

verified industrial  
maintenance solutions



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**CRY SOUND**

# ACOUSTIC IMAGING TECHNOLOGY

LET YOU SEE LEAK AND PARTIAL DISCHARGE



[www.vims.pl](http://www.vims.pl)

## CRY2620

CRY2620 is the 64-MIC version hand-held industrial acoustic imager, supporting the ultrasonic frequencies. As an entry-level product of CRY SOUND, it has powerful functions. This device can help quickly detect potential pressurized gas leakage and vacuum leakage in noisy industrial environments. It can identify potential partial discharge fault points in the power generating facilities.



## CRY2623

CRY2623 is the 128 MIC version hand-held industrial acoustic imager that supports the ultrasonic frequencies. Same as CRY2620, it can help quickly detect potential pressurized gas leakage and vacuum leakage in noisy industrial environments, and quickly identify potential partial discharge fault points when used in power systems.

As a superior product, it is more alert and responsive than CRY2620. Also, it has extra functions, including PRPD mapping function and partial discharge type analysis function.



## CRY2624



CRY2624 is the ATEX version anti-explosion hand-held industrial acoustic imager, support the ultrasonic frequencies, with II 3G Ex ic IIC T5 Gc explosion-proof grade. While sharing with similar functions with CRY2623, CRY2624 can be applied in a wider range of situations due to its anti-explosion function. It can be utilized in chemical plants containing dangerous flammable gases and hazardous area that have the strictly explosion-proof.

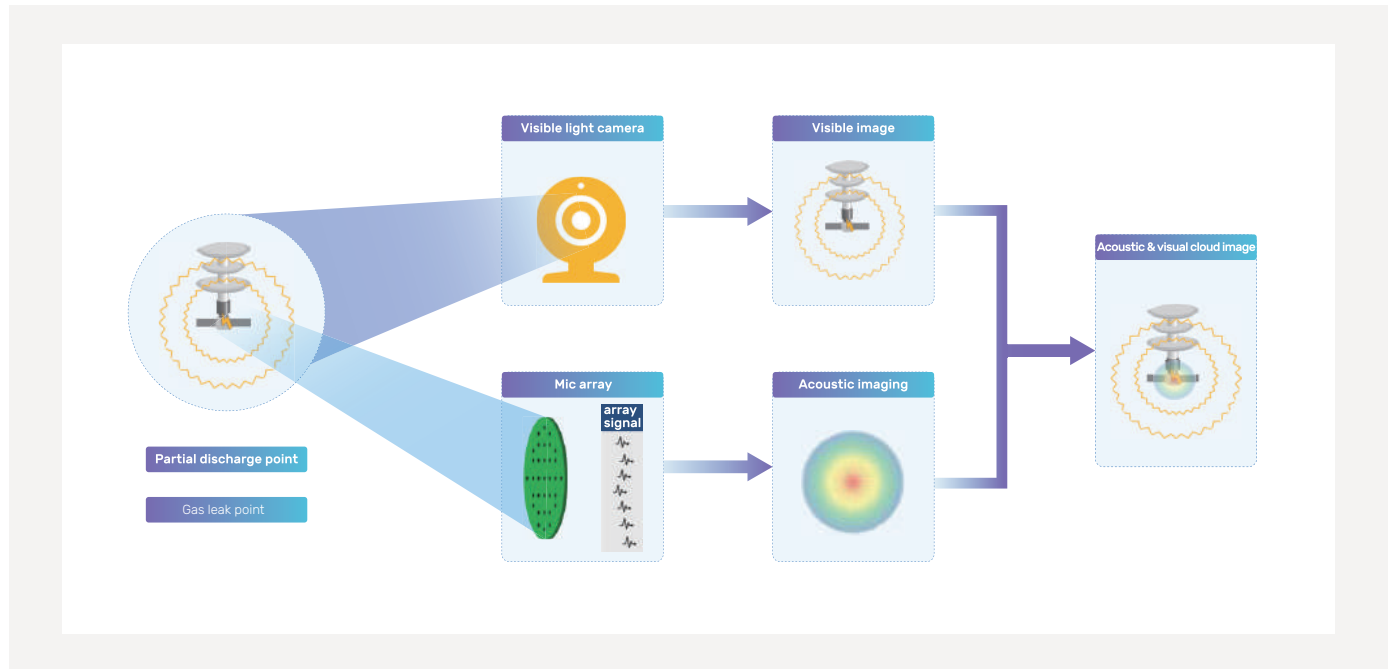


# TECHNICAL SPECIFICATION

	CRY2620	CRY2620	CRY2624
<b>ACOUSTIC SPECIFICATION</b>			
○ MICROPHONE ARRAY	64 channels MEMS microphone	128 channels MEMS microphones	
○ EFFECTIVE TEST BANDWIDTH	2kHz~40kHz		2kHz~48kHz
○ DYNAMIC RANGE	0.5dB~12dB user adjustable		
○ TEST SOUND PRESSURE LEVEL RANGE	28~120dBA	25.7~132.5dBA	
○ THRESHOLD VALUES	-40dB~100dB		
○ NUMBER OF DIGITS	24 bit		
○ SOUND IMAGE FOV	62°		
○ SOUND IMAGE FRAME RATE	At least 25 FPS		
○ LEAK DETECTION RATE	10m 5bar 2.4ml/s 0.5m 5bar 1.2ml/s	10m 5bar 0.92ml/s 0.5m 0.14bar 1.6m/s	0.5m 5bar 0.55ml/s
○ DETECT DISTANCES	0.5m~70m	0.3m~120m	
<b>GENERAL SPECIFICATION</b>			
○ INGRESS PROTECTION (IP)	IP54		
○ SIZE	272mm x 174mm x 42mm		
○ WEIGHT	1.7kg		
○ WARRANTY	2 years		
○ SELF-DIAGNOSTIC NOTIFICATION	Array-health test function to identify when microphone array needs attention		
○ SYSTEM	Linux system		
○ CERTIFICATE	CE, FCC, RoHS-Compliant	CE, FCC, RoHS-Compliant, MSDS	ATEX, CE, FCC, RoHS-Compliant, MSDS
<b>SOFTWARE</b>			
○ REPORT TYPES	1024*600(614,400 pixels)		
○ SIZE	7 inch		
○ TOUCH SCREEN	Capacitive touch screen		
○ BRIGHTNESS	Adjustable		
○ PHOTO NOTES	Up to 5 photos notes for reference		
○ SOURCE	Show single or multiple sources		
○ STANDARD PALETTES	Grayscale, Ironbow, Blue-red		
○ PLAYBACK FUNCTION	View photos & videos anytime Add notes or tags		
<b>DISPLAY</b>			
○ INTERNAL STORAGE	8G		
○ EXTERNAL STORAGE	TF memory card, 64G, expandable to 256G		
○ DATA STORAGE FORMAT	JPG(Picture) MP4(Video) WAV(Audio)		
○ VIDEO LENGTH	5 minutes		
○ DIGITAL EXPORT	TF Card		
<b>CAMERA</b>			
○ CAMERA FOV	62°		
○ CAMERA FOCAL LENGTH	3.04mm fixed focal length		
○ CAMERA PIXEL	8 million pixel		
<b>INTERFACE</b>			
	USB 3.0 Type-C USB host port 3.5mm headphone socket		
<b>OPERATING ENVIRONMENT</b>			
○ OPERATING ENVIRONMENT	-20°C ~ 50°C, 10% ~ 95% no condensation		
○ STORAGE TEMPERATURE	-20°C ~ 60°C		
○ CHARGING TEMPERATURE	10°C ~ 45°C		
○ SUPPORTED LANGUAGE	English, French, Chinese, German, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, etc.		

# ACOUSTIC IMAGING PRINCIPLE

Acoustic imaging technology uses the microphones array to scan and receive spatial sound waves, pinpoint the location of the sound source by the phase difference of the sound waves. Then superimpose optical information obtain a 'sonogram' on device screen, which indicates the intensity of the sound by the colour of the image.



## PRODUCT HIGHLIGHTS



### MULTI-TYPE GASES

Leaks of all pressurized gases can be detected regardless of the type of gas.



### HIGH TEST ACCURACY

128-microphone array.



### EASY TO OPERATE

Only adjust two parameters to meet the vast majority of the requirements.



### FULLY FUNCTIONAL

All-round record of the test results with photos, audio and video recordings, and automatically export reports, ledger and data processing function.



### INGRESS PROTECTION GRADE

IP54



### EXPLOSION-PROOF CERTIFICATION

ATEX-II 3 G Ex ic IIC T5 Gc



# PRODUCT FEATURES



## FAST TEST DISTANCE

The effective test distance is 0.3-120 m



## HIGH TEST ACCURANCY

The leak detection rate is  
10 m, 5 bar, 0.92 ml/s  
0.5 m, 5 bar, 0.55 ml/s



## HIGH EFFICIENCY

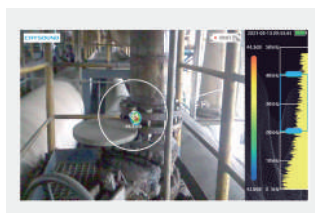
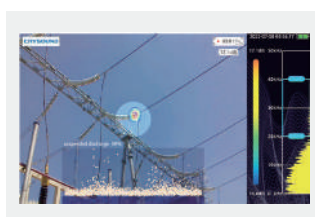
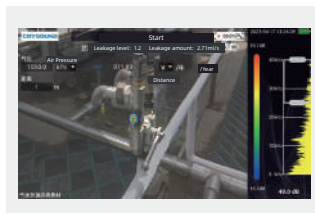
With the high refresh rate of 25 FPS and large field of view of 62°, it is a great assistand for efficient inspections.



## HIGH NOISE IMMUNITY

With “FOCUS” function and advanced noise-immunity algorithms, it can minimize the impact of environmental noise.

# FUNCTION INTRODUCTION



## LEAK RATE QUANTIFICATION

Acoustic imager could realistically estimate the leak flow rates. The screen shows the leak level and corresponding economic value loss data.

## PRPD (PHASE RESOLVED PARTIAL DISCHARGE)

The acoustic imager comes with a PRPD mapping function that can judge the type of partial discharge and help the user to diagnose discharge faults.

## FOCUSING FUNCTION

The focusing function is mainly used to eliminate environmental interface noise, reflection noise, multi-source interference. It narrows the test area to the aperture, eliminating interference from sources outside the aperture and helping you to find small leaks in complex sound field environments.

## ULTRASONIC MONITORING

The equipment can modulate the signal in the ultrasonic frequency band to the audible frequency band, and can monitor the sound with headphones. Ultrasonic modulation is realized by superheterodyne. The reference frequency of modulation can be set. It is recommended to set a frequency band of about 38.6kHz for near modulation and monitoring.

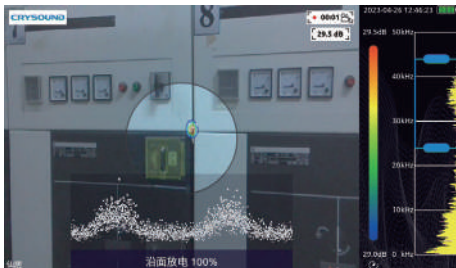
# LEAK RATE QUANTIFICATION

Compressed air is a major source of power, but leaks can be a big problem in factories. Leakage accounts for 10-50% of the total air supply, resulting in significant energy loss. Even a small 1mm hole can cause a loss of about 3525 kWh per year. Large factories may have thousands of leakage points. Many inspectors listen for gas leaks, which means that by the time a leak is detected, it is already leaking quite badly. The CRY SOUND acoustic imager can quickly detect gas leaks from a distance and estimate the leakage volume in real-time, reducing inspection time and energy waste.



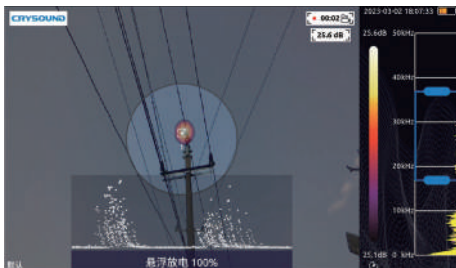
# PRPD INTELLIGENT RECOGNITION

PRPD (Phase Resolved Partial Discharge) is a method of displaying partial discharge pulses with phase identification. Different types of discharges exhibit different characteristics in the PRPD map. Based on the PRPD map, the CRY SOUND acoustic imager has added an offline partial discharge type identification function, which can display the type of partial discharge in real-time during the inspection process, making every customer a master of partial discharge fault diagnosis.



## SURFACE DISCHARGE

Surface discharge refers to the discharge phenomenon along the interface of different aggregated state dielectrics. Usually, the discharge along the surface of solid dielectrics is more common in gas or liquid dielectrics.



## SUSPENSION DISCHARGE

There is poor contact discharge due to a small gap between an internal metal part and a conductor (or grounding body), such as the transformer core and metal bolts, where they lose electrical potential connection.

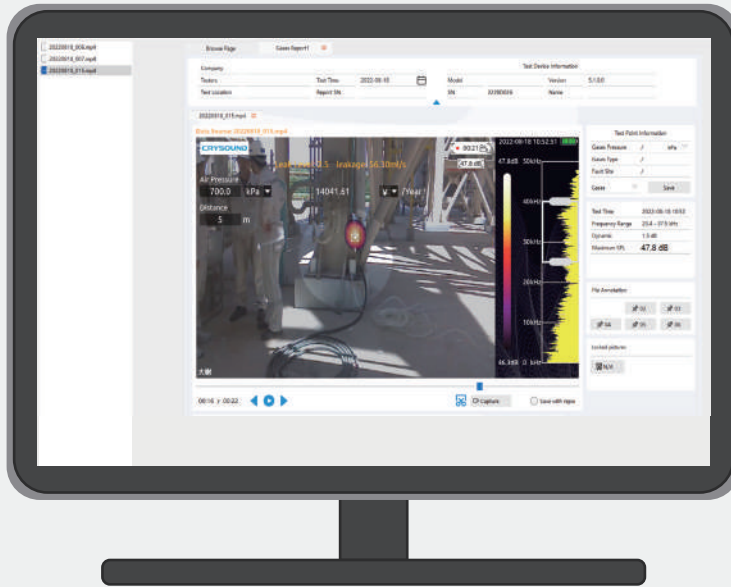


## CORONA DISCHARGE

Corona discharge usually occurs when the high voltage conductor is completely surrounded by gas.



# REPORTING SYSTEM



## SUPPORT PD IDENTIFICATION AND LEAK QUANTIFICATION

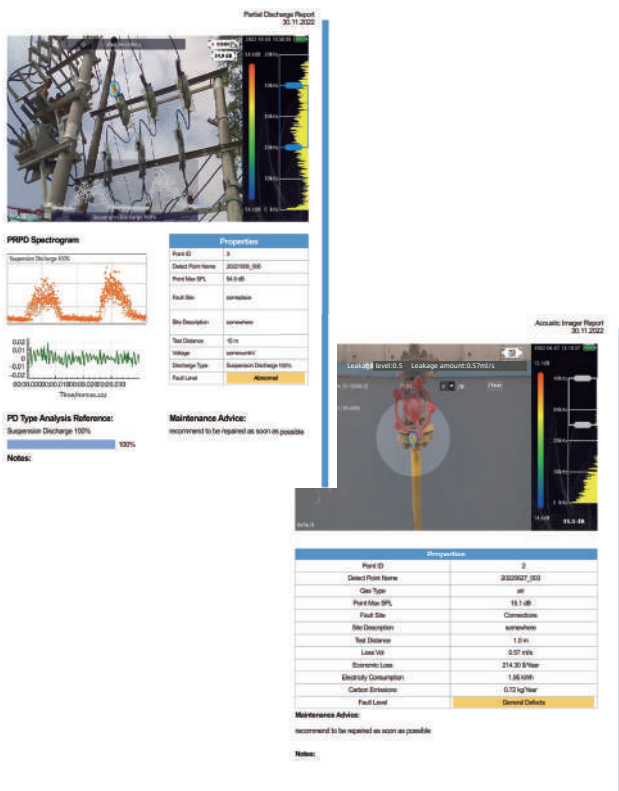
The develop a detailed report, you could input certain variables such as gas type, pressure, gas cost, tester information, among many other useful and necessary information. The analysis tool calculates leak and loss value estimate for all pressurized gases leaks, and assesses the severity of partial discharges, judges the PD type with PPRD pattern.

## MEET ISO 50001-COMPATIBLE STANDARD

Reporting software allows you to create organized and detailed ISO 50001-compatible report with the images you captured, videos taken by CRY SOUND handheld acoustic imager.

## PROVIDE INTELLIGENT ALGORITHM

The software with cutting-edge algorithm helps you make intelligent maintenance decisions. You do not need have the more in-depth knowledge and understanding to explain the result.





# OUR SOFTWARE FEATURES

## EASY TO CREATE A NEW REPORT

Users can effortlessly generate reports by following a few simple steps:

**Step 1:** Users can build a new report template.

**Step 2:** Users can import the desired pictures and videos for reference. Once the media files are uploaded, the system takes care of the rest.

**Step 3:** The system automatically extracts relevant information from the pictures and videos and populates the report form accordingly. The filled information includes details such as the detected person, detection time, device model, software version number, detection location, device serial number, and report template type.

## POWERFUL ANALYSIS FUNCTIONS

Our software is equipped with an array of powerful analysis functions that provide valuable insights. These functions include:

- **Comprehensive Estimation:** The system can accurately estimate various parameters, such as working hours, electricity consumption, carbon emissions, and annual financial loss, based on the amount of gas leakage.
- **Advanced PRPD Analysis:** By utilizing FFT analysis, the system can effectively analyze the Partial Discharge types with PRPD patterns, enabling users to gain a deeper understanding of the data.
- **Defect Classification and Maintenance Suggestions:** The system goes even further by classifying defected partial discharge and providing valuable suggestions for maintenance, ensuring proactive and informed decision-making.

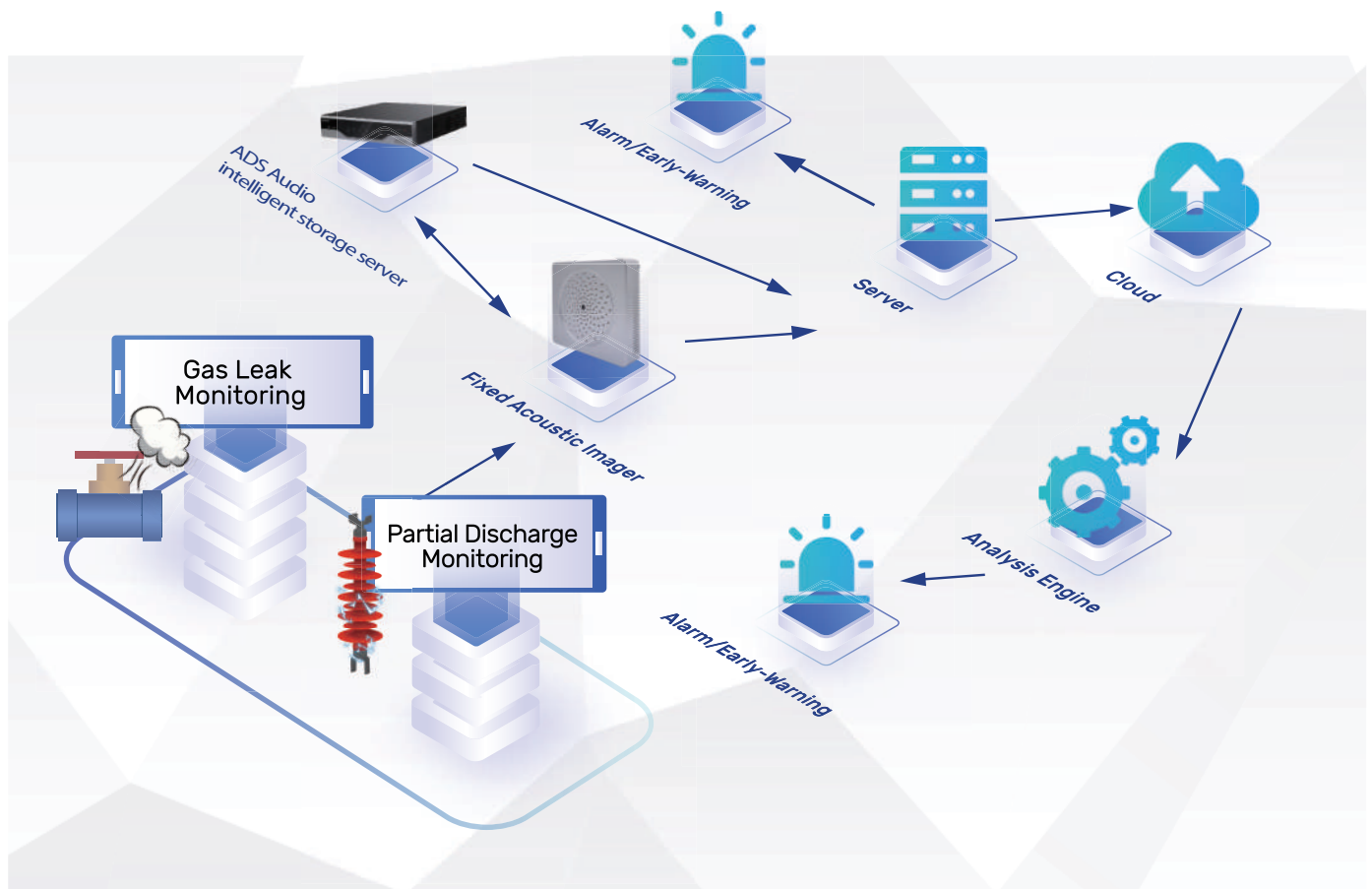
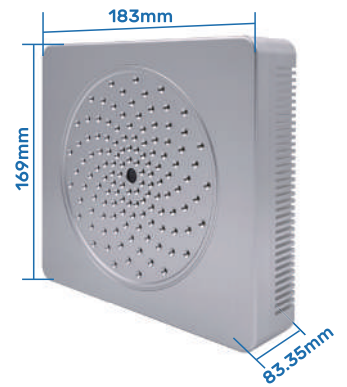
## ADEQUATE REPORT CONTENT & FORMS

Our system ensures that the generated reports contain comprehensive and relevant content. Here are some key features:

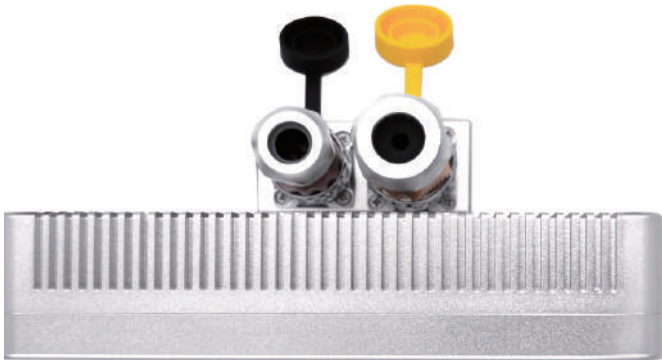
- **Frame Extraction and Analysis:** Users have the flexibility to extract any frame from a video. After analyzing the selected frames, the system automatically adds them, along with the associated information, to the report, enhancing the report's visual appeal and accuracy.
- **Waveform, Spectrum, and Spectrogram:** Our system also provides waveform, spectrum, and spectrogram analysis related to videos, allowing users to delve deeper into the data and gain a more comprehensive understanding.
- **Delivery in Multiple Formats:** To cater to diverse user preferences, the reports can be delivered in both Excel and PDF formats. This flexibility ensures that users can easily access and share the reports in their preferred format.

# FIXED ACOUSTIC IMAGER

	CRY2623M	CRY2624M
NUMBER OF MICROPHONE CHANNELS	128 channels	
TEST FREQUENCY RANGE	2 kHz - 48 kHz	
CAMERA RESOLUTION	8 million	
FRAME RATE	25 FPS	
TEST DISTANCE	0.5 - 50 m	
WEIGHT	about 1.3 kg	
SIZE	183 x 169 x 85.35 mm	
STORAGE	8 GB internal storage, 64 G TF card expansion storage	
OPERATING TEMPERATURE	-10 °C - + 50°C	
SUPPLY VOLTAGE	DC 12-20 V	
POWER CONSUMPTION	about 14W	
IP DEGREE OF PROTECTION	IP56	
POWER CONSUMPTION	Bottom 1/4 - 20 UNC thread/ MS screw fixing	
IP DEGREE OF PROTECTION	-	Ex ic II C T4 Go & CNEX



# INTERFACE METHOD



The data communication supports wired data transmission and can be expanded to support Wi-Fi. The transmission of test data supports RTSP/RTMP streaming.

The bottom is equipped with M5 thread and 1/4-20UNC thread for convenient fixing of the pan-tilt.

## FLEXIBLE DEPLOYMENT

The acoustic imaging online monitoring system is a device fault monitoring system based on acoustic imaging technology. Fixed acoustic imager is deployed in key monitoring areas to achieve unattended, all-weather 24/7 fault monitoring and alarm, realizing the intelligent operation and maintenance requirements of power equipment, and providing strong guarantee for the safe and stable operation and maintenance of the power system.



## MOBILE CARRIED INSTALLATION

The CRY SOUND Fixed acoustic imager can be carried with unmanned aerial vehicles, robots and other intelligent inspection platforms to achieve the automation of inspection processes. Even in the face of dangerous gas leaks, adverse weather conditions etc., it can meet the multiple needs of accurate positioning of fault points and ensuring the personal safety of inspectors.





# CRY2625:

## MOBILE CARRIED INSTALLATION SPECIFICATION



<b>ACOUSTIC SPECIFICATION</b>	
MICROPHONE ARRAY	128 channels MEMS microphones
EFFECTIVE TEST BANDWIDTH	2kHz~48kHz
TEST SOUND PRESSURE LEVEL RANGE	28~130dB
SOUND IMAGE FOV	62°
SOUND IMAGE FRAME RATE	At least 25FPS
DETECT DISTANCE	0.5m~30m
<b>CAMERA</b>	
CAMERA FOV	62°
CAMERA FOCAL LENGTH	3.04mm fixed focal length
CAMERA PIXEL	8 million pixel
<b>STORAGE</b>	
INTERNAL STORAGE	8G
EXTERNAL STORAGE	TF memory card, 64G, expandable to 256G
DATA STORAGE FORMAT	JPG(Picture) MP4(Video) WAV(Audio)
VIDEO LENGTH	5 minutes
DIGITAL EXPORT	TF Card
<b>DRONE</b>	
TYPE	DJI M300RTK M350RTK
<b>ENVIRONMENT</b>	
OPERATING ENVIRONMENT	-20 C ~ 50 C 10% ~ 95% no condensation
STORAGE TEMPERATURE	-20 C ~ 60 C
ALTITUDE	Under 5000 meters
<b>POWER</b>	
VOLTAGE	Same as SKYPORT, DC 12V
POWER INTERFACE	Same as SKYPORT
POWER CONSUMPTION	10W
<b>GENERAL SPECIFICATION</b>	
INGRESS PROTECTION (IP)	IP42
SIZE	167mm x 167mm x 210mm
WEIGHT	930g
INSTALLATION	SKYPORT V2
SELF-DIAGNOSTIC NOTIFICATION	Array-health test function to identify when microphone array needs attention
SYSTEM	Linux system
<b>SOFTWARE</b>	
AGREEMENT	DJI PSDK Agreement
REPORT TYPE	Gas/Electricity, ISO 50001-compliant
ANALYSIS	PRPD

# SOFTWARE PAGE DISPLAY

SPLIT-SCREEN FRAM,  
EFFECTIVELY  
SHIELDING  
OFF-SCREEN  
INTERFERENCE



ACOUSTIC  
SPECTROGRAM

MONITOR  
SCREEN

ALARM STATISTICS

DATA STATISTICS



## FONT-END SENSING MODULE

Detect and locate leakage points to achieve real-time alarm and accurate capture of leaks.



## ADS AUDIO INTELLIGENT STORAGE SERVER

Store video and audio data and support for forwarding of various protocols.



## ACS AUDIO INTELLIGENT COMPUTING SERVER

Achieve fault point display, recording, and intelligent data processing.



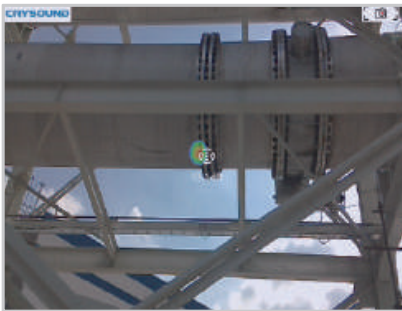
## CLOUD ANALYSIS ENGINE

The cloud fault library can achieve intelligent analysis and intelligent learning.

# APPLICATIONS IN INDUSTRIES

## CASES IN GAS LEAK DETECTION

CRUSOUND acoustic imagers show you the exact location of leaks and software tells you how much they cost annually, assisting you in keeping production costs low. Compared to traditional ultrasonic leak detectors and other conventional methods, the acoustic imager is considerably more accurate and could improve energy efficiency.



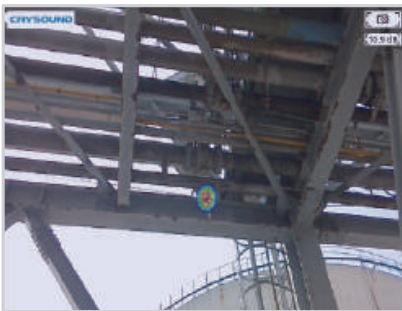
OVERHEAD PIPE FLANGE LEAK



GIANT STEAM FLANGE LEAK



WORKSHOP TOP PIPE JOINT LEAK



PIPE WELDED SEAM LEAK



BLAST FURNACE NITROGEN LEAK

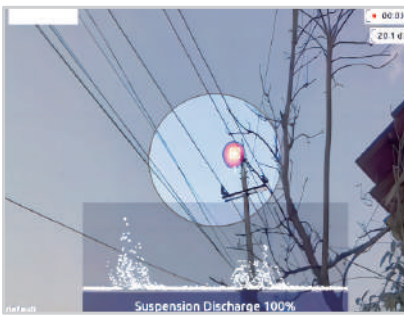


DRY RUNNING GAS SEALS  
/ NITROGEN LEAK





Natural gas companies, petrochemical plants, chemical plant areas, metallurgical plants, pipelines in the manufacturing industry, automatic braking system on the bottom of trains in the transportation industry, and wind blade manufacturing plants, all have complex pipeline distributions, complex gas types, high testing requirements, Traditional detection methods are difficult to cover comprehensively and easily leave behind hidden safety hazards.



DISCHARGE OF INSULATORS ON 10KV TOWER POLES



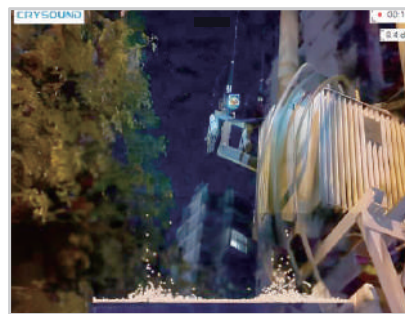
DISCHARGE OF PORCELAIN BUSHINGS ON OUTGOING LINES



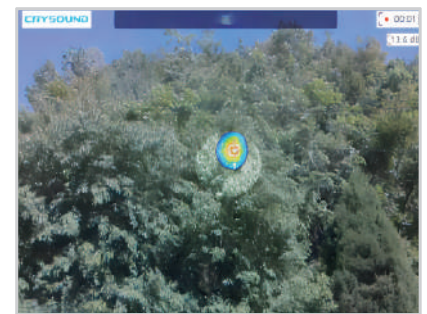
DISCHARGE OF 110KV MAIN BUSBARS



DISCHARGE OF INSULATORS ON GANTRY STRUCTURES



DISCHARGE OF DROPOUT SWITCH



DISCHARGE DUE TO INSULATOR BREAKDOWN





# MEET THE TEAM

LONG YEARS OF EXCELLENCE SOLUTIONS WITH QUALITY AT IT'S BEST!

VIMS is a company that, based on the many years of experience of its team and cooperation with international partners, provides support for the widely understood predictive maintenance. Our mission is to provide solutions and assistance in the implementation of proven methods for effective detection of damage at a very early stage of its occurrence and optimal planning of industrial machinery downtime. We tailor products, solutions and services to the specifics of each customer. In the era of Industry 4.0 and the increasingly common IoT and M2M class solutions, an excess of data is as detrimental as its absence. Therefore, in our activities we strive to make effective use of the collected information, and implement the results of their analysis in the implemented solutions consistent with the Plug&Predict® policy.

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