

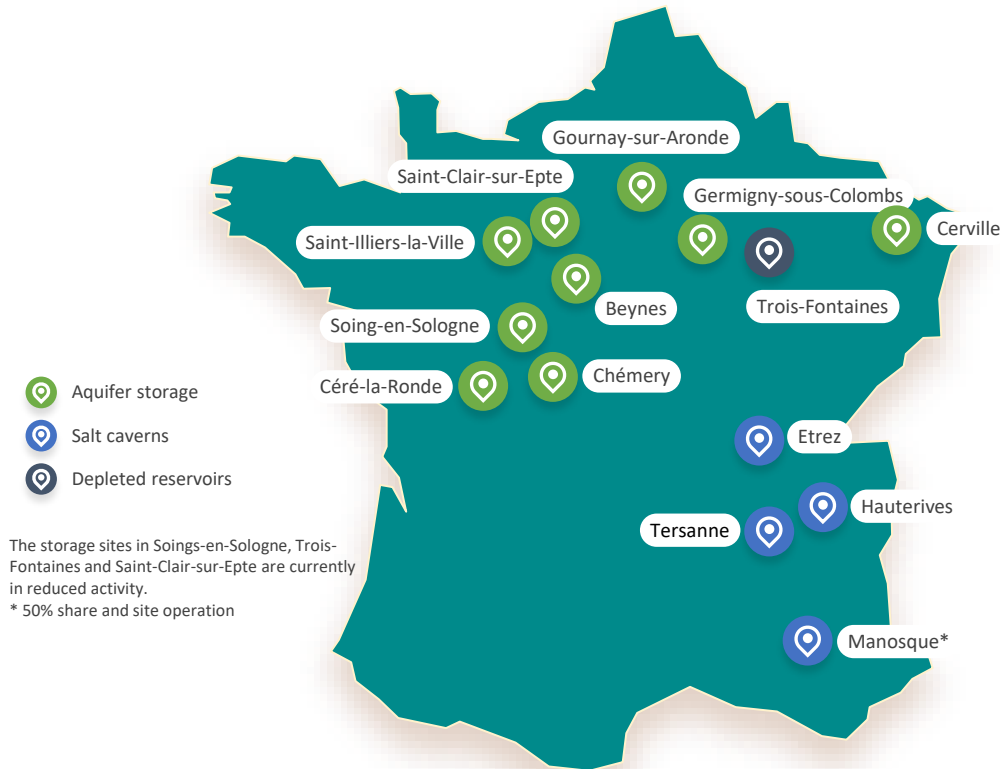
# storengy

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# Storengy France experiences as UGS operator within OGMP 2.0

MAY 2022

# OUR PRESENCE IN France and OUR AMBITION



**14** UNDERGROUND STORAGE SITES

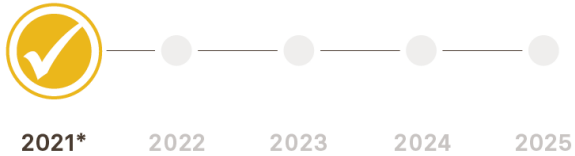
**10** GM3 IN CAPACITIES FOR GAS STORAGE

**620** EMPLOYEES

**1/4** OF FRENCH CONSUMPTION

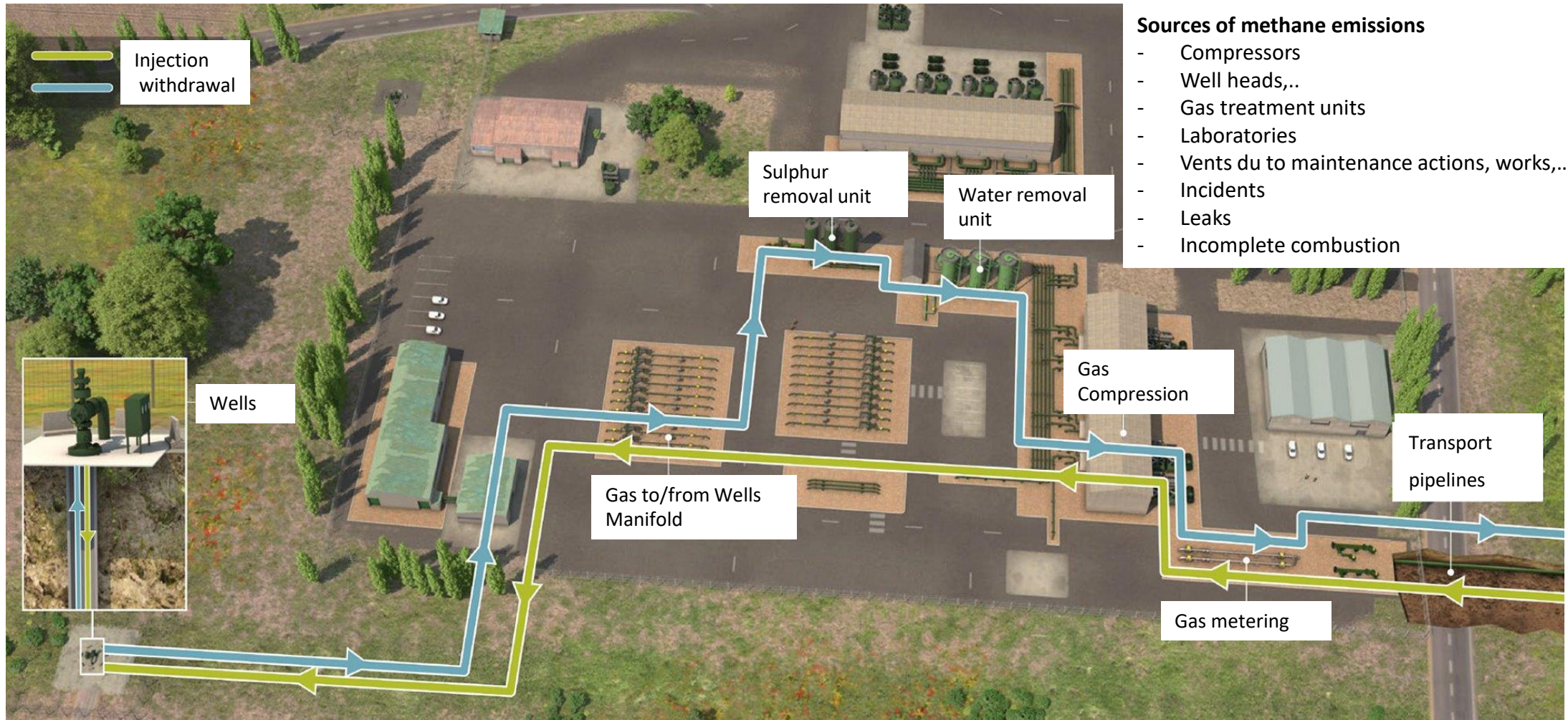
- Storengy France is focus on methane emissions monitoring and reduction since 2015
- Storengy France contributes to 0,1% of national methane emissions
- Methane emissions count about 50% of CO2eq direct emissions (Scope 1)
- Storengy joins OGMP 2.0 in September 2020 with a double objective:
  - Improve methane emissions monitoring/reporting → L4 reporting on material sources by 2024 (2023 year reporting)
  - Reduce at least 25% of methane emissions by 2025

GOLD STANDARD



\* implementation plan approved for data quality improvement

# Design of a UGS site of Storengy France



## Sources of methane emissions

- Compressors
- Well heads,..
- Gas treatment units
- Laboratories
- Vents du to maintenance actions, works,..
- Incidents
- Leaks
- Incomplete combustion

# OGMP 2.0 UGS reporting & Implementation Plan – an overall overview

COMMENTS (voluntary)	Levels 1, 2, 3, 4			
	Methane	Level	Comments	Source for own data (please include one or more "%")
	kg/y	Please indicate the Level of the data: 1/2/3/4	Please feel free to provide additional information	Measurements EF Measurements EF Literature Calculation Modelling Estimation
2.	UGS			
	<b>Total for UGS</b>			
2.1	<b>UGS - Compressor Stations</b>			
2.1.a	<b>Fugitive Emissions</b>			
2.1.a.1.	Connections (flanges, seals, joints)	RRR		
2.1.a.2.	Valves and control valves	RRR		
2.1.a.3.	Pressure relief valves			
2.1.a.4.	BD-OEL (blow-down open ended line)			
2.1.a.5.	OEL			
2.1.a.6.	Others			
2.1.b	<b>Vents</b>			
2.1.b.1	Purging & venting (maintenance, process, commissioning&decommissioning)			
2.1.b.2	Regular emission tec. devices			
	Pneumatic devices			
	Gas analysers			
	Seals of the compressor units			
	Others			
2.1.b.3	Start/stop vents			
	Total emission caused by starts			
	Total emission caused by stops			
2.1.b.4	Incident / Emergency vents			
2.1.b.5	Others			
2.1.c	<b>Incomplete combustion</b>			
2.1.c.1	Gas combustion devices			
	Turbines			
	Engines			
	Heaters/pre-heating system/boilers/etc			
	Others			
2.1.c.2	Flaring			
2.2.	<b>UGS - Treatment &amp; Wells &amp; Dehydrators</b>			
2.2.a	<b>Fugitive Emissions</b>			
2.2.a.1	Connections (flanges, seals, joints)	3		
2.2.a.2	Valves and control valves			
2.2.a.3	Pressure relief valves			
2.2.a.4	BD-OEL (blow-down open ended line)			
2.2.a.5	OEL			
2.2.a.6	Others			
2.2.b	<b>Vents</b>			
2.2.b.1	Purging & venting (maintenance, process, commissioning&decommissioning)			
2.2.b.2	Regular emission tec. Devices			
	Pneumatic devices			
	Gas analysers			
	Others			
2.2.b.3	Incident / Emergency vents			
2.2.b.4	Others			
2.2.c	<b>Incomplete combustion</b>			
2.2.c.1	Gas combustion devices			
	Fuel Gas for drying facilities			
	Fuel gas consumption heaters			
	Pre-heating system/boilers/etc			
	Others			
2.2.c.2	Flaring			

1

## Compression activity methane emissions, *material source*

From compressor seals

- Technology suppliers and literature based EF - **Level 3** for all sites except for 2 sites that are reporting **Level 4**
- To reach **Level 4**, Storengy France is installing best solutions to ensure continuous monitoring.

From startup phase

- Calculation based on the geometrical volume of the loop and the inlet pressure (aligned with international standards) - **Level 4**. Measurements under progress to validate procedure - **Level 3** reporting for 2022

Depressurized shot-down

- Emissions calculated based on geometrical of volume of the loop and the settled out pressure - **Level 4**

2

## Purging, Vents and incidents (compression, wells and gas treatment units)

- Engineer calculations using the volume section of the pipe/equipment and the pressure conditions - **Level 4**

All emissions related to compression activity

All emissions related to wells and gas treatment units activity

# OGMP 2.0 UGS reporting & Implementation Plan – an overall overview

## 3 Methane Leaks (fugitive emissions), *material source*

- LDAR campaigns coupled with emissions quantification on all components of each UGS sites
- IR camera (FLIR system) for detection coupled with FID analyzer for quantification according to EN 15 446
- Quantification employing methodology recognized by international standards and certificated bodies - **Level 4**



→ 2022 LDAR campaign compatible with regulation project with detection level at 500 ppm

### → Experience (1<sup>st</sup> results) :

- Campaign duration x 3 (FID analyzer instead of IR camera for leak detection)
- Supplementary emissions concerning 1% of total leaks

## 4 Laboratory emissions, *material source*

- methane emissions are currently quantified through direct measures via a flowmeter and/or engineering calculations can also be carried by taking into consideration the flowrate and the pressure on the fast loops of the sampling lines - **Level 4**

## 5 Incomplete combustion, *non-material source*

- Generic EF for compressor turbines and engines - **Level 3** except for 1 site (material source) where specific direct measurement are performed regularly - **Level 4**
- Generic EF for TEG regeneration flares - **Level 3**,
- EF from direct measurements for economizers - **level 4**.

# Level 5 an important challenge on reconciliation source level and site level measurements

## Storengy France strongly committed in different initiative/studies :

- Internally benchmark studies screening all available technologies in the market
- GERG project on Site level technologies experimentation in collaboration with a large group of gas operators actors
- Real UGS conditions drone campaign experimentation performed in mars 2022 at Saint-Illiers site in parallel of LDAR campaign (IR/FTIR analyzer and bagging for quantification at source level)
- Storengy France will keep active in this point in order to identify the best accurate solution for reach Level 5.



# Main progress on OGMP 2.0 Reporting and Implementation Plan

- ~80% of material methane sources are reported in 2022 (reporting year 2021), according to TGDs specifications, at Level 4 (main progress)
- Storengy France is installing the best solutions to ensure continuous monitoring of methane emissions from compressor seals and reach level 4
- Incomplete combustion will normally remain a non-material source that reported mainly at level 3 (expect for some systems that are already reported Level 4)
- Storengy France will proceed efforts on Site Level technologies and reconciliation with Source Level measurements



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## Merci

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