

Methane Emissions

MRV for the Gas Industry

16th Gas Forum - 23 Sept 2021 - Ljubljana

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Environmental & Integrity Service Provider



Emission Management
Pipeline Integrity



35 Countries
Worldwide experience



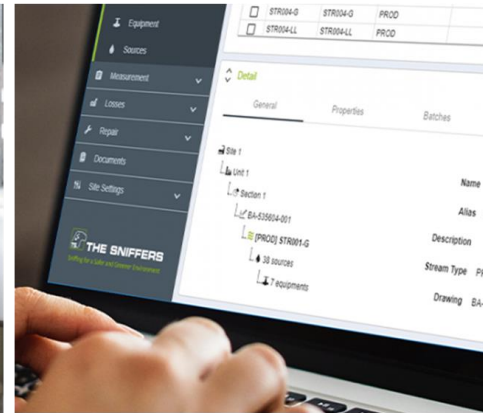
9.000
Executed Projects



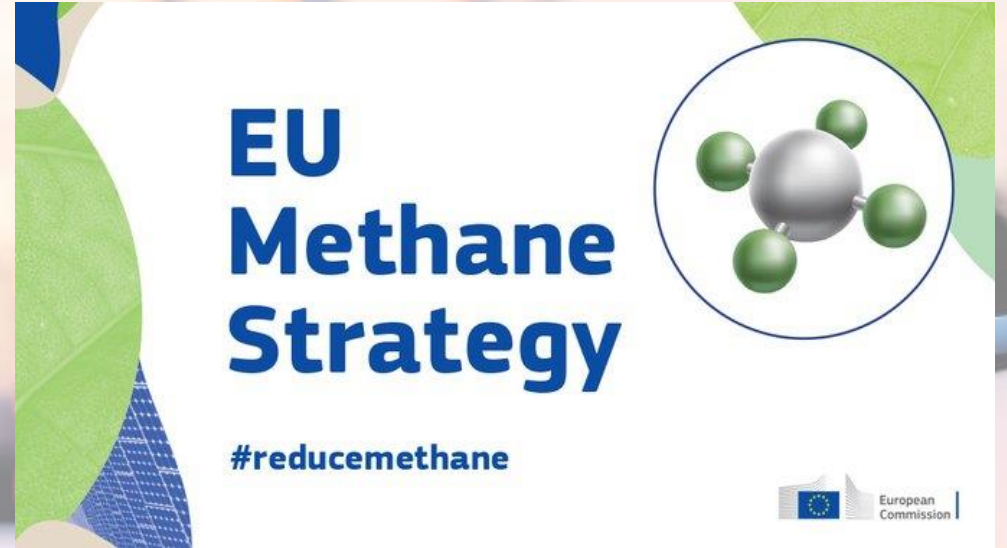
Innovative Technologies,
Equipment and Applications



Reliability
ISO 9001- 14001 // ISO 17025 Lab
612-TEST Belac 389-TEST Israc



Realizing your Environmental, and Sustainability Ambition
Safe, Compliant, and Efficient Pipeline Operations



Level Scenario

Level 1	Venture / Asset Reporting <ul style="list-style-type: none">• Single, consolidated emission factors• Only applicable where company has limited information sharing
Level 2	Emission Category <ul style="list-style-type: none">• Report emissions based on methane emissions categories• Estimates based on emission factors
Level 3	Emission Source Level <ul style="list-style-type: none">• Emissions allocated to individual source types• Estimates based on generic emission factors
Level 4	Emission Source Level <ul style="list-style-type: none">• Emissions allocated to individual source types• Estimates based on specific EFs and direct measurements
Level 5	Site Level <ul style="list-style-type: none">• Emissions allocated to individual source types• Reporting based on site-level measurements to reconcile source and site level emissions estimates

GOLD Standard

Plan in place to report at level 4/5 within 3 years (5 for JV's)



Reporting against OGMP2.0



Upstream 13 Source types

1	Stationary Combustion
2	Flaring (Incomplete Combustion)
3	Fugitive Component and Equipment Leaks
4	Natural gas driven pneumatic equipment
5	Centrifugal compressor shaft seals
6	Reciprocating compressor rod packing
7	Glycol dehydrators
8	Tanks
9	Well liquids unloading
10	Well casinghead venting
11	Hydraulic fracture completions
12	Venting - Other
13	Others Sources

Mid and Downstream 3 Source types

1	Fugitive Emissions	1	Connections (flanges, seals, joints)
		2	Valves and control valves
		3	Pressure relief valves
		4	Blow-down open ended line)
		5	Open ended Lines
		6	Others
		7	Permeation
2	Vents	8	Operational emissions - Purging & venting Methane emissions associated to maintenance activities, process, commissioning & decommissioning.
		9	Operational emissions - Regular emission technical devices Methane emissions associated to pneumatic devices, gas analysers,...
		10	Operational emissions - Starts & stops Start/stop of the compressor stations of the transmission grids or the underground gas storages.
		11	Incidents / emergency situations
		12	Others Start/stop of the gas combustion devices (turbines, engines, boilers...) and flares will be reported in "Others"
3	Incomplete combustion	13	Gas combustion devices
		14	Flaring



Source Types: Upstream and Mid/Downstream



On Site Measurement and Data Collection

Fit-for-Purpose Technology

OGMP
Level 4



Methane Site Measurements

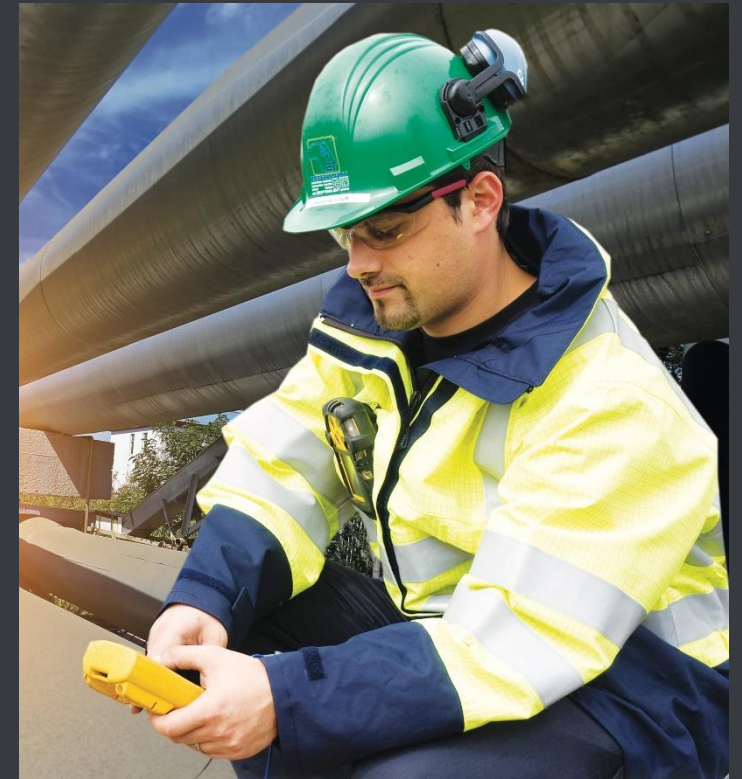
Fit-for-Purpose Technology Drone or Fixed Sensor data

OGMP
Level 5

- Start ! Organize measuring campaigns
- Install processes for
 - Repairing Leaks
 - Engineering Changes
- Facilitate the Culture Change
- Not rocket science



Recommendations



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