

LEONARDO ELECTRONICS

# HALO

## HOSTILE ARTILLERY LOCATING SYSTEM

Leonardo leads the way in state-of-the-art solutions for long-range acoustic weapon locating systems. With over 40 years' experience, the company has delivered passive acoustic weapon locating systems to more than 20 armies worldwide.

The Hostile Artillery Locating (HALO) system is currently in service with over ten nations including the British Army, Canadian Army, and US Marine Corps. The demand for HALO continues to grow due to the ever increasing threat from electronic warfare based targeting and anti-radar weapon systems countering radar based weapon locating systems.

HALO's incorporates highly sophisticated acoustic data processing techniques to determine with high accuracy the Point of Origin (POO) and Point of Impact (POI) locations of enemy artillery and mortars with exceptional speed and reliability.

HALO employs unmanned Sensor Posts (SP), comprising clusters of highly sensitive acoustic sensors, to detect the acoustic (pressure) waves generated by gun or mortar fire and other explosive events. SP data is communicated to the HALO Command Post where it is processed and the location, or POO, of the source of the sound is almost instantaneously presented to the operator. The POI capability also supports increased accuracy of friendly artillery counter-fire.

The British Army has been successfully deployed HALO in urban, mountainous and desert terrain. It has proven capability ranging from Bosnia and Kosovo to Iraq and Afghanistan.

## KEY BENEFITS

- Detects gun breaks and impacts from artillery, mortars, tanks and heavy cannons plus explosions of mines, bombs and improvised explosive devices
- Highly accurate to typically within 1% of range at 15km
- Passive and covert and almost impossible to locate on the battlefield
- Low-cost, lightweight, rugged and easy to deploy and operate
- Very large area or coverage of typically two thousand four hundred square kilometres or more
- Provides 360 degree coverage
- Requires minimal manning HALO only alerts when 2 or more sensor posts 'hear' a noise which means that it does not give false alarms
- Uses an array of distributed sensors supporting minimal and graceful degradation in performance should sensors become damaged
- Does not saturate during high intensity operations and locates multiple simultaneous firing locations
- Operates effectively in extremes of terrain and climate
- Easily integrated into digital Command & Control systems



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## RANGE

<b>155mm or higher</b>	> 20km
<b>105mm or higher</b>	> 15km
<b>120mm mortars</b>	> 7km
<b>81 mm mortar</b>	> 5.6km

*All ranges are subject to meteorological conditions.*

HALO is an extremely versatile system. It can be deployed in many configurations and in areas where there is limited space.

SPs do not need to be laid out according to any particular template. Differential GPS provides sufficient accuracy for HALO survey. Leonardo provides a computer based deployment aid that assists the user in optimising area coverage and communications. This flexibility enables HALO to be used successfully in cities and other complex terrains.

The use of HALO is not limited to standard artillery locating tasks. It is also suited to force protection operations, where it enables security forces to dominate the area for many kilometres around an installation.

If a number of bases need to be protected, and they are suitable distances apart, a coherent picture of activity over a large area can be formed. Locations of the sources of explosions, whether from heavy weapons or bombs and mines, can be instantly passed to Command & Control systems for near real-time distribution to appropriate decision makers and counter fire assets. All information is stored and can be replayed or transferred for archive. HALO provides the commander with displays that show trends of activity over time to allow pattern analysis and interdiction task planning.

Additionally HALO can be used to monitor ceasefire violations and thus allow the user to alert Peacekeeping forces to such violations. Data such as time, location and type of weapon can be used in evidence.

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