



# PRO:ZERO

The ProZero series is a range of fast boats designed specifically for professional use. They are built to endure the harsh conditions of operations on open sea while providing the operator with an ideal work environment.

With advanced design and sophisticated application of composite materials, the ProZero series offers the customer significant commercial benefits and enhance overall vessel performance and energy efficiency. The ProZero range covers Offshore, Workboats and vessels for Security & Defense.

#weloveworkboats

#### **PROVEN TECHNOLOGY**

The ProZero series of boats is the quintessence of years of experience. Building on well-consolidated technology, the ProZero boats provide unrivaled safety, performance and comfort.

We are the trusted supplier of many customers and have delivered vessels to both private organizations, shipyards and governmental institutions.



## **Efficient and proven hull**

Matchless strength-to-weight and seaworthiness. Shaping first-class hulls with precision technique and cost-effective production.



**Low consumption Minimized operating costs and** improved environmental impact. For a sustainable and prosperous









## **14M HYDROGRAPHIC** SURVEY BOAT

## **Efficient surveys under changing weather**

The 14m subsea survey boat is designed to accommodate workspace for 2 subsea specialists in addition to the helmsman's workstation. The design enables efficient surveys under changing weather conditions and the hydrodynamic profile of the hull minimizes turbulence that can interfere with the highly sensitive measuring equipment.

#### Advanced sonar equipment

The advanced sonar equipment is recessed into the hull structure to protect it against adverse conditions. The equipment includes high-performance sensors and processors that can capture the signals, manage multiform data streams and constantly produce and store high-quality information that truthfully represents the sea floor.

## Designed with acute attention to ergonomics

The cabin has been designed with acute attention to ergonomics and working environment. Noise insulation ensures comfort and easy communication under all operating conditions and the layout has been organized to facilitate workflow coordination, both during the missions and during transport to and from the sites. The cockpit layout is arranged to maximize the use of state-of-the-art operations management equipment and electronic aids for situational awareness.



# nmatched strength

Confront the elements with confidence. Built for strength, safety and durabilility.

14M HYDROGRAPHIC SURVEY BOAT





# PRO:ZERO 14M HYDROGRAPHIC BOAT







Length overall, approx.: Beam overall, approx.: Draft (full load), approx.: Displacement (full load), approx.: 14000 kg **Engines:** 

#### BENEFITS:

The 14m subsea survey boat is designed to accommodate workspace for 2 subsea specialists in addition to the helmsman's workstation. The design enables efficient surveys under changing weather conditions and the hydrodynamic profile of the hull minimizes turbulence that can interfere with the highly sensitive measuring equipment. The advanced sonar equipment is recessed

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#### 2017 | 5000-03-60 OPERATIONAL FEATURES:

14 m Speed: 32 kts (with 3 persons). Speed (cruise): 25 kt. Range: 8 hours at cruise speed. Fuel capacity: 2.000 l.

#### 1.500 kg DESCRIPTION:

**2 x inboard diesel** The boat has been built to meet the requirements from the competent authorities, and features a redundant propulsion system.

#### **HULL, DECK AND SUPERSTRUCTURE:**

The boat is made of a combination of glass- and LED lights in cabin and cockpit. carbon fibre as sandwich construction with PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

#### FENDER:

The fender has a D profile of 85 x 75 mm. It is made of hard rubber and bolted to the hull.

#### DECK:

Deck is self-bailing. Large working area aft of the cabin. 6 mooring bites. Aluminium railings on aft and fore deck.

#### CABIN & COCKPIT:

Toilet with WC and washbasin and technical room in separate cabin.

Main cabin mounted on anti-vibration shock mounts to ensure low noise levels.

2 Hydrographical workstations and a combined helmsman/workstation.

1 bench and table in the aft of the main cabin. Hinged door in the aft of the cabin.

Defrosting system for windows with hot air

All windows are glued into the structure.

#### TECHNICAL:

#### ENGINES, PROPULSION, STEERING etc.:

2 x Inboard diesel engine.

2 x Water jet.

Redundant propulsion system. Independent diesel generator – 230V.

Structural diesel tank with hatch and filling protection. Independent fresh water tank. Independent black water tank with odourless

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable. Shore power with control lamp, marked fuses,

earth connection.

Isolation transformer with earth plate for

protection of galvanic corrosion.

24-volt electrical system.

Main switches with separate battery systems for

start, navigation and consumption. Battery charger with indicator.

1 x Searchlight on cabin roof, manually

operated.

Navigational lights.

Floodlights on foredeck and aft deck.

#### **NAVIGATION & ELECTRONIC EQUIPMENT:**

Complete engine instruments supplied by engine manufacturer.

Fuel gauge.

Control panel for all lighting and other electrical equipment.

1 x Magnetic compass.

#### **SECURITY EQUIPMENT:**

Bilge pumps.

Fire extinguisher at helmsman station. Automatic fire extinguisher system in engine











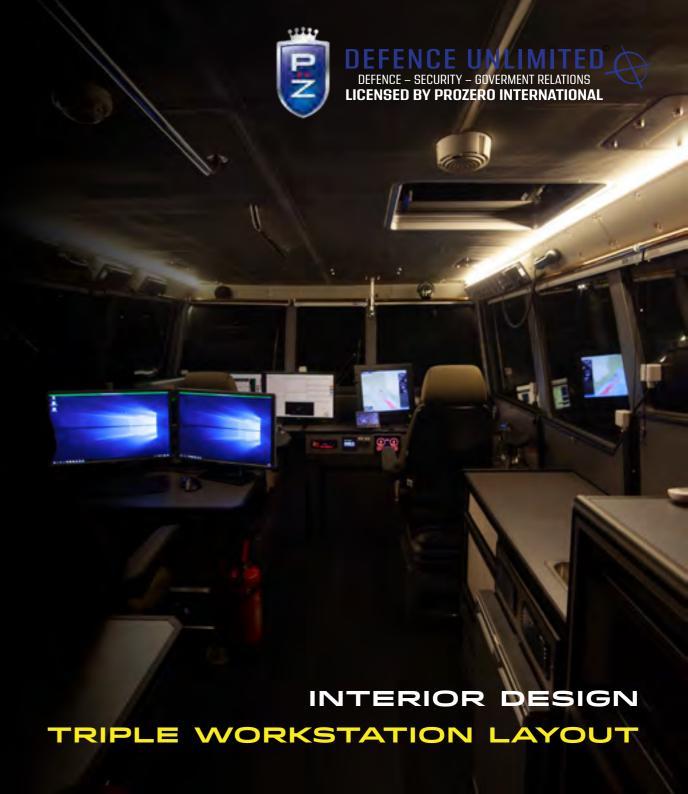
The cabin offers great comfort and is equipped with an adjustable heating system, an air-suspended driver's seat, ergonomic passenger seats and state-of-the-art electronic equipment.

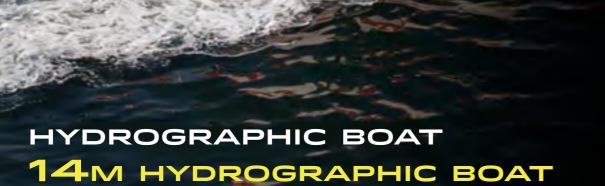


Comfortable cabin
Attending to the human factor. Functional, bright and ergonomic working conditions with noise insulation for ease of communication.









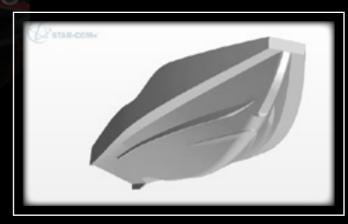


# INNOVATIVE HULL DESIGN HULL MOUNTED SONAR

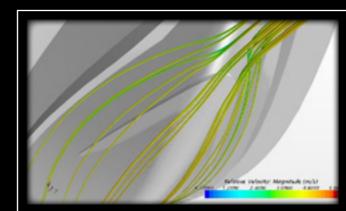
## DETAILED HULL ANALYSIS

#### **Optimal conditions for data collection**

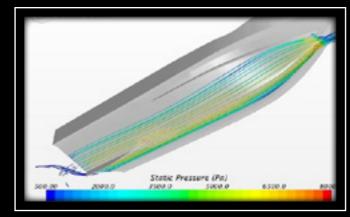
Acquisition of high-quality hydrographic data requires optimal conditions. Consequently, special attention has been paid to obtain a hull profile which reduces or eliminates hydrodynamic phenomena that affect the sonar equipment. The enemy is cavitation bubbles and sweep-down of bubbles from the bow that become entrained under the hull. Computational analyses carried out by Hauschildt Marine A/S, Copenhagen, helped to reveal the best hull design before the vessel was put into production.



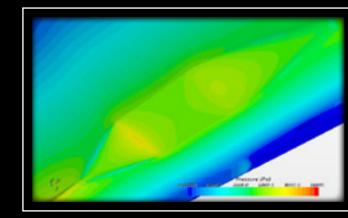
\* A proposed bow mounted feature for redirecting streamlines carrying bubbles



\* A proposed bow mounted feature for redirecting streamlines carrying bubbles



\* Velocity Lines and pressure lines on existing hull at 10 knots



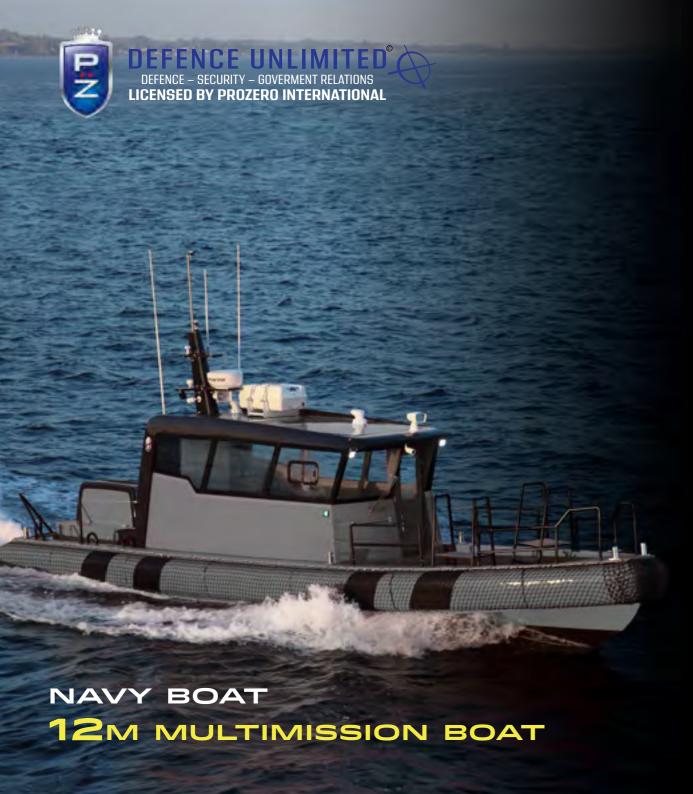
\* Velocity Lines and pressure lines on existing hull at 10 knots

"The 14m ProZero Subsea Survey vessel exceeded all expectations and contractual demands when being able to do more than 14 kts without any disturbance and air-bubbles in the sonar area. This is way better than the contractual requirements when contracting the vessel."



INNOVATIVE HULL DESIGN HULL MOUNTED SONAR

<sup>-</sup> Preben Thuren Larsen, Project Manager



# 12M MULTIMISSION BOAT

## Designed for speed, agility and comfort

The 12m ProZero multimission boat is a fast vessel designed specifically for speed, agility and comfort. The vessel can perform a wide variety of missions, including personnel transfer and hydrographic missions.

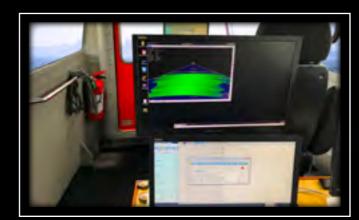
#### **Exceptional seakeeping capabilities**

The design of the fore and aft deck ensures quick and safe accommodation of passengers in the cabin and cargo on the foredeck.

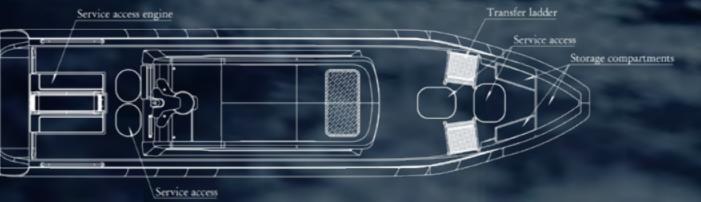
The sleek and deep v-bottom of the boat secures a stable ride and provides the boat with exceptional seakeeping capabilities which contributes even further to crew comfort.

## Reduction in fuel consumption and emissions

The vessel is made from composite materials and is equipped with aluminium railing. Smart material selection contributes to significant weight reductions and the low weight translates directly into impressive reductions in fuel consumption and emissions. In addition, the strong and durable composite materials are non-corrosive and virtually maintenance-free which cuts the cost of ownership.

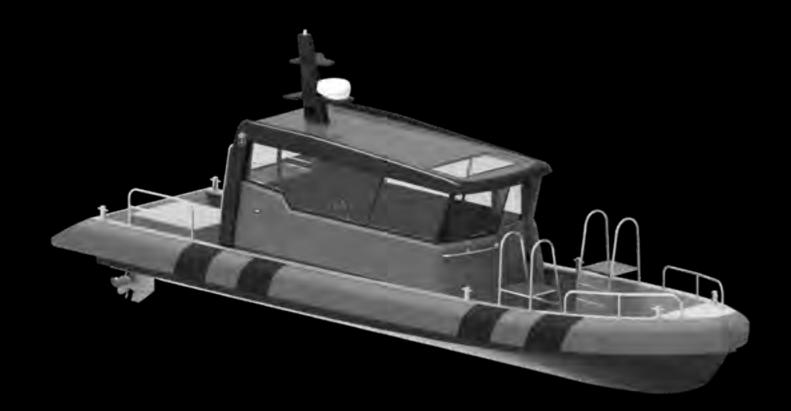








# PRO:ZERO 12M MULTIMISSION BOAT







Design: Length overall, approx.: Beam overall, approx.: Draft (full load), approx.: Displacement (full load), approx.:

#### **BENEFITS:**

This daughter craft is designed to fulfil requirements from pilots. The cabin allows access from both aft and foredeck and the unique ProZero cabin mounting system reduces both noise and vibrations from hull and engine(s). The design of the ProZero cabin allows a huge amount of daylight which improves the personal comfort even further. The low weight construction reduces fuel consumption significantly and supports the great and proven seakeeping ability.

#### **OPERATIONAL FEATURES:**

Speed (max): +27 kt. Fuel capacity, approx.: 400 l.

#### **DESCRIPTION:**

The boat has been built to meet the requirements from competent authorities. The boat is made of a combination of glass- and carbon fibre as sandwich construction with PVC as core material.

#### 2014 | 5000-02-04 HULL, DECK AND SUPERSTRUCTURE:

12 m The boat is made of a combination of glass- and carbon fibre as sandwich construction with PVC as core material. This core material acts **6.400 kg** as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

> FENDER: The fender is constructed from closed cell polyethylene foam and features a non-deflating solid core which cannot lose buoyancy or absorb water. Any damage is strictly cosmetic.

#### Railings and transfer ladders.

Decks are self bailing, both interior and aft deck. Removable deck sections to access fuel tank. Engine room cover with easy access for engine maintenance. Stowage for mooring equipment.

Mooring bites.

Watertight stowage in forward compartments. Benches on both sides of the forward deck. Deck lights on aft deck.

#### CABIN & COCKPIT:

The cabin is fastened to the hull on antivibration mounts. Seats for crew and passengers. Hinged door in the front of the cabin. Hinged door in the aft of the cabin. Windshield wiper with interval relay. All windows are glued into the structure. Comfort insulation in the cabin. Air Conditioning / Heating system.

#### TECHNICAL:

#### **ENGINES, PROPULSION, STEERING etc.:**

1 x Inboard diesel engine, Volvo Penta D6 330hp.

1 x Sterndrive, Volvo Penta Duoprop. 1 x Bow thruster Craftsmann 85kgf - 12V.

- optional drivelines on request.

Structural diesel tank with hatch and filling protection.

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable. 12-volt electrical system. Main switches with separate battery systems for start, navigation and consumption. Battery charger with indicator. 220 V-outlets in cabin.

1 x LED searchlight on cabin roof. Navigational lights.

2 x Floodlights on the working aft deck.

2 x Floodlights on the working fore deck.

#### **NAVIGATION & ELECTRONIC EQUIPMENT:**

1 x 12" multi chart plotter, Ray Marine E125. 1 x Echo sound transducer, RayMarine.

2 x Exterior cams, RayMarine CAM200.

1 x Digital radar.

1 x Class A AIS, RayMarine AIS 950.

2 x VHF, RayMarine 218E & 49E.

1 x AIS SART.

1 x DynaWatt 5,0kW 230V generator driven by

Fuel gauge.

1 x Magnetic compass.

#### **SECURITY EQUIPMENT:**

Manual bilge pump.

Electrical emergency pump in bilge, manual

Fire extinguisher at helmsman station.



















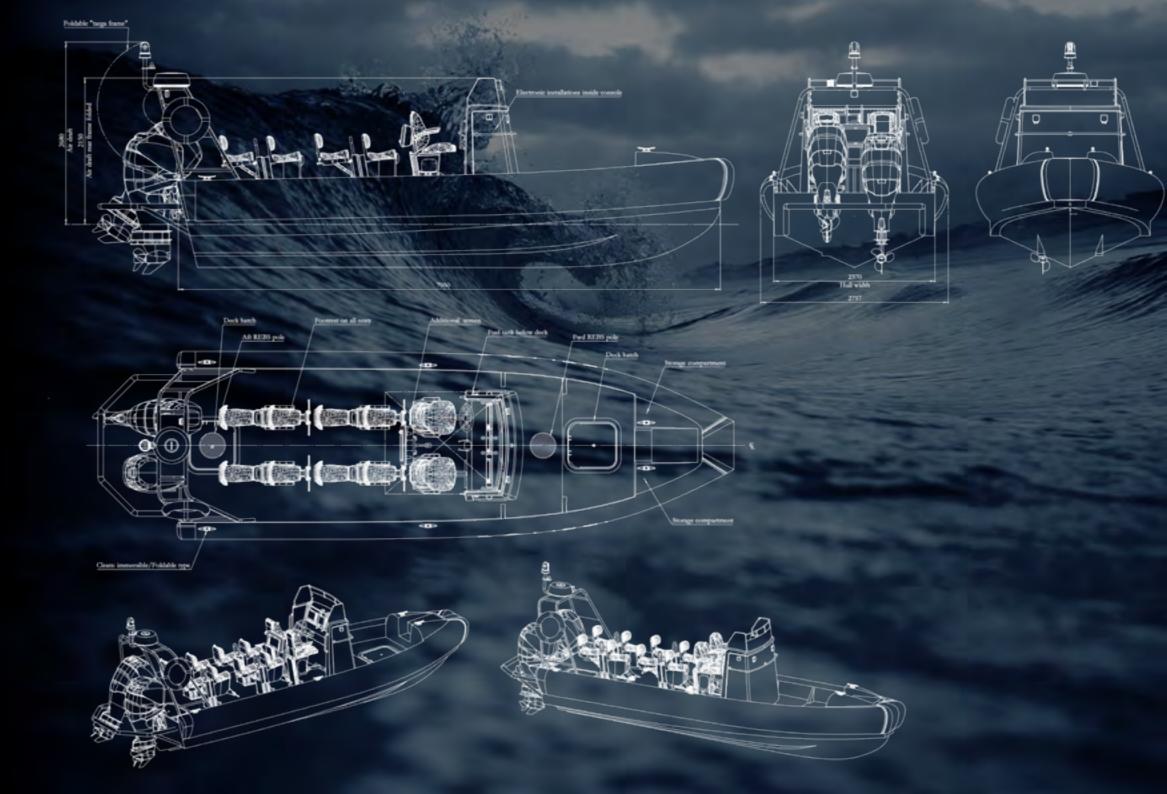
## **8M CC INTERCEPTOR**

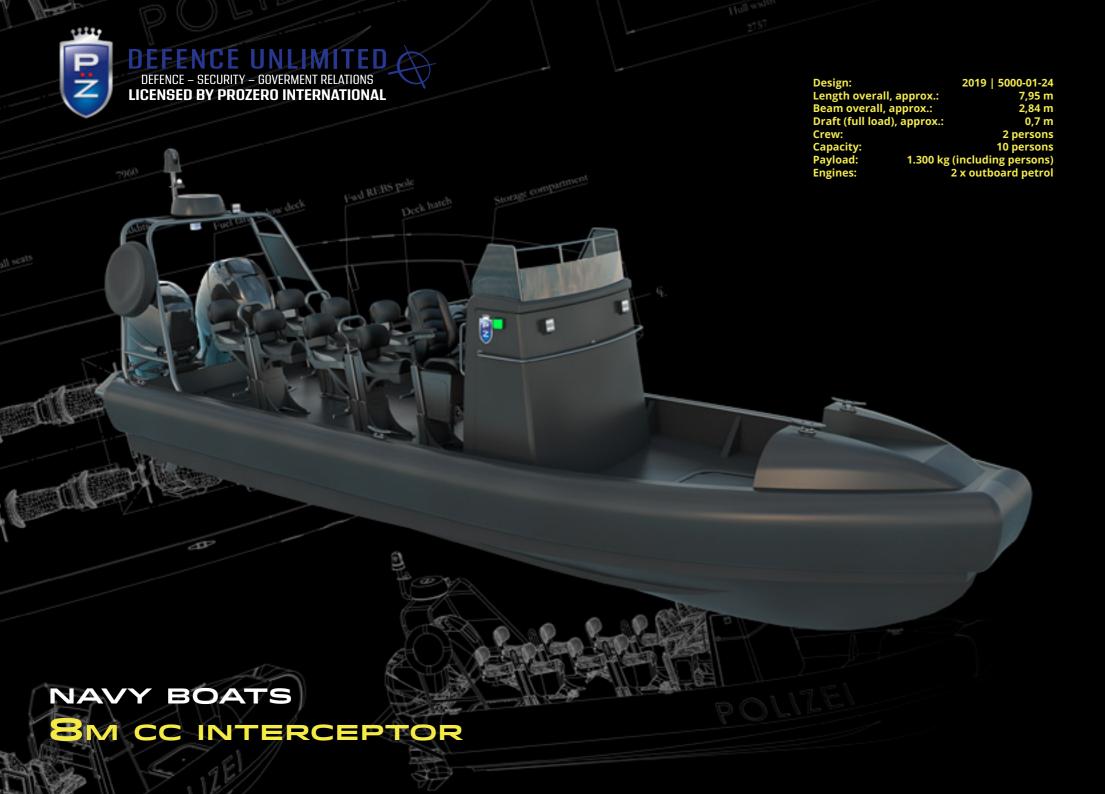
The 8-metre ProZero Center Console Interceptor is built on the proven, reliable and extremely seaworthy ProZero hull platform. The boat is strategically sized and carefully equipped for high-speed security and patrol missions in coastal and offshore waters.

The 8m ProZero CC Interceptor is the short-length successor to the 12m ProZero Interceptor and lives up to the same high commercial standards. Good ride quality and ergonomics is key to enduring exhausting high-speed missions, and the 8m Center Console is designed to provide just that. With its non-stepped, variable deadrise deep V-bottom hull featuring good forward entry, a flared bow, wide chines and lifting strakes/spray rails, the hull provides a safe and reliable base for high-speed operations and will tackle even very agitated sea states.

Particular attention has been paid to crew comfort, shock mitigation and safety during high-speed and boarding missions while enhancing mission-capability and preserving structural rigidity, integrity and strength. The Center Console deck layout provides flexibility and room for a variety of missions and boarding situations. The deck layout is adjustable and can be transformed through built-in cargo rails into mission-specific environments with shock mitigating seating arrangements, weapon mounts or extra cargo areas.







#### PATROLLING AT ULTRA HIGH SPEEDS

#### Top speed at the harshest of seas

The 8m cc interceptor is designed for high speed and safe transport at the harshest of seas, with room for up to 10 passengers and a maximum speed of approx. +40 kt. The boat is significantly lighter than the market avarage which benefits fuel consumption and adds to the already proven seaworthiness.

#### Hull, deck and superstructure

The boat is made of a combination of glass- and carbon fibre as sandwich construction with PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

#### Fender

The fender is constructed of closed cell polyethylene foam. Not deflating with solid core that cannot lose buoyancy or absorb water. Damage is strictly cosmetic keeping crew safe. Fender system absorbs major impacts and retains integrity and shape. The ProZero fenders profile gives substantially more interior room than a comparable RIB.

#### Deck

Decks are self-bailing.
Deck surfaces are treated with antislip.
Metallic mooring bollards.
Lashing points on decks for equipment.
Protection bar on the transom for engines protection.
Seats for 10 persons.

#### Steering console

Composite console optimized for maximum ergonomic to ensure a safe and stable platform with all instruments within reach.

Windshield to protect crew.

Handhelds to protect crew.







Flexible construction

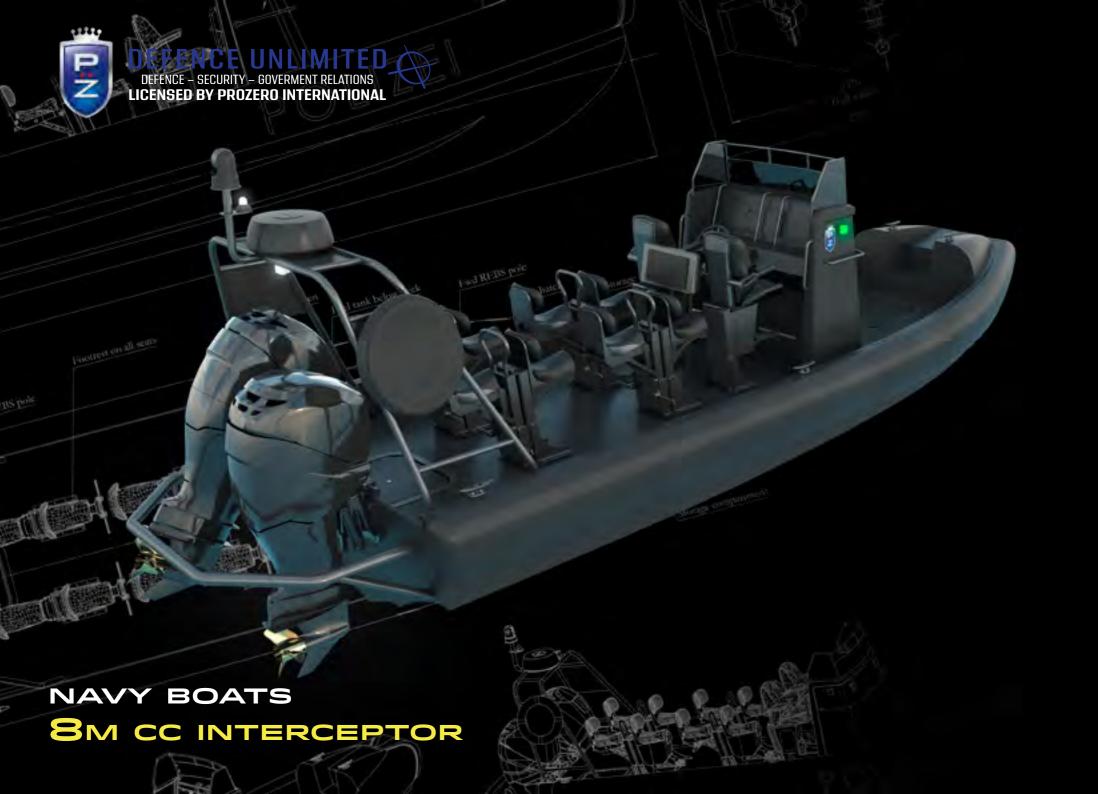
Construction with a purp

Construction with a purpose. Know-how and expert engineering at the service of unique client demands.



## **Efficient and proven hull**

Matchless strength-to-weight and seaworthiness. Shaping first-class hulls with precision technique and cost-effective production.



## **TECHNICAL**

## Engines, propulsion, steering etc.

2 x outboard petrol engines.

#### **Tanks**

Stainless steel petrol tank with hatch and filling protection. Capacity: 400l

## **Electrical system & lighting**

All electrical wiring in marine cable.

Shore power with control lamp, marked fuses, earth connection and shore cable.

Main switches with separate battery systems for start, navigation and consumption.

Battery charger with indicator.

Navigational lights.

#### Navigation & electronic equipment

Electric engine controls. Complete engine instruments with RPM, temperature, oil pressure and voltmeter for start batteries supplied by engine manufacturer. Rudder indicator

Fuel gauge.

Control panel for all lighting and other electrical equipment.

- 1 x magnetic Compass
- 1 x electric horn
- 1 x fixed VHF

## Security equipment

Manual and electrical bilge pump. Portable fire extinguishers.

#### Safety

Safety equipment specified in applicable CE rules







Unmatched strength
Confront the elements with confidence. Built for strength, safety and durability.



Low consumption
Minimized operating costs and

improved environmental impact.
For a sustainable and prosperous future.



# NAVY BOATS 12M INTERCEPTOR

## 12M INTERCEPTOR

#### Fast transfer and deployment

The 12m ProZero interceptor is designed for ultrahigh-speed patrol-duties under the most challenging conditions and on the well-proven hull platform it can offer an exclusive track mounting system which allows the operator to rapidly configure the deck to accommodate a variety of seating and mission-specific payloads. The 12m ProZero Interceptor can operate at top speeds in the harshest seas and features an open P-Top design to increase visibility at all angles. Ergonomic features maximize efficiency and enhance ease of movement around the vessel while the deep-V hull delivers unbelievable on track performance.

## Proven D-shape collar technology

The composite hull is capable of facing the hardest sea-conditions and the well proven D-shape collar technology increases the usable deck area significantly. Boasts a high-speed optimized steering console with anti-shock seating for two crew, sheltered by the ProZero P-top with an extended aft canopy. The P-top provides loads of headroom and weather protection curtains can be added to further shelter crew and passengers from the elements. Wide, non-skid walkways enable easy crew movement in fore and aft. The full-height transom offers security. Oversized scuppers assure that the vessel's self-bailing cockpit drains quickly for improved safety during harsh weather missions.







# PRO:ZERO 12M INTERCEPTOR







Design: 2018 | Length overall, approx.: Beam overall, approx.: Capacity: Maximum load (including pax.):

Maximum load (including pax.): 2.500 kg
Engines: 2 x inboard diesel

#### BENEFITS:

This boat is developed for fast transfer and deployment of up to 11 persons or a combination of passengers and different loads and equipment. Based on the well-proven ProZero hull that have been continuously improved and developed since first launching in 2002. It has a rugged ergonomic steering console for 3 crew members to ensure maximum comfort and functionality Additionally, the modular ProZero design allows for easy removal or installation of the jockey seats for passengers, thus being able to adapt the boat to the profile of each operation for carrying passengers, cargo or equipment.

#### **OPERATIONAL FEATURES:**

Speed max.: +60 kt. Speed (cruise): 40 kt. Range: 400 nm.

#### 2018 | 5000-01-18 DESCRIPTION:

12 m The boat has been built to meet the requirements from the competent authorities.

#### 2.500 kg HULL, DECK AND SUPERSTRUCTURE:

The boat is made of a combination of glass- and carbon fibre as sandwich construction with PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption.

Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

#### FENDER:

The fender is constructed from closed cell polyethylene foam and features a non-deflating solid core which cannot lose buoyancy or absorb water. Any damage is strictly cosmetic. Fender system absorbs major impacts and retains integrity and shape. ProZero fender's profile gives substantially more interior room than a comparable RIB.

#### DECK:

Deck is self-bailing.
Deck has an anti-skid surface.
Storage compartment in bow for mooring equipment.
Rugged ergonomic steering console with

windshield and integrated arch frame.

Lashing points for seat, cargo or equipment.

3 x Jockey seats for crew.

- 11 x Modular jockey seats for passengers.
  6 x Mooring bollards.
- 2 x Hard-points for machine gun installation.
- 2 x Towing eye-pads in the transom.

#### TECHNICAL:

#### ENGINES, PROPULSION, STEERING etc.:

- 2 x Inboard diesel engines.
- 2 x Sterndrives or optional Waterjets.

#### TANI

2 x Structural diesel tanks.

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable.

Shore power with control lamp, marked fuses, earth connection.

Isolation transformer with earth plate for

protection of galvanic corrosion.

24-volt electrical system.

Main switches with separate battery systems for start, navigation and consumption.

Battery charger with indicator.

Navigational lights. 4 x Floodlights in the arch frame.

4 X Floodlights in the arch fram

1 x Searchlight in the arch frame.

#### **NAVIGATION & ELECTRONIC EQUIPMENT:**

Complete engine instruments supplied by engine manufacturer.
Fuel gauge.
Control panel for all lighting and other electrical

equipment. 1 x Magnetic compass.

1 x Fixed VHF radio.

#### SAFETY EQUIPMENT:

Bilge pumps.

Automatic fire extinguish system in the engine

Fire extinguisher at helmsman station. Fire extinguisher in aft deck.





# HULL AND MATERIAL 12M INTERCEPTOR

## HULL

#### Hull construction and material

The composite structure is designed, engineered and built to meet the requirements of classification societies. Careful attention is constantly paid to weight-control and detailed design in order to produce a robust and seaworthy craft fit for challenging high-speed operations. The elements of lightness and structural robustness are perfectly balanced, so although the classification rules permit even lighter designs, lighter weight cannot be obtained without sacrifice to the overall operational efficiency.

The main hull shell is a one-piece moulding produced in accordance with the hull construction drawing. The hull shell has pigmented gelcoat above and below the waterline.

#### Structure

The first two laminates are made from powder bound reinforcement impregnated with resin. Subsequent laminates are applied as dry fabrics and core material and infused in one operation with high quality resin. Most part of the complete structure is built in a sandwich configuration but in specific areas, core material is replaced by additional laminates.

The hull frames, stringers and longitudinals are built from of a combination of bi-directional fibres and uni-directional reinforcement impregnated with resin over foam sections.

Adequate limber holes are fitted throughout the craft to allow bilge water to drain. Limber holes are omitted under the main engines so that the framing will act as a drip tray.

Throughout the structure, all compartments are finished in top coat. Primary stiffening is obtained through longitudinal engine beds and the fuel tank construction. Deck joint knees are bonded in at each frame and all deck knees etc. shall taper in to frames very gradually. Stiffeners are formed in WR with uni-directional tape (UDT) reinforcement as necessary on the stiffener faces. A general arrangement plan is provided together with details of the proposed hull and the arrangement for the rest of the vessel.



Efficient and proven hull Matchless strength-to-weight and

seaworthiness. Shaping first-class hulls with precision technique and cost-effective production.

#### **Engine beds**

The main longitudinals are profiled and built up within the machinery and tank space to form engine beds that suit the specified engines. The construction is a box-type section with tapping strips along their upper faces to accommodate the engine feet. The mild steel tapping strips span the full width of the bed and are suitably abraded before inclusion into the laminate.

#### Fuel tank/tanks

The fuel tanks are positioned amidships and/or in a port and starboard configuration. The tank(s) are constructed of composites and bonded onto the hull to become an integral part of the hull construction.

Baffles are fitted inside the tank(s) to prevent surging.

Large tank lids are fitted on the top face of the tank(s) for easy access when cleaning the tank(s). The tank lids are moulded from composites and are secured in place with a strong back.

The tank(s) will be subjected to a 0.2 bar leakage test.

A Tank Tender content gauge will be integrated in the display head mounted in the steering console and a fuel filler locker will be positioned on the deck. The fuel filler locker is fitted with a container to collect any spillage. The filling system allows filling by normal fuelling hose. The fillers are routed down to the tank(s) through flexible approved hoses. The main filler line is 38mm while the vent line is double Ø38mm. The vent lines will terminate inside the fuel filler locker and be fitted with a gooseneck.

#### **Bulkheads**

The vessel will be fitted with watertight structural bulkheads dividing the vessel as follows:

- Forepeak
- Tank / technical compartment
- Engine Room

Main bulkheads are constructed from composite board and bonded onto the structure. Furthermore, the vessel is strengthened with open frames to ensure proper hull and deck support and compliance with the relevant rules.

#### **Hull Construction and Materials**

The composite structure is designed, engineered and built to meet the requirements of classifications societies.



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12M INTERCEPTOR

#### DECK

## **Decks & General Arrangement**

The main deck structure is moulded in one piece and manufactured in accordance with the deck structure construction drawing. It is bolted/glued and laminated to the hull.

A steering console wide enough for 2 crew members. The console is ergonomically designed and optimised to protect the crew from harsh weather conditions. It features a polycarbonate windshield with protective aluminium railing.

The steering console has both front and fear hatches for easy maintenance. All controls and instruments are installed in fully enclosed, watertight compartments. All cables, pipes and hoses going through watertight bulkheads are installed in approved watertight frames and seals.

12 shock-mitigated seats are placed on a built-in track system, making it possible to transform layout and seating for cargo carrying purposes.

#### **Anchors and cables**

Appropriately sized anchors will be supplied in accordance with the code of practice.



#### Hatches

Deck hatches are of a robust and reliable type with adequate securing clips for both internal and external opening. They will be fitted as shown in the GA drawing.

All hatches will feature warning labels with the caption "Keep closed at sea ".

#### **Bollards**

A set of three bollards will be fitted. One bollard is fitted forward and two bollards aft.

Bollards will be manufactured from cast stainless steel.

#### **Fendering**

The fender is constructed from closed cell polyethylene foam and features a non-deflating solid core which cannot lose buoyancy or absorb water. Any damage is strictly cosmetic.

The fendering system absorbs major impacts while retaining integrity and shape. The fendering system will be bonded to the hull using a polyurethane adhesive system.

#### Handrails

Handrails will be fitted as necessary to allow safe movement of crew members on the vessel. Generally, all grab and guard rails will be 30 mm in diameter and crafted from either stainless steel or aluminium tube.

#### Arch

N/A

#### Lifting / painter gear

The boat is designed to be lifted with slings by a boat hoist.



#### MECHANICAL AND PROPULSION

#### Main engines and gearboxes

The vessel is designed to accommodate several types of engine installations with or without gearboxes. Engine room and engine cover(s) are designed for either single or twin-engine configuration and it is possible to install different types of drives. Please contact Tuco Marine for a design-review on special engine/drive setups.

Engines and gearboxes will be mounted on sturdy mounts aligned with the output half-couplings. Particular attention will be paid to the size of the mounts and their securing bolts. Installation of machinery will follow the manufacturer's recommendations and be reviewed and approved by them upon completion.

Care and attention will be paid to providing a durable machinery installation with appropriate support of piping and cable runs whilst minimizing weight penalty.

Guards are fitted to rotating machinery in accordance with health and safety provisions.

Each engine will be fitted with an alternator.

Pipework for systems will be properly dimensioned and incorporate a minimum of 90-degree elbows.

#### **Engine controls and monitoring**

Engine and gearbox controls are installed on the steering console at the helmsman's station.

Standard instruments from engine supplier will be installed at the steering console.

Controls for remote operation of fuel valves and discharge of the fire extinguishing system will be clustered together at a single point in the form of an emergency panel. Clear instructions for operation of the systems will be displayed by the panel.

#### Waterjets/stern drives

Propulsion will be fitted and connected to the main engine/gearboxes.

#### Contact Tuco Marine for a design review for special drive setup

The propulsion units will be controlled from the steering console. Dedicated handles will be available for operation of each drive to obtain high maneuverability.

#### **Engine Removal**

Engine removal will happen through opening the main engine cover placed directly above the engine. It will be possible to lift the engine directly off the engine bed in one operation.





Flexible construction

Construction with a purpose. Know-how and expert engineering at the service of unique client demands.



#### SYSTEMS

#### **Fuel system**

Fuel filters will be fitted to supply each main engine.

The fuel system will enable each engine to be fed independently from each tank. Fuel hoses to engines from tanks and return lines will be ISO – 7840 (marine hose). To reduce the likelihood of fire, care and attention will be paid to shielding the fuel lines and filters.

#### Engine cooling

Cooling water will be drawn through hull mounted intakes or supplied from jet(s) (depending on jet model) fitted with correctly sized scoops. Intakes will be fitted with isolating valves and clear top type strainers that serve one engine each. Waste cooling water will be injected into stainless steel spray heads in the exhaust system to provide exhaust cooling.

#### Exhaust system

Each main engine will be fitted with stainless-steel exhaust risers terminating with water injection spray heads. The stainless-steel risers will be insulated. Approved nitrile diesel exhaust hose will connect each engine to an exhaust silencer. The exhaust will then lead aft and terminate on the transom or through the propulsion systems as per manufactures recommendations. The silencers will be suitably supported, and all hoses clamped appropriately with stainless steel hose clamps.

#### **Engine room ventilation**

Air for combustion and ventilation in the machinery space is drawn from two openings in the back of the bow cover and ducted through a Z-shaped channel below deck to avoid water ingress in the engine room. Additionally, two smaller openings are placed in the lower part of the steering console back panel to induce natural air circulation in the engine room. All openings are fitted with fire flaps.

#### Bilge System

Each compartment will be fitted with a remotely mounted, electrically operated, submersible bilge pump and a dedicated strum box. Each pump will have its own dedicated overboard discharge.

A dedicated manual bilge system is installed in each watertight compartment. One pump will be fitted above deck and connected with valves to the bilge system. All bilge suctions will be fitted at the lowest part of the bilge and fitted with a strum box. A bilge alarm system will be fitted which monitors all compartments.

#### Fire detection and extinguishing

Optionally, a fire extinguishing system can be fitted to protect the engine space. The control panel will be located in the steering console at the emergency panel. Clear instructions on the operation of the system and the fire flaps will be posted next to the panel.

Portable fire extinguishers will be supplied to meet the Code requirements.





Rest assured and focus on the job.
Our skilled technicians are always
prepared to offer support.



Unmatched strength
Confront the elements with confidence. Built for strength, safety and durabilility.



#### **ELECTRICAL SYSTEMS**

#### General

The primary 12V DC electrical system on the vessel will be distributed through a main switchboard located in the steering console.

The electrical system will be a double-pole, protected two-wire insulated return-system throughout. Batteries are charged by the main engine-driven alternators.

The supply to all equipment will be cable and/or flexible cord, insulated in fire retardant sheathing. All wiring is to be carried in trunking and/or conduit. Trunking and conduit will be secured in an approved manner using junction boxes and the accessories for all internal circuits in watertight compartments are mounted as high as possible within the vessel. Wherever wiring penetrates bulkheads, appropriate glands are used. All external fittings will be of the highest waterproof, marine grade quality.

All wiring on main engines and gearboxes are in proprietary cable and will be fastened tightly and adequately protected from mechanical damage. The wiring will be routed to avoid contact with the high temperature surfaces of the engine.

All circuits and switchgear will be labelled to show their functions, and sockets will be clearly marked with their voltage.

#### 12V DC System

The vessel will be fitted with batteries supplying 12V DC.

There will be one engine starting bank for each engine and one service bank. All batteries will be gel-type and will be charged through blocking diodes by the main engine alternators. Secondary charging will take place from shore supply via a 240V – 12V DC battery charger or alternatively from a 42V – 12V DC/DC transformer.

Starting and service batteries will be secured in battery boxes in the ventilated tank space. Furthermore, a 12V/12V DC/DC converter for charging of emergency battery (GMDSS) will be installed. All relevant equipment is connected to the GMDSS bank according to the applicable rules.

#### Instrumentation

A combined digital voltmeter and ammeter will be fitted for monitoring of individual batteries.

#### Shore system

A 42V – 12V DC/DC converter will be installed to charge with DC power.

#### **DC Equipment**

The DC equipment fitted will include the following:

- Navigation lights
- 1x Searchlight in arch frame
- Bow lights below fender
- Bilge pumps

#### **Navigation lights**

The following navigation lights will be fitted:

- Port
- Starboard
- Stern
- Anchor
- Masthead

All navigation lights will be of LED type.

#### Searchlight/deck lights

LED floodlights will be fitted to illuminate the deck area.

#### **Navigation Equipment**

The following navigation equipment will be supplied and fitted:

Magnetic compass

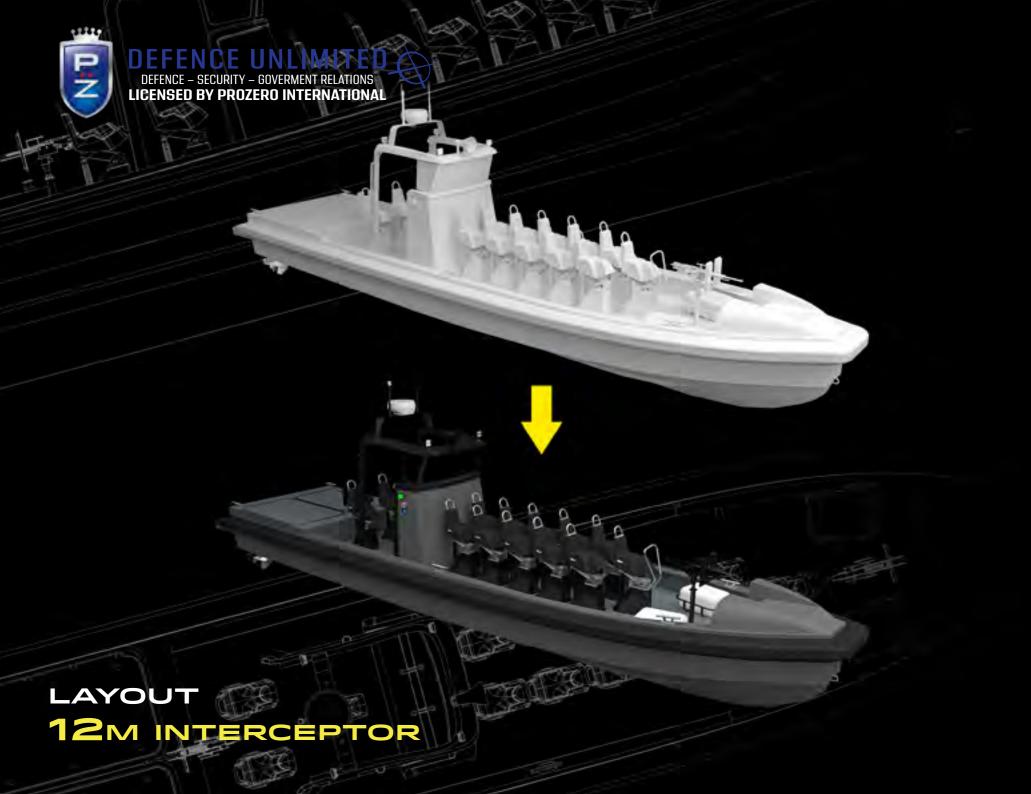
#### **Communication Equipment**

Fixed VHF



## Low consumption

Minimized operating costs and improved environmental impact. For a sustainable and prosperous future.



## LAYOUT

#### General

The layout of the vessel will comply with the GA drawings.

In order to prevent injury to personnel in extreme sea conditions, no areas will exhibit sharp corners. Suitable handrails and hand-holds are provided for safe passage throughout the vessel whilst at sea.

The quality of fit-out is of very high standard. All surfaces will be finished to a high standard and provide a low maintenance finish. All fittings will be of the highest quality marine grade aluminum or stainless steel and all fasteners are A4 quality.

#### Forward compartment

The forward compartment is accessed from a deck hatch mounted on the fore deck.

#### Tank space

The tank space is accessed from the deck through a deck hatch.

The main 12V DC distribution boards are confined in this space along with the battery banks which are preserved in ventilated battery boxes.

#### **Engine Room**

The engine room is accessed from flush hatches. Please refer to GA for further details.

The engine room is organized to allow easy access to engines for maintenance and repairs.

#### Signage

Suitable SOLAS/class approved signage will be used throughout. Signs and decals are applied to the craft topsides, deck and console as necessary.

Vessel name and port of registry will be affixed to the transom (vinyl letters).

#### PAINTING AND FINISHES

#### **External Finish**

External hull is prepared in gelcoat finish.
External superstructure is prepared in gelcoat finish or painted.
The deck is applied with non-slip screed and painted.

#### **Internal Finish**

#### Console:

Composite painted

#### Forward compartment:

All composite surfaces – Topcoat finish

#### Tank space:

All composite surfaces – Topcoat finish

#### Engine space:

All composite surfaces – Topcoat finish

#### Colour scheme

To be agreed with client.

#### Decals

To be agreed with client in compliance with the relevant rules.



#### Flexible construction

Construction with a purpose. Know-how and expert engineering at the service of unique client demands.



## 13M PATROL

## Immediate response

The 13m ProZero patrol boat is built specifically for safety, speed and comfort. The boat is built from lightweight materials, making the boat both lighter and faster which contributes to operation success, all without losing safety. The fender is designed for high speed boarding, while the main deck is placed low for increased stability and easy boarding. The boat is able to reach +40kt which ensures swift MOB operations. The outboard engines increase vessel configuration flexibility.

#### Offensive protection

The front and aft of the 13m patrol boat are both equipped with a machine gun, that covers 360 degrees combined.

## **Ballistic protection**

The secure cabin provides the crew with ballistic-protection from projectiles and provides personel-comfort. The fuel system is bullet-protected, to ensure mission continuation.

The machine gunner in the front is protected by armour gunwale railings which is installed on both sides of the gunner, while the machine gunner in the front is protected by a lowered foredeck.







# PRO:ZERO 13M NAVY BOAT





2018 | 5000-03-62 FENDER:



Length overall, approx.: Beam overall, approx.: Draft (full load), approx.: Displacement (full load), approx.: Capacity: Maximum load:

OPERATIONAL FEATURES:

and manned compartments.

The boat has been built to meet the

HULL, DECK AND SUPERSTRUCTURE:

requirements from the competent authorities.

The boat is made of a combination of glass- and

carbon fibre as sandwich construction with

PVC as core material. This core material acts

as a natural buoyancy reserve material, due

to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin

Speed (max): +40 kt.

Speed (cruise): 15 kt.

Range: 100 nm.

DESCRIPTION:

BENEFITS:

ability.

**Engines:** 

13,1 m The fender is constructed from closed cell polyethylene foam and features a non-deflating solid core which cannot lose buoyancy or 10.500 kg absorb water. Any damage is strictly cosmetic. **8 persons** Fender system absorbs major impacts and **200 kg** retains integrity and shape. **3 x outboard** The fender system will be bonded to the hull using a polyurethane adhesive system.

This navy craft is developed for safe operations. The design of the ProZero cabin ensures a All exterior decks have an anti-skid surface huge amount of daylight, this also improves the finishing. personal comfort. The low weight construction Decks are self-bailing. reduces fuel consumption significantly and Low main deck increase stability and make supports the great and proven seakeeping

boarding and MOB operations safer. Removable railings installed on both sides of aft gunner. Railings are with armour protection. Large deck hatch installed in aft deck. Hatch acts as recess for aft gunner with access to compartment below deck.

Foredeck raised to create a protected area for the fwd gunner.

6 x Mooring cleats.

Support frame around outboard engines. Grabrails installed SB & PS of cabin to increase safety operations.

All railings done in aluminium.

#### CABIN & COCKPIT:

Toilet with WC and washbasin.

8 comfort seats. Hinged door in the aft of the cabin. Defrosting system for front windows. All windows are glued into the structure. LED lights in cabin and cockpit, with white and red light for day and night operations. Storage compartment in aft SB of the cabin.

Dog cage in aft PS of the cabin. Midship a large storage compartment is located SB and the toilet is located PS.

A large compartment is located below foredeck, access to fwd gunner from this compartment, to Control panel for all lighting and other electrical increase protection.

Comfort insulation in the cabin.

#### TECHNICAL:

# ENGINES, PROPULSION, STEERING etc.:

3 x Outboard petrol engines, each rated at 300-350hp.

#### TANKS:

2 x 300 l petrol tank, hatch and filling protection. 1 x 100 l Fresh water tank.

1 x 100 l Grey water tank.

1 x 40 l Black water tank.

DELIVERY:

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the yard in Denmark.

Additionally, all necessary safety equipment to

meet the requirements from the competent

**ELECTRICAL SYSTEM & LIGHTING:** 

All electrical wiring in marine cable.

start, navigation and consumption.

12/24V DC electrical system.

Battery charger with indicator.

earth connection.

15 m shore cable.

engine manufacture.

1 x Magnetic compass.

SAFETY EQUIPMENT:

Bilge pumps according to rules.

Fire extinguisher according to rules.

equipment.

authorities.

Shore power with control lamp, marked fuses,

Main switches with separate battery systems for

**NAVIGATION & ELECTRONIC EQUIPMENT:** 

Complete engine instruments supplied by

Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's manual.



#### **SUPERIOR MATERIALS**

#### High strength, low maintenance

Clever choices of materials increase performance and productivity. Fiber reinforced composites have great strength-to-weight ratio, physical stability and molding flexibility. This makes them highly attractive for manufacturing the fast and durable ProZero

#### Safe and durable

Improved safety is also a benefit of using composites. Drop tests proves that the "sandwich"-type composite panels used in the ProZero series have better energy absorption capacity compared to for instance aluminium. This means that the structural integrity of the vessel is better preserved in the occasion of collision with objects. The sandwich panel acts as a closed cell, so that in the event of a collision where the outer skin is compromised, water intake is confined and obstructed whereas a similar aluminum panel will suffer full penetration which sets the vessel and crew at risk.

## **Working together**

At Defence Unlimited, we carefully draw out all the potential inherent in these materials and we continuously work together with the Danish Technical University amongst others to verify the mechanical properties and advantages of composites.



nmatched strenght

Confront the elements with confidence. Built for strenght, safety and durabilility.

## PROVEN TECHNOLOGY

The ProZero series of boats is the quintessence of years of experience. Building on well-consolidated technology, the ProZero boats provide unrivaled safety, performance and comfort.

We are the trusted supplier of many customers and have delivered vessels to both private organizations, shipyards and governmental institutions.



#### Efficient and proven hull

Matchless strength-to-weight and seaworthiness. Shaping first-class hulls with precision technique and cost-effective production.



**Low consumption Minimized operating costs and** improved environmental impact. For a sustainable and prosperous









# DROPTEST COMPOSITES VS ALUMINIUM

#### **DROPTEST:** COMPOSITE

#### Composite hull structure

- Dropping a 12,5 kg load from 6 m height.
- 25mm sandwich panel with PVC core.
- A controlled release mechanism lets the load falls straight down and ensures reproducibility of results.

#### **RESULT:**

#### Absorbs the impact

- Only the outer skin of the hull structure is penetrated - No water intake, no immediate risk for boat and crew.
- The sandwich core absorbs the energy from the impact and the inner skin remains undamaged.
- The vessel can return safely to harbour with no risk for crew and vessel.



\* Image shows penetration of only the frontside of the sandwich panel because the inner core absorbed the impact

#### **DROPTEST: ALUMINIUM**

## Aluminium hull plating

- Dropping a 12,5 kg load from 6 m height.
- 5 mm aluminium hull plate.
- A controlled release mechanism lets the load falls straight down and ensures reproducibility of results.

#### **RESULT:**

#### Water intake

- Impact on the aluminium hull plating results in <u>immediate water intake</u> with <u>crucial risk</u> for crew and boat.
- Damage like this requires instant attention.



\* Image shows full penetration of the aluminiums plate



DROPTEST
COMPOSITES VS ALUMINIUM



#### **QUALITY ASSURANCE**

#### **Quality comes first**

Quality is a keyword at Defence Unlimited. In our pursuit of excellence, it is crucial that the quality is under complete control. We work nonstop to ensure that our products and services not only fulfill, but surpass quality requirements. Our skilled employees secure high quality at every step in the manufacturing process by performing systematic measurements and continuous monitoring of raw materials, components, assemblies and finished products.

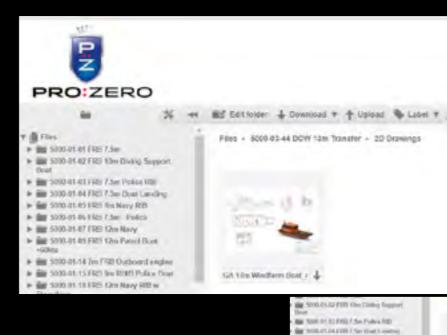




# ACCESS TO DRAWINGS AND 3D FILES

# Easy decisions - exploit our design library and save time

Filecamp is a design library containing drawings and renderings for our range of ProZero vessels. The Filecamp library provides an efficient and convenient way for naval architects to access the ProZero designs. The comprehensive Filecamp data can support and facilitate planning, eliminate superfluous procedures and help in reaching informed design choices.



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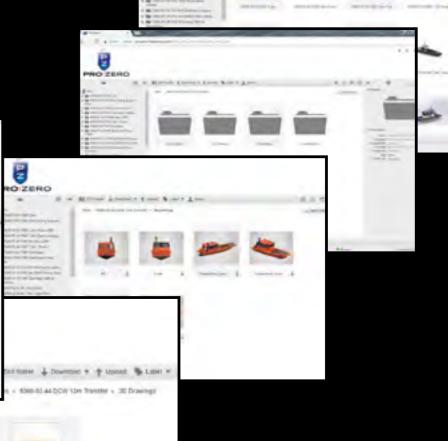
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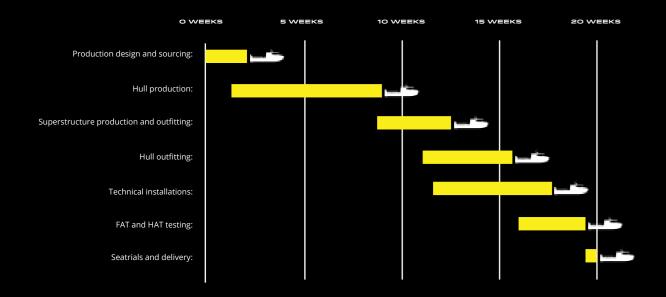
DEFENCE - SECURITY - GOVERMENT RELATIONS

LICENSED BY PROZERO INTERNATIONAL

FILECAMP

**EASY INTEGRATION** 





#### SERIAL PRODUCTION

#### Merging unparalleled quality with cost-efficiency and prompt delivery

Construction with fiber-reinforced composites is highly suited for serial production. Defence Unlimited has developed an exceptionally efficient modular production method to fully exploit the advantages inherent in composite materials.

To guarantee product excellence and quality uniformity across our range of vessels, female moulds are applied in the production of all ProZero hulls. This permits a very high degree of accuracy and consistency in the manufacturing process so that every single hull lives up to our rigorous quality standards. Production using high quality moulds outperforms any other building technique in terms of cost-effectiveness.

Our modular production method enables us to integrate specific design requests and we cooperate closely with all involved stakeholders to deliver uncompromising quality and excellent products without sacrificing short delivery times.



# SHORT LEAD TIME **EFFICIENT PRODUCTION PLATFORM**

#### SERVICE AND SUPPLY

## Far and wide - support is always within reach

The reliability and speed of our products are echoed in our range of support services. We are committed to act fast whenever a customer needs us. We appreciate the significance of constant operational capacity, and Defence Unlimited's Spare Parts and Service Team helps to intercept unexpected downtime and keep productivity at a maximum.

The team is staffed by some of the most skilled technicians in the industry and they work to ensure the highest possible level of technical support for our

#### Integrating the best equipment

Beyond that, we have long-lasting relationships with OEMs. We collaborate with key vendors from the early design phase to integrate the best features into the building process. This way we create a safer and more comfortable boat for the crew.

Our extensive product knowledge and our unique ties with the industry allows us to offer a high degree of availability and coverage - we extend our support far beyond what you might expect from a boatbuil-



Swift support
Rest assured and focus on the job. Our skilled technicians are always prepared to offer support.





#### LAUNCH AND RECOVERY

## Not taking any risks

Launch and recovery of Daughter Crafts is an area that requires exceptional vigilance. The ProZero series is carefully designed to secure maximum safety and reliability for the users in these high-risk situations, and special care is taken in the design process to ensure accessibility to hooking points.

## Lighter overall solution

Due to the lightweight construction of the ProZero Daughter Crafts, less stress is exerted on the lifting equipment. This allows fitting of lighter davit equipment which benefits the overall naval architecture and saves resources that enable clients to pursue their real goals. Light weight solutions lift the entire value chain.

We work closely with a number of leading equipment manufacturers and we are happy to include customized LARS solutions for individual clients.



Low weight
Cutting weight and adding value.
Low weight design lifts the value







# PRO:ZERO FRB 7.5M - SINGLE ENGINE







Rev.25/8/16 | 5000-01-01 FENDER: Length overall, approx.:

Beam (without fender), approx.: Crew:

Capacity: Maximum Load (incl. persons)

#### **OPERATIONAL FEATURES:**

Speed (lightweight): 25 kt. Speed (full load): 20 kt.

#### DESCRIPTION:

The boat has been built to meet the SOLAS requirements for fast rescue boats.

#### **HULL, DECK AND SUPERSTRUCTURE:**

The boat is made of a combination of glass- and Seats for crew. carbon fibre as sandwich construction with PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space.

7.78 m The fender is constructed of closed cell Beam Overall (with fender) approx.: 2.69 m polyethylene foam. Not deflating with solid core **2.34 m** that cannot lose buoyancy or absorb water. 2 persons Damage is strictly cosmetic keeping crew safe 12 persons Fender system absorbs major impacts and **900 kg** retains integrity and shape. ProZero fender's profile gives substantially more interior room than a comparable RIB

#### DECK:

Deck is self-bailing. Storage for mooring equipment. Mooring bites. Aft platform. Single point lifting hook. Self-righting system. Metallic arch. Steering console with all around railing.

#### **TECHNICAL:**

#### ENGINES, PROPULSION, STEERING & MANOUVERING:

- 1 x Diesel inboard engine. 1 x Water jet (Option 1).
- 1 x Sterndrive (Option 2).

Possibility of twin engine and drive installation for redundant propulsion system. Main switches with separate battery systems for start and consumption. Battery charger with indicator. Navigational lights. Searchlight.

#### TANKS: Fuel tank.

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable. Isolation transformer with earth plate for protection of galvanic corrosion.

#### **NAVIGATION & ELECTRONIC EQUIPMENT:**

Electric engine controls. Complete engine instruments with RPM, temperature, oil pressure and voltmeter for start batteries supplied by engine manufacturer.

Fuel gauge. Control panel for all lighting and other electrical equipment.

Fixed VHF. Magnetic Compass.

#### **SECURITY EQUIPMENT:**

Manual bilge pump. Electrical emergency pump in bilge, manual start, in the bilge and in the engine room. Fire extinguisher at helmsman station.

#### **GENERAL:**

The boat is built as a standard according to the technical specification and our general quality standard. The specification is valid when being printed. Details in construction, design and equipment can be changed as a result of the experience from the use of the boats. The quality and the equipment standard, however, are equivalent at least to this specification. The hull and structure have a 2 years' warranty since delivery.

The equipment and devices fitted in the boat have a 1 year's warranty since delivery.

#### DELIVERY:

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the vard in Denmark.

Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's



# PRO:ZERO 9M FRB POLICE RIB







Rev.25/8/16 | 5000-01-15 DESCRIPTION: Length overall, approx.: Beam overall, approx.: Capacity: Maximum load (including pax.): 12 persons

#### OPERATIONAL FEATURES:

Speed max.: 45 kt. Speed (cruise): 30 kt. Range: 8 hours at cruise speed.

#### BENEFITS:

This boat is developed for fast transfer and deployment of up to 12 persons or a combination of passengers and different loads and equipment.

It has a rugged ergonomic steering console for 2 crew members to ensure comfort and functionality.

Additionally, the modular ProZero design allows to easily remove or install the jockey seat for passengers, thus being able to adapt the boat to the profile of each operation for carrying passengers, cargo or equipment.

9,57 m The boat has been built to meet the **2,70 m** requirements from the competent authorities.

900 kg HULL, DECK AND SUPERSTRUCTURE: 2 x Outboard petrol engines The boat is made of a combination of glass- and carbon fibre as sandwich construction with PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

#### FENDER:

The fender is constructed of closed cell polyethylene foam. Not deflating with solid core that cannot lose buoyancy or absorb water. Damage is strictly cosmetic keeping crew safe. Fender system absorbs major impacts and retains integrity and shape. ProZero fender's profile gives substantially more interior room than a comparable RIB.

#### DECK:

Deck is self-bailing. Deck has an anti-skid surface. Bow cover for weather protection. Storage compartment in bow for mooring equipment. Rugged ergonomic steering console.

Lashing points for seat, cargo or equipment. 12 x Modular jockey seats for passengers. 3 x Mooring cleats. Metallic arch frame.

#### TECHNICAL:

## ENGINES, PROPULSION, STEERING etc.

2 x Outboard petrol engines.

#### TANKS:

Independent petrol tanks with hatch and filling

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable. Shore power with control lamp, marked fuses, earth connection. Isolation transformer with earth plate for protection of galvanic corrosion. 24-volt electrical system. Main switches with separate battery systems for start, navigation and consumption. Battery charger with indicator. Navigational lights. 2 x Floodlights on the arch frame.

#### **NAVIGATION & ELECTRONIC EQUIPMENT:**

Complete engine instruments supplied by engine manufacturer. Fuel gauge. Control panel for all lighting and other electrical 1 x Magnetic compass.

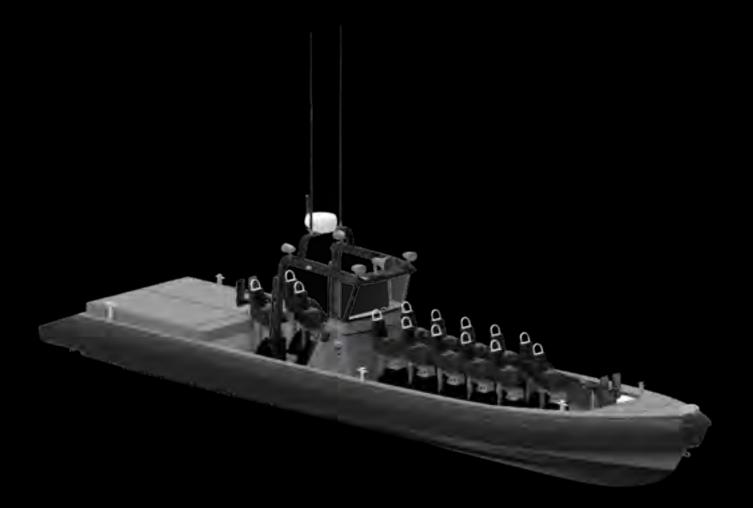
# 1 x Fixed VHF radio. **SECURITY EQUIPMENT:**

Bilge pumps. Fire extinguisher at helmsman station. Fire extinguisher in aft deck.

#### **DELIVERY:**

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the yard in Denmark. Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's manual.

# PRO:ZERO 12M FRB







Length overall, approx.: Beam overall, approx.: Crew:

Capacity: Draft (full load):

Maximum load (including pax.): Engine: Double inboard diesel + Water Jet 1 x Steering console of rugged construction with

#### OPERATIONAL FEATURES

Speed (max): 60 kt. Speed (cruise): 40 kt. Range: 400 Nm.

#### DESCRIPTION

The boat has been built to meet the requirements of the pertinent authorities.

#### HULL, DECK AND SUPERSTRUCTURE:

The boat is made of a combination of glass- and anchor. carbon fibre as sandwich construction with PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space.

#### FENDER:

The fender is composed of a inflatable collar with 9 independent sections to guarantee maximum buoyancy even if one of them is punctured. The fender has a D shape profile to 1 x Structural diesel tanks integrated into increase the internal usable beam. In both sides the hull, with hatch and filling protection and of the boat there is hand grab line along the fender allowing a person to easily climb onto the deck from the water.

**12,02 m** Deck is self bailing.

2,69 m 3 x Shock absorbing jockey seats for the crew, 3 with backrest and cushion.

**11 passengers** 11 x Easily removable jockey seats, each one 0,65 m with backrest and cushion. Multiple possibilities **2500kg** of distribution and configuration.

> railings all around, windscreen, and an upper structure to deploy weather protection for the

1 x Forward storage compartment.

2 x Huge hinged engine room hatches with gas struts to assist in opening / closing.

1 x Aft + 1 x Front bed for mounting machine

Foldable radar mast on top of the steering

Forward storage for mooring equipment and

6 x Stainless steel mooring bites.

Watertight storage in forward compartments. Aft platform integrated into the hull with inspection hatches for the water jets.

#### TECHNICAL: **ENGINES, PROPULSION, STEERING &** MANOUVERING

2 x Inboard diesel engines.

2 x Water jet drives.

#### **FUEL TANK:**

properly sized to meet the required range. All fuel systems are pressure tested.

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable. Shore power with control lamp, marked fuses, earth connection and 20 m shore cable. Isolation transformer with earth plate for protection of galvanic corrosion.

24-volt DC electrical system.

Main switches with separate battery systems for start, navigation and consumption. Battery charger with indicator.

Outlets distributed in 4 x Floodlights on the top of the steering console, covering all the working deck space, 360° around.

Navigational lights.

#### NAVIGATION & ELECTRONIC EQUIPMENT

1 x 12" Chart plotter Ray Marine.

1 x Digital radar RayMarine 24 NM range.

1 x Echo-sounder.

1 x Magnetic compass.

1 x Fixed VHF Ray Marine.

The boat is wired, but not equipped, for FLIR cameras and tactical and internal radio communication devices.

Electric engine controls.

Complete engine instruments with RPM, temperature, oil pressure and voltmeter for start batteries supplied by engine manufacturer. Fuel gauge.

Control panel for all lighting and other electrical equipment.

#### SECURITY EOUIPMENT:

- 2 x Manual bilge pumps (1 in the hull's bilge and 1 in the engine room). 1 x Electrical emergency pump in bilge, manual
- 1 x Fire extinguisher at helmsman station.
- 1 x Fire alarm with smoke detector and 1 fixed fire fighting system in engine room.
- 2 x Life rafts class B with 8 person capacity each

1 x Air filling pump + 1 deflating pump for the fender collar.

#### **GENERAL:**

The boat is built as a standard according to the technical specification and our general quality standard. Details in construction, design and equipment can be changed as a result of the experience from the use of the boats. Photographs may contain items that are extra equipment. The hull and structure have a 2 years warranty since delivery. The equipments and devices fitted in the boat have a 1 year warranty since delivery.

#### **DELIVERY:**

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the yard in Denmark. Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's manual.



# PRO:ZERO DCW 9M ARCTIC WORKBOAT







Rev.25/8/16 | 5000-03-49 DESCRIPTION:

Length overall, approx.: Beam overall, approx.: Draft (full load), approx.: Capacity: Maximum load:

**Engines:** Drive:

1.22 m

#### **OPERATIONAL FEATURES:**

Speed (cruise): 12 kt. Range: 8 hours at cruise speed. Fuel capacity: 600 l.

#### BENEFITS:

This daughter craft is developed to deploy different equipment and perform a wide range of tasks in its large aft deck. The hull shape in bow and stern has been

specially designed to allow navigation through an ice layer in artic areas.

The design of the ProZero cabin ensures a huge amount of daylight, this also improves the personal comfort. The benefits by being significantly lighter than market average are lower fuel consumption and lighter lifting equipment on mother vessel.

10.08 m The boat has been built to meet the requirements **3.75 m** from the competent authorities.

#### 2 + 8 persons HULL, DECK AND SUPERSTRUCTURE:

1.000 kg The boat is made of a combination of glass- and 1 x inboard diesel carbon fibre as sandwich construction with PVC **Fixed pitch propeller** as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

#### FENDER:

The fender is constructed of a holed hard rubber D profile 100 x 100 mm, glued to the hull.

#### DECK:

Lifting frame ready for single point lifting hook. Deck and cabin are self-bailing. Large working area in the aft deck. Storage compartments on the side of the cabin. 5 mooring bites.

Detachable modular black anodized aluminium railings in the aft deck.

Rounded aft platform to enable reversing in ice

Toilet with WC and washbasin. 2 comfort seats for crew. Hinged door in the aft of the cabin. Defrosting system for windows with hot air

Comfort insulation in the cabin.

Heating system.

#### TECHNICAL:

Engine electric heater connected to shore power.

1 x Inboard diesel engine.

#### TANKS:

Structural diesel tank with hatch and filling protection.

Independent fresh water tank.

ELECTRICAL SYSTEM & LIGHTING: All electrical wiring in marine cable.

Black anodized aluminium railings around cabin Shore power with control lamp, marked fuses, earth connection. Isolation transformer with earth plate for

#### **CABIN & COCKPIT:**

All windows are glued into the structure. LED lights in cabin and cockpit.

#### ENGINES, PROPULSION, STEERING etc.:

1 x Fixed pitch propeller.

#### **SECURITY EQUIPMENT:** Bilge pumps.

Fire extinguisher at helmsman station. Automatic fire extinguisher system in engine room.

protection of galvanic corrosion.

start, navigation and consumption.

2 x Floodlights on the working foredeck

**NAVIGATION & ELECTRONIC EQUIPMENT:** 

Battery charger with indicator.

Main switches with separate battery systems for

1 x Searchlight on cabin roof, manually operated.

Complete engine instruments supplied by engine

Control panel for all lighting and other electrical

24-volt electrical system.

Navigational lights.

manufacturer.

1 x Magnetic compass.

Fuel gauge.

equipment.

#### Independent dark water tank with odourless filter. **DELIVERY:**

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the yard in Denmark.

Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's



# PRO:ZERO 11M PATROL VESSEL







Design: Rev. Length overall, approx.: Rev.25/8/16 | 5000-03-21 FENDER:

Beam overall, approx.: Draft (full load), approx.: Capacity: Engine:

#### **OPERATIONAL FEATURES:**

Speed (max): +25 kt. Speed (cruise): 20 kt.

#### DESCRIPTION:

The boat has been built to meet the requirements from the competent authorities.

#### HULL. DECK AND SUPERSTRUCTURE:

The boat is made of a combination of glass- and carbon fibre as sandwich construction with PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

11,50 m The fender is constructed of closed cell 3,88 m polyethylene foam. Not deflating with solid core **0,95 m** that cannot lose buoyancy or absorb water. 8 persons Damage is strictly cosmetic keeping crew safe 2 x inboard diesel engine Fender system absorbs major impacts and retains integrity and shape. ProZero fender's profile gives substantially more interior room than a comparable RIB.

#### DECK:

Deck and cabin are self-bailing. Metallic mooring bites. Lifting points in the hull sides.

#### CABIN & COCKPIT:

The cabin is linked to the hull with anti-vibration supports that reduce noise inside the cabin. Hinged door in the aft of the cabin. Hatch to access the mast. Double hatch in cabin floor / main deck to access the engine room for service and maintenance. Windshield wiper. LED lights in cabin and cockpit. Chart table and lamp with white and red light. Comfort insulation in the cabin.

#### TECHNICAL:

#### **ENGINES, PROPULSION, STEERING &** MANOUVERING:

2 x Inboard diesel engines.

2 x Fixed pitch propellers.

## TANKS:

Independent diesel tank with hatch and filling protection. Independent fresh water tank. Independent dark water tank with odourless filter.

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable.

Shore power with control lamp, marked fuses, earth connection and shore cable. 24-volt electrical system. Main switches with separate battery systems for start and consumption. Battery charger with indicator. Searchlight on cabin roof, manually operated Navigational lights.

2 x Floodlights on the working foredeck.

#### **NAVIGATION & ELECTRONIC EQUIPMENT:** Complete engine instruments supplied by

engine manufacturer. Fuel gauge. Control panel for all lighting and other electrical

#### **SECURITY EQUIPMENT:**

Bilge pumps.

Magnetic compass.

Fire extinguisher at helmsman station. Automatic fire extinguisher system in engine

#### **DELIVERY:**

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the yard in Denmark. Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's manual.



# PRO:ZERO DCW 10M SAR BOAT







Rev.25/8/16 | 5000-03-39 FENDER:

Length overall, approx.: Length hull, approx.: Beam overall, approx.: Engine:

#### OPERATIONAL FEATURES:

Speed (lightweight condition) approx.: 30kt.

#### **DESCRIPTION:**

The boat has been built to meet the competent authority's regulations.

#### **HULL, DECK AND SUPERSTRUCTURE:**

The boat is made of a combination of glass- and carbon fibre as sandwich construction with PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

10,05 m The fender is constructed of closed cell 9,00 m polyethylene foam. Not deflating with solid core **4,05 m** that cannot lose buoyancy or absorb water. **1 x Inboard diesel engine** Damage is strictly cosmetic keeping crew safe. Fender system absorbs major impacts and retains integrity and shape. ProZero fender's profile gives substantially more interior room than a comparable RIB.

Deck and cabin are self-bailing. Metallic mooring bollards. Modular and easy detachable aluminium railings. Lashing points on aft deck for equipment. 2 x Pillars for towing on the aft deck. 2 x Strong points on the transom for towing. Storage box in front of the cabin.

1 x Hinged door in the aft of the cabin. 1 x Hinged door on the starboard side of the cabin earth connection and shore cable. Windshield wiper. LED lights in cabin and cockpit. Chart table and lamp with white and red light.

Comfort insulation in the cabin. 2 x Comfort seats for crew.

2 x Comfort seats for passengers.

TECHNICAL:

#### **ENGINES, PROPULSION, STEERING &** MANOUVERING:

1 x Inboard diesel engine. 1 x Water jet.

Possibility of twin engine and drive installation for redundant propulsion system.

#### TANKS:

Structural diesel tank with hatch and filling protection.

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable. Shore power with control lamp, marked fuses, 24-volt DC system electrical system. Main switches with separate battery systems for start and consumption. Battery charger with indicator. Searchlight on cabin roof, manually operated. Navigational lights. Floodlights on the aft deck.

#### **NAVIGATION & ELECTRONIC EQUIPMENT:** Electric engine controls. Complete engine

instruments with RPM, temperature, oil pressure and voltmeter for start batteries supplied by engine manufacturer. Fuel gauge. Control panel for all lighting and other electrical equipment.
Magnetic Compass. Electric horn.

#### **SECURITY EQUIPMENT:**

Manual bilge pump. Electrical emergency pump. High water level alarm in bilge. Portable fire extinguishers. SOLAS compliance equipment.

#### **GENERAL:**

VHF.

The boat is built as a standard according to the technical specification and our general quality standard. The specification is valid when being printed. Details in construction, design and equipment can be changed as a result of the experience from the use of the boats. The quality and the equipment standard, however, are equivalent at least to this specification.

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the yard in Denmark. Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with acomplete owner's manual.



# PRO:ZERO 13M NAVY TRANSPORT BOAT







Length overall, approx.: Beam overall, approx.:

Capacity: 2: Maximum load (including pax): 25 persons

#### **OPERATIONAL FEATURES:**

Speed max.: 25 kt. Speed (cruise): 20 kt. Range: 8 hours at cruise speed.

#### BENEFITS:

This daughter craft is developed for transfer of up to 25 persons and offers the possibility to mount armour panels for crew and passengers protection. Optionally, it can also be fitted with bulletproof glass.

The design of the ProZero cabin ensures a huge amount of daylight, this also improves the personal comfort. Benefits by being significantly Transfer raised platform in the bow with ladder lighter than market average are lower fuel consumption and lighter lifting equipment on mother vessel. Supporting the great and proven sailing capabilities.

#### 2016 | 5000-03-50 DESCRIPTION:

12,90 m The boat has been built to meet the 3,75 m requirements from the competent authorities.

#### 2.500 kg HULL, DECK AND SUPERSTRUCTURE:

2 x Outboard petrol engines The boat is made of a combination of glass- and carbon fibre as sandwich construction with PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

The fender is constructed of a hard rubbed holed profile, glued to the hull.

#### DECK:

Deck and cabin are self-bailing. between this one and the main deck. 6 mooring bites. Aluminium railings in aft and fore deck.

#### CABIN & COCKPIT:

Toilet with WC and washbasin. Benches for 18 passengers in forecastle. Benches for 7 passengers & 1 crew member in cabin.

- 1 x Pilot comfort seat in cabin.
- 1 x Hinged door in the aft of the cabin.
- 1 x Hinged door in the forecastle front.

Defrosting system for windows with hot air blowers.

All windows are glued into the structure. LED lights in cabin and forecastle.

#### TECHNICAL:

#### ENGINES, PROPULSION, STEERING etc.

2 x Outboard petrol engines.

Independent petrol tanks with hatch and filling protection. Independent fresh water tank.

Independent dark water tank with odourless

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable. Shore power with control lamp, marked fuses, earth connection.

Isolation transformer with earth plate for protection of galvanic corrosion. 24-volt electrical system.

Main switches with separate battery systems for start, navigation and consumption. Battery charger with indicator. Navigational lights.

- 2 x Floodlights on the foredeck.
- 2 x Floodlights on the aft deck.

#### **NAVIGATION & ELECTRONIC EQUIPMENT:**

Complete engine instruments supplied by engine manufacturer.

Fuel gauge.

Control panel for all lighting and other electrical equipment.

1 x Magnetic compass.

1 x Fixed VHF radio.

#### **SECURITY EQUIPMENT:**

Bilge pumps. Fire extinguisher at helmsman station. Fire extinguisher in the aft deck.

#### **DELIVERY:**

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the yard in Denmark. Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's manual.



# PRO:ZERO 15M DIVING SUPPORT VESSEL









0,75 m Damage is strictly cosmetic keeping crew safe 2 Fender system absorbs major impacts and **9 persons** retains integrity and shape. ProZero fender's 1000 kg profile gives substantially more interior room

2 x inboard diesel engine than a comparable RIB

2 x water jet

OPERATIONAL FEATURES: Top speed: 30 kt. Speed approx. (cruise): 20 kt.

Length overall, approx..: Length hull, approx.: Beam overall, approx.:

Draft, approx. (hull):

Crew:

Capacity:

#### DESCRIPTION:

The boat has been built to meet the requirements from the competent authorities. Single point lifting hook.

#### **HULL, DECK AND SUPERSTRUCTURE:**

carbon fibre as sandwich construction with PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

Deck and cabin are self-bailing. Metallic mooring bites. Spacious aft working deck. Aluminium railings. Hydraulic crane. Multiple hatches to access to technical spaces below deck.

The boat is made of a combination of glass- and Hinged door in the aft of the cabin. cabin aft. Hatch to access the mast. Moreover, the sandwich construction avoids the Windshield wiper. LED lights in cabin and cockpit. Chart table and lamp with white and red light.

**CABIN & FORECASTLE:** 

Toilet with WC, sink and shower, with direct access from working deck though a door on the

Comfort insulation in the cabin.

2 x Comfort seats for crew.

9 x Comfort seats for passengers inside the

2 x Cabins for 2 persons each.

1 x Pantry with sink, stove and fridge. Hatch to access the foredeck from the forecastle.

Heating system in both cabin and forecastle.

#### TECHNICAL:

#### **ENGINES, PROPULSION, STEERING &** MANOUVERING:

2 x Inboard diesel engines.

2 x Wateriets.

1 x Independent diesel genset (4kVA approx.).

1 x Hydraulic power-pack.

#### TANKS:

Structural diesel tanks with hatch and filling protection.

Fresh water tank.

Black water tank with odour filter.

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable. Shore power with control lamp, marked fuses, earth connection and shore cable. 24-volt electrical system.

Main switches with separate battery systems for start, navigation and consumption. Battery charger with indicator.

Searchlight on cabin roof, manually operated Navigational lights.

Floodlights on the aft deck

#### **NAVIGATION & ELECTRONIC EQUIPMENT:** Electric engine controls. Complete engine

instruments with RPM, temperature, oil pressure and voltmeter for start batteries supplied by engine manufacturer. Control panel for all lighting and other electrical equipment.

1 x Magnetic Compass.

VHF.

#### **SECURITY EQUIPMENT:**

Manual bilge pump. Electrical emergency pump. High water level alarm in bilge. Portable fire extinguishers.

#### **GENERAL:**

The boat is built as a standard according to the technical specification and our general quality standard. The specification is valid when being printed. The quality and the equipment standard, however, are equivalent at least to this specification.

#### DELIVERY:

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the yard in Denmark. Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's manual.



# PRO:ZERO DCW 15M ROV SUPPORT VESSEL







Beam overall, approx.: Draft, approx.: Engine:

Length, overall, approx.:

#### OPERATIONAL FEATURES

Speed (max): 20 kt. Range: 10 hours cruise speed.

#### DESCRIPTION

The boat has been built to meet the requirements from the pertinent authorities.

#### DECK:

Aluminium railings. Deck and cabin are self-bailing. Composite Mast. Stowage for mooring equipment. 6 stainless steel mooring bites. 2 Davits for launching and recovery the ROVs.

#### GENERAL:

The boat is built as a standard according to the technical specification and our general quality standard. The specification is valid when being printed. Details in construction, design and equipment can be changed as a result of the experience from the use of the boats. The quality and the equipment standard, however, are equivalent at least to this specification. The hull and structure have a 2 years warranty since delivery.

The equipment and devices fitted in the boat have a 1 year's warranty since delivery.

**15.00 m** The boat is made of a combination of glass- and **3.95 m** carbon fiber as sandwich construction with **1,00 m** PVC as core material. This core material acts **2 x Inboard diesel engine** as a natural buoyancy reserve material, due 2 x Water Jet to its lightweight and zero water-absorption. **16.05 m** Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable Internal space and offers a natural insulation capability, improving the comfort in the cabin and manned comportments.

The fender is constructed of closed cell polyethylene foam. Not deflating with solid core that cannot lose buoyancy or absorb water. Damage is strictly cosmetic keeping crew safe. Fender system absorbs major impacts and retains integrity and shape. The ProZero fender's profile gives substantially more interior room than a comparable RIB.

The fender can be easily detached and attached for transport and maintenance.

#### CABIN:

2 Comfort seats for crew. Hinged door in the aft of the cabin. Windshield wiper with interval relay. All windows are glued into the structure. Lights in cockpit with dual mode white/red light. Chart lamp with white and red light. Comfort insulation in the cabin. Mess area with L sofa and table. Pantry with sink and cooking facilities. Multiple storage spaces. Dark Control Room for ROV operation. Ladder down to forecastle.

#### FORECASTLE:

2 x Cabins with room for a 1,5 x 2,0 m mattress, desk board and wardrobe. Toilet with WC, shower and sink. Staircase to access foredeck with enclosed lobby with independent drainage to bilge.

#### TECHNICAL:

#### **ENGINES. PROPULSION. STEERING &** MANOUVERING

2 x Inboard diesel engines. 2 x Water jets.

#### **FUEL TANK:**

Structural diesel tank with hatch and filling protection.

All fuel systems are pressure tested.

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable. Shore power with control lamp, marked fuses, earth connection and shore cable. 24-volt electrical system. Main switches with separate battery systems for start and consumption. Battery charger with indicator.

#### **NAVIGATION & ELECTRONIC EQUIPMENT**

Electric engine controls. Complete engine instruments with RPM, temperature, oil pressure and voltmeter for start batteries supplied by engine manufacturer. Control panel for all lighting and other electrical equipment. Magnetic Compass.

#### SECURITY EQUIPMENT:

Manual bilge pump. Electrical emergency pump in bilge, manual start, in the bilge and in the engine room. Fire extinguisher at helmsman station. Automatic fire extinguish system in the engine

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the vard in Denmark. Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's manual.

# PRO:ZERO 17M ASV





Length overall, approx.: Beam overall, approx.: Draft (drives), approx.:

OPERATIONAL FEATURES:

Capacity: Maximum load:

**Engines:** 

Speed: 35 kt.

BENEFITS:

consumption.

comfort.

Speed (cruise): 32 kt.

Fuel capacity: 1400 l.

Displacement (full load) approx.:

This ASV concept boat is build by using the

ASV (Air Supported Vessel) technology, where

70% of the overall weight of the vessel will be

The ASV concept boat is a part of the ProZero

system with a flexible attached cabin reducing

both noise and vibrations from hull and engine.

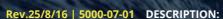
The design of the ProZero cabin ensures a huge

amount of daylight, this improves the personal

supported on the cushion of pressurized air.

minimizing hull resistance is the key ingredient.





17,68 m The boat's structure has been built according to 4,99 m DNV HSLC Code. 1.13 m

#### 14.000 kg HULL, DECK AND SUPERSTRUCTURE:

**14 persons** The boat is made of a combination of glass- and 1.000 kg carbon fibre as sandwich construction with **2 x inboard diesel** PVC as core material. This core material acts as a natural buoyancy reserve material, due to its lightweight and zero water-absorption. Moreover, the sandwich construction avoids the use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

#### DECK:

Stepped deck with two levels: fore deck and main deck, both with an antiskid surface. By activating the ASV technology, approximately Flush main engine hatches. Largeaft working deck. Deck and cabin are self-bailing. This ensures a higher top speed and lower fuel 6 aluminium mooring bites and aluminium

#### CABIN & COCKPIT:

The cabin is linked to the hull with anti-vibration supports that reduce the noise inside the cabin. 1 x Hinged door in the starboard side of the

Staircase to space below deck. All windows are glued into the structure. LED lights in cabin and cockpit.

#### TECHNICAL:

#### ENGINES, PROPULSION, STEERING etc.

2 x Main inboard Volvo Penta D6 diesel engines, rated at 435 hp.

1 x Auxiliary Volvo Penta D3 diesel engine, rated at 190 hp.

2 x IPS1 drives.

1 x Hydraulic pump.

Redundant propulsion system.

TANKS:

- 1 x Main fuel tank of 1250 l capacity. 1 x Daily fuel tank of 150 l capacity.
- 1 x Hydraulic tank of 85 I capacity.

#### **ELECTRICAL SYSTEM & LIGHTING:**

start, navigation and consumption.

Battery charger with indicator.

All electrical wiring in marine cable. Shore power with control lamp, marked fuses, earth connection. Isolation transformer with earth plate for protection of galvanic corrosion. 24-volt electrical system. Main switches with separate battery systems for

engine manufacturer. Fuel gauge. Control panel for all lighting and other electrical

**NAVIGATION & ELECTRONIC EQUIPMENT:** 

Complete engine instruments supplied by

## 1 x Magnetic compass. **SECURITY EQUIPMENT:**

1 x Manual bilge pump, connected to all compartments through a manifold. 8 x Electrical bilge pumps, manual start and with high water level alarm in the engine room, accommodation space, void/cargo space and fore peak.

2 x Portable fire extinguishers.

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the yard in Denmark. Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's manual.

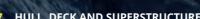


# PRO:ZERO 12M DRONE RECOVERY BOAT









Length overall, approx.: Beam overall, approx.: Draft (full load, drive), approx.: Capacity: Maximum load:

#### **OPERATIONAL FEATURES:**

Speed (max, lightweight condition): 25 kt. Speed (cruise): 20 kt. Fuel capacity: 700 l.

#### BENEFITS:

**Engines:** 

Drive:

This daughter craft is developed for deploying and recovering heavy equipment from sea. The design of the ProZero cabin ensures a huge amount of daylight, this also improves the personal comfort. Benefits by being significantly than a comparable RIB. lighter than market average are lower fuel consumption and lighter lifting equipment on mother vessel. Supporting the great and proven sailing capabilities.

#### DESCRIPTION:

The boat has been built to meet the requirements from the competent authorities, and features a redundant propulsion system.

#### Rev.25/8/16 | 5000-03-47 HULL, DECK AND SUPERSTRUCTURE:

12,13 m The boat is made of a combination of glass- and **3.92 m** carbon fibre as sandwich construction with 0,95 m PVC as core material. This core material acts **4 persons** as a natural buoyancy reserve material, due 2.000 kg to its lightweight and zero water-absorption. **2 x inboard diesel** Moreover, the sandwich construction avoids the **2 x Sterndrive** use of internal stiffeners, increasing the usable internal space and offers a natural insulation capability, improving the comfort in the cabin and manned compartments.

#### FENDER:

The fender is constructed of closed cell polyethylene foam. Not deflating with solid core that cannot lose buoyancy or absorb water. Damage is strictly cosmetic keeping crew safe. Fender system absorbs major impacts and retains integrity and shape. ProZero fender's profile gives substantially more interior room

Deck and cabin are self-bailing.

Large working area in the aft deck.

#### DECK:

5 mooring bites. Aluminium railings in aft deck and around the cabin with rollers for handling over heavy loads. Open transom. Lifting A-Frame.

#### **CABIN & COCKPIT:**

Toilet with WC and washbasin. 4 comfort seats for crew. Console for 2 crew members in port side. Pantry with sink, tap, fridge and coffee machine. Hinged door in the aft of the cabin. Defrosting system for windows with hot air blowers. All windows are glued into the structure.

LED lights in cabin and cockpit. Comfort insulation in the cabin.

#### TECHNICAL:

#### ENGINES, PROPULSION, STEERING etc.

2 x Inboard diesel engines. 2 x Sterndrives.

Redundant propulsion system.

#### TANKS:

Structural diesel tank with hatch and filling protection. Independent fresh water tank. Independent dark water tank with odourless

#### **ELECTRICAL SYSTEM & LIGHTING:**

All electrical wiring in marine cable. Shore power with control lamp, marked fuses, earth connection.

Isolation transformer with earth plate for protection of galvanic corrosion.

24-volt electrical system.

Main switches with separate battery systems for start, navigation and consumption. Battery charger with indicator.

1 x Searchlight on cabin roof, manually operated.

Navigational lights.

2 x Floodlights on the working foredeck.

#### **NAVIGATION & ELECTRONIC EQUIPMENT:**

Complete engine instruments supplied by engine manufacturer.

Fuel gauge.

Control panel for all lighting and other electrical equipment.

1 x Magnetic compass.

1 x Fixed VHF.

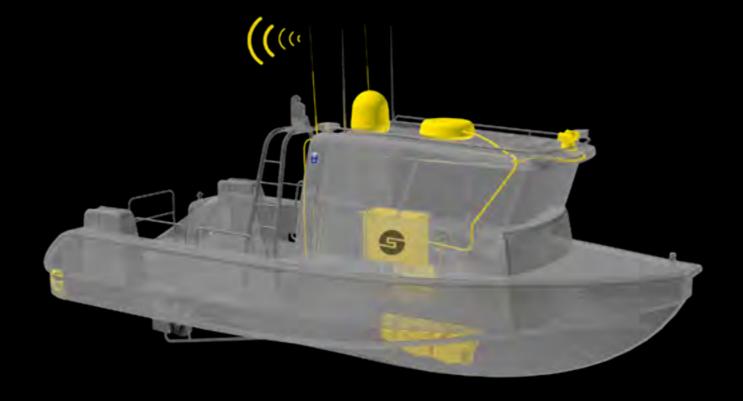
#### **SECURITY EQUIPMENT:**

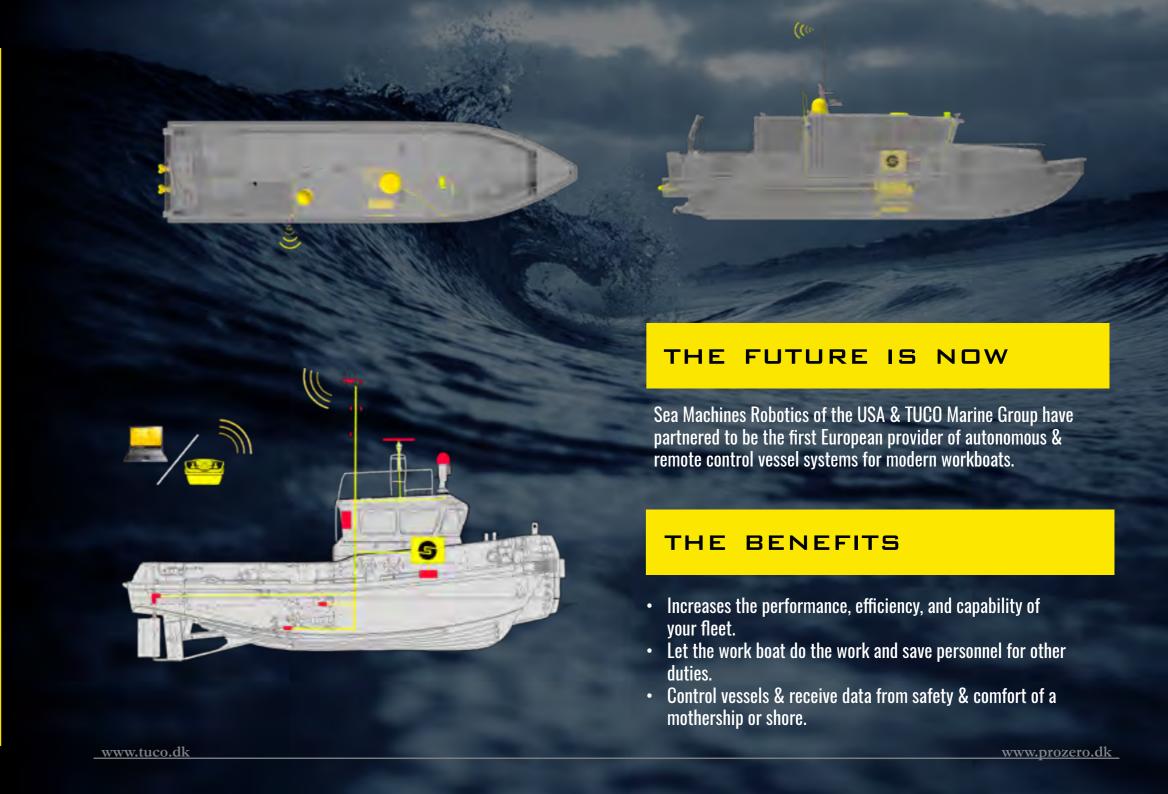
Bilge pumps (2 x electrical + 1 manual). Fire extinguisher at helmsman station. Automatic fire extinguisher system in engine Life jackets.

#### **DELIVERY:**

All boats are launched, tested and calibrated and has gone through a scrupulous quality control at the yard in Denmark. Delivery, hand over, test drive and technical review with customer at yard in Denmark. All boats are delivered with a complete owner's manual.







# SEA MACHINES PROVIDES!

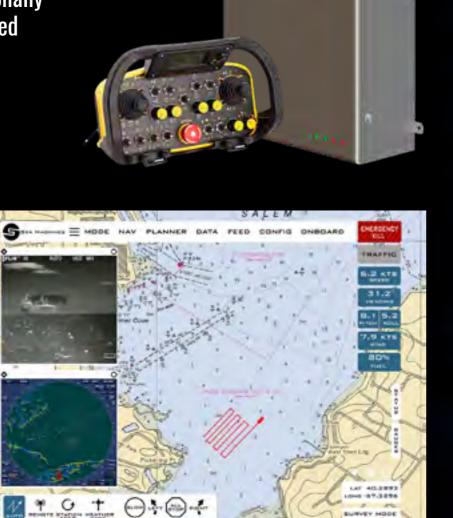
# RC-NXT SYSTEM

Sea Machines' RC-NXT Remote Command System enables conventionally piloted vessels to be controlled remotely using an industrial-hardened onboard PLC & wireless joystick controller.

This system is ideal for improving control, situational awareness, safety of personnel, and efficiency by providing the ability to pilot a vessel from a location that is best suited for the operation, which is not always the pilot house.

# **DP-NXT SYSTEM**

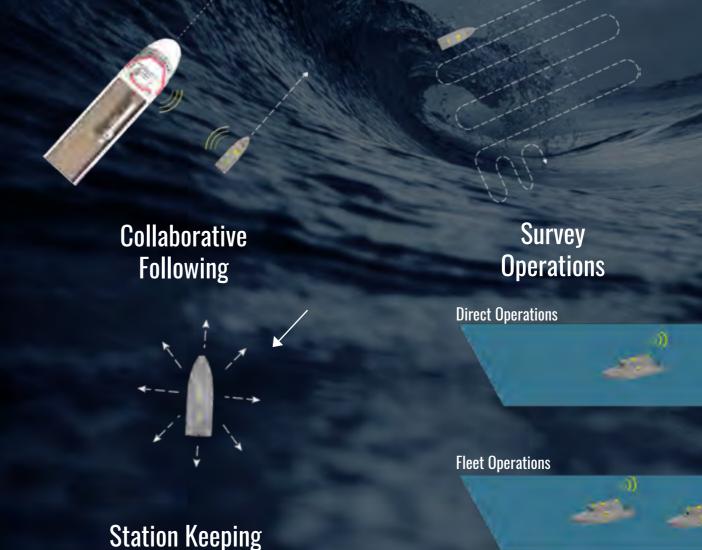
Sea Machines' DP-NXT Autonomous Control System is an advancement of RC-NXT that upgrades conventional vessels to do task-based operations using a reduced or zero onboard crew. Empower your boats with Autonomy and enjoy the many benefits of this advanced technology.



# WHAT CAN AUTONOMOUS UNMANNED SYSTEMS DO FOR YOU?

Waypoint

**Following** 



# DEFENCE UNLIMITED DEFENCE-SECURITY-GOVERNMENT RELATIONS

Defence unlimited international mailbox@defenceunlimited.com www.defenceunlimited.com