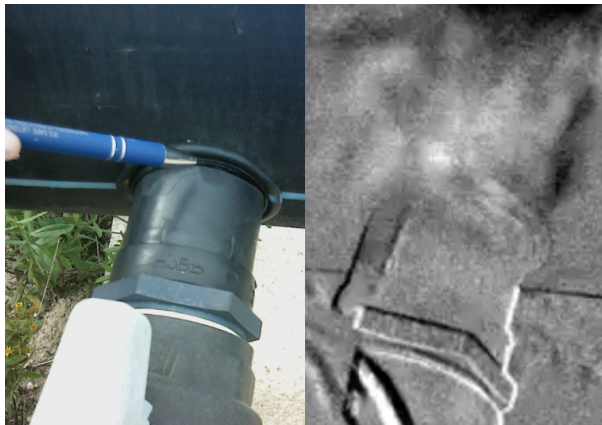


# LDAR Leak Detection

**LDAR "Leak Detection and Repair"** is the tailored service provided by Applus+ to improve companies' performance in the Oil and Gas industry. Knowledge acquired through years of working with companies performing LDAR as part of their regulatory requirements is applied, ensuring the best results.

**Leak Detection and Repair (LDAR) Program** is a methodology based on inspection of all elements of a facility composing the storage, production and distribution lines identifying any type of volatile substance that may leak in the system. These leaks generate losses that affect the environment, occupational safety, and the economic performance of the system as a whole or a part of it.



## THE Applus+ SOLUTION

Applus+ implements, develops, and maintains LDAR Programs applied to the following sectors:

- Petrochemical: Hydrocarbons and Other Volatile Organic Compounds (VOCs), Ethanol, Hydrogen.
- Energy and Gas: Methane (CH<sub>4</sub>).
- Landfills and Treatment Plants: Methane (CH<sub>4</sub>) and Other residual gases.
- Livestock: Methane (CH<sub>4</sub>) and Other residual gases.

Applus+ also actively participates in improving measurement and testing processes and in the operational verification of new technologies developed to provide the oil and gas industry with better quantifications of their methane emissions. This is done with the precision and transparency required by being part of the working groups of OGMP 2.0 (Oil and Gas Methane Partnership 2.0) established by the United Nations Environment Programme (UNEP) with goals for the progressive reduction and mitigation of methane emissions.



To strengthen the operational management of LDAR Programs, Applus+ provides **FEMA+, a digital platform specifically designed for fugitive emissions control**. FEMA+ allows users to generate dashboards, track inspection campaigns, manage inventories, and analyse leak evolution, offering real-time visibility of the entire LDAR process. The platform supports offline work, enables 3D visualization of facilities, and centralizes all campaign information to improve traceability, productivity, and decision-making.

## Target customers

The LDAR program provides detailed and useful information for decision-making affecting maintenance, operations, the environment, procurement, prevention, and management, based on:

- Establishing an inventory of all possible leakage points in a facility and the process lines included in the LDAR Program.
- Qualitative evaluation of detected leaks using Optical Gas Imaging (OGI) cameras with infrared (IR) technology.
- Quantitative evaluation of detected leaks using measurement and testing equipment based on PID/FID technologies (Photoionization/Flame Ionization), and monitoring their leak flow rates.
- Calculating theoretical emission factors due to leaks and developing emission factors specific to each installation.
- Monitoring and re-monitoring leakage points after repair and maintenance.

Using FEMA+, all these activities can be visualised, recorded, and evaluated through customizable dashboards, facilitating the monitoring of repair status, historical leak behaviour, and compliance.

## Key customer benefits

Partnering Applus+ for the implementation and monitoring of LDAR Programs offers, among others, the following benefits to clients:

- Immediate quantification of economic losses associated with unintended fugitive emissions of raw materials, products, and by-products influencing direct operating costs.
- Identifying maintenance issues that are not visible to the human eye, allowing for timely repairs.
- Provides an objective overview of the condition of an installation and relevant information for decision-making associated with the acquisition of equipment and components.
- Detailed information is available to assess the risks posed by leaks of volatile gases of any nature to human health and the impact on the environment.

