



SOLUTIONS FOR OIL & GAS



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DETECTION & QUANTIFICATION

Detection:

In order to reduce industrial emissions gas leaks have to be **detected** and repaired.

- OGI cameras are up to 10x faster in detecting leaks.
- OGI cameras make leak source visible
- OGI can find leaks in unexpected and hard to reach location

But, OGI can not measure leak quantity.

Quantification:

In order to assure continuous emission reduction leaks have to be **quantified** and reported

- Method 21 FID/PID analyzers measure leaks from few PPMs to >50,000 PPM



LDAR EVOLUTION

USA EPA

LDAR : Current Work Practice (CWP)

Method 21 using Analyzers
Check every identified component
Every Q

2011

Smart LDAR : Alternative Work Practice

OGI based
Inspect every component
Routinely (varying frequency)
Use Method 21 once a year.

2016

OOOOa: OGI is BSER (best system for Emission Reduction)

OGI only
Wellsites , compressor stations
2/4 times per year

New Concept

“Next Gen” LDAR

OGI detects, Analyzer Quantifies

Existing technologies, best of all worlds.

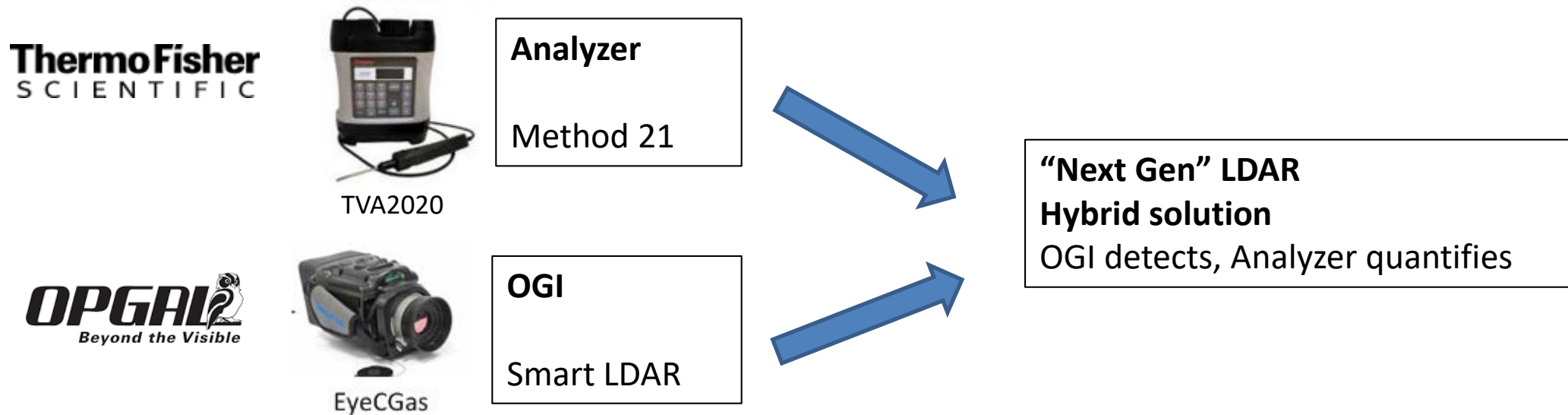


MOTIVATION



NEXT GEN LDAR IMPLEMENTATION

- Using Augmented Reality
- Combined/Hybrid solution of OGI and Analyzer



AUGMENTED REALITY



NEXT GEN LDAR: MODE OF OPERATION

Only components with leaks are quantified.

1. OGI is “paired” with Sniffer wirelessly
2. Leak is detected using OGI
3. Analyzer is guided to leak source
4. Analyzer quantifies the leak
5. OGI records the leak measurement in real time (PPM, GPS, Datetime, Video)

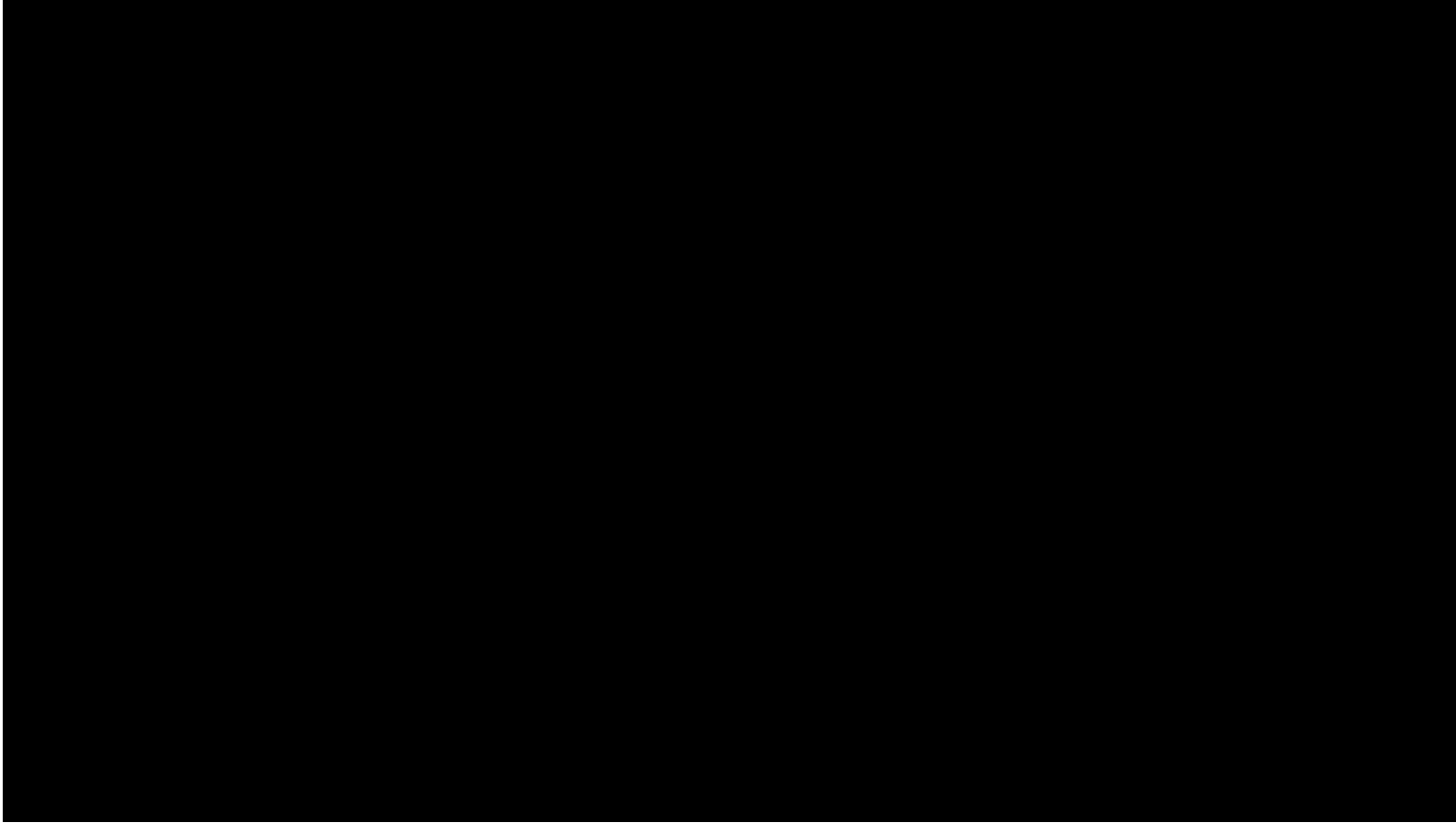


NEXT GEN LDAR METHOD BENEFITS

Existing Problem	Method 21 issue	OGI + Analyzer (Next Gen)
Inspection cost	Measuring 100% components. 97% not leaking	Solved (OGI up to 10x faster)
Leak not found	Looking at the wrong place? Not monitoring long enough ? Not monitoring close enough? Leak in unexpected place ?	Solved. Solved Solved Solved
Safety	Operator standing in plume (“downwind”)	Solved
False Leak	Gas coming from other source	Solved
Small impact leak	High PPM, but very small flow	Solved
Evidence	Unable to know inspection quality	Solved, Video.
Reporting	manual data entry	Solved, GPS + PPM on image



CONCEPT IN ACTION





Thank you

