



HERTZINNO

Acoustic Camera

For Gas Leak

Represented by:



Equipamientos Analíticos S.A

35 años brindando soluciones



www.equipanaliticos.com.ar
ventas@equipanaliticos.com.ar





Comprehensive Solutions & Industry Focus

Hertzinnno offers a robust product matrix, including handheld acoustic cameras, online monitoring systems, DGA, and distributed fiber optic sensing. Our solutions are widely applied across six core sectors, including Power & Grid, Oil & Gas, Smart Manufacturing, and New Energy.



Intelligence Behind
Every Hertz



AI Leadership & Global Footprint

Powered by leading AI diagnostics and a library of 5M+ acoustic samples, our footprint spans five continents. In collaboration with 70+ global partners, Hertzinnno ensures reliability for 1,000+ application scenarios across 100+ industries, making industrial production safer and more efficient.

About us

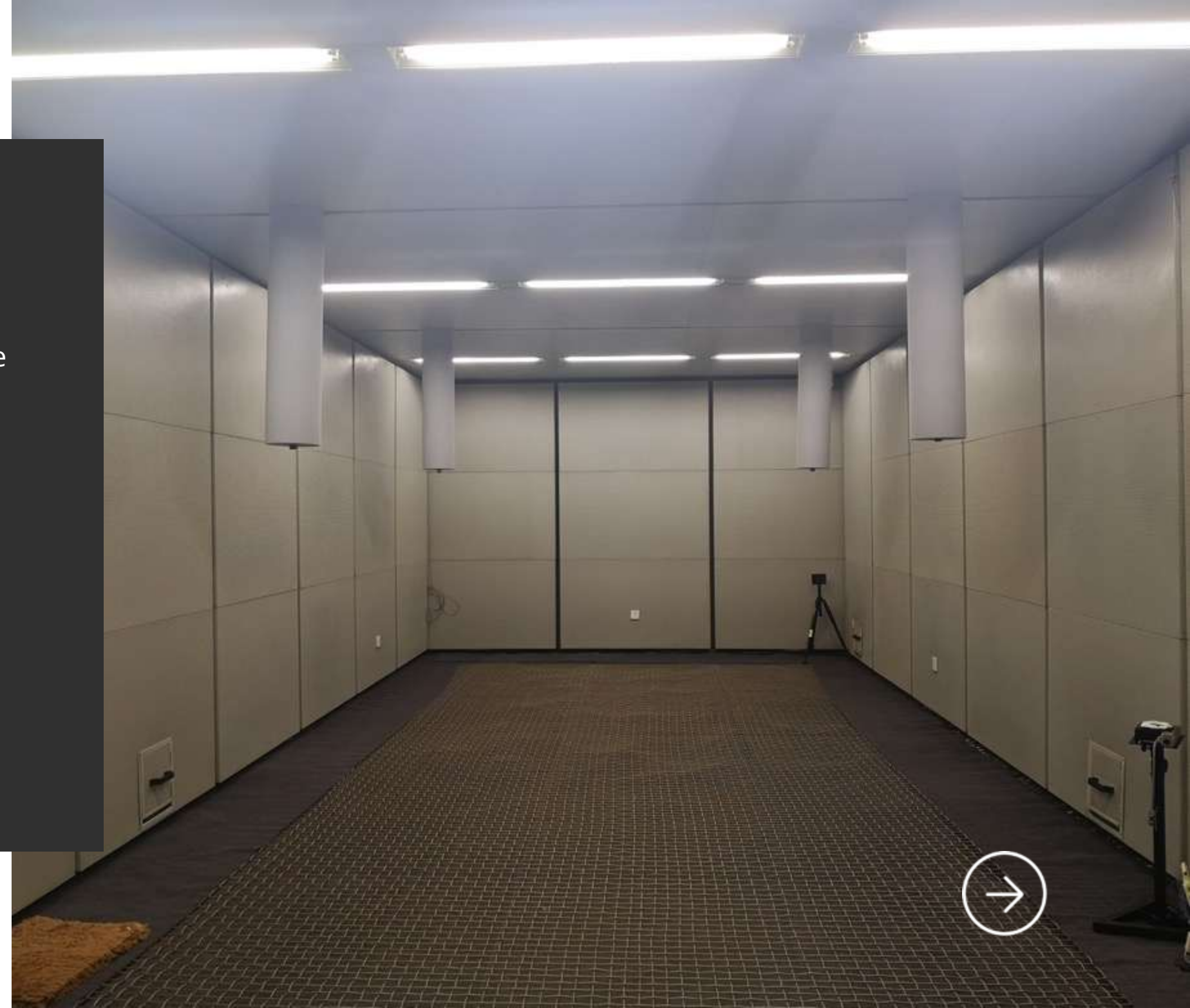
Innovation & R&D Excellence

Multi-Sensor Fusion: Integrating acoustic, thermal, and TDLAS technologies for multidimensional diagnostics.

Advanced AI Algorithms: Proprietary deep learning models trained on over 5 million industrial acoustic signatures.

Edge Computing: Real-time on-device processing for instantaneous fault localization and alerting.

Customizable Solutions: Agile R&D team capable of tailoring hardware and software to meet unique industrial challenges.



Our Technological DNA



Global Partners



Develop sales and service networks in 60+ countries and regions worldwide



Leveraging full-stack, self-developed products with outstanding performance, alongside advanced technology and reliable quality



Industry-driven approach, growing together with our partners, Now entering a rapid growth phase

HERTZINNO has successfully established a distribution network in over 60 countries and regions.

In the Americas, our products have been successfully delivered to key markets including **the United States, Canada, Mexico, Brazil, and Chile**, as well as other countries and regions across North, Central, and South America.

Oil & Gas Solutions

From on-site inspection to continuous pipeline protection

01 ACOUSTIC CAMERAS



HANDHELD + FIXED

Rapid leak localization
& 24/7 monitoring

02 HZ-WL-15A



GAS WELL MONITORING

Wellhead leak alarm
& remote notification

03 DAS / DTS



FIBER-OPTIC SENSING

Long-distance pipeline
monitoring

04 HZ-PS-20A



SMART PIPELINE SENTINEL

Ground activity detection
& pipeline protection

How Does Acoustic Camera Work



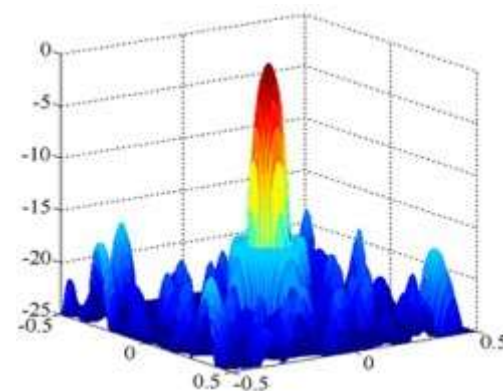
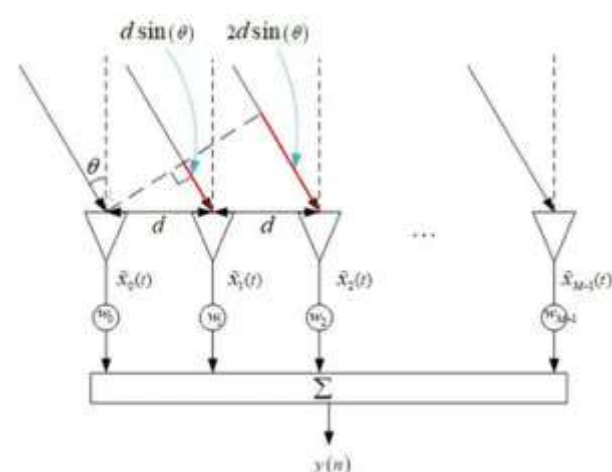
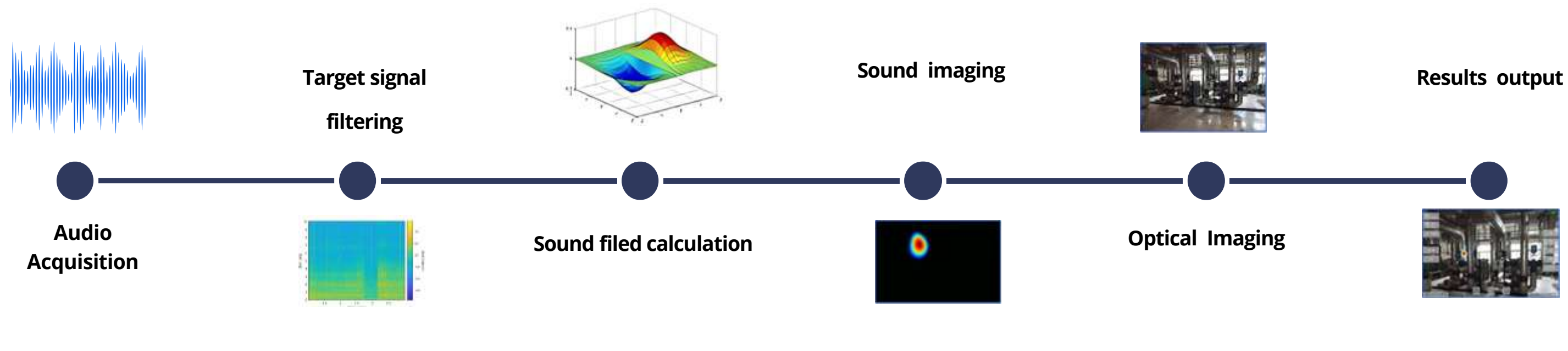
Microphone Array + FPGA

Optical Camera

CPU + Main Board

Screen

Acoustic camera consists of a group of microphones, also called a microphone array, from which signals are simultaneously collected and processed to form a representation of the location of the sound sources.



When pressurized gas leaks, gas molecules rush out from the leak hole and collide with each other, generating turbulence. This turbulence can then excite ultrasonic waves. Therefore, gas leaks can be detected acoustically. Meanwhile, an acoustic camera can calculate the location of the sound source based on the time and phase differences of the ultrasonic waves arriving at different microphones, enabling high-precision localization of the leak.



Acoustic Camera – Gas Leak Sector

Convert invisible gas leaks into visual, quantifiable and actionable inspection results



Traditional OGI Camera (Optical Gas Imaging)

- Highly dependent on thermal contrast
- Used for large-area detection, but only applicable to certain gases
- Difficult to locate small leaks and leak holes
- Extremely high equipment and maintenance costs



Point Sniffers / NDIR

- Only works for specific gases
- Cannot quickly locate the leak position
- Not suitable for some outdoor environments



Soap Water Testing

- Simple, cheap, and economical
- Suitable for temporary leak detection
- Cannot be used for large-area coverage

Industry Need
**Visualize.
Locate.
Quantify.
Report.**

Hertzinno Acoustic Camera Features

- 1 Non-contact Leak Localization**
Visualizes leak sources from a safe distance without equipment downtime.
- 2 Can detect any gas type**
Detects leaks from any pressurized gas, not limited by gas type.
- 3 AI-based Quantification**
Estimates leak rate and focuses on leak points in noisy industrial environments.
- 4 ATEX + Anti-noise**
Supports hazardous areas and complex field conditions.

Field visualization examples



Outdoor tank area



Gas Pipeline



LNG Carrier



Storage Tank Leak



Aerospace Manufacturing



Food & Beverage Process Piping

Value for gas leak inspection

Rapidly scan large industrial areas, visually confirm leak locations, estimate leak volume, and generate clearer inspection records for maintenance teams.



HA3 Series Acoustic Camera

Acoustic with AI Analysis

Hardware

- 144 MEMS Microphones
- Detection Range 2kHz ~ 150kHz
- Wi-Fi, Bluetooth, E-compass, GPS
- LED & Laser Rangefinder

Software

- AI Analysis for Partial discharge
- AI analysis for Gas leak rate
- Mechanical noise analysis
- On-device Analysis & Report
- Spectrum display & RTSP
- Video & Picture analysis

[Video of HA3 Series](#)

ATEX certificated for X version



● Design

- Tripod Mount
- Wrist Strap
- Less than 1100g
- Removable Battery

● Improve details

- PRPD AI algorithm
- File Management
- Voice Annotation
- Video Analysis

● Battery & Charging

- 3.5 hours in operation mode
- 7 hours in standby mode
- 2 hours full charge

Hazardous Areas Acoustic Camera



HA3X

Hertzinno more professional

ATEX

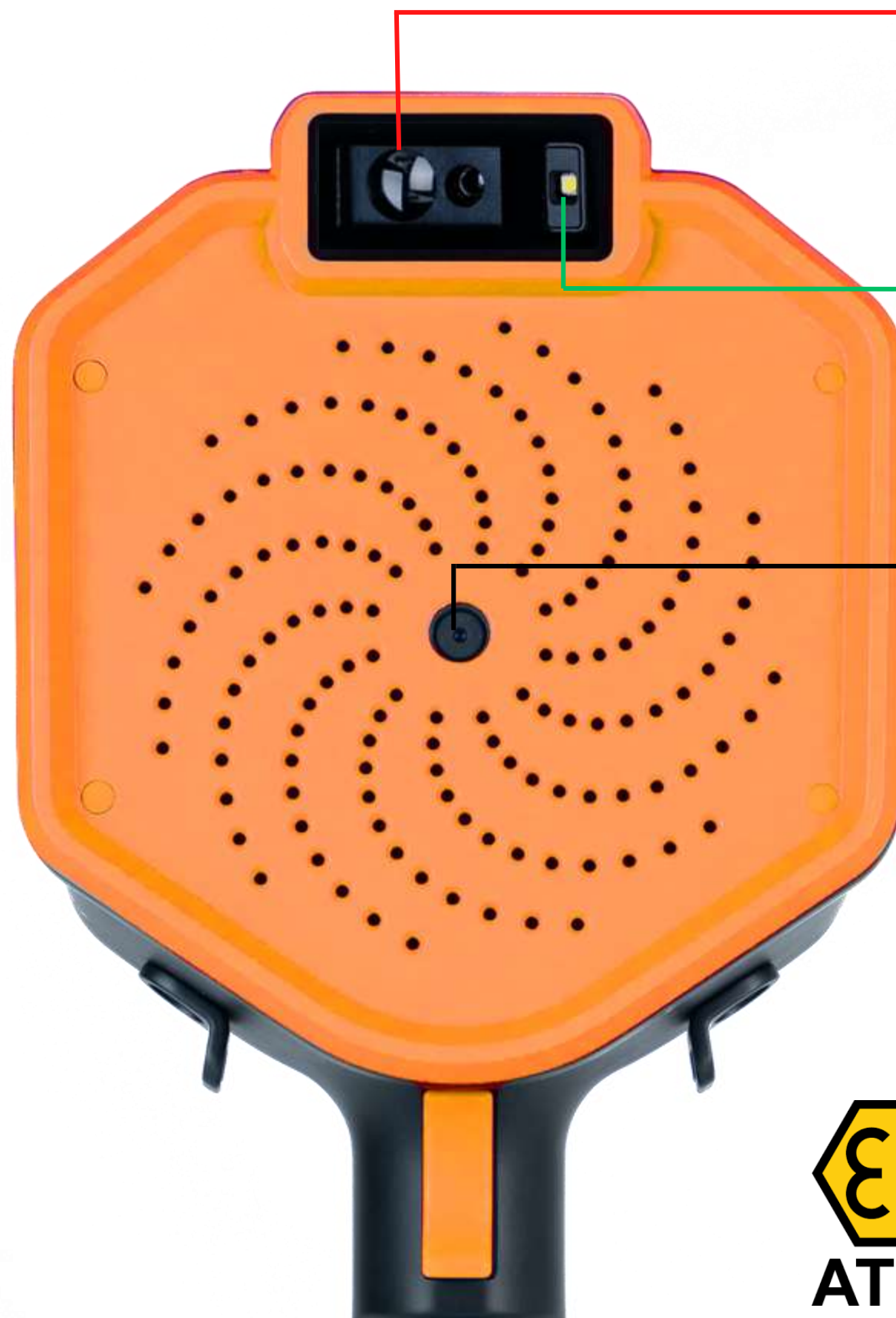
ATEX ACOUSTIC

- II 2 G Ex ib IIC T4 Gb
- II 2 D Ex ib IIIC T130°C Db

Smarter

More Powerful

- Partial Discharge Mode
- Gas Leak Detection Mode
- Mechanical Noise Mode
- Adaptive Frequency Tuning
- Less than 1100g
- 3.5h Operation time
- 7 hours Standby time
- IP54 & ATEX



● Laser Rangefinder

Class II Laser
30 meters measure distance

● LED & Storage

High-brightness LED Light 1W
Removable MicroSD Card

● Cameras & Others

13MP Optical Camera
8x Digital Zoom



Leak Detection on LNG ship

HA3T

Hertzinno more professional

Thermal

IR & ACOUSTIC

- 640*512 IR resolution
- $\leq 40\text{mK} (@25^{\circ}\text{C}, F\#=1.0)$

High Sensitivity IR

Temperature Detection

- Response band $8\sim 14\mu\text{m}$
- 0.8 mrad
- $-20^{\circ}\text{C}\sim 150^{\circ}\text{C}$ & $100^{\circ}\text{C}\sim 550^{\circ}\text{C}$
- $\pm 2^{\circ}\text{C}$ or $\pm 2\%$ of reading
(whichever is greater)
- Less than 1100g
- 4 hours Operation time
- 8 hours Standby time
- IP54



Thermal Graph Sensor

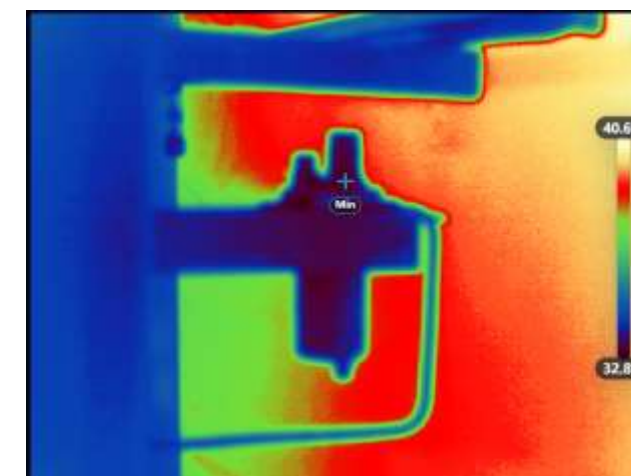
VOx Sensor
12 μm size & 15mm inch

Rangefinder Laser & LED

Up to 30m Laser Rangefinder
High-brightness LED Light

Cameras & Others

13MP Optical Camera
144 MEMS Microphones



Thermal Mode



Acoustic Mode

HA3LX

Hertzinno more professional

Methane

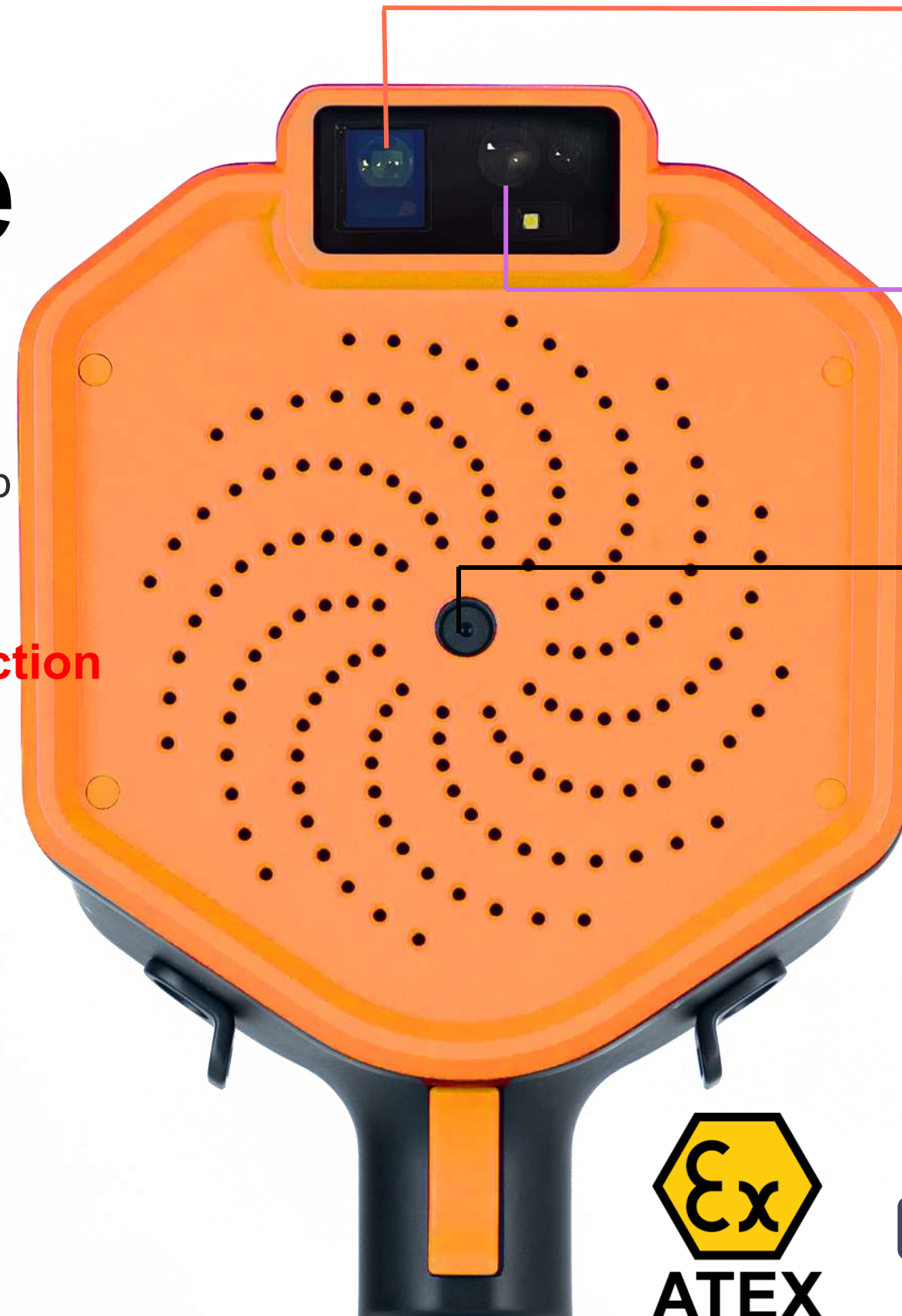
ATEX ACOUSTIC

- II 2 G Ex ib IIC T4 Gb
- II 2 D Ex ib IIIC T130°C Db

Higher Sensitivity

Gas Concentration Detection

- 15dB SPL @20kHz
- 2k ~ 150 kHz
- <1cm@1m @40kHz
- 0 ~ 50000 ppm*m
- Less than 1100g
- 4 hours Operation time
- 8 hours Standby time
- IP54 & ATEX



Methane Laser Sensor

5ppm*m Concentration
Leak Rate and Cost Calculate

Rangefinder Laser & LED

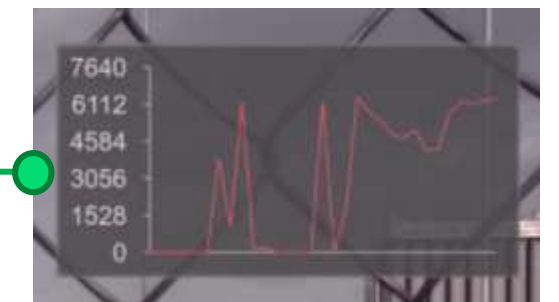
Up to 30m Laser Rangefinder
High-brightness LED Light

Cameras & Others

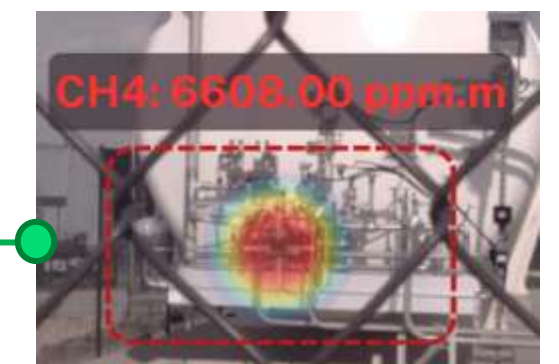
13MP Optical Camera
144 MEMS Microphones



Acoustic Mode + Gas Concentration Detection



Gas Concentration Trend Chart



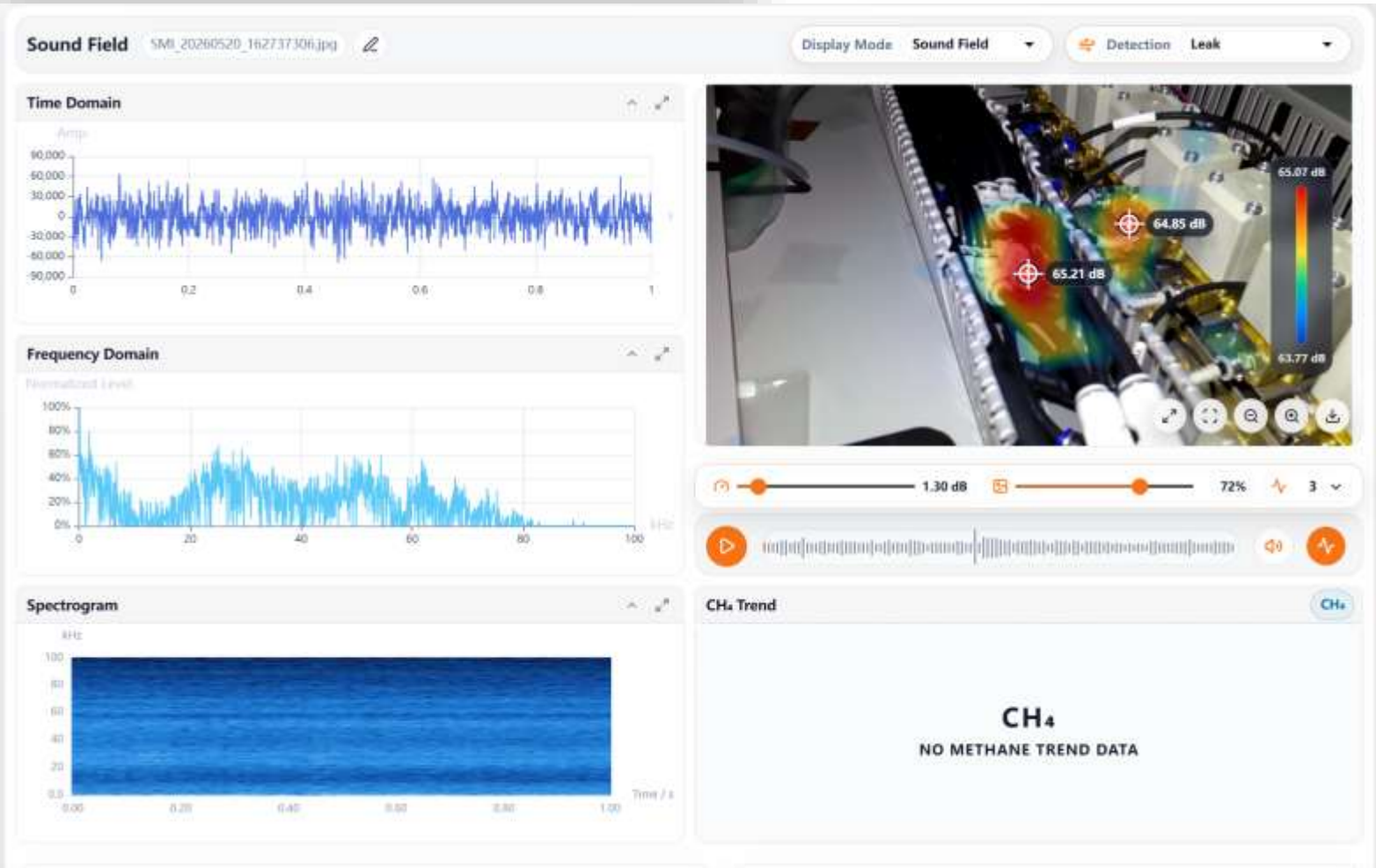
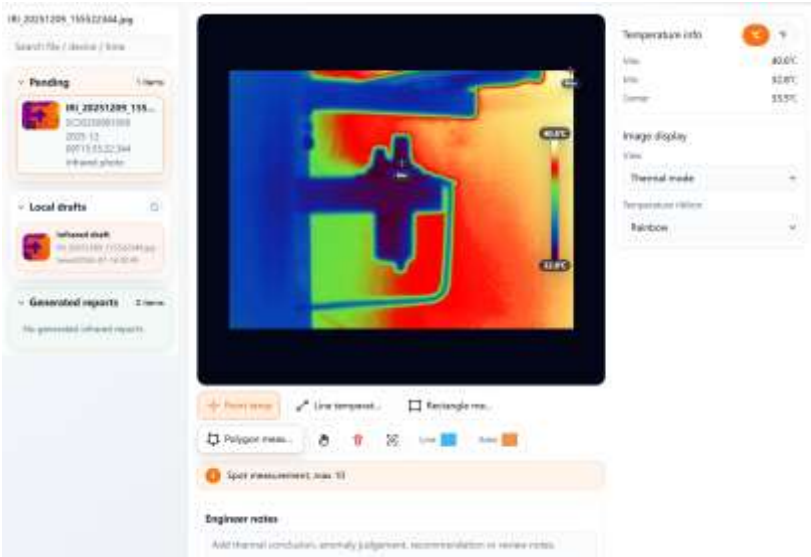
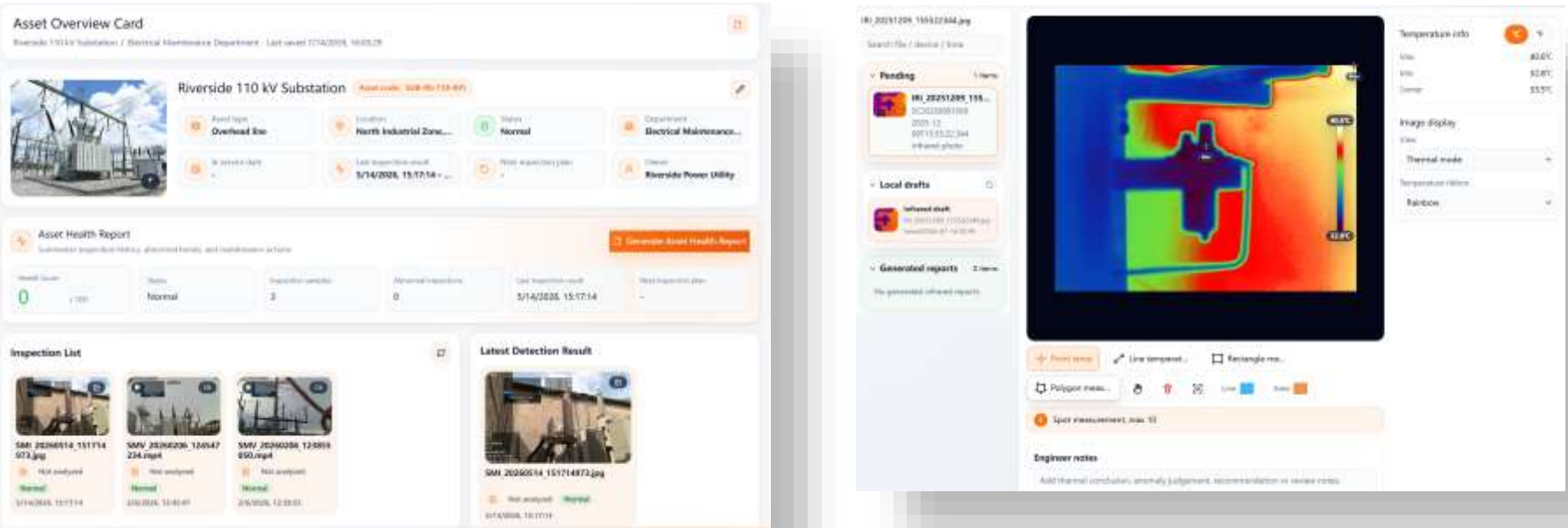
Gas Concentration

Parameters of HA3 Series



Model	HA3A	HA3(X)	HA3LX	HA3T(X)
Scenario	Compressed Air leak & Mechanical	Power Industry/ATEX	Chemical Industry	Power Industry
Microphones	128	144	144	144
Bandwidth	2-100kHz	2 - 150 kHz	2 - 150 kHz	2 - 150 kHz
Tuning Fre	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual
Acoustic FPS	30fps	30fps	30fps	30fps
Camera & LED	13MP @75°	13MP @75°	13MP @75°	13MP @75°
Resolution	4k & 1080P(video)	4k & 1080P(video)	4k & 1080P(video)	4k & 1080P(video)
Digital Zoom	8x	8x	8x	8x
Display	1920*1080 @ 5.0'LCD	1920*1080 @ 5.0'LCD	1920*1080 @ 5.0'LCD	1920*1080 @ 5.0'LCD
Imaging Sensitivity	10 kHz: 1 dB SPL 20 kHz: -10 dB SPL 30 kHz: -6 dB SPL 40 kHz: 3 dB SPL 50 kHz: 6 dB SPL 60 kHz: 20dB SPL	10 kHz: 1 dB SPL 20 kHz: -15 dB SPL 30 kHz: -5 dB SPL 40 kHz: 3 dB SPL 60 kHz: 10dB SPL	10 kHz: 1 dB SPL 20 kHz: -15 dB SPL 30 kHz: -5 dB SPL 40 kHz: 3 dB SPL 60 kHz: 10dB SPL	10 kHz: 1 dB SPL 20 kHz: -15 dB SPL 30 kHz: -5 dB SPL 40 kHz: 3 dB SPL 60 kHz: 10dB SPL
Frequency Tuning	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual
Distance Measurement	Laser for 30m	Laser for 30m	Laser for 30m	Laser for 30m
Battery Time	7 hours with Standby mode 3.5 hours continue testing	7 hours with Standby mode 3.5 hours continue testing	7 hours with Standby mode 3.5 hours continue testing	7 hours with Standby mode 3.5 hours continue testing
Communications	Wi-Fi & Bluetooth	Wi-Fi & Bluetooth	Wi-Fi & Bluetooth	Wi-Fi & Bluetooth
Other Functions	GPS, E-Compass, Atmospheric Humidity	GPS, E-Compass, Atmospheric Humidity	GPS, E-Compass, Atmospheric Humidity	GPS, E-Compass, Atmospheric Humidity
Weight	980g	1000g	1039g	990g
Thermal Graph	NA	NA	NA	640*512 & NETD 40mk
Methane Concentration	NA	NA	0 ~ 50,000PPM	
Partial Discharge	NA	Corona, Floating, Surface, Other	Corona, Floating, Surface, Other	Corona, Floating, Surface, Other
Gas Leak & Mechanical Noise	Yes	Yes	Yes	Yes
ATEX	NA	X version	YES	X version
Analysis Function	AI Analysis on Device, and software	AI Analysis on Device, and software	AI Analysis on Device, and software	AI Analysis on Device, and software

Hertzinno Insight Studio



Shanghai Hertzinno
Technology Co., Ltd.

Gas Leak Inspection Report Data

2026-02-06
GAS-260206-001

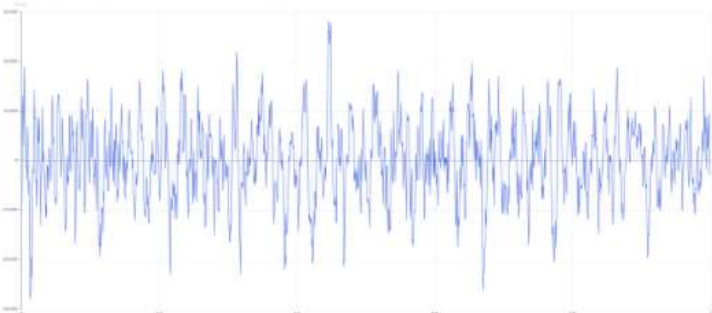
File Name	SMV_20260206_114255388.mp4	Capture Time	2026-02-06 11:42:55
Associated Asset	--	Asset Type	transformer
Inspection Location	--	Inspector	--
SPL (dB)	46	Risk Level	Low



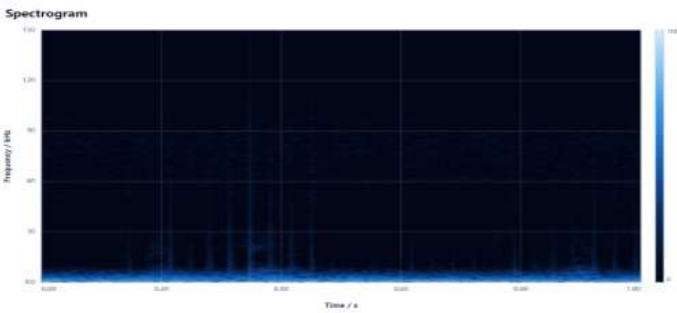
Key Parameters

Acoustic Energy Level
46
Leak Rate
0.626 L/min
Gas Price
¥200 / m³
Annual Loss Cost
¥60119.54
Carbon Emission Estimate
0 kgCO₂e/year

Acoustic Information



Time Domain



Spectrogram

Recommendation:

Engineer Opinion

AI Software

Generated Report

Online Acoustic Camera

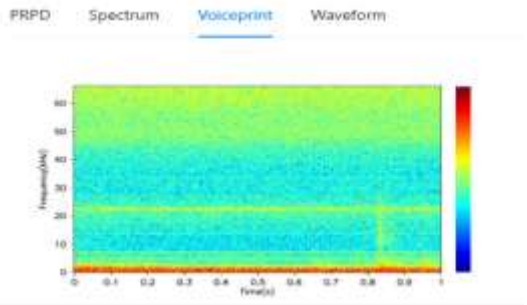
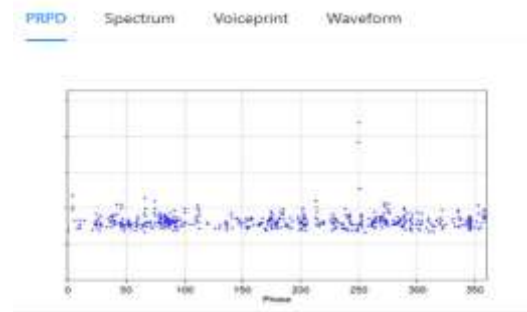


For 7*24 monitoring, Hertzinno provides online acoustic camera for continue monitoring and robotic integration.



Model	HZ-FA-371	HZ-FA-371T	HZ-FA-371P
Microphones	128MEMS	128 MEMS	128 MEMS
Frequency Range	2kHz ~ 65kHz	2kHz ~ 65kHz	2kHz ~ 65kHz
Distance	0.3 ~ 130m	0.3 ~ 130m	0.3 ~ 130m
Video	1920*1080 @30fps	1920*1080 @30fps	1920*1080 @30fps
Detection Mode	Partial Discharge Gas Leak Voiceprint	Partial Discharge Gas Leak Voiceprint	Partial Discharge Gas Leak Voiceprint
Thermal Sensor	NA	640*512 and NETD less 40mk	NA
Communication	HTTP & WebSocket via TCP/IP	HTTP & WebSocket via TCP/IP	HTTP & WebSocket via TCP/IP
Power	12VDC 3A	12VDC 3A	12VDC 3A
Protection	IP66 & IP68	IP66	NA
Pan Tilt	NA	NA	YES
Weight	900g	1200g	1100g
Anti-Explosion	Ex ib IIC T4 Gb Ex ib IIIC T80°C Db	Ex ib IIC T4 Gb Ex ib IIIC T80°C Db	NA

The system supports webpage overview and multiple communication via network.



Fixed Acoustic Camera

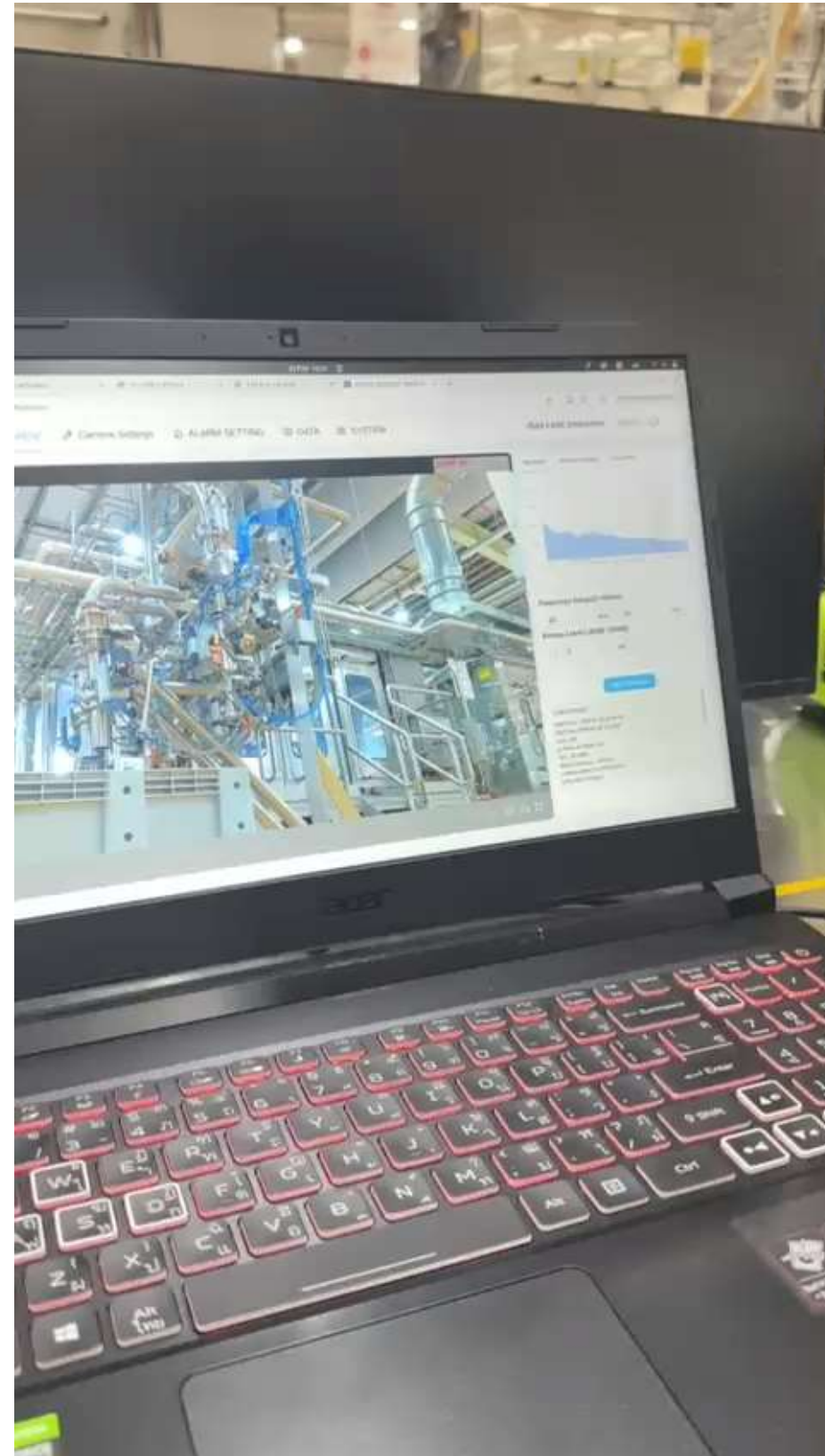


- 128 MEMS Microphones
- 640*512 Thermal Lens
- 2kHz ~ 65kHz detection
- Supports multiple source detection
- Real-time sound source localization
- Real-time estimate gas leak rate
- Min. detection 120sccm @8m 380kPa



Fixed Acoustic Camera + Quadruped Robot

Nestle Factory Gas Leak Inspection



Scenarios of Gas Leak



High-demand scenarios : Acoustic + TDLAS



High-demand scenarios : Acoustic with ATEX



High demand for expensive toxic gas: Acoustic + Thermal



HA3A



HA3A



HA3A

Applications

SHELL: DYNAMIC PERSONNEL SAFETY



- **Environment** : Active operational zone
- **Target**: Personnel carrying portable gas sampling gear
- **Result**: Instantly located a micro-leak at the hose connection while in motion

SHELL: STATIC APPLICATIONS



- **Environment**: Outdoor tank farm facility
- **Target**: Methane storage tank roof / relief valve
- **Result** : Instantly locked onto a high-altitude relief valve leak and precisely identified the methane concentration

Applications



CNPC: STATIC ASSET INTEGRITY



- **Environment** : High-density pipeline distribution area
- **Target**: High-pressure methane pipeline valve
- **Result** : Locked onto the leak source instantly, requiring absolutely zero thermal contrast

CNPC: SEVERE LEAK QUANTIFICATION



- **Environment** : Main pipeline station
- **Target**: Heavy-duty pipeline valve and flange
- **Result** : Safely pinpointed and quantified an extreme concentration leak (over 11,000 ppm.m) from a safe distance

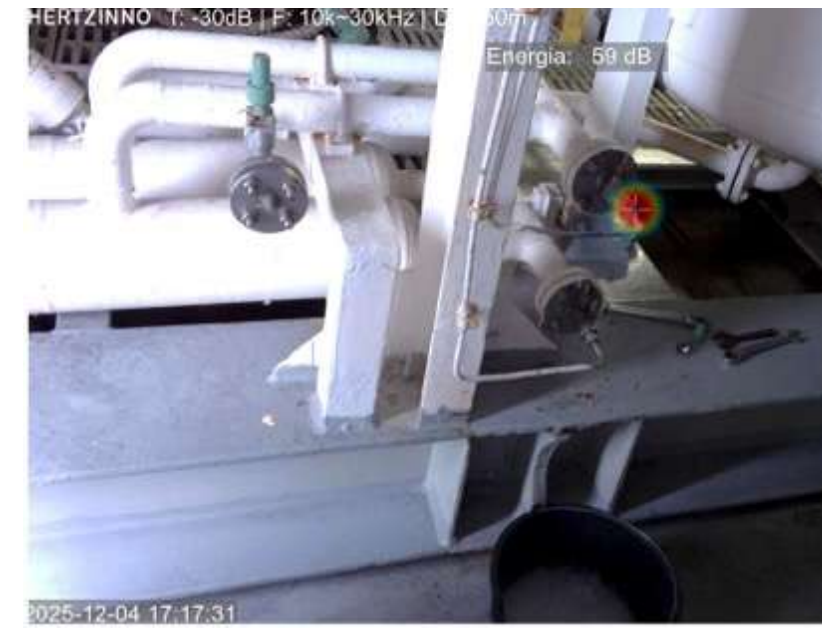
Gas leak in Italy Factory



Factory Leak Case



Demark – LNG Carrier Gas Leak Detection



Acoustic cameras have been successfully validated on LNG carriers and have received high praise from maritime professionals. From the outstanding performance of the HZ-HA-170P aboard MV Happy Peregrine.

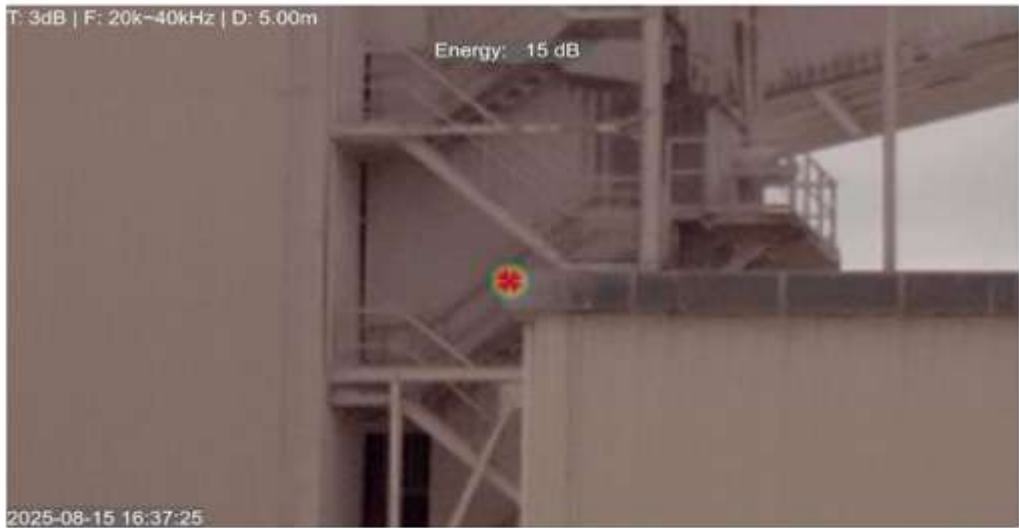


LNG Carrier Application

Long Distance Detection



Detect leaks from 85m away. Sound energy 16dB



8x Zoom enable



2x Zoom enable



Walk close to the leaks points about 9m close to leak source. Sound energy become higher 40dB



4x Zoom enable



Enter the building and climb up to detects the exact leaks. Sound energy are rated at 85dB

With HA3 camera, we can detect the gas leak from 85m away.
The sensitivity of a camera is not only reflected in its measurement distance, but more importantly in its ability to detect weak signals, preventing faults from escalating due to being overlooked.

Acoustic Fingerprint Products



Based on a deep learning neural network, the system is trained on acoustic signature samples to accurately identify common transformer fault sounds and actively filter out other interfering signals in the monitoring environment.

Acoustic Fingerprint Solution

Power Industry



01

Power Equipment online monitoring with acoustic sensors

Quality Inspection



02

Production quality control
Based on sound information to detect product's quality in produce lines.

Leak Monitoring



03

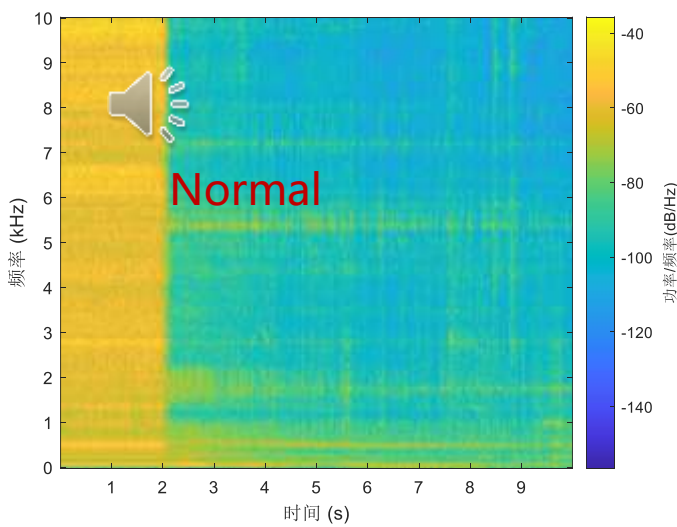
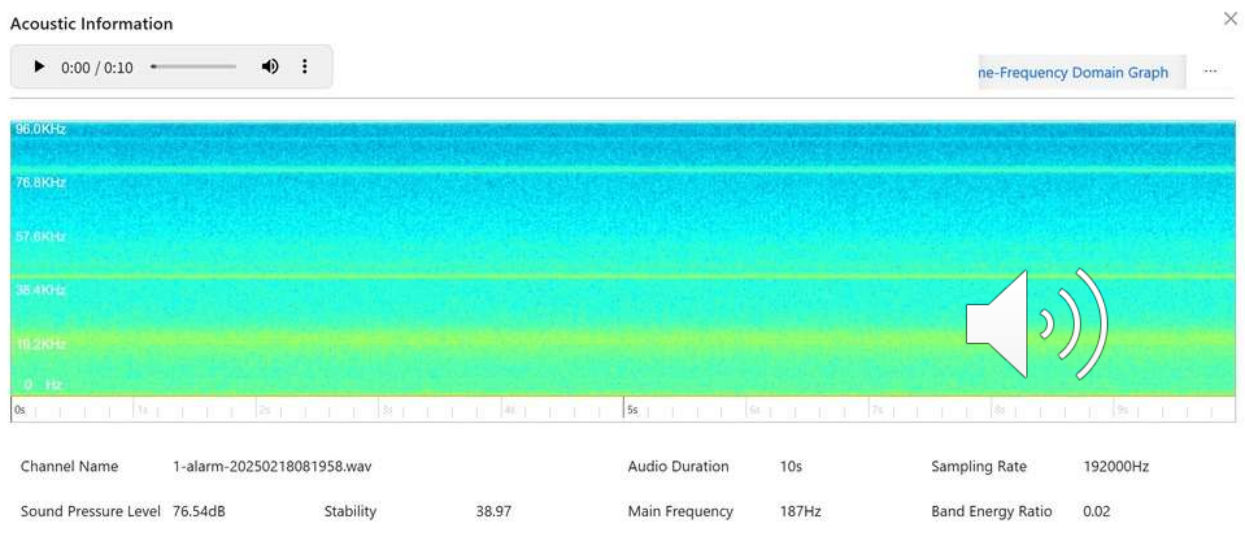
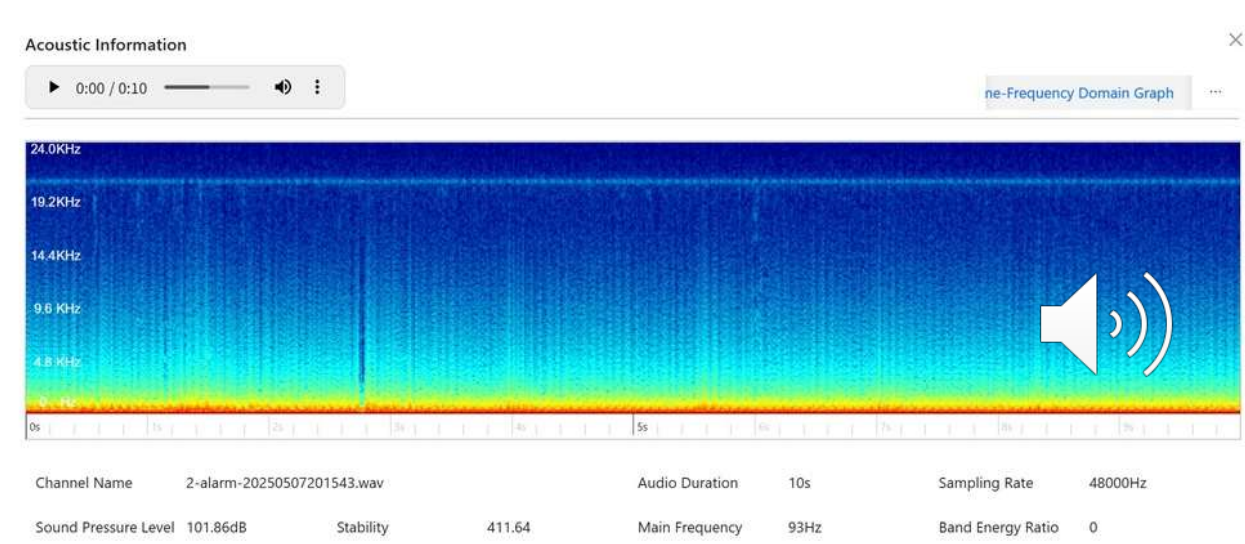
Gas well valve, Oil pipeline leak, Illegal
Based on ultrasonic signal to monitor gas leak.



Acoustic Fingerprint Products



Acoustic fingerprint characterized by its frequency, energy, harmonics, and timing patterns. It enables functions like identity recognition, fault detection, and quality control. Like a fingerprint, each person or device has a distinct and stable voiceprint under certain conditions.



HZ-FA-110/8

Deep learning-based voiceprint analysis engine for power and rotating equipment

- Built-in acoustic analysis algorithm for power industry
- 10 types of power equipment abnormalities
- 2/8-channel synchronized acquisition and alarm
- Supports on-device real-time analysis and alerting
- IP 66 / IP68



HZ-FA-QC

Deep learning-based fingerprint quality control system
For Production line inspection

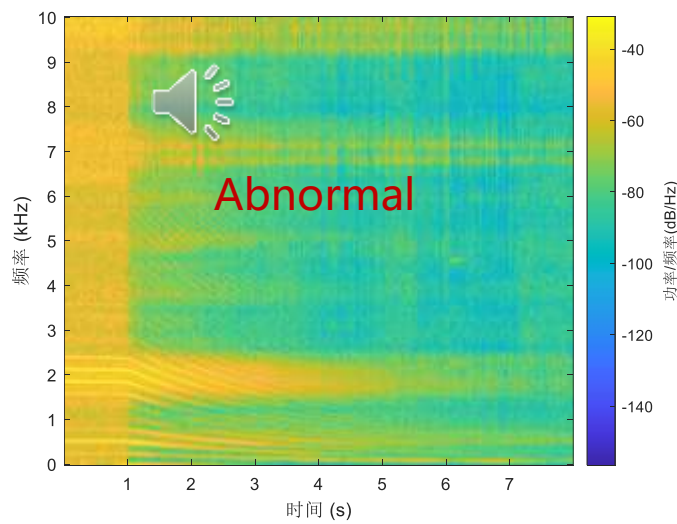
- Supports 2-channel voiceprint data acquisition
- Compatible with multiple types of acoustic sensors
- Detects abnormal sounds in rotating equipment
- Performs quality inspection for power equipment
- Performs quality inspection for vibration motors



HZ-WL-15A

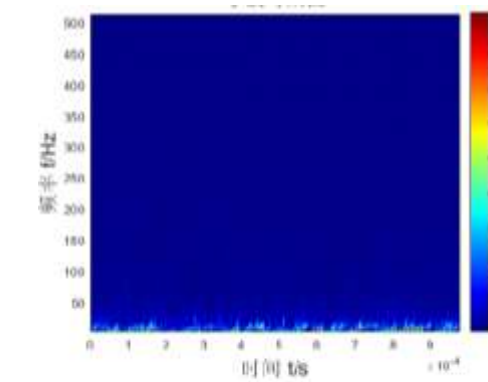
Deep learning-based fingerprint gas leak system
For Gas well leak

- 9 MEMS microphones sensor
- Gas well tree leak monitoring
- Distinguish gas leak sound from background noise
- Low false alarm rate
- 2 sensors for a system

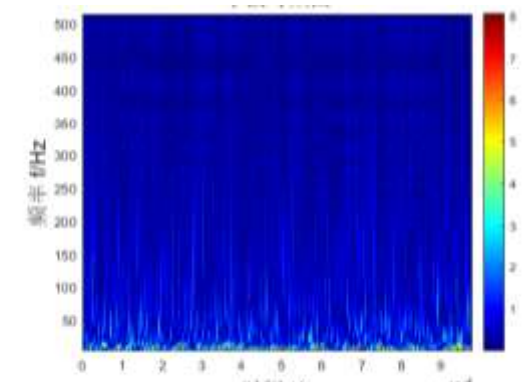


APPLICATION CASE: HZ-WL-15A

An installation case from Xinjiang



Normal Status



Leak Status

- Two sensors installed approximately 20 meters from the gas extraction tree
- Continuous acoustic monitoring of the valve station and gas well site
- On-site analysis box with built-in leak recognition algorithms
- Local noise filtering and gas leak diagnosis without cloud processing
- Automatic alarm transmission to a designated server or third-party platform upon leak detection

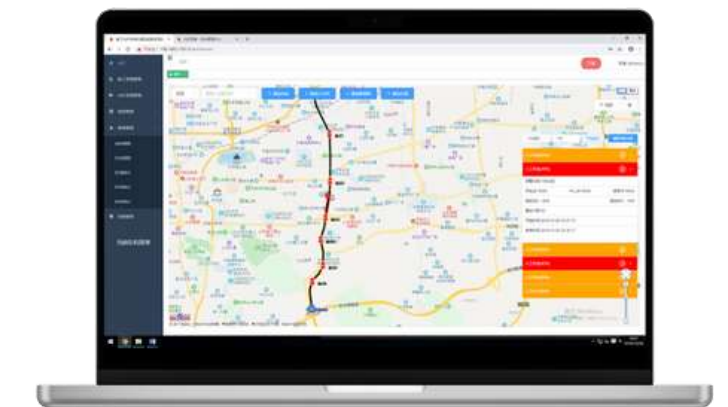
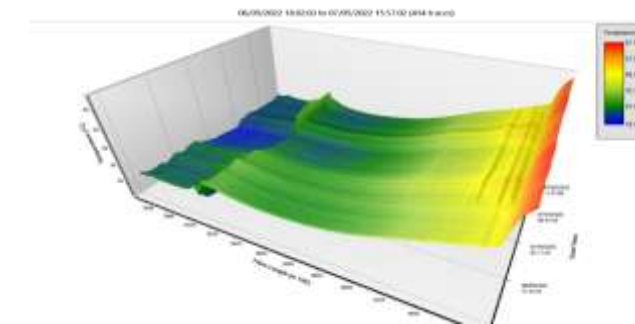
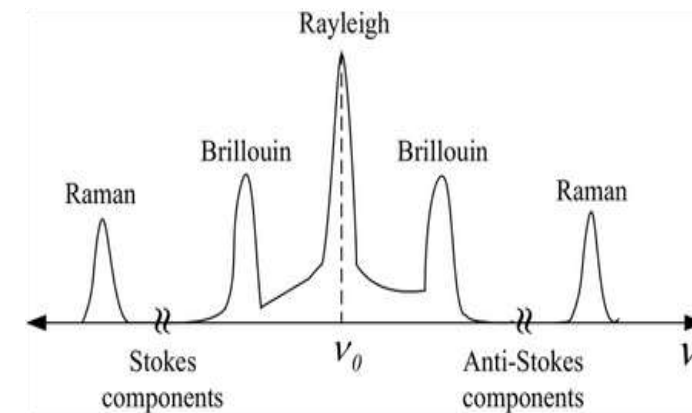


Optic Fiber Sensing



Optic fiber sensing systems are long-range detection solutions based on acoustic-optical hybrid technology. Depending on the sensing principle, they can perform temperature monitoring (DTS), acoustic monitoring (DAS), and BOTDA products. These systems are widely applied in power lines, oil & gas pipelines, transportation, and perimeter security, offering high accuracy.

- OTDR & Rayleigh Scattering
- OTDR & Raman Scattering
- Brillouin Optical Time Domain Analysis



Products



HZ-iDAS-10

Distributed acoustic detection system

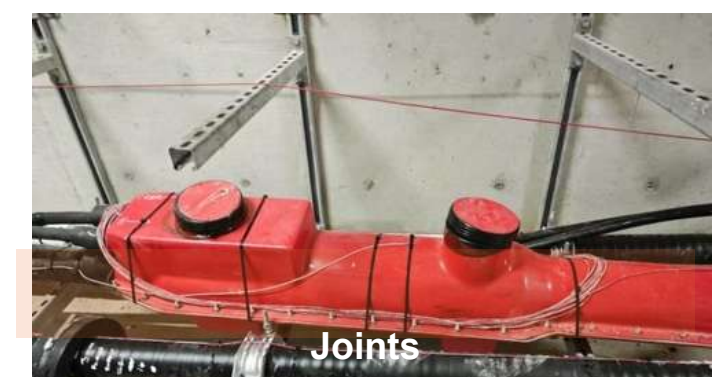
- 5km/20km/50km Monitoring
- 5m/10m Spatial Resolution
- 20kHz Bandwidth
- 1 / 2 CH



HZ-DTS-1004

Distributed temperature detection system

- 13km Monitoring
- 0.1 °C Resolution
- 0.4/0.8 m Sampling Space
- 4/8/16 CH



Smart Pipeline Sentinel

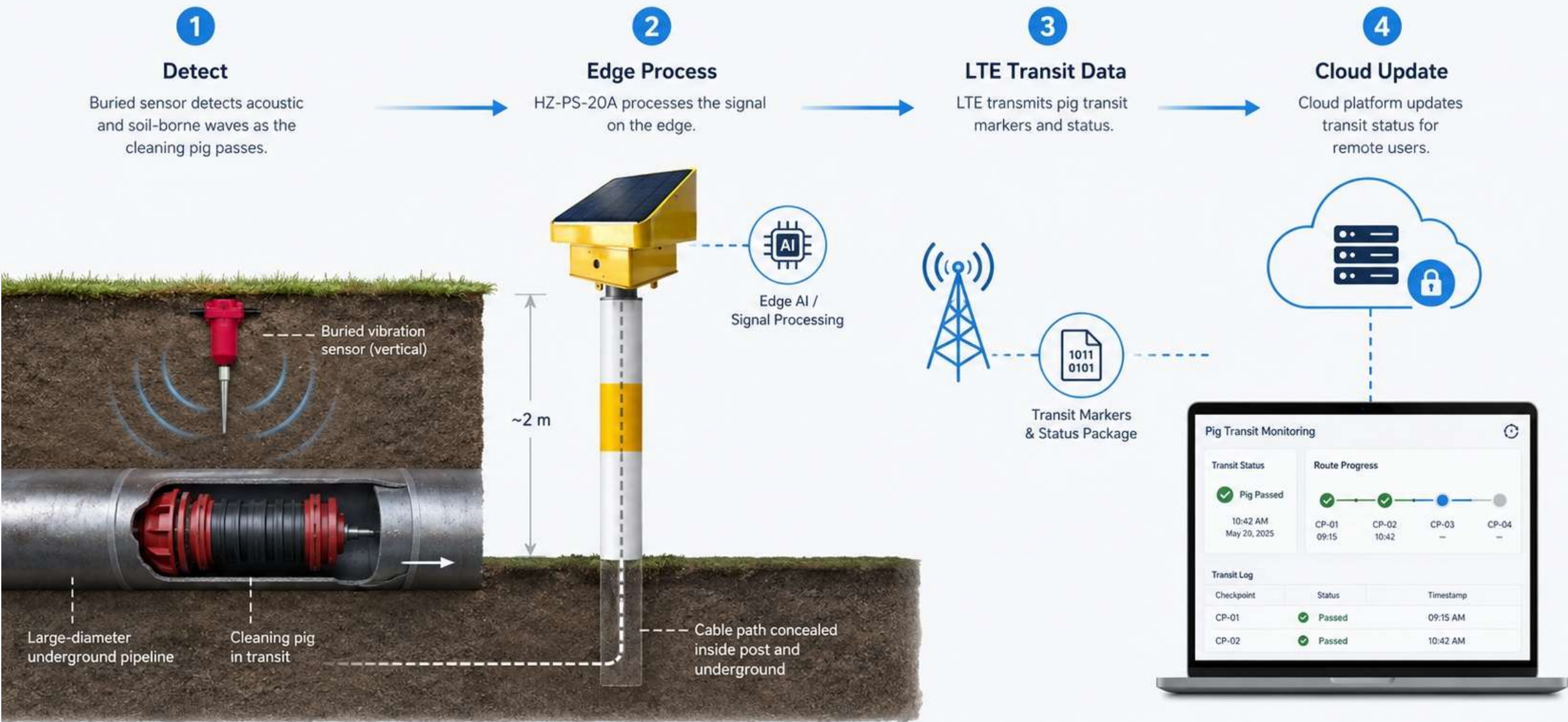
Intelligent Ground Vibration Monitoring System



HZ-PS-20A

Smart Pipeline Sentinel

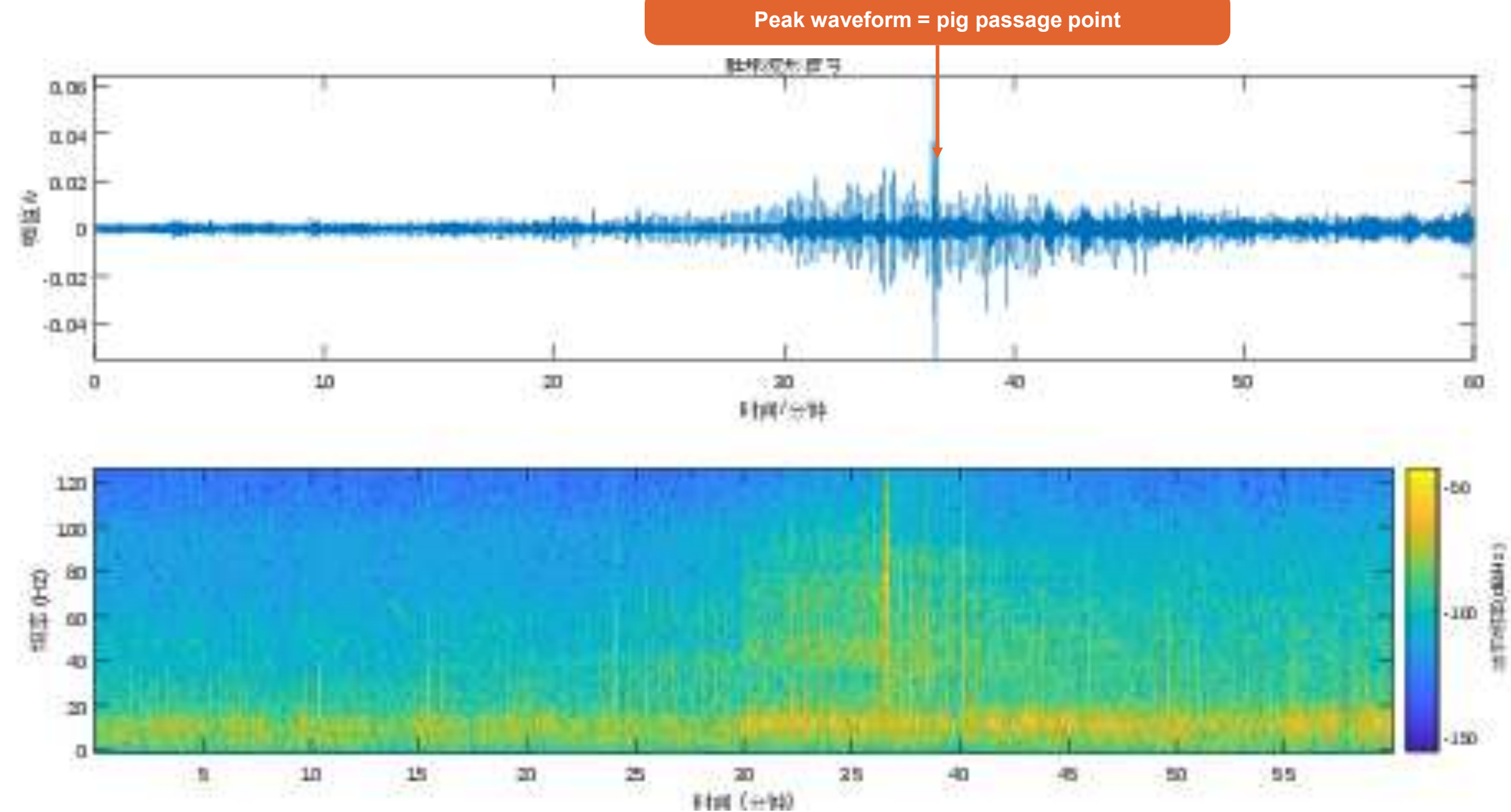
- **Oil & Gas Pipeline Protection**
Detects unauthorized excavation and abnormal construction activities near buried pipelines.
- **Pipeline Cleaning-Pig Tracking**
Confirms pig passage, records timestamps, tracks progress, and helps identify possible abnormal stops





Pigging Operation

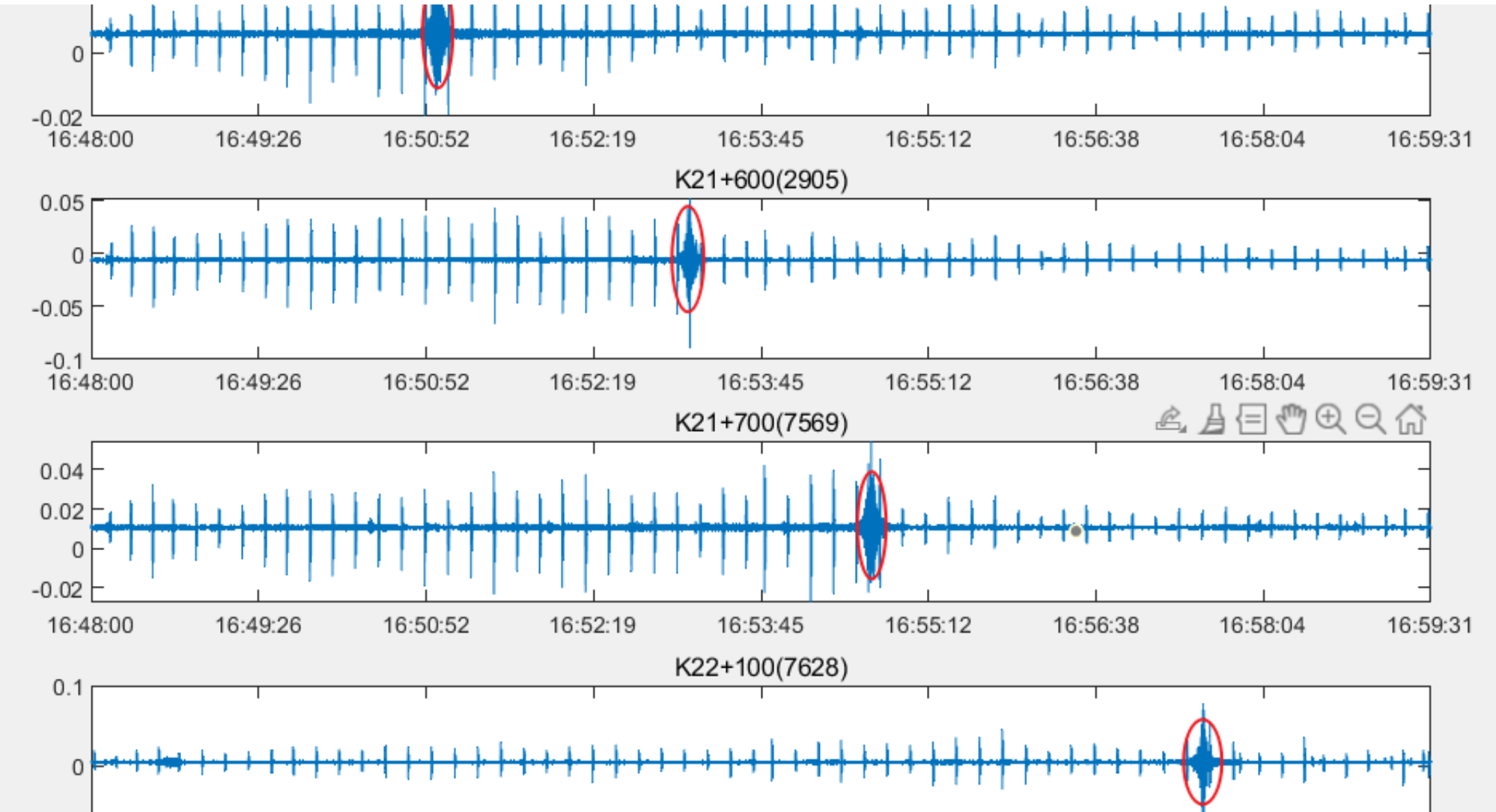
The sentinel captures the acoustic signature created by a cleaning pig passing through the pipeline.



- Clear signal within approximately $\pm 1,000$ m of the sentinel.
- Enables operators to confirm passage time and identify abnormal stops.



Field installation



Acoustic waveform showing the cleaning pig passing four pipeline sentinels in sequence.

Night scenes become visible evidence

Black-light cameras support unattended field monitoring after dark, with video evidence for review and alert verification.

2:00 AM field view



唯一标识: 862189087940167(862189087940167)

51%



Video evidence + secondary review

When suspicious behavior is detected, the system records image evidence and supports follow-up verification.



Acoustic Alerts

Today's Alerts

All Alerts

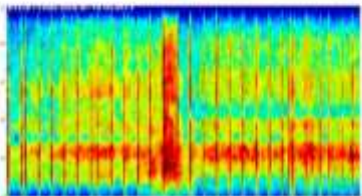


Passing

Alert Time: 2026-07-16 16:44:22

Unique ID: 862189087897201(QT4-Siping 333#+130m--Passing)

84%

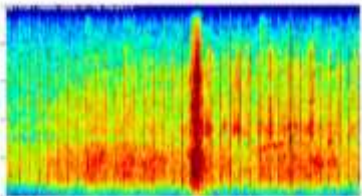


Passing

Alert Time: 2026-07-16 16:34:13

Unique ID: 862189087885404(QT4-Yangchang 184#+500m--Passing)

81%



Passing

Alert Time: 2026-07-16 16:34:13

Unique ID: 862189087752489(QT4-Yangchang 230#)

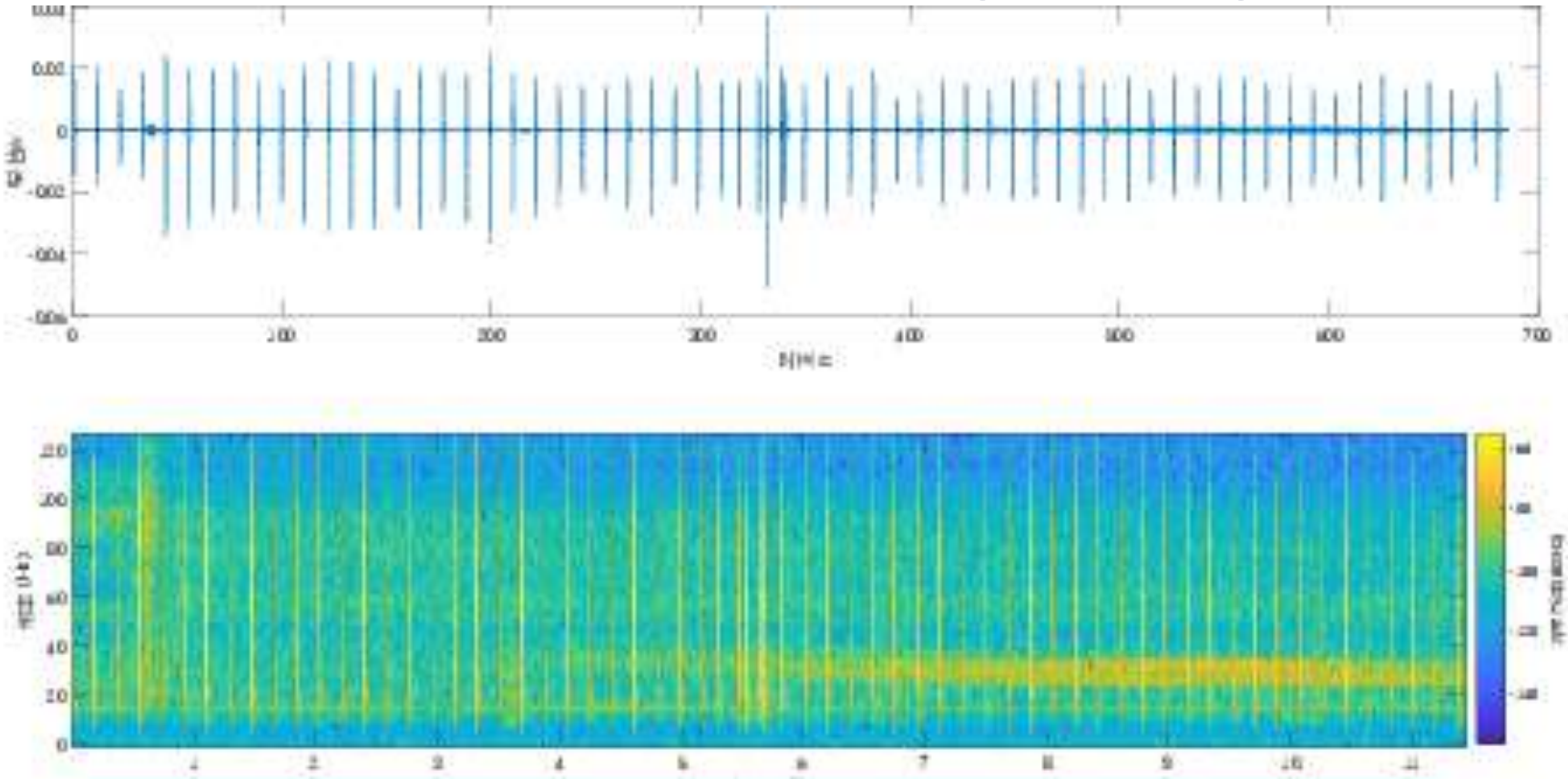
85%





Sentinel deployment

Acoustic waveform for pig tracking



Regular impulses indicate the sound of the pig rubbing against pipe weld seams.

Multi-point field deployment of pipeline sentinels across open-field pipeline corridors.



Site 1



Site 2



Site 3



Site 4



Vehicle Excavation / Construction

Detects abnormal construction activity near pipeline corridors.

Video evidence



Personnel Excavation & Walking

Identifies personnel movement and digging behavior for alert review.

Video evidence



Night Vision Performance

Black-light view supports visible records around 2:00 AM.

2:00 AM



Thank You

Represented by:



Equipamientos Analíticos S.A

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