

# Ultrasound cameras:

*A versatile gas leak detection method for the Refining and Oil & Gas Industry*

Live demo on booth 4203



SPONSORED BY:



# Johan Wictor

jwictor@pergamusa.com

Cell: 425-503-8127



SPONSORED BY:



# Moving towards a reduction of fugitive emissions on Oil & Gas facilities

*Detection and quantification of gas leaks are paramount to ensure:*



Environment protection



Safety



Reliability

SPONSORED BY:



MRC Global







Camera's screen display



## OUR SOLUTION

Real-time visualization of ultrasounds emitted by gas leaks  
One device to detect leaks from any type of gas and vacuum

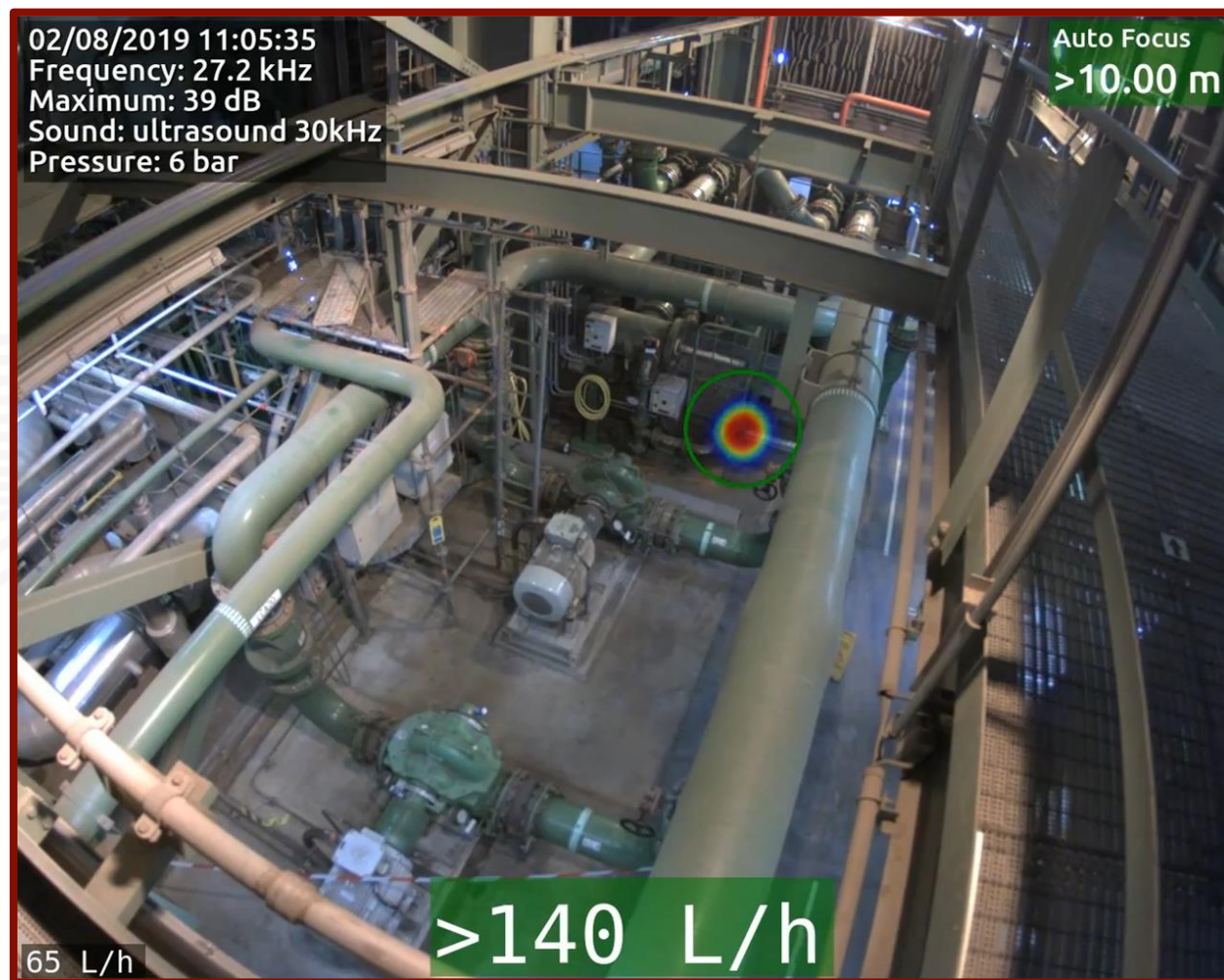


## OUR SOLUTION: ULTRA PRO

2022



Ultrasound imaging pinpoints  
gas leaks from the sounds  
they emit, at a distance



SPONSORED BY:



Bray



MRC Global



ZWICK  
ARMATUREN GMBH

# How does it work



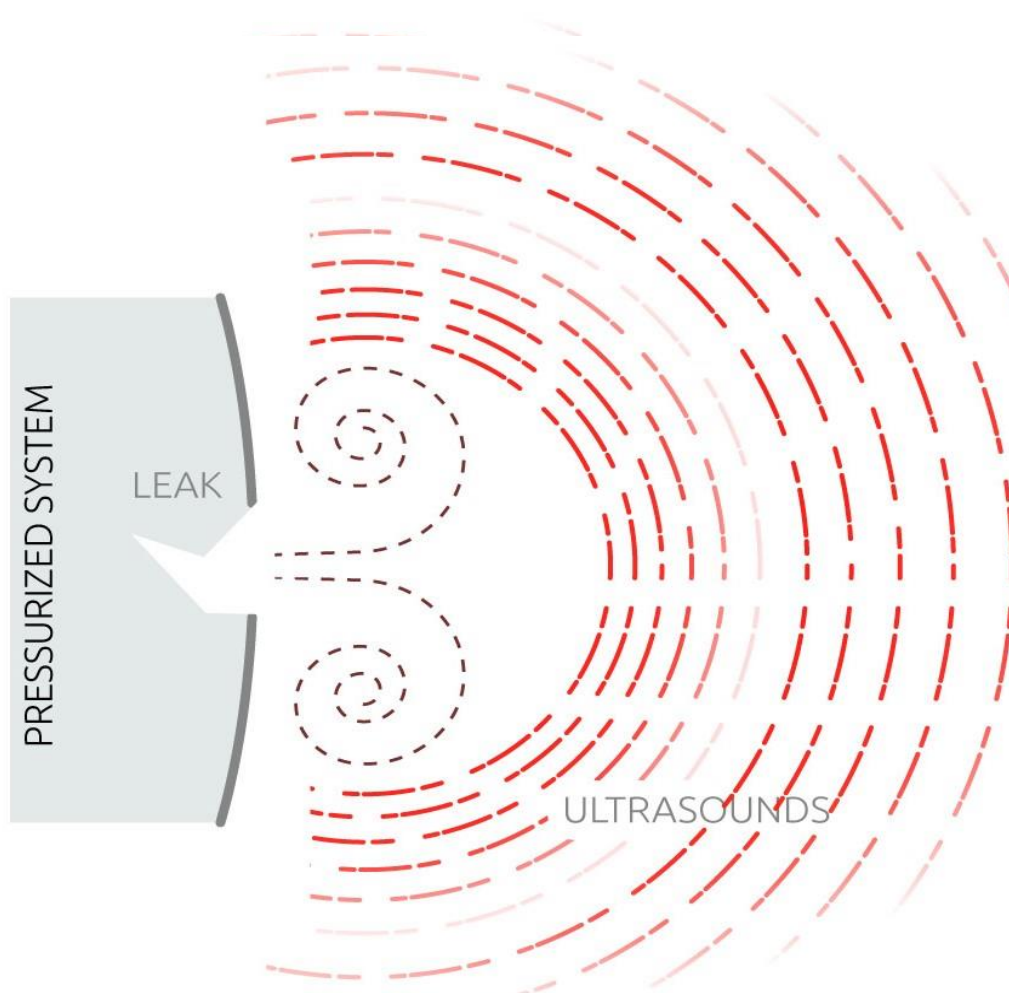
Ultra Pro pinpoints  
ultrasounds sources  
such as gas leaks

SPONSORED BY:





# How does it work



## Hydrogen leak on a gas manifold



SPONSORED BY:



Bray

EMERSON

MRC Global

TEADIT  
Sealing for a Safer and Greener Tomorrow

ZWICK  
ARMATUREN GMBH

OUR SOLUTION: ULTRA PRO

2022

How does it work



SPONSORED BY:



Bray

EMERSON

MRC Global

TEADIT  
Sealing for a Safer and Greener Tomorrow

ZWICK  
ARMATUREN GMBH



# Requirements to detect gas leaks



## Gas leak must create ultrasounds

- ⇒ Minimum pressure difference required (50 mbar)
- ⇒ Detection limit depends on the camera design and environment (around 2 L/h at 1 meter)



## Ultrasounds must reach the sensor

- ⇒ No detection of leaks on:
  - Underground pipes
  - Insulated pipes



Weight  
**3.3 lb**

Detection distance  
*Typical cases*  
**From 3 to 20 ft**

Handling  
**Single  
handed**

Minimum flow rate  
**0.1 ft<sup>3</sup> / h\***



**Explosion  
proof**  
version available

Minimum pressure  
differential  
**0.7 psi**

*\*for a 58-psi methane leak at a 1-ft distance*

SPONSORED BY:



**Bray**

**EMERSON**

**MRC Global**

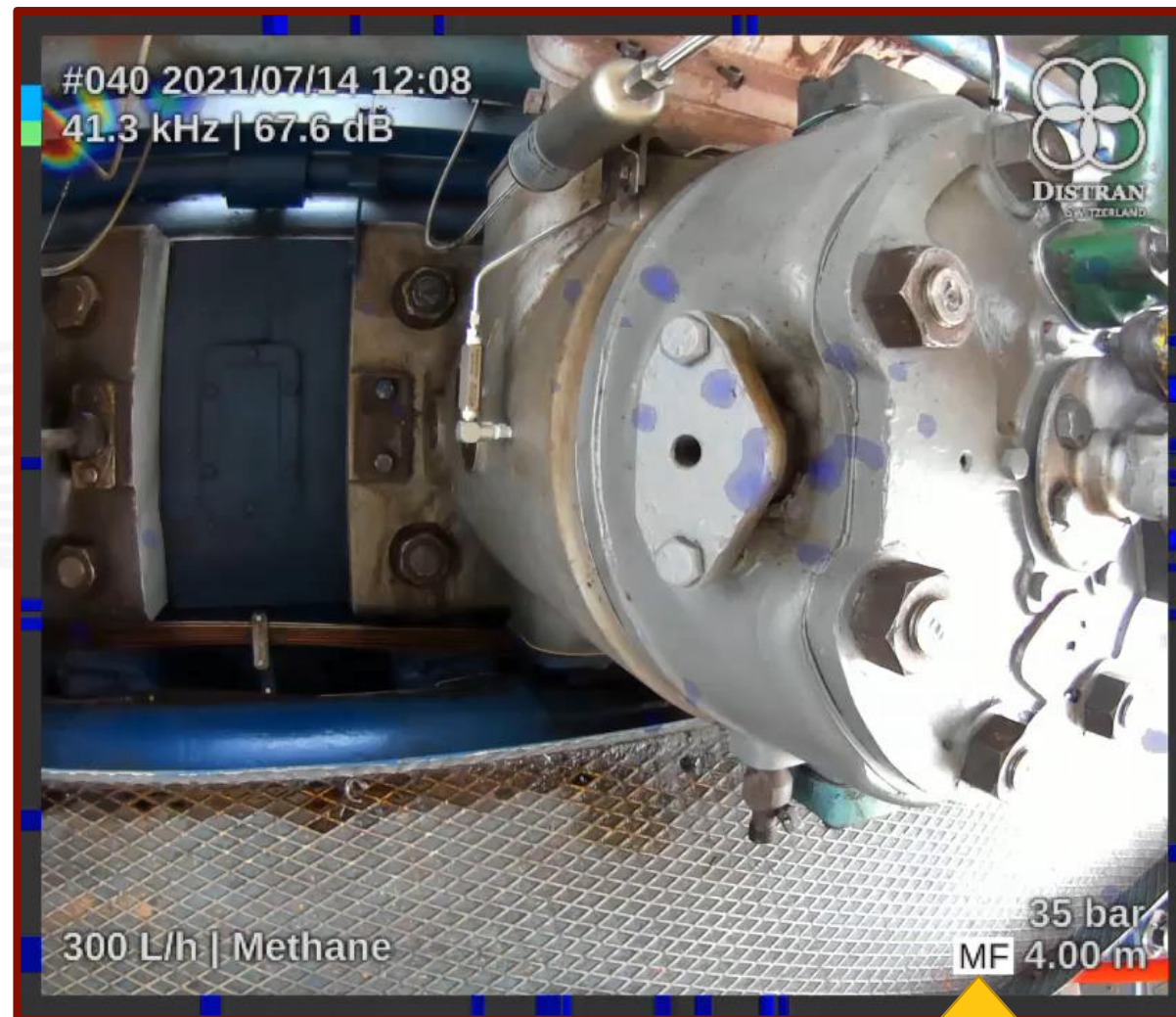
**TEADIT**  
Sealing for a Safer and Greener Tomorrow

**ZWICK**  
ARMATUREN GMBH



## Autofocus feature to avoid missing leaks

- Small leaks are hard to detect, above all in noisy environment
- Inspection without autofocus:
  - ➔ Distance to the leak is not proper
  - ➔ The leak is hard to spot



MANUAL FOCUS

SPONSORED BY:



Bray

EMERSON

MRC Global

TEADIT  
Sealing for a Safer and Greener Tomorrow

ZWICK  
ARMATUREN GMBH

## Autofocus feature to avoid missing leaks

- Inspection with autofocus
  - ➔ Automatic adjustment of the distance to the inspected setup, to help locating the exact source



AUTOFOCUS

SPONSORED BY:



Bray

EMERSON

MRC Global

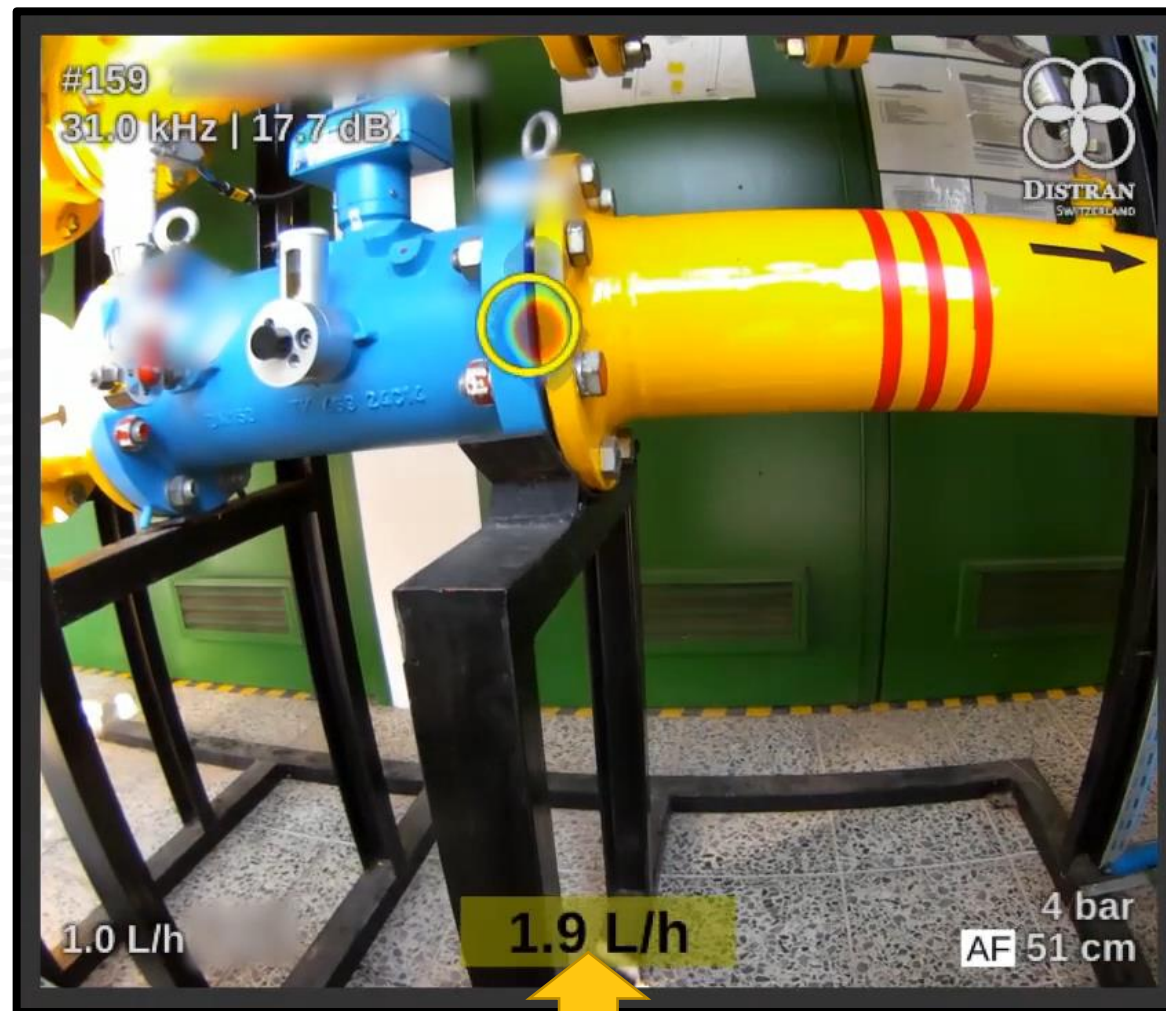
TEADIT  
Sealing for a Safer and Greener Tomorrow

ZWICK  
ARMATUREN GMBH



## Live leak rate quantification feature

- The live quantification gives a realistic estimation of the leak rate
- Gas type and system pressure allow to calculate the leak rate
  - ➔ To assess dangerousness
  - ➔ To evaluate losses and costs



LIVE LEAK RATE QUANTIFICATION

SPONSORED BY:



Bray



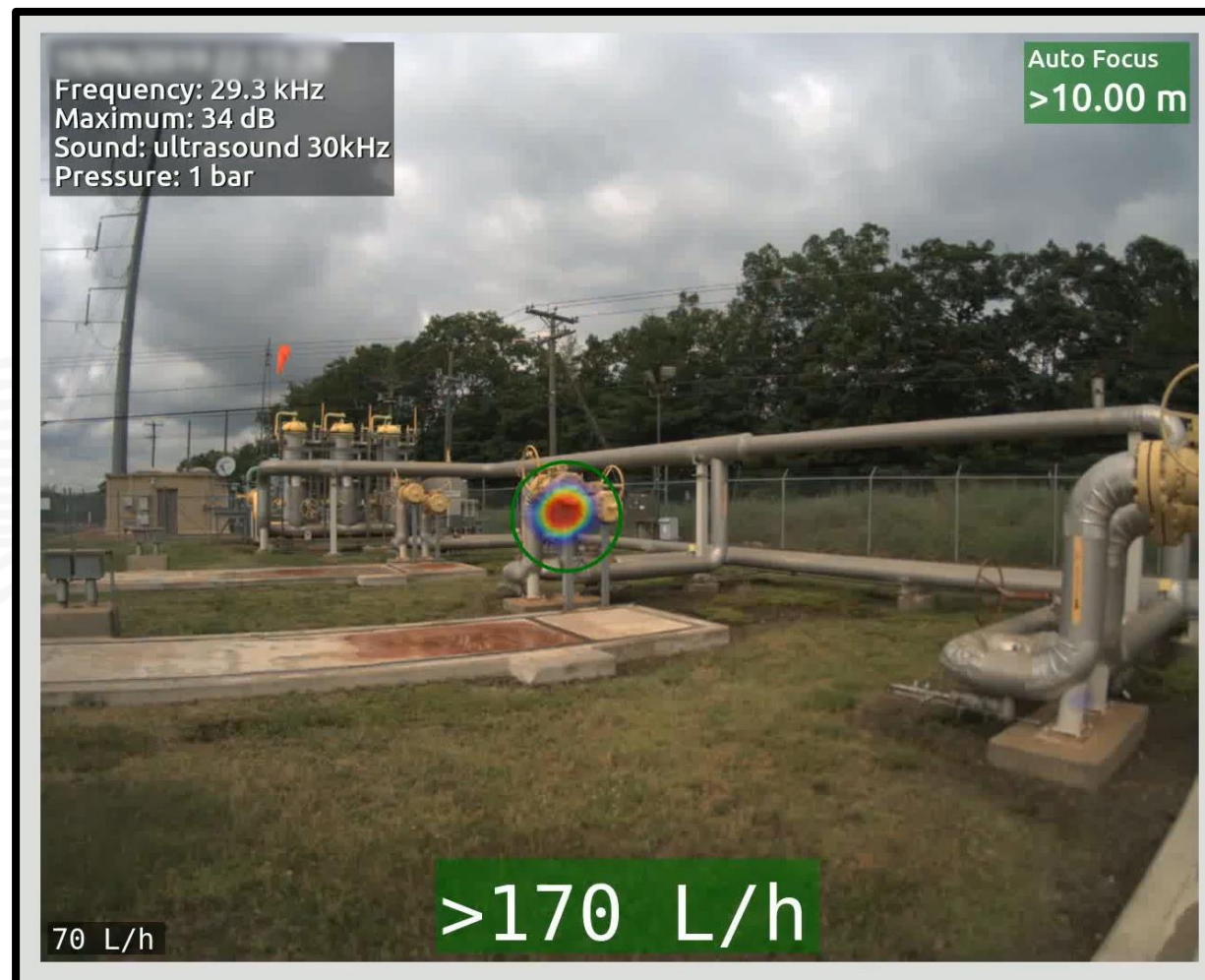
EMERSON

MRC Global



ZWICK  
ARMATUREN GMBH

# Methane leak on dew point station





# Methane leak

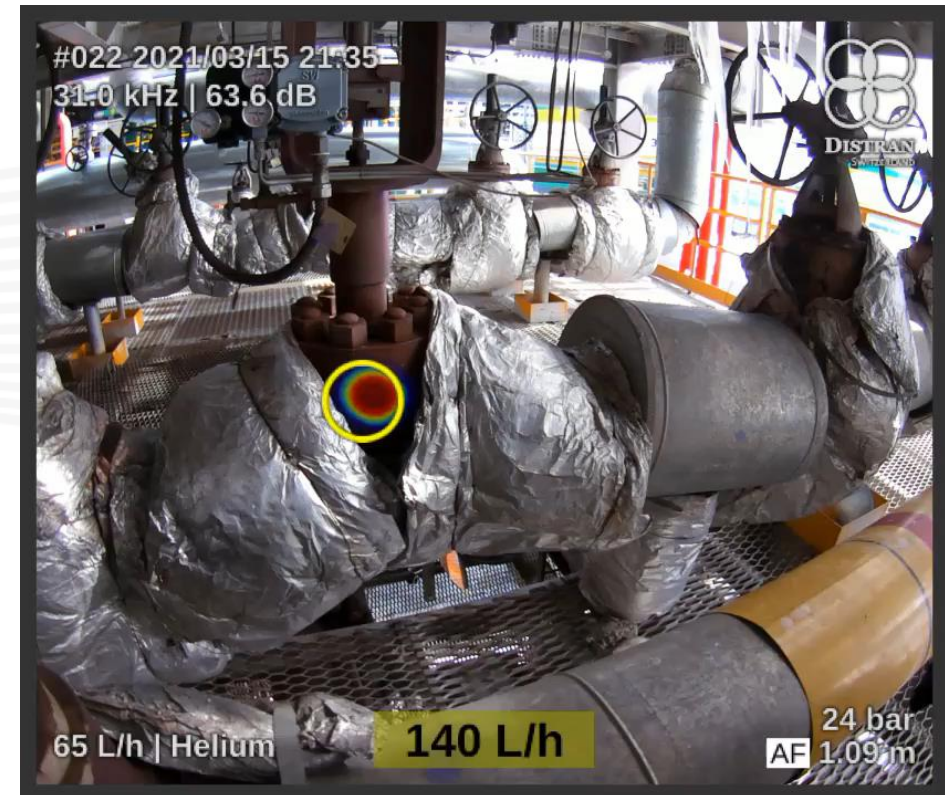
*Usage of the Zoom feature*



# ULTRA PRO IN REFINERIES

## Hydrogen leaks

2022



SPONSORED BY:



Bray

EMERSON

MRC Global

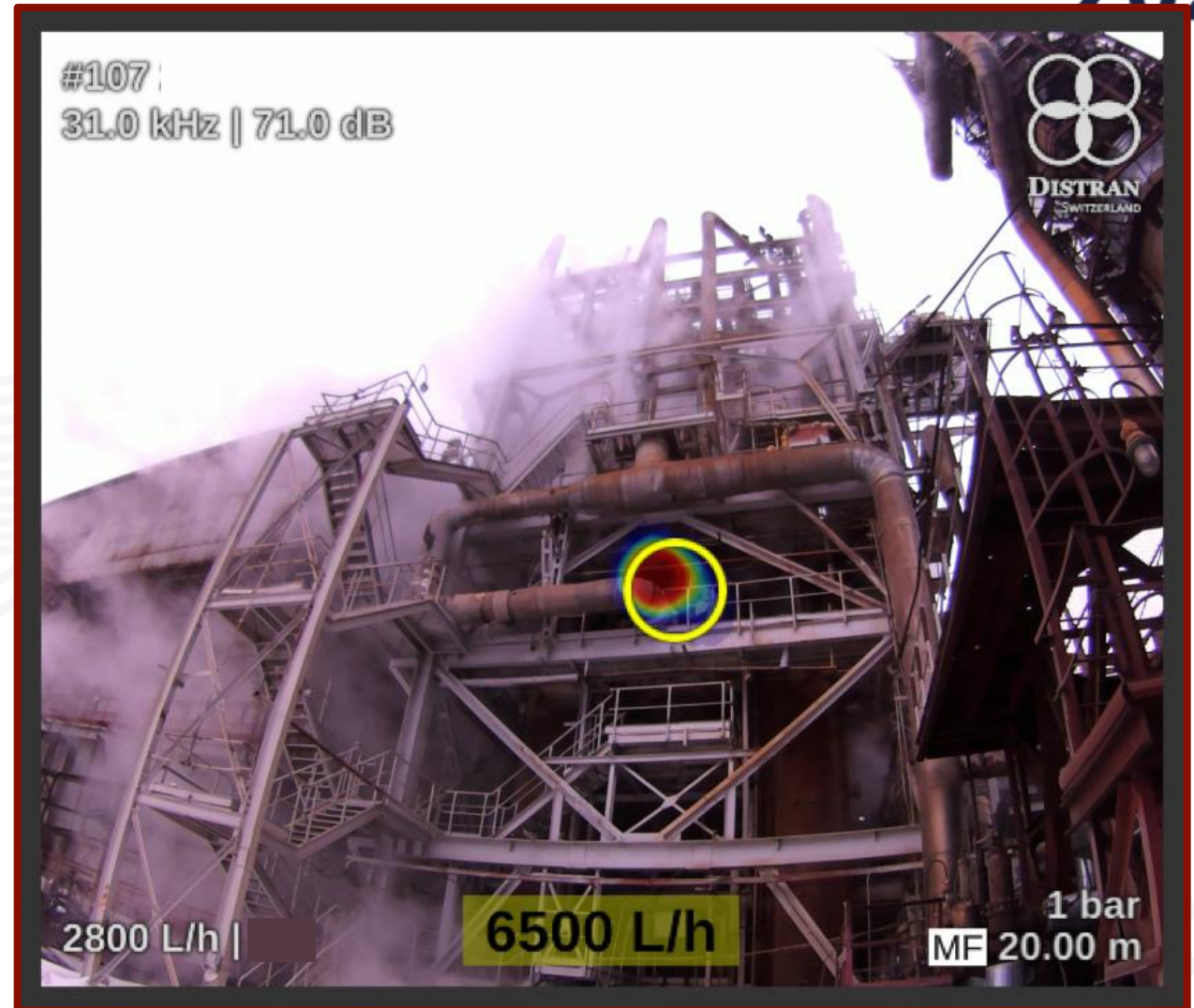
TEADIT  
Sealing for a Safer and Greener Tomorrow

ZWICK  
ARMATUREN GMBH



# Steam leak

*From 20 meters*



SPONSORED BY:



**Bray**

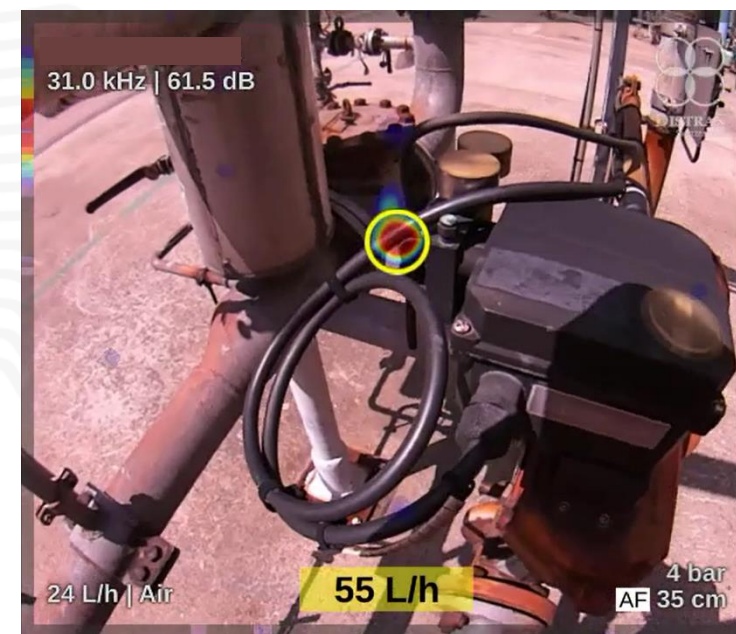
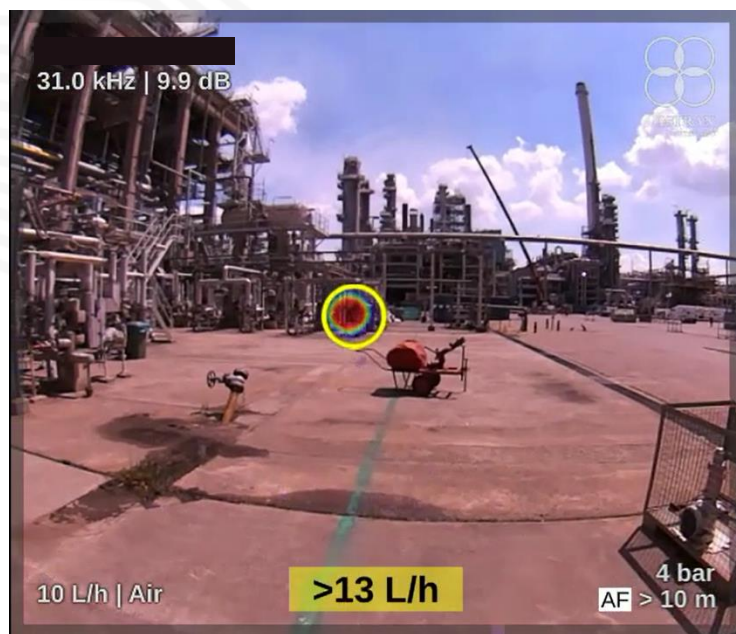
EMERSON

**MRC Global**

**TEADIT**  
Sealing for a Safer and Greener Tomorrow

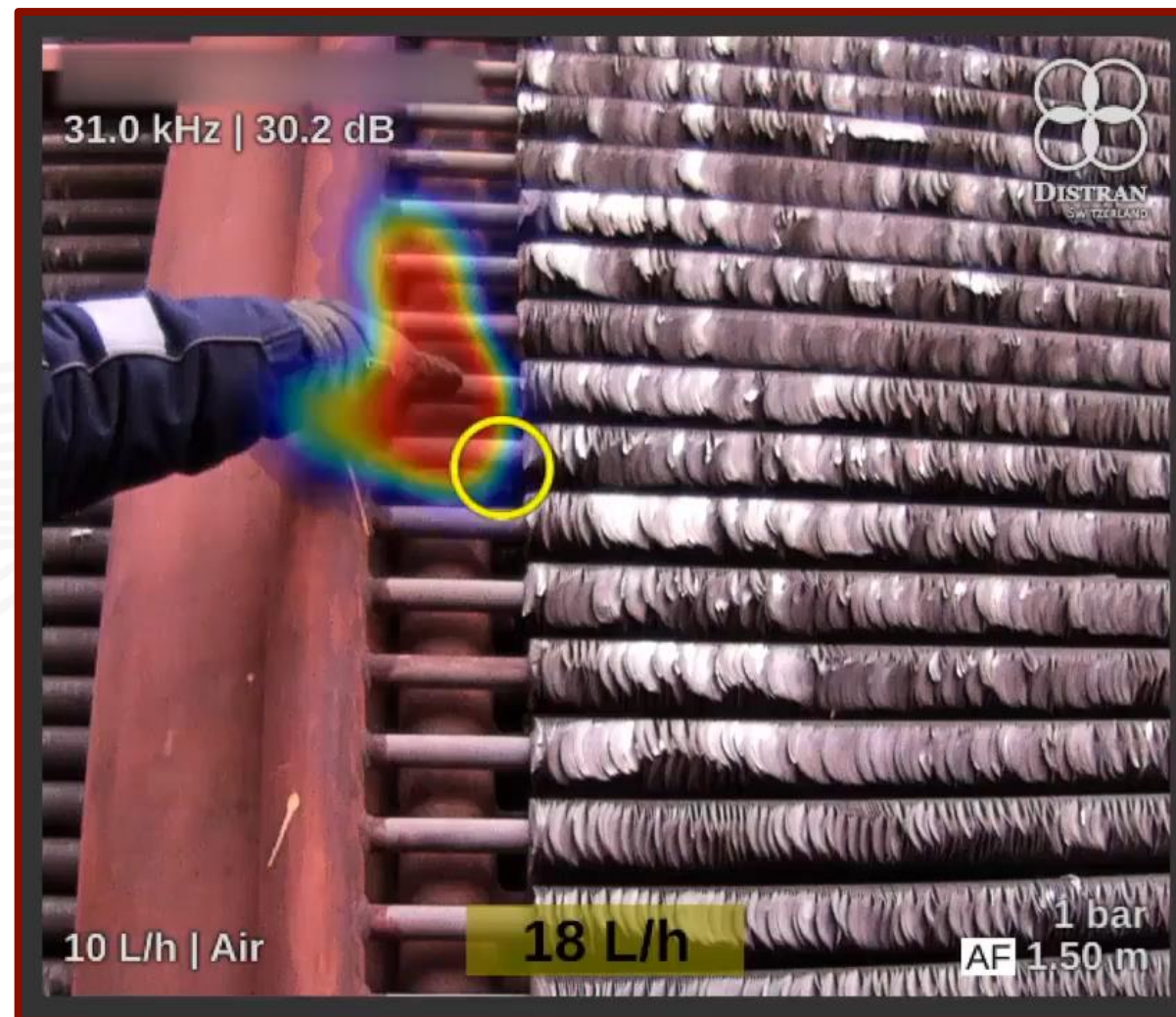
**ZWICK**  
ARMATUREN GMBH

# Compressed air leak spotted from 30 meters





# Vacuum leak



# Document your inspections



2022

## INSPECT

Capture pictures, videos  
& voice notes



## DOCUMENT

Upload content to Audalytics  
to trace all leaks  
& build an inspection report



## REPAIR

Classify & repair leaks  
Monitor evolution



**Fast**

**Traceable**

**Collaborative**

SPONSORED BY:



**Bray**



**MRC Global**



**ZWICK**  
ARMATUREN GMBH



# Imaging gas leak detection techniques

2022

*Common capabilities, differences &  
complementarity on the field*

ACOUSTIC  
LEAK  
IMAGING

OPTICAL GAS  
IMAGING



SPONSORED BY:



Bray

EMERSON

MRC Global

TEADIT  
Sealing for a Safer and Greener Tomorrow

ZWICK  
ARMATUREN GMBH

Both ALI and OGI share...



## CAPABILITIES

- ⇒ Visualization of gas leak location
- ⇒ Leak rate quantification



## SPEED

- ⇒ Inspect areas **faster**
- ⇒ Perform inspection in **normal operation** without scaffoldings



## SAFETY

- ⇒ Inspect at a **distance**: reduce exposure to dangerous gases & avoid working at heights
- ⇒ Enter **ATEX Zones 2**



# Complementarity & Differences



## OGI 'Optical'

Specific to a range of gas

Plume visualization

Sensitive to wind and humidity

Post-processed quantification

EPA recognition

Calibration recommended

Expertise level: high

Price range: high

## ALI 'Acoustic'

1 camera for all gases

Clear indication of leaks  
*(easy image interpretation)*

Sensitive to ultrasound noise

Real time quantification

No calibration needed

Expertise level: moderate

Price range: medium



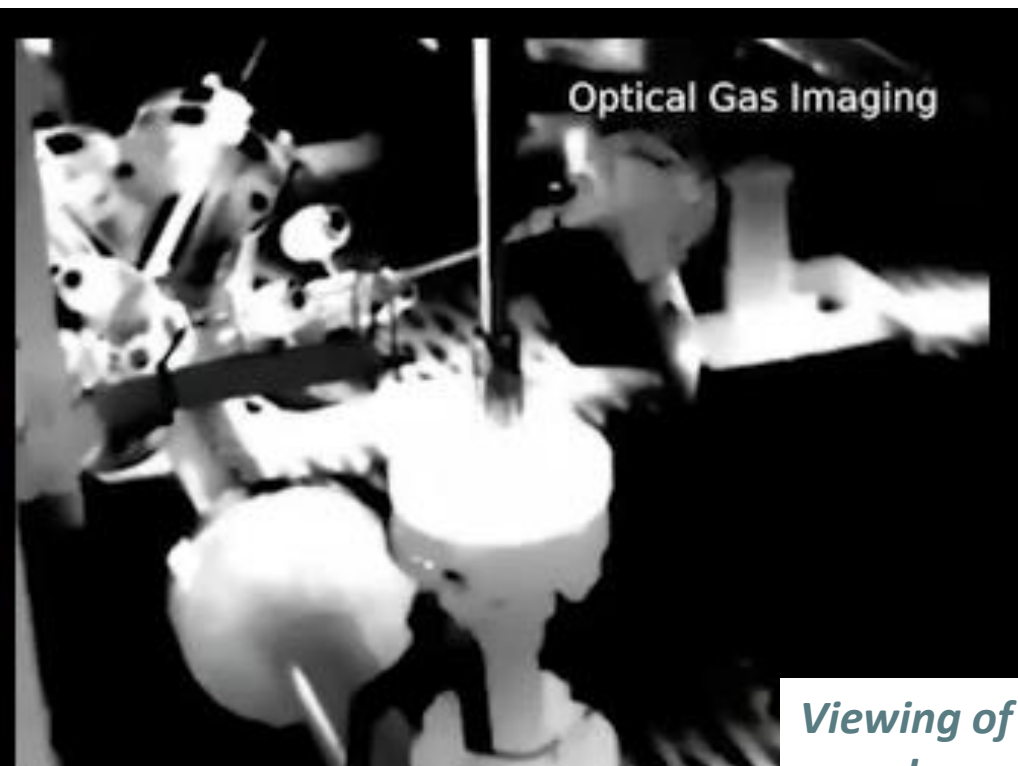
SPONSORED BY:



# Same leak - 2 detection methods



*Pinpoints the  
exact location of  
the leak source*



*Viewing of  
gas plumes*

SPONSORED BY:



Bray

EMERSON

MRC Global

TEADIT  
Sealing for a Safer and Greener Tomorrow

ZWICK  
ARMATUREN GMBH



# Specific applications



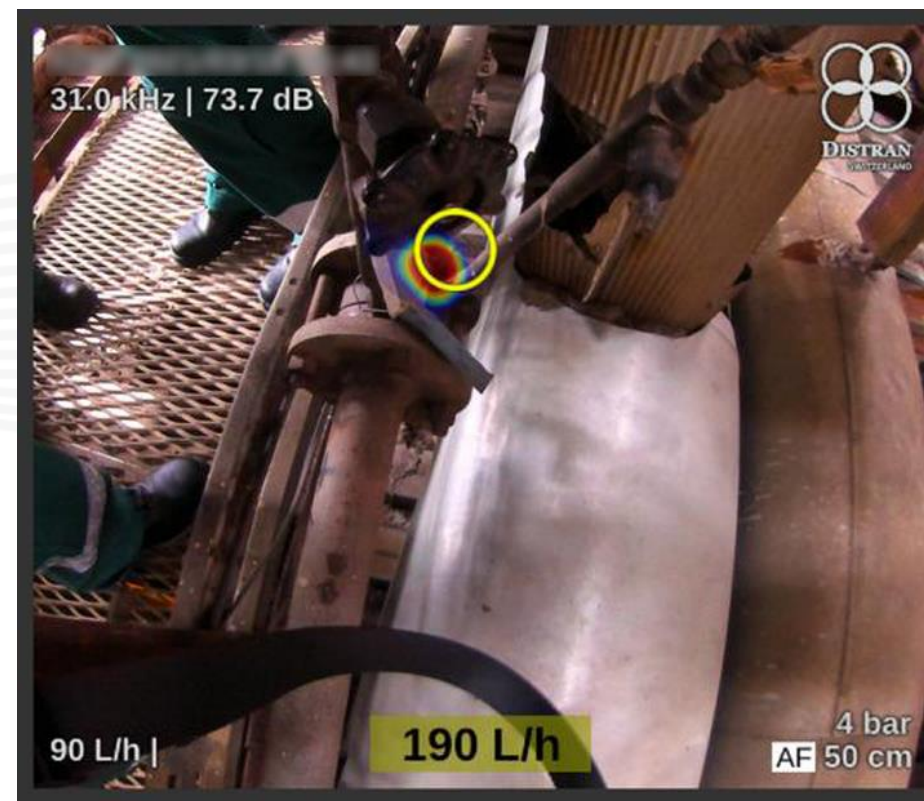
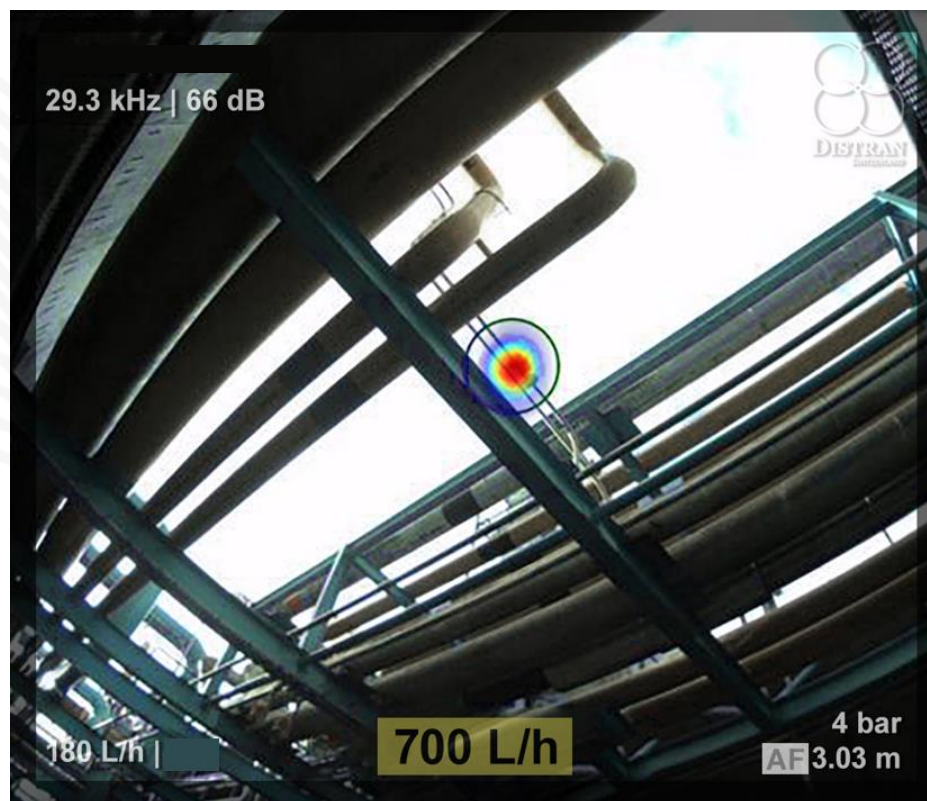
SPONSORED BY:



MRC Global



# Use of nitrogen in commissioning process





# Detection of leaks on housing panels



SPONSORED BY:



Bray



MRC Global



ZWICK  
ARMATUREN GMBH

# The voice of our customers



SPONSORED BY:



 **Bray**

 **EMERSON**

**MRC Global**

 **TEADIT**  
Sealing for a Safer and Greener Tomorrow

**ZWICK**  
ARMATUREN GMBH





**SHELL**

*Efficiency and safety standards  
further improved*

*“Distran makes it possible to significantly  
expand the spectrum of leakage  
identification.*

*This can be a key factor on the way to a safe  
production facility.”*

*Daniel Blambeck*

*Shell Energy and Chemicals Park Rheinland  
Team Lead Planning - Plant Engineer*



SPONSORED BY:



**Bray**



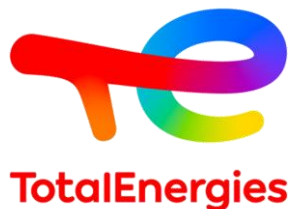
**MRC Global**



**ZWICK**  
ARMATUREN GMBH



DISTRAN ULTRA PRO – CLIENTS' REFERENCE



**TOTAL ENERGIES**

*TotalEnergies uses Distran  
state-of-the-art technology*

*The integration of an acoustic camera, simple to use and quick to set up, in addition to optical technologies, provided a real solution for improving operational conditions.”*

Xavier Watremez

Total E&P - Leader for Safety monitoring and crisis



SPONSORED BY:



**Bray**



**MRC Global**



Sealing for a Safer and Greener Tomorrow



ARMATUREN GMBH





## AIR LIQUIDE

*Leak inspections are now  
300% faster with Distran Ultra Pro*

*“The Distran approach represents what our  
business is all about: saving time, saving cost,  
detecting earlier, and being safe.”*

Olivier Mourot  
Air Liquide, France - Director of Maintenance



SPONSORED BY:



**Bray**



**MRC Global**



**ZWICK**  
ARMATUREN GMBH





National Aeronautics and  
Space Administration

*Ultra Pro is currently applied by  
the astronauts within the  
International Space Station*



SPONSORED BY:





# Contact us!

## Johan Wictor

E-mail: [jwictor@pergamusa.com](mailto:jwictor@pergamusa.com)

Cell: +1-425-503-8127

Pergam Technical Services  
Renton, WA 98057, United States

**Live demo on booth 4203**

SPONSORED BY:





# Q&A

All questions are welcome.!

SPONSORED BY:





SPONSORED BY:



SPONSORED BY:





SPONSORED BY:



SPONSORED BY:



SPONSORED BY:

