ALD®
Acoustic Leak Detector (Patented)

Worldwide leader in underwater leak detection

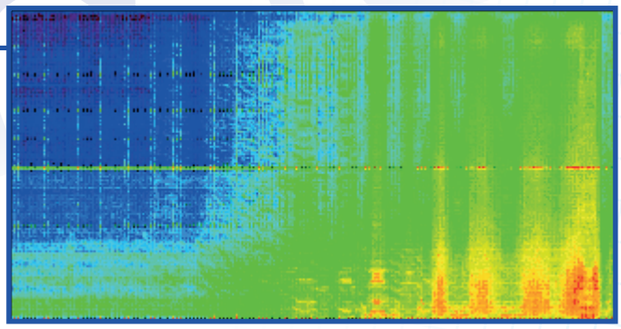
co.l.mar.

THE EXPERIENCE

As always at sea experience is the first asset: COLMAR was established in 1982 and in 1998 its engineers designed, manfacured and patented the Acoustic Leak Detector, successfully tested at the end of the same year in the Yellow Sea (Pinghu). Since that date the equipment has been subject to continuous development up to the current performances. Thanks to the experiences made on the field in these years, we have optimised our service and collected data and knowledge from the most different leak situations: buried pipe, gas leak, oil leak, deep water, pipe in pipe, flanges, well head, etc. We have added functions and developed new sensors and inspection techniques with the mission of supplying the most complete and reliable leak detection service in any situations under the sea surface. Up to now (November 2015) ALD® has detected a total of 43 leaks on offshore installation with a rate of success of 100%.

PRINCIPLES OF OPERATION

A pipeline leakage consists in the transition of a fluid from the inside pressure to the lower external pressure. This creates an acoustic signal due to the turbulence and to the sudden expansion of the fluid mass. ALD® is capable to extract this leakage signal from the ambient noise, reaching an extremely high sensitivity. On the top: ALD® survey with ROV. On the left: a leak signature detected by ALD®.



THE SYSTEM

ALD® technology is covered by an international patent. The system is mainly composed by a set of underwater sensor units, a transmission line and a surface receiving and processing station. The acoustic signal acquired, pre-processed and digitalised by the underwater sensor is then processed by the ALD® receiver and by the ALD® software. Data are processed and displayed in real time by the COLMAR proprietary ALD® software. The sophistication of the processing algorithms is one of the keys to reach a very hight sensitivity. The system is fully digital and a series of optional sensors can be added: hydrocarbon, methane, crude oil, fluorescine detector.

For each inspection the ALD® configuration and survey technique will be selected on the base of client requirements. On the right: one of the ALD® sensor unit installed on a ROV.

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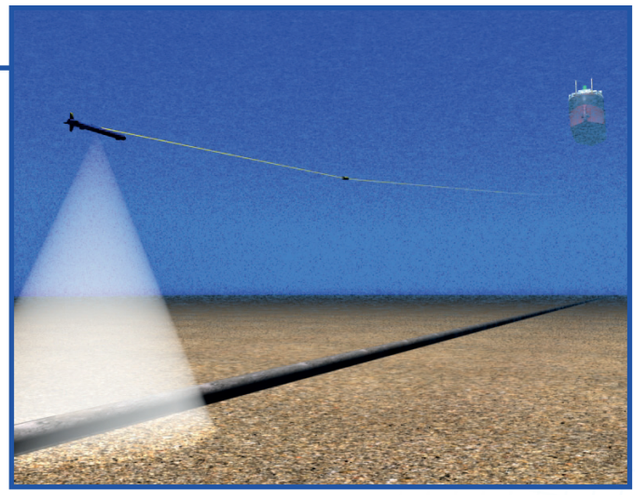
ALD® OPERATIONAL MODES



ALD® *survey with the towed fish*

On the base of the characteristics of each project (depth, pipeline length, differential pressure, etc.) and the availability of means on site (ROV, DP vessel, etc.) one or more of the survey techniques can be selected:

- **ROV** installation: the sensor is installed on the vehicle and connected to the receiver through the ROV umbilical. Compatible with any ROV, depth up to 3500m.
- **TOWFISH**: the sensor is a towed body. The transmission line is the towing line. Requirements: small vessel (no DP required), max depth 250mt. Survey speed up to 6 knt.
- **VERTICAL DEPLOYMENT**: the sensor is fixed to a clump weight, lowered above the pipeline while the S/V moves along. Requirements: DP vessel. Depth up to 200m
- **DIVER**: the sensor is hand held by the diver and connected to the surface through a dedicated umbilical. Ideal for flanges, valves and skids.
- **POLE MOUNTED**: for very shallow water, the sensor is pole mounted and driven along the pipeline track
- **AUV** installation: automatic monitoring and inspection of subsea installations. Can be integrated into any AUV.

A diver inspecting a flange using the ALD® handheld sensor

THE SERVICE

- Includes leak detection equipment (in hand-carry peli case total 80kg) and n°2 specialised operators covering 24/24 hours.
- Urgent inspection: worldwide mobilisation in very short time in case of hydrotest failure or oil spill
- Hydrotest assistance: we provide leak contingency plans by keeping equipment and/or personnel available during hydrotesting.
- Planned inspection: pipeline rehabilitation, integrity inspection

10 REASONS TO CHOOSE ALD®

1. 100% success rate up to now.
2. 17 years' experience, 43 leaks detected on pipes, flanges, clamps, wellheads, pipe in pipe etc.
3. In real application, detected leak as small as 0.2 lt/min (never encountered smaller leak on the field)
4. 6 inspection techniques available and optional sensors
5. No need to stop production or use colorant dye
6. Based on the detection of acoustic signals and not affected by current, poor visibility or pipeline burial, like optical and chemical systems.
7. Allow detection with great accuracy and in real time even in noisy environment
8. Leak detected on buried pipes (over 3 m burial)
9. ALD® is entirely designed and manufactured within our facilities and can be customised if requested.
10. Portfolio: *SAIPEM, ENI, McDERMOTT, FUGRO, BP, EXXONMOBIL, SHELL, HORIZON, TECHNIP, BAKER HUGHES*, etc.

www.leakdetector.it

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