



## CASE STUDY

### Leak detection and repair applications

This case study elaborates on Snam's Leak Detection Repair (LDAR) program, which consists of periodic campaigns for monitoring system components to identify methane leaks and plan maintenance operations. It outlines how components are monitored, repairs are carried out and LDAR data feeds into emissions quantification.

#### Context

Fugitive emissions can be an important source of greenhouse gas emissions and loss of product in the midstream sector. Detection and quantification of individual fugitive sources allows for prioritization of repairs, lower emissions, and improved emissions reporting. However, it may be time consuming, considering the midstream sector includes both large facilities (such as compressor stations) and smaller facilities, scattered throughout extensive areas.

### Leak detection and repair program

Starting in 2020, Snam has implemented on a regular basis a Leak Detection Repair (LDAR) program, which consists of periodic campaigns for monitoring system components to identify methane leaks and plan maintenance operations.

Each emitting component is identified in the Enterprise Asset Management (EAM) IT system and a unique ID number is assigned to it. The quantification of leaks is performed with FID (Flame Ionization Detector) and according to standard EN 15446 (Fugitive and diffuse emissions of common concern to industry sectors - Measurement of fugitive emission of vapours generating from equipment and piping leaks). All leaks exceeding a certain threshold limit are immediately repaired, where feasible. A new measurement of the leak is taken after repair and the component is considered to be repaired only after it has been monitored and shown not to be leaking above the threshold. Leaks that cannot be immediately repaired are marked with a temporary tag and enter a leak-tracking process; repairs are then scheduled as soon as possible, also considering a cost/benefit approach.

At the end of the operations, findings of the surveys and repairs are recorded in EAM and facility emissions are updated in real-time on a site-specific approach, so LDAR activities also increase the quantification accuracy of fugitive emissions. Measurements with FID are used in facilities known to give rise to significant leaks, in a cost-effective approach, and are currently applied to all the compressor stations and storage sites (22), SNAM's LNG Terminal, all the major facilities of the gas transmission network (more than 1,000) and a representative sample of smaller installations (valve stations).



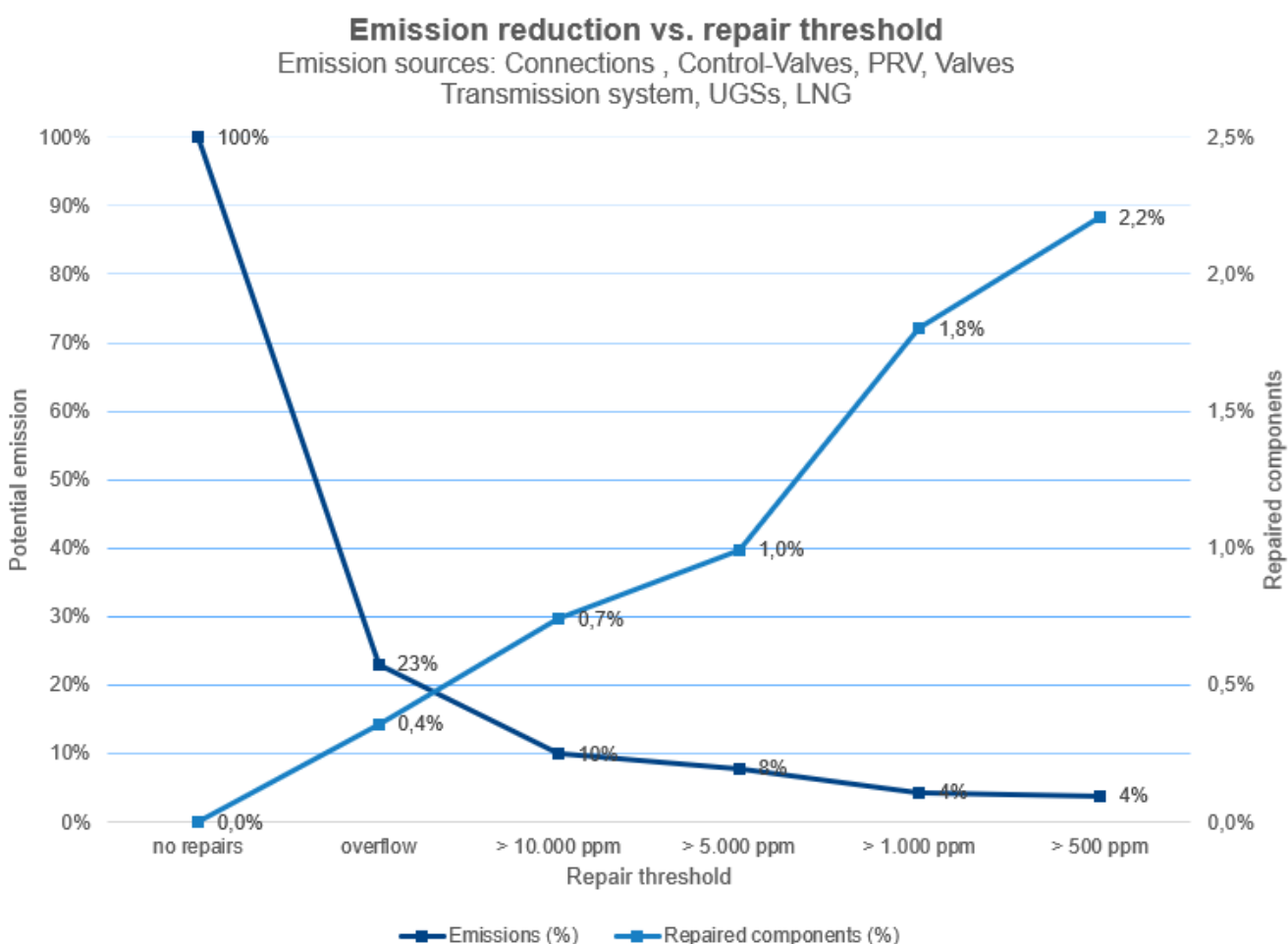
*Leak quantification with Flame Ionization Detector (FID)*

## Results

LDAR is an efficient measure to reduce methane emissions.

It is expected that LDAR, when fully implemented in the SNAM infrastructures, will save approximately seven Mcm of gas every year.

Available data shows that a significant emission reduction can be achieved through the repair of a small percentage of components.



*Potential emission reduction from LDAR vs. repair threshold*

Fugitive sources of methane are often easy and economic to mitigate through quick interventions (tightening screwed connections, replacement of seals, greasing). However, some repairs can be difficult (e.g. component is hard to access), take long (e.g. if repair must be done during a facility downtime) or require costs above potential revenue from captured gas. A well-defined repair threshold helps prioritise abatement efforts by balancing the benefits of emissions reductions and the cost of repairs.

For more technical information on LDAR, check the Best Practice Guide on [Reducing methane emissions from equipment leaks](#). If you are looking for policies related to this practice, see page 68 of the [IEA's Regulatory Roadmap and Toolkit](#) or search "leak detection and repair requirements" in the [IEA's Policies Database](#).

## Find out more

[UNECE Best Practice Guidance for effective methane management](#)



[CATF Colombia becomes first South American country...](#)



[IEA Policies Databases](#)



METHANE  
GUIDING  
PRINCIPLES

This case study was prepared and submitted by Snam and does not necessarily reflect the views or positions of all of the Signatories and Supporting Organisations of the Methane Guiding Principles.