THE AIRBOXER

MARITIME OPERATIONAL PERFORMANCE PROFILE

Persistent monitoring from vessel, coast or remote operating site

The Airboxer is a long-endurance unmanned helicopter developed for maritime surveillance, offshore inspection, infrastructure monitoring and emergency-response missions requiring extended time on station, vertical deployment and dependable data collection.

The platform combines vertical take-off and landing, stable hover, controlled low-speed flight and multi-hour endurance. It can be deployed from coastal locations, offshore facilities, remote sites and configured vessels without runway infrastructure or a large aviation facility.

OPERATIONAL PERFORMANCE

EXTENDING COVERAGE WITHOUT ADDING A FULL AVIATION CAPABILITY

Maritime and infrastructure operators often need to monitor large areas, inspect remote assets and respond rapidly to incidents. Crewed aircraft, vessels and physical inspections can provide the required access, but may involve high operating costs, limited availability and increased personnel exposure.

The Airboxer provides multi-hour rotary-wing surveillance and inspection capability while retaining a compact operating footprint and the ability to deploy from locations with limited infrastructure.

OPERATIONAL FACTOR	SMALL ELECTRIC UAS	THE AIRBOXER	CREWED OR LARGER UNMANNED ASSET
Vertical take-off and landing	Common	Standard capability	Platform-dependent
Stable hover	Common	Standard capability	Platform-dependent
Endurance	Limited	More than 4 hours	Extended
Maximum payload capacity	Limited	Up to 7.0 kg	Higher
Continuous payload power	Limited	300 W	Higher
Launch and recovery infrastructure	Minimal	Minimal	Often significant
Operating footprint	Low	Compact	Higher
Personnel and support burden	Low	Moderate	Higher

The comparison is indicative. Actual characteristics depend on the selected aircraft and system configuration.

OPERATIONAL VALUE

Extended time on station

More than four hours of endurance in standard configuration supports longer patrol, inspection and monitoring missions while reducing aircraft rotations.

Extended Range Fuel Tanks increase endurance to more than five hours when permitted by the payload and mission profile.

Vessel and remote-site deployment

Vertical take-off and landing remove dependence on runways, launch rails and recovery nets. The Airboxer can be operated from coastal sites, offshore facilities and configured vessels with limited available space.

Maritime situational awareness

Stabilized EO/IR payloads, AIS integration and mission-specific sensors support the detection, tracking, identification and assessment of vessels, offshore assets and activity within coastal or maritime operating areas.

Reduced personnel exposure

Remote observation and inspection reduce the need to place personnel in aircraft, small boats, elevated structures, offshore installations or other hazardous and difficult-to-access locations.

Repeatable data collection

Automated flight planning and controlled flight profiles support consistent inspection routes, repeatable measurements and comparison of data between successive missions.

Live data distribution

Payload video, aircraft telemetry and mission data can be delivered to the local operator, vessel systems, technical specialists or a remote operations centre.

PRIMARY OPERATIONAL APPLICATIONS

- Maritime domain awareness
- Coastal and offshore surveillance
- Vessel detection, tracking and identification
- Search and rescue support
- Offshore energy and infrastructure inspection
- Port, harbour and waterway monitoring
- Environmental observation and data collection
- Powerline, pipeline and critical-asset inspection
- Emergency assessment and incident response

REFERENCE SYSTEM CONFIGURATIONS

CONFIGURATION	TYPICAL EQUIPMENT	PRIMARY PURPOSE
Maritime Surveillance	Stabilized EO/IR, AIS, maritime or MIMO data link	Vessel detection and identification
Extended-Endurance Patrol	EO/IR, Extended Range Fuel Tanks	Increased patrol area or time on station
Offshore Inspection	EO/IR, LiDAR or specialist sensor	Asset inspection and condition assessment
Environmental Monitoring	Scientific or survey payload	Repeatable measurement and data collection
Vessel-Based Operation	EO/IR, vessel communication system, ship-integrated GCS	Surveillance from a configured vessel

Final payload and communication configurations remain subject to technical integration, flight clearance and operational approval.

CORE PERFORMANCE

FLIGHT PERFORMANCE	VALUE
Maximum take-off weight	34.2 kg
Endurance, standard configuration	More than 4 hours
Endurance with Extended Range Fuel Tanks	More than 5 hours
Maximum flight range	More than 200 NM / 360 km
Endurance cruise speed	40 kts IAS
Range cruise speed	45 kts IAS
Maximum flight speed	75 kts IAS
Operational wind limit	25 kts, up to 40 kts including gusts
Operating temperature	-10°C to +45°C

PAYLOAD AND ELECTRICAL CAPABILITY	VALUE
Maximum payload capacity	7.0 kg
Payload capacity at full standard fuel	3.0 kg
Continuous payload power	300 W / 24 VDC
Payload data interface	IP Ethernet, IEEE 802.3
Onboard electrical generation	28 V / 700 W
Payload arrangement	Multiple payload positions

Maximum flight range is not equivalent to operational radius. Operational radius and time on station depend on payload, fuel, atmospheric conditions, communication coverage, flight profile and required recovery reserve.

SYSTEM ARCHITECTURE AND MATURITY

INTEGRATED UNMANNED AIRCRAFT SYSTEM

The Airboxer is supplied as an integrated unmanned aircraft system rather than as a standalone air vehicle.

A mission configuration can include:

- The Airboxer aircraft
- Stabilized EO/IR or specialist mission payload
- AIS receiver or interface
- Airborne communication system
- Tracking, fixed-site or vessel-mounted antenna
- Portable, vehicle-integrated or ship-integrated Ground Control Station
- Pilot and payload-control interfaces
- Transport and support equipment
- Mission-planning software
- Technical and operational documentation
- Training, maintenance and lifecycle support

FLIGHT-CONTROL ARCHITECTURE

The flight-control system manages aircraft attitude, heading, trajectory, airspeed and mission execution throughout the flight.

Automated flight functions reduce operator workload and support repeatable mission execution while maintaining pilot authority over the aircraft and mission.

The system architecture incorporates:

- redundant flight-control elements;
- continuous system monitoring;
- defined degradation logic;
- controlled contingency responses;
- documented operational and environmental limitations.

Detailed failure thresholds, recovery logic and system vulnerabilities are excluded from public-release documentation.

COMMUNICATION AND DATA ARCHITECTURE

Communication systems are selected according to operating radius, vessel or site configuration, spectrum availability, network coverage and data-distribution requirements.

COMMUNICATION OPTION	PRIMARY APPLICATION
Maritime C-band	Configured vessel-based operations
Encrypted 2×2 MIMO	Mobile coastal, offshore and remote-site operations
Directional tracking link	Extended line-of-sight operation
LTE/5G	Network-supported BVLOS operation
SATCOM backhaul	Remote data distribution or BLOS support

The available architectures support:

- aircraft command and control;
- aircraft and payload telemetry;
- payload control;
- live video transmission;
- mission-data distribution;
- connection to onboard and remote operational users.

Interfaces with vessel networks, command centres, GIS environments and asset-management systems can be assessed as part of the system-integration process.

GROUND CONTROL STATION

The ruggedized Ground Control Station supports:

- mission planning;
- aircraft command and control;
- payload operation;
- live video and telemetry display;
- mission-data recording;
- contingency management;
- post-flight review.

The Ground Control Station can be configured for portable, vehicle-integrated, ship-integrated or fixed-site operation.

For inspection and monitoring missions, collected data can be transferred for technical review, comparison with earlier missions and integration into the operator’s existing workflow.

ENVIRONMENTAL DESIGN

PARAMETER	VALUE
Aircraft enclosure	IP56
Avionics protection	IP67
Relative humidity	95% non-condensing
Electromagnetic field tolerance	At least 200 V/m
Operating temperature	-10°C to +45°C
Operational wind limit	25 kts, up to 40 kts including gusts

Environmental limits remain dependent on the complete aircraft configuration, payload installation and approved operating procedures.

Vessel-based operations additionally depend on deck layout, available operating area, vessel movement, communication coverage and the selected recovery method.

CAPABILITY MATURITY

The Airboxer is supported by structured configuration control, training, maintenance and technical documentation.

CAPABILITY	CURRENT STATUS
Core aircraft platform	Operationally demonstrated
Vertical take-off and landing	Operationally demonstrated
Multi-hour endurance	Validated
Stabilized EO/IR integration	Available
Portable Ground Control Station	Available
MIMO communication	Available
Directional tracking communication	Available
AIS integration	Available
Maritime C-band communication	Configuration-dependent
LTE/5G-supported operation	Configuration-dependent
SATCOM-supported operation	Integration-dependent
LiDAR and specialist payload integration	Integration-dependent
Shipborne operation	Demonstrated in configured conditions
Precision landing support	Available
Moving-vessel automatic landing	Validation and configuration-dependent

REGULATORY, TRAINING AND SUSTAINMENT FRAMEWORK

The Airboxer is developed for operation within professional and regulated aviation environments.

The system is supported by:

- High Eye's European LUC SAIL II operating experience;
- structured safety and risk-management processes;
- aviation-style operational and maintenance documentation;
- controlled system configurations;
- defined operational and environmental limitations;
- pilot, mission-operator and maintenance training;
- simulator and recurrent training;
- operator-level and factory-level maintenance support;
- spare-parts and support packages;
- configuration and obsolescence management;
- ITAR-free platform architecture.

The Airboxer is classified as a dual-use system under European export-control regulations. Operational authorization remains dependent on the mission, airspace, vessel or operating site, national regulatory framework, operating organization and selected system configuration.

OPERATIONAL FIT

The Airboxer is suitable for further evaluation where the requirement calls for:

- multi-hour maritime or infrastructure monitoring;
- vertical operation without runway infrastructure;
- deployment from coastal sites, offshore facilities or configured vessels;
- stable hover and controlled low-speed inspection;
- reduced personnel exposure in hazardous or inaccessible environments;
- repeatable data collection across successive missions;
- live distribution of video, telemetry and sensor data;
- modular payload and communication configurations;
- structured training, maintenance and lifecycle support.

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Published performance values are configuration-dependent. Actual endurance, range, operational radius and payload capacity vary with fuel quantity, payload mass, atmospheric conditions, altitude, communication equipment, operating procedures and required recovery reserve. Vessel-based operations are subject to vessel integration, deck layout, vessel movement, communication configuration and applicable approvals. Final performance and system specifications are confirmed for the selected configuration and approved operational scenario. Export and operation remain subject to applicable national and international regulations.