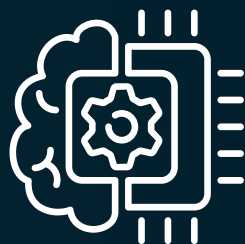


Subsea Leak Detection

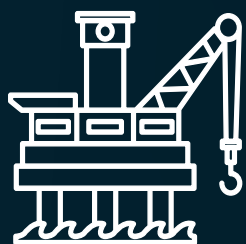
Wide Area Active Monitoring (WAAM) System





Intelligence Built In

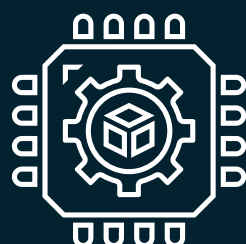
The sonar system uses advanced machine learning to interpret the sonar signal to identify targets within the area under observation. These targets are analysed and categorized. The primary category of interest is leakage of oil and gas. If this category is observed, the system will report probability of leak, location and estimate flow rate. Alarms can be set at specific probabilities based upon client preference.



Developed with Offshore Operators

The hardware and software have been developed in collaboration with subsea oil and gas operators to overcome the limitations of existing leak detection systems, while also enabling surveillance of the water column for other information or hazards, such as: man-made objects (AUV/ROV/Fishing gear/dropped objects/submarines), biologics (fish, whales), and natural seepage of oil or gas from the sea bed.

A primary objective of the oil and gas operators was to eliminate false alarms, a key trust factor with existing leak detection systems. This drove the development of the interpretation software and alarm system.



Standard Product with Low Cost of Specialization

The WAAM system hardware is standardized and operation is easily adapted by software, with selectable scanning regimes and set-up. Further specialization is possible by use of our Calibration System which allows adaptation of the system to new scenarios and applications.

The Calibration System is a subsea deployable tool with accurate measurement devices to enable controlled release of gases or liquids. This enables site specific and / or fluid specific adaptations rapidly. By enabling verification of operation and/or capture of specific data to enable training for new applications.

Benefits

- **Early Identification:** Reduces release quantity and therefore severity of the incident.
- **Cost-Effective:** Large coverage area means fewer units needed.
- **False Alarm Prevention:** Less resources spent responding to false alarms
- **Rapid Isolation:** Quickly identify isolation options and reduce severity of the incident
- **Severity Tracking:** Provides real-time risk monitoring to adapt response to severity
- **Action Verification:** Reduces time from action to results, enabling faster decision making, reducing cost.
- **Risk Management:** Continuous surveillance reduces overall risk of severe incident
- **Regulatory Compliance:** Simplifies system requirements, reducing regulatory proof burden

Features

- **Scanning SONAR:** 360°horizontal range
-10° +60° vertical range.
- **Advanced Tech:** Wide-band frequency & split-beam transducer.
- **Robust Hardware:** Compact, modular design with versatile configuration.
- **Remote Operations:** Remote control and automated data acquisition.
- **Flexible Regimes:** Adaptive scanning with redundant electronics.
- **DNV Standard:** Developed according to DNV RP A203.
- **API Standard:** Qualified according to API 17F.

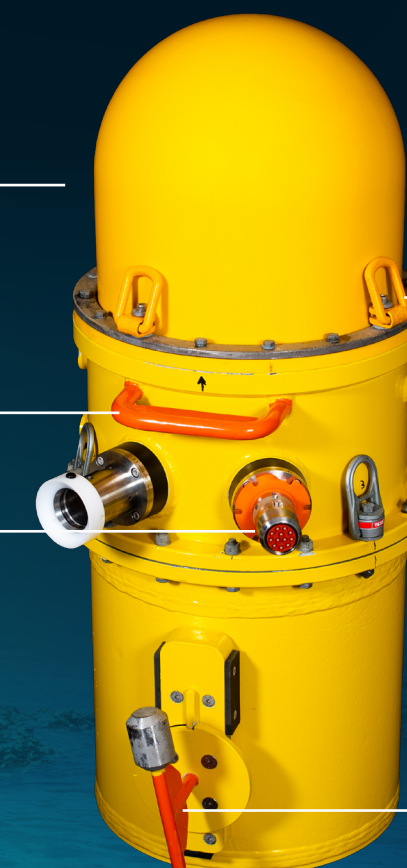
360° Horizontal
SONAR

Lifting Lugs

ROV Grab Handle

Connector

Locking Mechanism



Technical Spec

Alarm Sensitivity	<500m 8 l/Min, <850m 22 l/Min, >850m 40 l/Min
Range	> 1,000 meters radius
Input Power	24VDC (18-36 VDC)
Power consumption	<35 W
Typical Dimensions (diameter x H)	43 cm x 110 cm
Water Depth	1,500 meters
Weight (approx.)	400 kg (air), 270 kg (water)
Operating temperature range	-10°C to +35°C
Storage Temperature	-18° to 80°C

Configurable Options

Communication	SIIS L3 (ethernet), Modbus TCP/IP (RS-485)
Available Wide Band Sonar Frequencies	50-90 kHz, 95-150 kHz, 160-240 kHz

To Find Out More

To find out more about WAAM please email Michael Thomas Smith - Product Manager – Environmental Monitoring System: michael.thomas.smith@imenco.com or scan the QR code.

