

Identifying and Preventing Fugitive Methane Emissions

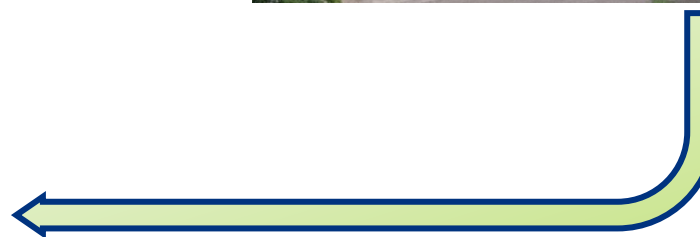
Our findings from 10 years of methane leak detection on biogas plants

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working in partnership with





Feedstock

Source & supply



Silage additives

Minimise losses & increase gas yield



Biological support

Gain control & improve profitability



Process additives

Trace elements, active ingredients & enzymes



Gas leakage detection

Reduce fugitive emissions & maximise feedstock sustainability



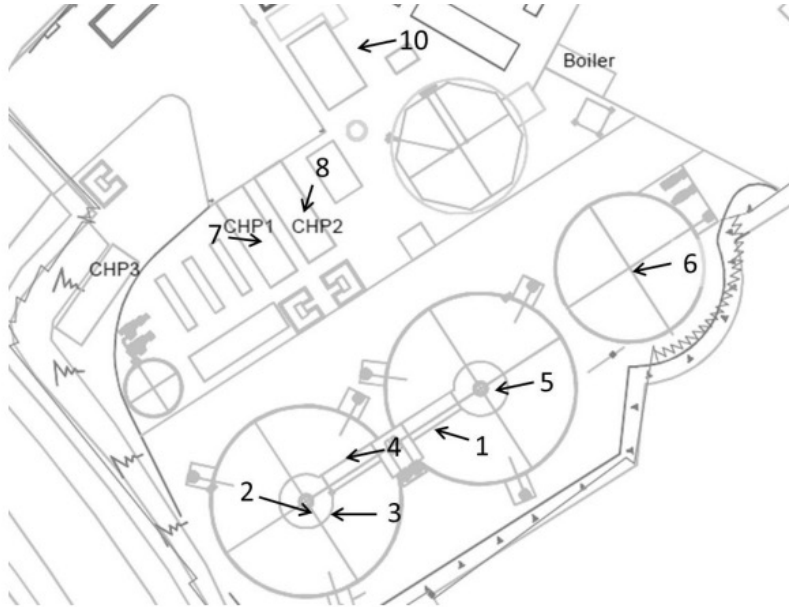
Experience of Methane Leakage Detection






- >1100 plants surveyed across Europe
- 85% had leaks
- 25% had significant leaks ($>1\text{m}^3 \text{CH}_4/\text{hr}$)
- More than 1 leak present in most cases
- Undertake a professional survey after commissioning, major maintenance or annually

Equipment Used



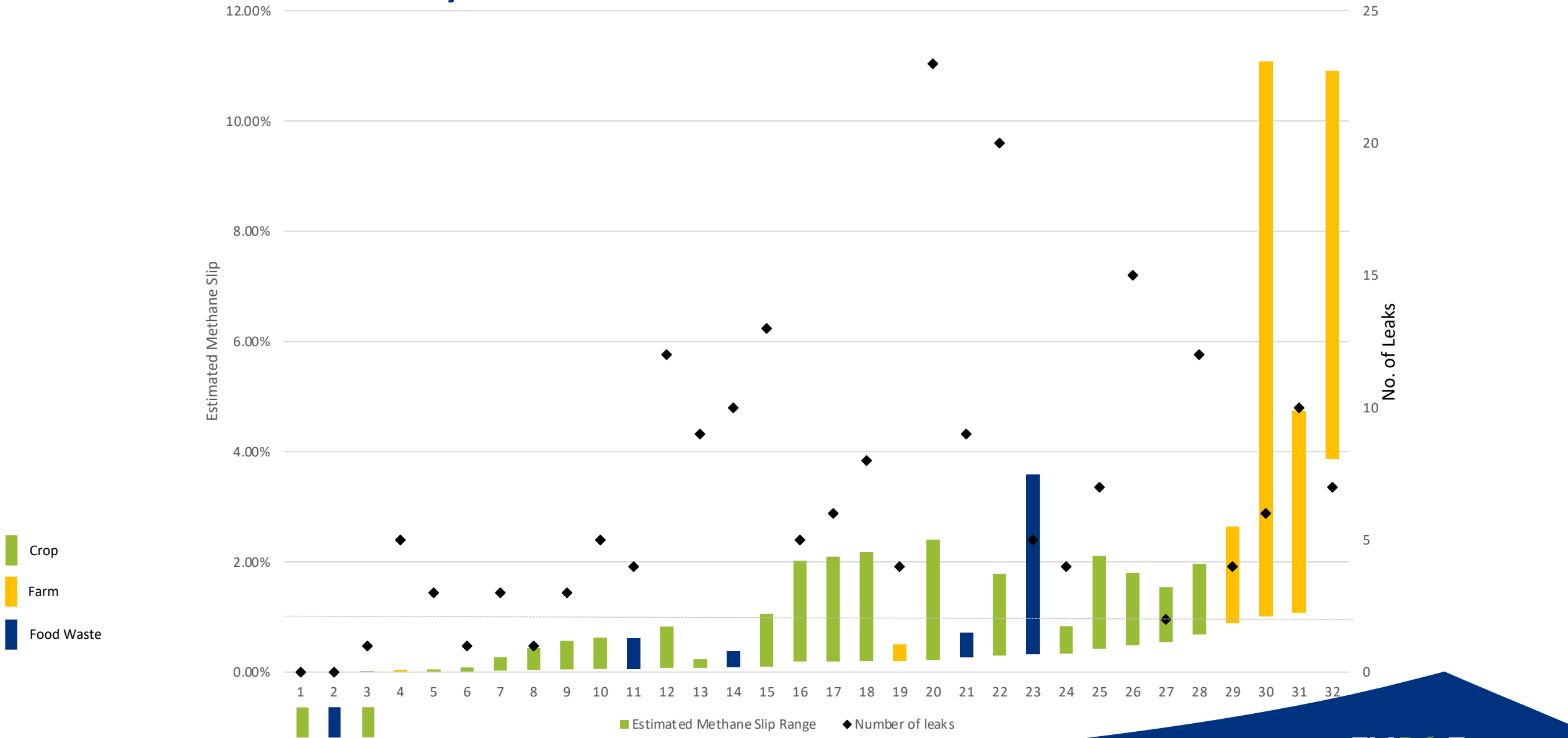
Reporting



No.	CH ₄ -concentration	Description (location and type of leakage)	Movie No.	Picture No.
1	0,5 Vol.-%	Overpressure protection	2788	2789 
2	0,5 Vol.-%	Under mounting rail	2790 2793	2791 
3	-	Under mounting rail	2794	2795 
7	13 Vol.-%	grommet	2803	2804 
8	24 Vol.-%	passage of the water line	2805	2806 

Criteria		Category 2 0 Points	Category 1 1 Point	Category 0 2 Point	Sum	Recommendation/ Code ⁷⁾
CH ₄ -Conc. [Vol.%]: ¹⁾	A	<0,5	0,5-2,5	>2,5		
Accessibility: ²⁾	B	Under normal operation no access	Access only with additional equipment (e.g. ladder)	Easy access		
Distance to next potential ignition source: ³⁾	C	No ignition source	< 2m	< 1m		
Wind exposure: ⁴⁾	D	Exposed (roof of the fermenter)	Partly exposed (platform)	Enclosed space (CHP)		
Potential increase of the leakage: ⁵⁾	E	no	-	yes (e.g. cracks in membranes)		
Emission potential [l/h] ⁶⁾	F	< 100	< 1.000	> 1.000		

2022 UK Survey Data



Common Causes and Locations

Manufacture



Movement




Maintenance



Muppetry



Conclusions

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- 1 We can only estimate % slip
 - 2 1% emissions is a fair current industry estimate
 - 3 Smaller on-farm plants more likely to leak higher %
 - 4 Many leaks are easily avoided/fixed
 - 5 Gas tight is achievable
 - 6 Undertake a professional survey after commissioning, major maintenance or annually

Thank you

