



ELECTRONICS DIVISION

Hostile Artillery LOcating (HALO)

The Global Leader in Passive
Acoustic Weapon Locating

 **LEONARDO**

For over 40 years, Leonardo has set the standard in passive acoustic weapon-locating technology.

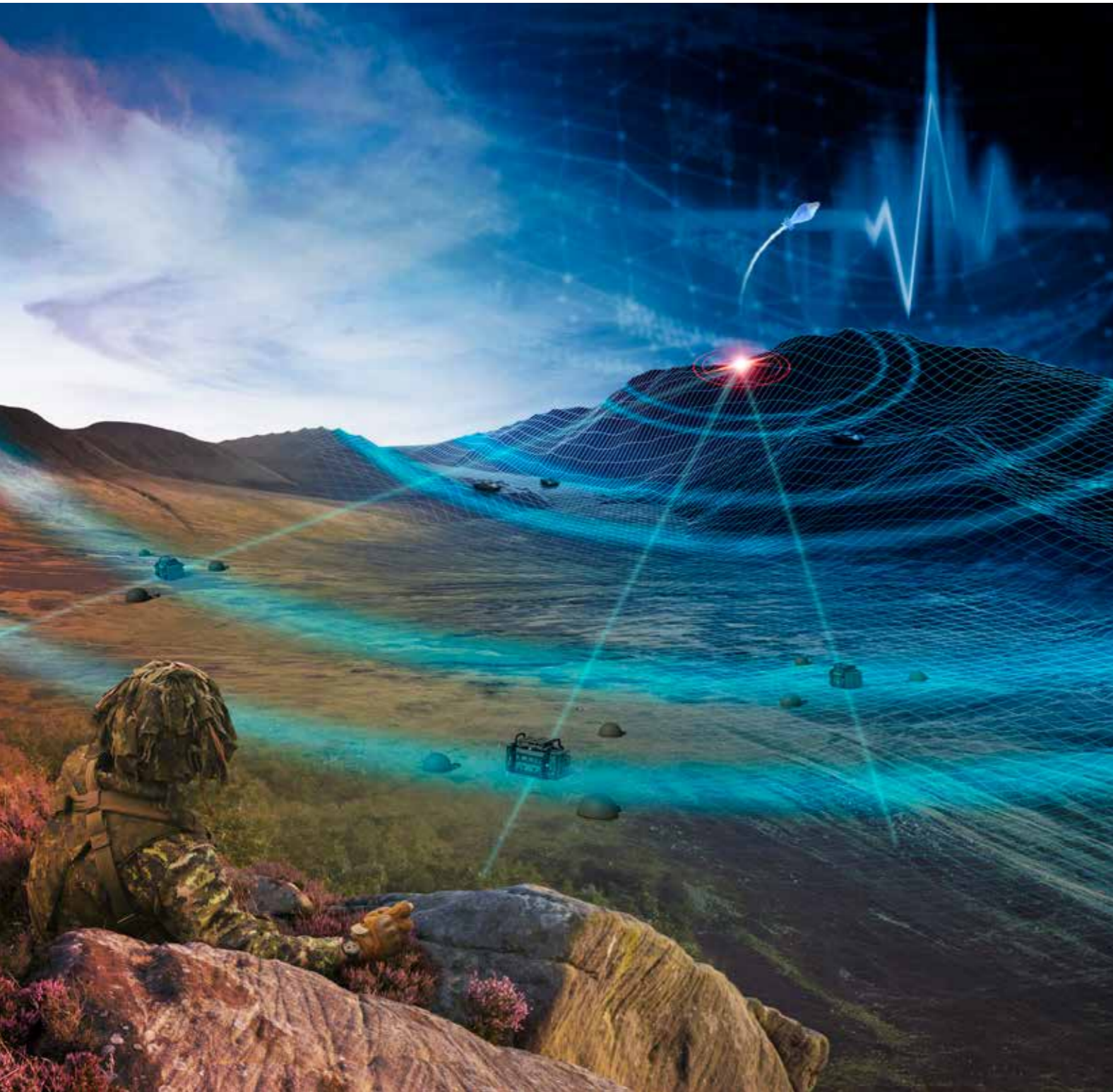
HALO is the world's most advanced and battle-proven acoustic weapon locating system, operationally deployed by 12 armed forces, including NATO countries.

Combat-Proven Across the Globe

HALO has demonstrated interoperable performance in various theatre including:

- Bosnia and Kosovo
- Iraq and Afghanistan
- South Korea and Ukraine
- Latvia

As battlefields become increasingly contested by Electronic Warfare (EW) and anti-radar threats, demand for passive, radar-independent solutions like HALO continues to grow.



Unparalleled Accuracy and Speed

HALO uses advanced acoustic processing to precisely locate:

- Point of Origin (POO) – Enemy artillery and mortar launch sites
- Point of Impact (POI) – Strike locations for counterfire adjustments

Unlike radars, HALO operates covertly, without emitting an electronic signature.

How HALO Works

Uncrewed Sensor Posts (SPs) with advanced microphones detect acoustic pressure waves from gunfire, mortars, and explosions. These signals are instantly relayed to the HALO Command Post, where powerful algorithms determine the exact threat location.

- Rapid counterfire support
 - enhances friendly artillery accuracy
- Real-time threat detection – delivers immediate, high-confidence targeting data

Mission-Critical Capabilities

HALO provides persistent, wide area monitoring in all weather conditions and integrates seamlessly with Intelligence, Surveillance, Target Acquisition, and Reconnaissance (ISTAR) systems, filling critical surveillance gaps.

- Enhanced Situational Awareness
 - Extends battlefield coverage where ISTAR assets are unavailable
- Cueing & Targeting – Provides precise targeting data, reducing reliance on vulnerable radars
- Event Correlation – Fuses HALO data with WLR and other sensor inputs for improved impact accuracy

HALO in Ukraine: The Counterfire Battle

During Russia's 2022 full-scale invasion, mass artillery barrages - estimated at 80,000 rounds per day - were at the centre of Russian tactics.

HALO was rapidly deployed by the Armed Forces of Ukraine, where it has outperformed radar-based systems in contested environments.

- Baseline range: 25km, covering ~160km of the frontline
- 4 systems deployed since Feb 2023
 - Over 30,000 operational hours
- Single Command Post (CP) sending 500+ targeting events per day

“HALO systems are identifying POO/POI even when radars are not.”

- Ukrainian HALO Operator.

HALO System Specifications

Deployment

- Command Post: Setup in 10 minutes
- Sensor Posts: Setup in 3 minutes
- Portable Deployment: Easily transported via quad bikes (Air Assault Capable)

Power Options

- Low Power Consumption
- Battery (3 days) | Fuel Cell (5 days) | Solar Panels

Detection Capabilities

Threat Type	Detection Range
155mm Artillery & Larger	>25km
120mm Mortars	>15km
IEDs	>5km
30mm Rounds	>4km
Rockets	Variable

System Weight

- Sensor Post: 29.9kg
- Command Post: 15.6kg

Interoperability

- Seamless integration with Target Management Systems
- HYAS C2 interface for customer C2/C4I systems

User Interface

- Google-style mapping for intuitive operation
- PDA support for GPS-denied environments

Operational Coverage

- Frontage: 40km
- Total Coverage: 2,250km²
- 360° Surveillance
- Accuracy:
 - 100m CEP (<15km range),
 - 0.7% of range (>15km)

The Future of Passive Acoustic Warfare

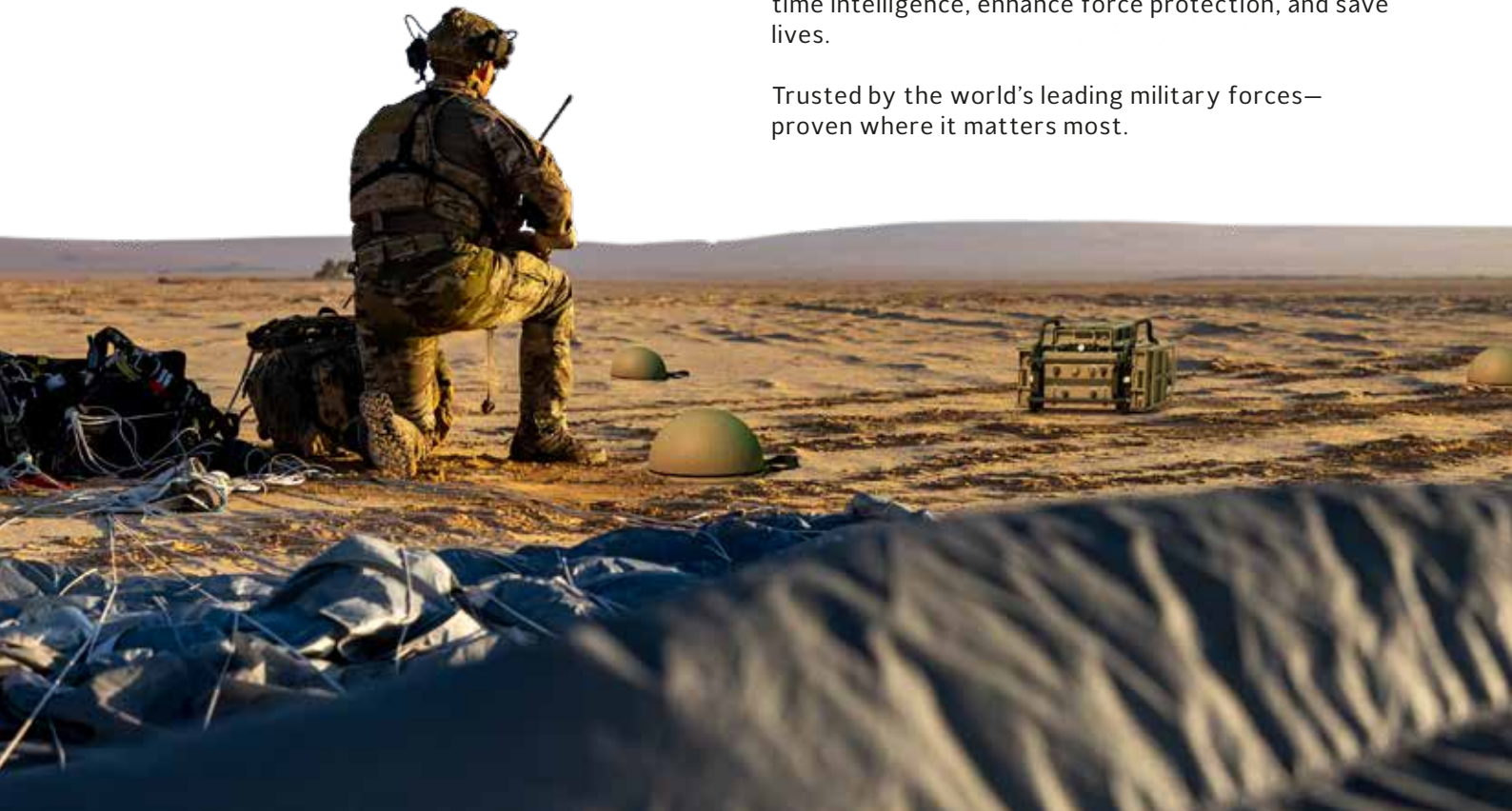
Leonardo continues HALO's spiral development, expanding its capabilities for emerging threats:

- Passive Acoustic UAV Detection
- Rocket Detection
- Microphones Deployed by UAS
- Vehicle-Mounted Microphones

HALO: The World's Most Advanced Passive Acoustic Weapon Locator

With decades of real-world combat experience, HALO remains unmatched in accuracy, reliability, and effectiveness. While traditional radars face increasing limitations, HALO continues to deliver real-time intelligence, enhance force protection, and save lives.

Trusted by the world's leading military forces—proven where it matters most.



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