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Data Xplorer

Research and Maritime Domain Awareness USV

This uncrewed surface vehicle (USV) is designed for persistent continuous operations of up to six months. It is engineered to withstand hurricane-force conditions and is self-righting. The vessel is maneuverable enough to be used or launched in congested nearshore environments, while its energy harvesting abilities and efficient drive system allow it to work indefinitely when conducting low-power operations. A modular battery system of up to 10.5 kWh also allows it to conduct high-powered operations such as multibeam surveying continuously for 30-40 hours.

Features

- Electric propulsion for near silent operation
- 360° camera feed transmitted real-time
- Efficient self-righting hull
- Ruggedized for hurricane conditions.
- Solar harvesting for extended operations
- Six-month continuous operation capacity
- Satellite/cellular/radio communications
- Real-time encrypted data transmission
- Autonomous or remotely operated

Applications

- Increase maritime domain awareness
- Persistent data collection for research
- Patrol marine-protected areas
- Multibeam surveying
- Monitoring cetaceans and enforcing no-go zones.
- Communication relay for subsea sensors
- Replace crewed vessels in dangerous operations

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Technical Specifications

Data Xplorer	
Length	3.56 Meters (11.66 feet)
Beam	0.89 Meters (35 inches)
Draft	0.46 Meters (18 inches)
Propulsion	Interchangeable pod motor (high efficiency or high power)
Speed	Top speed 15 knots, cruise speed 1.5-4 knots
Mission Duration	Up to six months depending on mission requirements
Communications	Satellite, cellular, long-range wifi and radio
Hull Material	Composite construction made from carbon fiber and S-glass
Solar Array	220-400 Watts
Battery	Lithium Ion Modular System 3.5-10.5 kWh
Payload Dry	100 kg
Payload Wet	Wet instrument bay with water exchange: 12 liters (3 gallons)
Cameras	Three providing 360 degree view (streamed through 3g/4g)
Collision Avoidance	Vessel reacts to data from single-beam lidar and AIS
Keel	Optimized to protect rudder and pod motor and shed debris
Sensors	Over 40 environmental and system health sensors.
Weather Station	Airmar WX-IPX7 - wind speed and direction, temp, pressure
Transducer	Airmar SMART Tri -depth, speed relative to water, water temp

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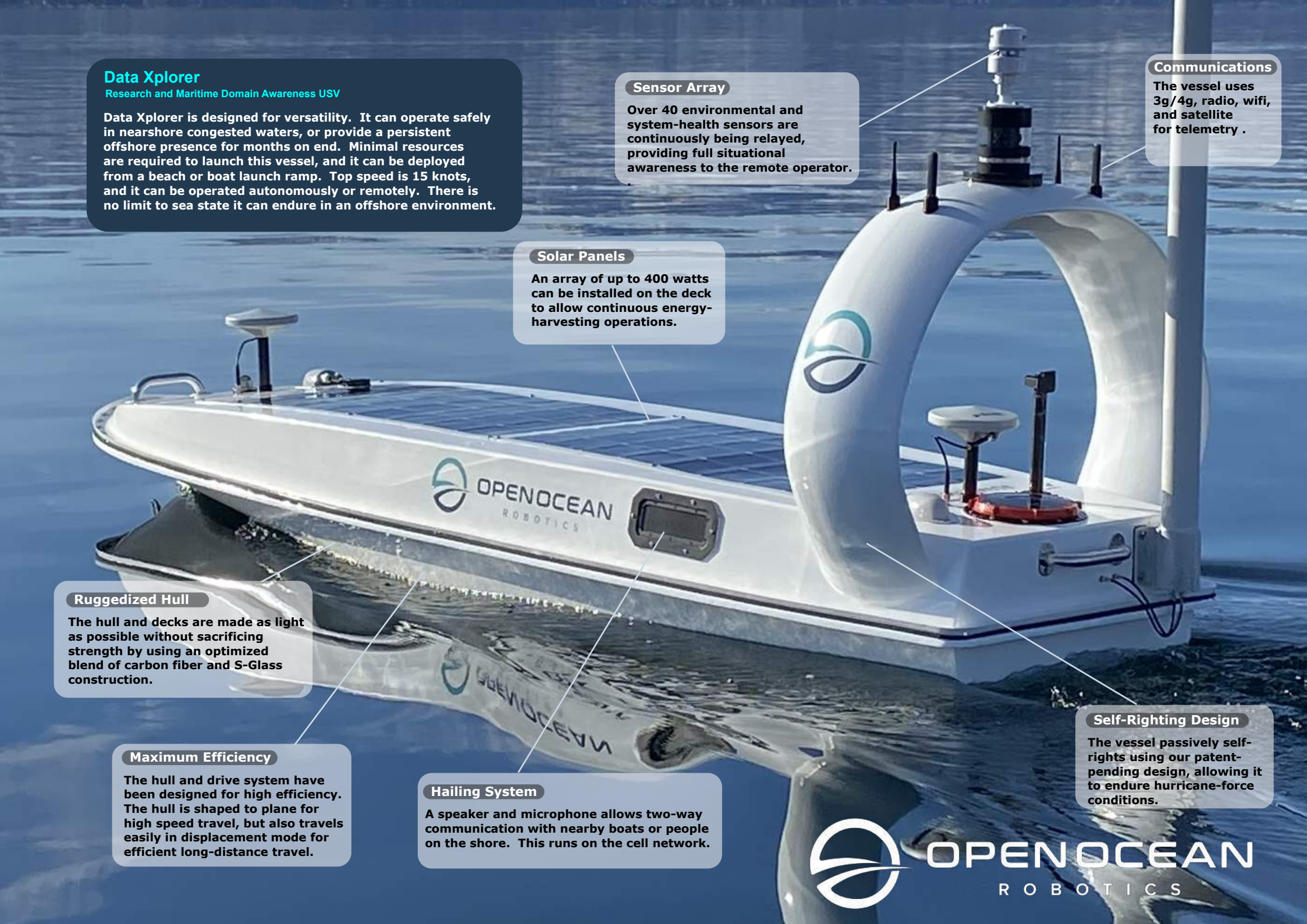

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Data Xplorer is designed for versatility. It can operate safely in nearshore congested waters, or provide a persistent offshore presence for months on end. Minimal resources are required to launch this vessel, and it can be deployed from a beach or boat launch ramp. Top speed is 15 knots, and it can be operated autonomously or remotely. There is no limit to sea state it can endure in an offshore environment.

Sensor Array

Over 40 environmental and system-health sensors are continuously being relayed, providing full situational awareness to the remote operator.

Communications

The vessel uses 3g/4g, radio, wifi, and satellite for telemetry .

Solar Panels

An array of up to 400 watts can be installed on the deck to allow continuous energy-harvesting operations.

Ruggedized Hull

The hull and decks are made as light as possible without sacrificing strength by using an optimized blend of carbon fiber and S-Glass construction.

Maximum Efficiency

The hull and drive system have been designed for high efficiency. The hull is shaped to plane for high speed travel, but also travels easily in displacement mode for efficient long-distance travel.

Hailing System

A speaker and microphone allows two-way communication with nearby boats or people on the shore. This runs on the cell network.

Self-Righting Design

The vessel passively self-rights using our patent-pending design, allowing it to endure hurricane-force conditions.

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