAIN DIMENSIONS

Length:	6.60 m
Breadth:	3 m
Center Depth:	0.90 m
Draft @thread displacement:	0.30 m
Thread displacement:	5.90 t
Number of Modules or Pontoon:	03
Module 1 and 3:	3,00x2, 40x0, 90 m
Module 2 (central):	3,00x1, 80x0, 90 m

TYPE E BERTH

MAIN DIMENSIONS

Total length:	13.20 m
Breadth:	9 m
Depth:	0.90 m
Draft:	0.30 m

ACCESSORIES

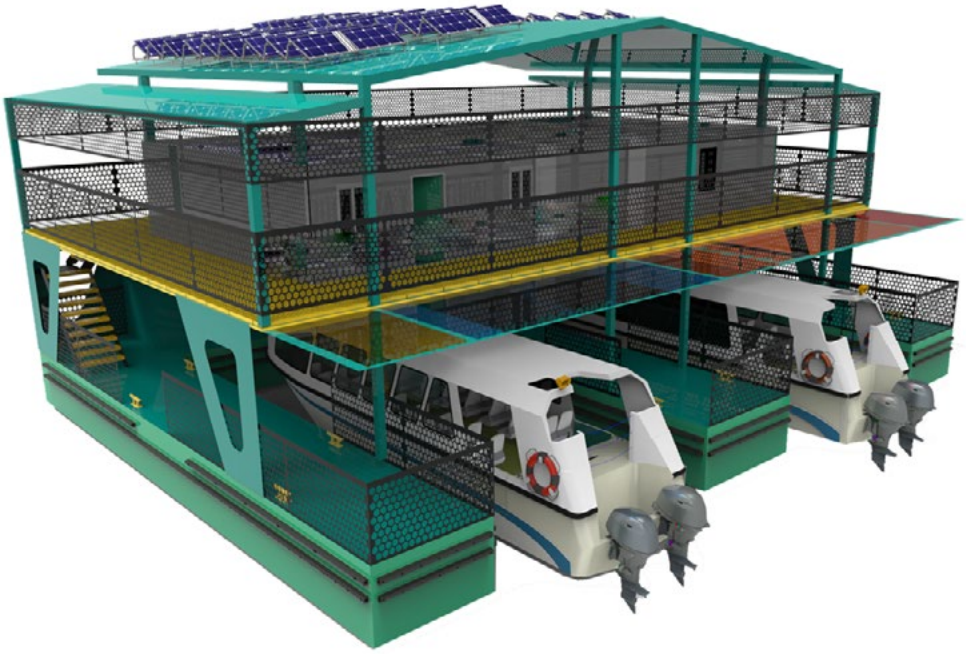
12" Cleats	16
3" Double Bitts	14

SIGNALING

LED ceiling lights:	12
Maneuver spotlights:	07
Red signaling light:	02

CAPABILITIES

Two 6 m boats in inner bay
Two 9 m boats



PEF

RIVER TRAINING PLATFORM

Non-propelled platform to provide academic training services to isolated populations, thus overcoming geographical as well as socio-cultural barriers, and promoting institutional presence.

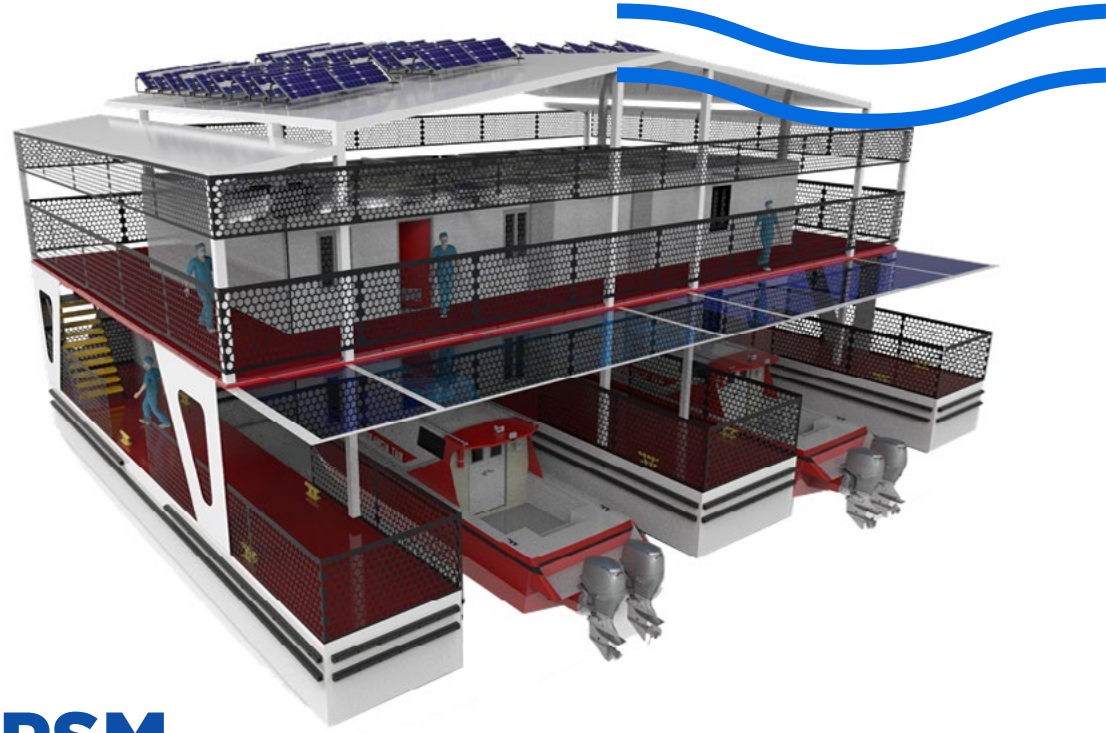
MAIN DIMENSIONS

Length:	19.20 m
Breadth:	15.00 m
Depth:	140 m
Maximum draft:	0.9 m

CAPABILITIES

Classrooms for 40 students
Satellite connectivity

iver School Transport



PSM

MEDICAL SERVICES PLATFORM

Non-propelled platform for providing basic health services to isolated populations with capacity for general medical care, dental assistance and first aids.

MAIN DIMENSIONS

Length:	19.20 m
Breadth:	15.00 m
Depth:	140 m
Maximum draft:	0.9 m

CAPABILITIES

General Medicine
Dentistry
Pharmacy

Medical Care Transport


50t
50t

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