

UNMANNED SYSTEMS

Autonomous Minesweeping Capability



Proven Reputation





📍 Stakeholders attend a demonstration of the minesweeping system.

AEUK's modern unmanned sweeping systems can safely clear sea mines from military theatres of operation, moving towards a future of "removing the man from the minefield".

The world-leading minesweeping systems feature a wide range of capabilities to enable Navies to undertake consistently effective operations and mine clearance in challenging environments.

Within hours of arriving in theatre, a small team can plan, configure, deploy and operate the system and ultimately defeat complex mine threats.

AEUK continues to demonstrate its pedigree as an organisation with an unparalleled and proven reputation for innovation in maritime defence technology.

In addition to the recent supply of the UK Sweep Capability to the Royal Navy, AEUK have provided, and continue, to provide minesweeping systems to global customers.

“This autonomous minesweeper takes us a step closer to taking our crews out of danger and allowing us to safely clear sea lanes of explosives, whether that’s supporting trade in global waters and around the British coastline, or protecting our ships and shores. We are investing millions in innovative technology now, to support our military of the future.”

GUTO BEBB

UK Minister for Defence Procurement



📍 Within hours of arriving in theatre, a small team can plan, configure and deploy the system.

Capability



0.1, 0.2, 0.3, 0.4, 0.5.

0.1 COLREGS Compliant, Resilient USV Capability

- A highly capable USV built to deliver the performance needed for minesweeping, while remaining responsive and resilient to above water and underwater threats.
- Multiple launch and recovery options for the USV providing operational flexibility from land and sea.
- Upgraded structural design to provide improved survivability to underwater explosion (UNDEX).
- USV operations and C2 contained within a secure system boundary, assuring operations in contested environments.
- Sophisticated autonomous behaviours provide the RN with its first full USV-based system aligned to the COLREGS.
- Autonomy allows the USV to make collision avoidance manoeuvres around other vessels according to the appropriate rules.



📍 The USV is COLREGS compliant, highly capable and able to deliver a wide range of naval effects including minesweeping.

0.2 Multi-Sensor Fit Enabling Revolutionary ‘Sense & Avoid’ Autonomy

- Enabling COLREGS compliance is the USV’s sophisticated Sense And Avoid (SAA) sub-system comprising sensors and processing components (e.g. radar, EO, IR, AIS).
- SAA allows the vehicle to detect static and moving obstacles and avoid collision automatically. AEUK’s C3 system can simultaneously provide information to the control cabin, allowing the remote C3 operator to maintain a proper look-out as the master of the vessel at all times, in accordance with COLREGS.
- Automatic object detection sensors and AEUK’s track fusion package have been integrated with collision avoidance algorithms. The collision avoidance autonomy has been tested at sea using real targets in representative scenarios.



👉 The minesweeping system can be operated remotely from on-board a ship or from the control cabin.

0.3 A Novel, High-Output Power Generation Module (PGM)

- The system uses AEUK's innovatively designed, high-output power generation module (PGM), which can produce four current controlled outputs and the acoustic source power for minesweeping.
- The outputs are user-defined and can be independent or parallel, to achieve a range of different sweep configurations.



📍 Autonomous capability distances personnel from danger.

“Combined Influence Minesweeping is a critical component of the Mine Countermeasures capability. This autonomous system will restore the Royal Navy’s sweep capability, enabling it to tackle modern digital mines that may not otherwise be discovered in challenging mine hunting conditions.”

BRIGADIER JIM MORRIS, ROYAL MARINES

Assistant Chief of the Naval Staff in Maritime Capability, and Senior Responsible Officer for the Mine Counter Measures and Hydrographic Capability (MHC) programme

“The autonomous minesweeper offers a commander the ability to defeat mines that cannot be countered by current hunting techniques and significantly reduces the risk to crew members in pressured and time-constrained operations. The system can offer greater flexibility and upgradability, allowing the Royal Navy to respond better to the sea-mine threat in the long term and operate more effectively around the world.”

NEAL LAWSON

Director Ships Support, for the UK MOD's procurement organisation, Defence Equipment and Support

0.4 World-Leading Multi-Influence Sweep System

The innovative towed Coil Auxiliary Boats (CABs) were developed to provide scalable components for magnetic field signature generation. The CABs were designed using a novel construction material ('Drop Stitch' inflatable panels) to provide structural support, stability and UNDEX resistance.

A towed programmable wide-band acoustic generator extends the sound frequency that can be transmitted into the water, allowing simulation of a larger number of ship types

The off-board Sweep Monitoring System (SMS) provides two functions:

- Detection of mine actuations, including bearing, number of actuations and time of actuation.
- Monitoring of the rear of the Sweep Module position, including bearing and acoustic influence output.



👉 CABs mimic the signature of a larger ship.



👉 The novel construction of the CABs provides stability, UNDEX resistance, and structural support.



👉 Customisable configurations available.

0.5 Easily Transportable Mission System

The sweep system is fully sea, road and air transportable, allowing it to be easily moved to theatre. Within hours of its arrival, a small team can plan, configure, deploy and operate the system in order to ultimately defeat complex mine threats.

A Portable Command Centre provides a safe and secure working environment for C3 operations, with further ISOs providing storage and deployment infrastructure for the acoustic sources.

➤ Portable command and control centre.



➤ The system can be easily packaged.



➤ A small team can disassemble the system for redeployment.



➤ The minesweeping system can be transported by sea, road and air.

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