Sedibelo Platinum Mines – Pilanesberg Platinum Mine

NOISE ENGINEERING CONTROLS CONVENTION

THE APPLICATION OF ACOUSTIC CAMERAS IN NOISE CONTROL

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13th June 2025

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Beyond SPL Levels

SPL Meters answer the question

How loud?

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The Noise Control Evolution

Acoustic Cameras answer the questions:

- WHAT made the noise?
- WHERE EXACTLY did the noise come from?
- WHEN did the noise occur?
- What was the DURATION of the noise?
- What is the SOUND SIGNATURE of the noise?

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The Noise Control Evolution

This is about making noise:

- Visible
- Traceable
- Fixable

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Not All Cameras Are Created Equal

- There is a direct relationship between the size of the microphone array and the frequency range it is able to detect.
- Small array = Better for high frequencies
- Medium array = Good all rounder
- Larger arrays = Better at detecting lower frequencies
- The quantity of mics in the array also determines how accurately it is able to localise the sound.

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Extra Small Handheld Device

Diameter:

17cm

Frequency Range:

2kHz - 100kHz

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Small - Medium Handheld

Diameter:

40cm

Frequency Range:

700Hz - 100kHz

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Diameter:

28cm

Frequency Range:

850Hz - 24kHz

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Diameter:

54cm

Frequency Range:

480Hz - 24kHz

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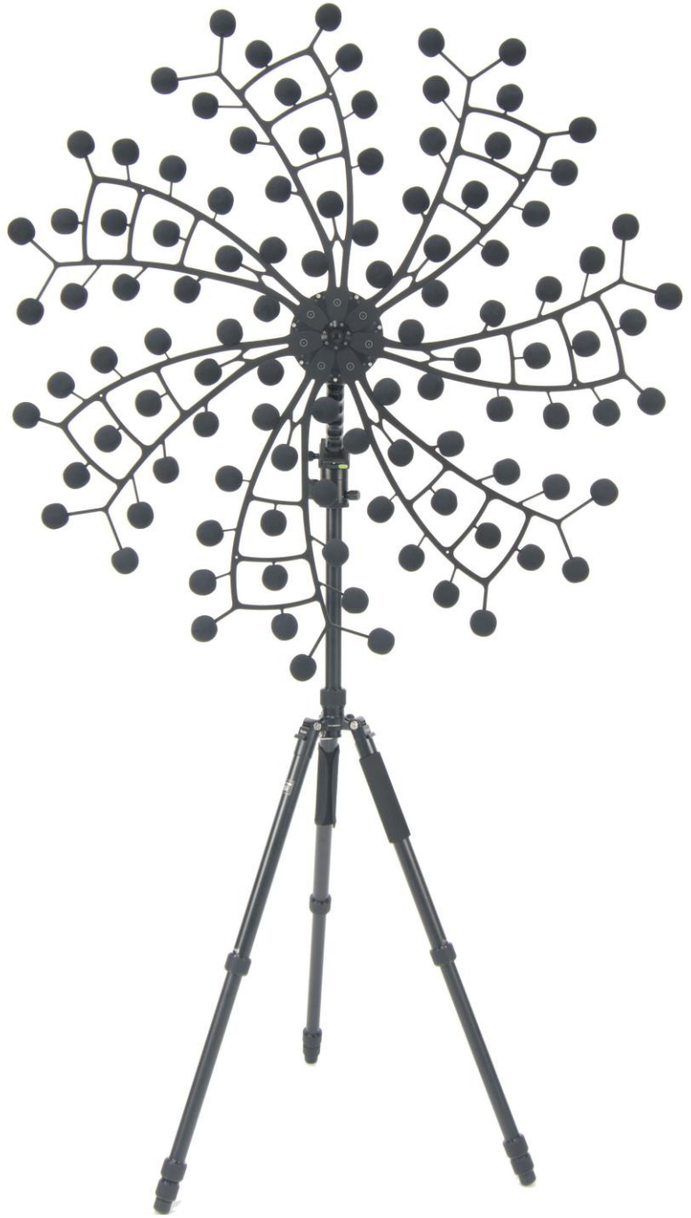
Diameter:

100cm

Frequency Range:

250Hz - 24kHz



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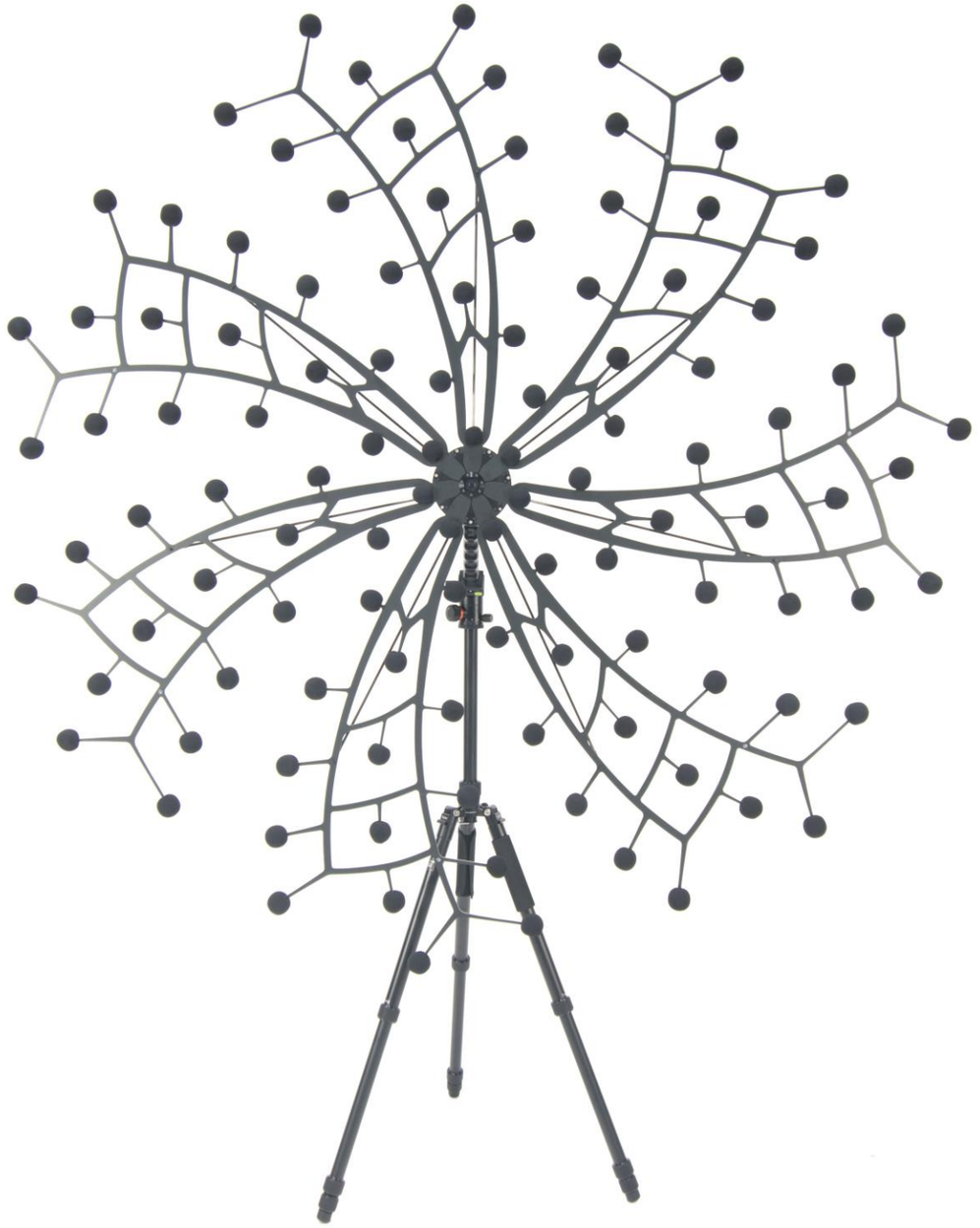
Diameter:

170cm

Frequency Range:

150Hz - 24kHz



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Special Functionality

- Thermal imaging
- GPS Tagging
- Software which auto generates reports
- Triggering functions when noise reaches a certain threshold
- Computer connectivity & special software
- Interchangeable microphone arrays
- Integrated colour touchscreens

Colour Touchscreen

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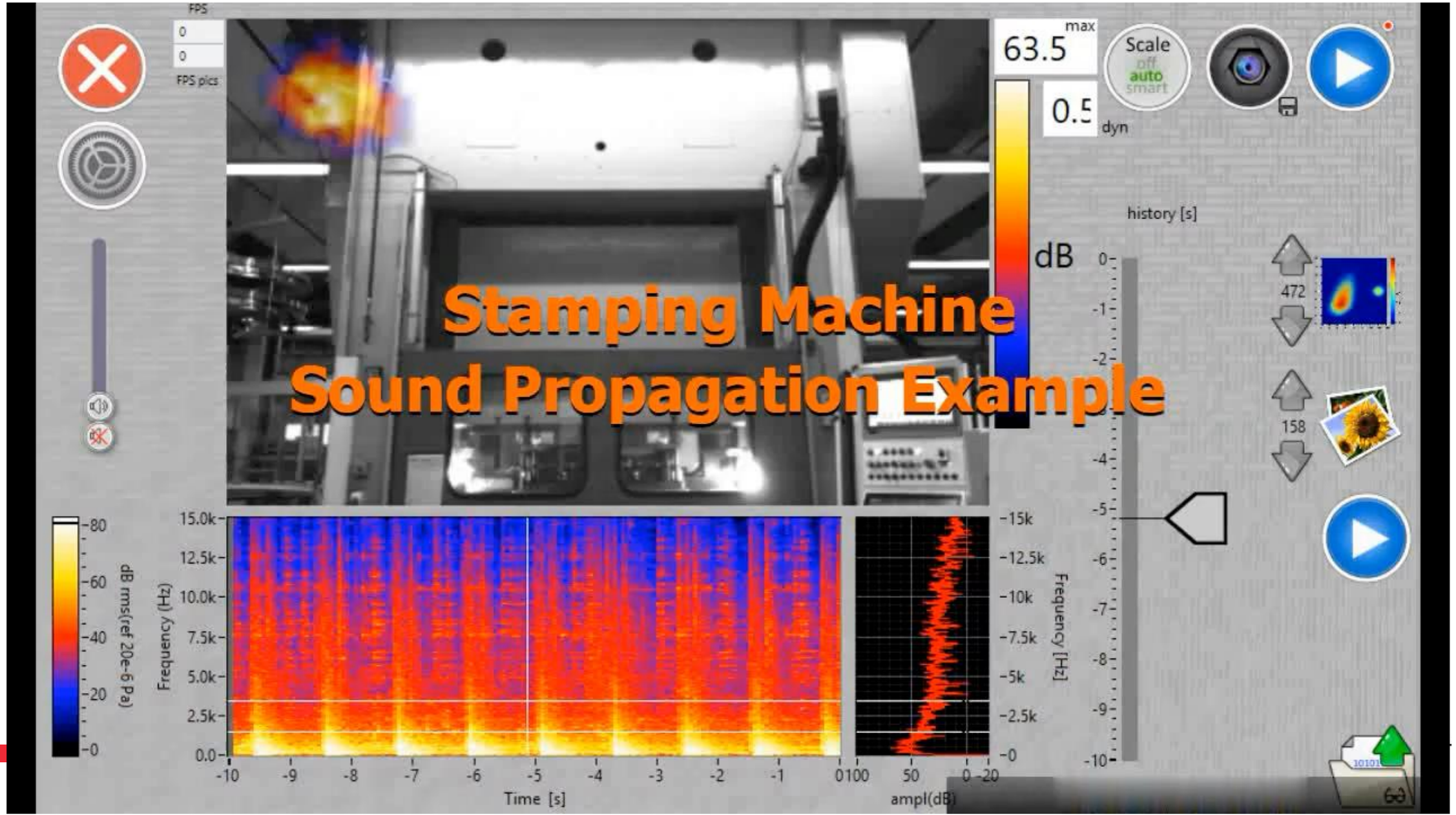
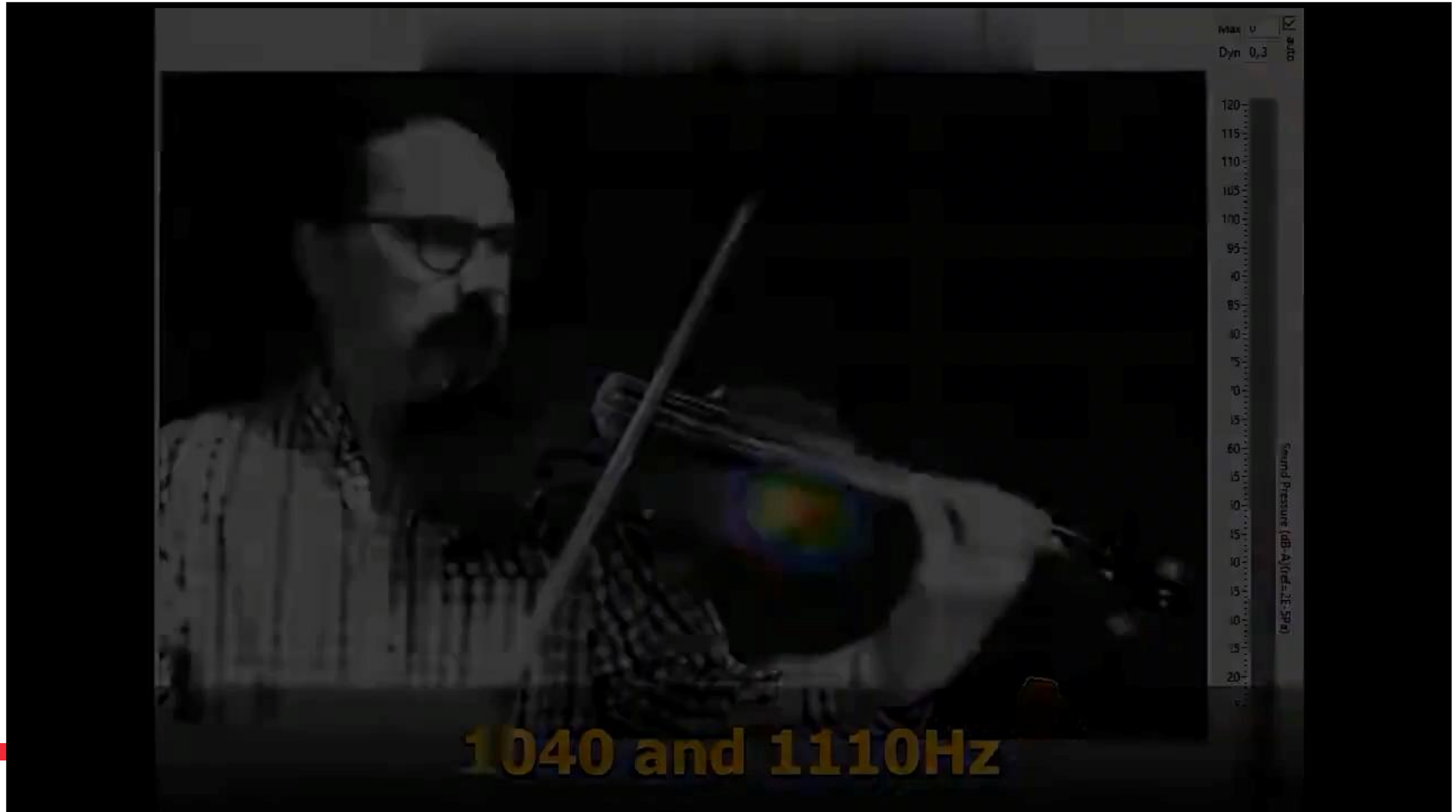
Sound Propagation in an Industrial Press

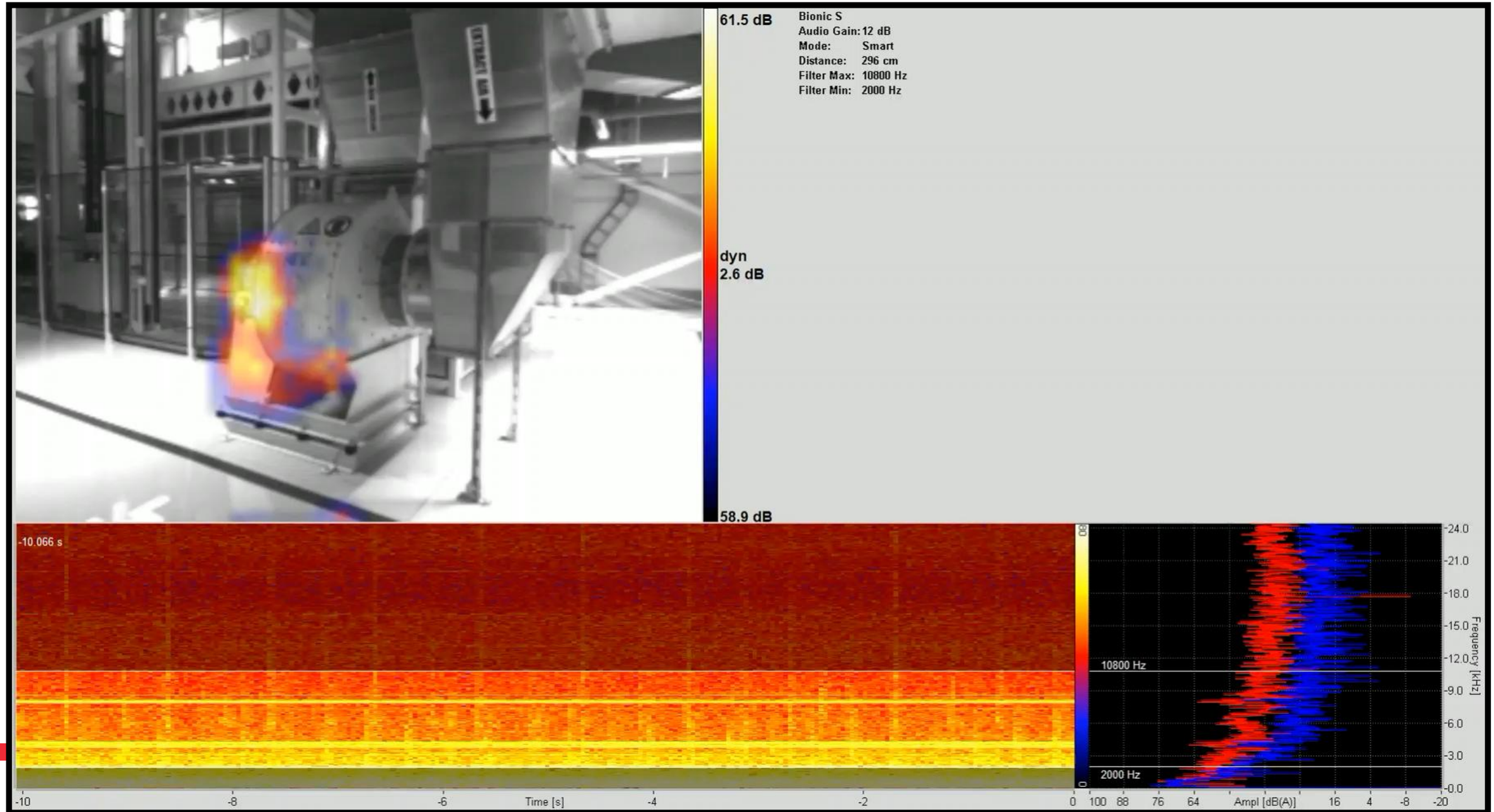


Sound Imaging Examples



Detection of a Compressed Air Leak

Fan Noise in a Factory



Treatment of Fan Noise in a Factory

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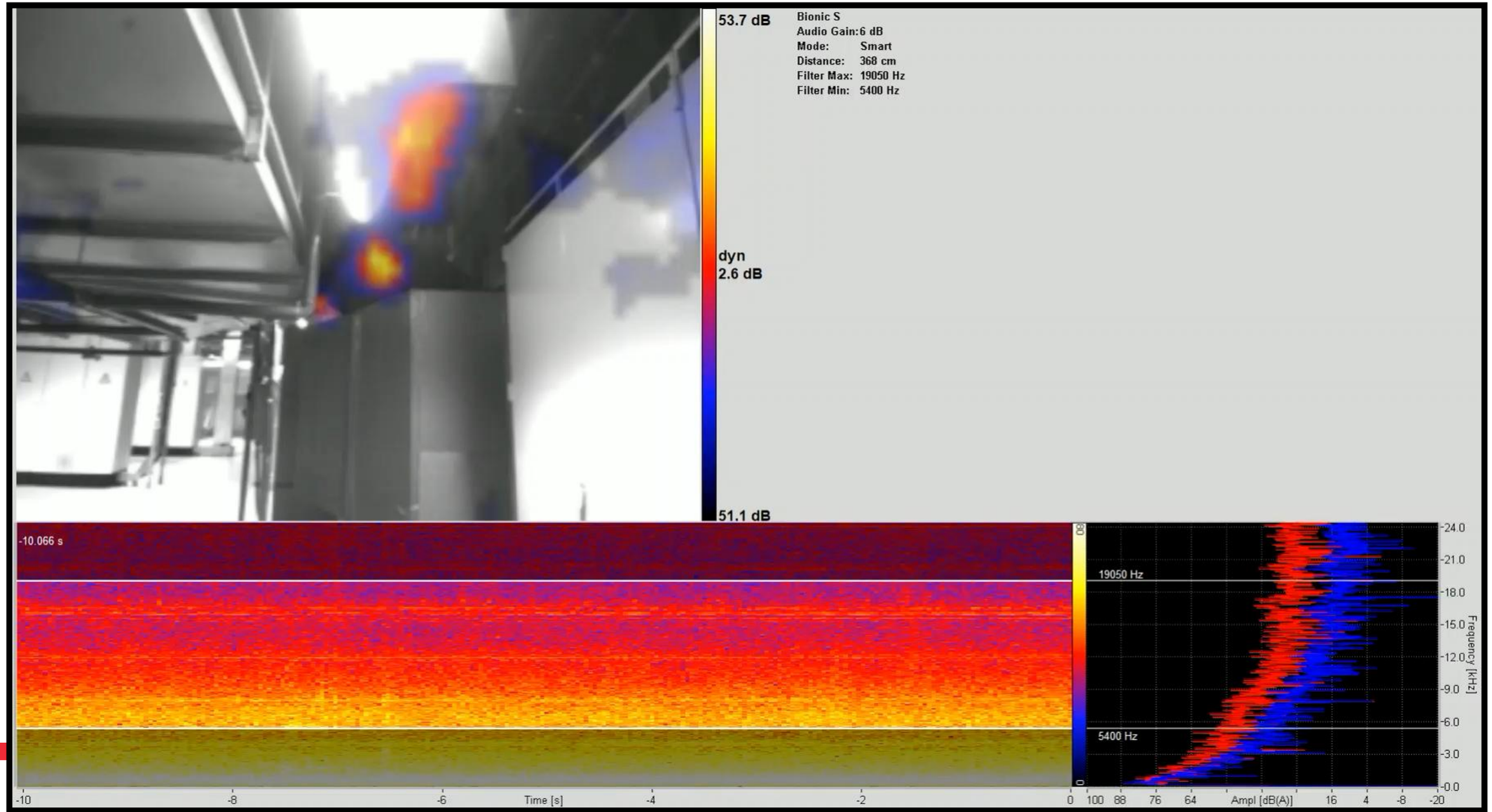
Duct Noise in a Factory



Treatment of Duct Noise in a Factory

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Detect & Analyse Generator Noise

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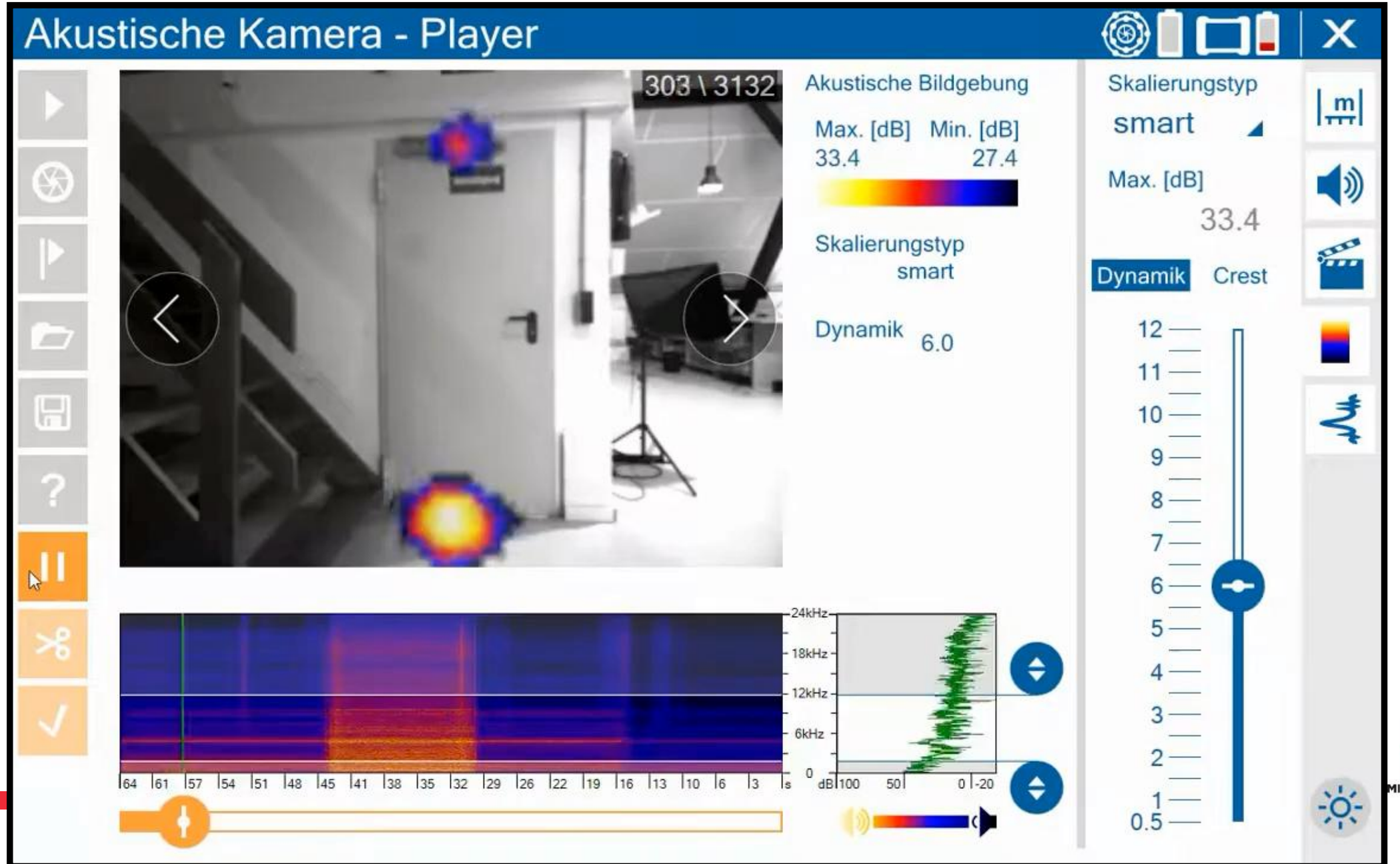
Before and After



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Installation of Large Soundproof Steel Door

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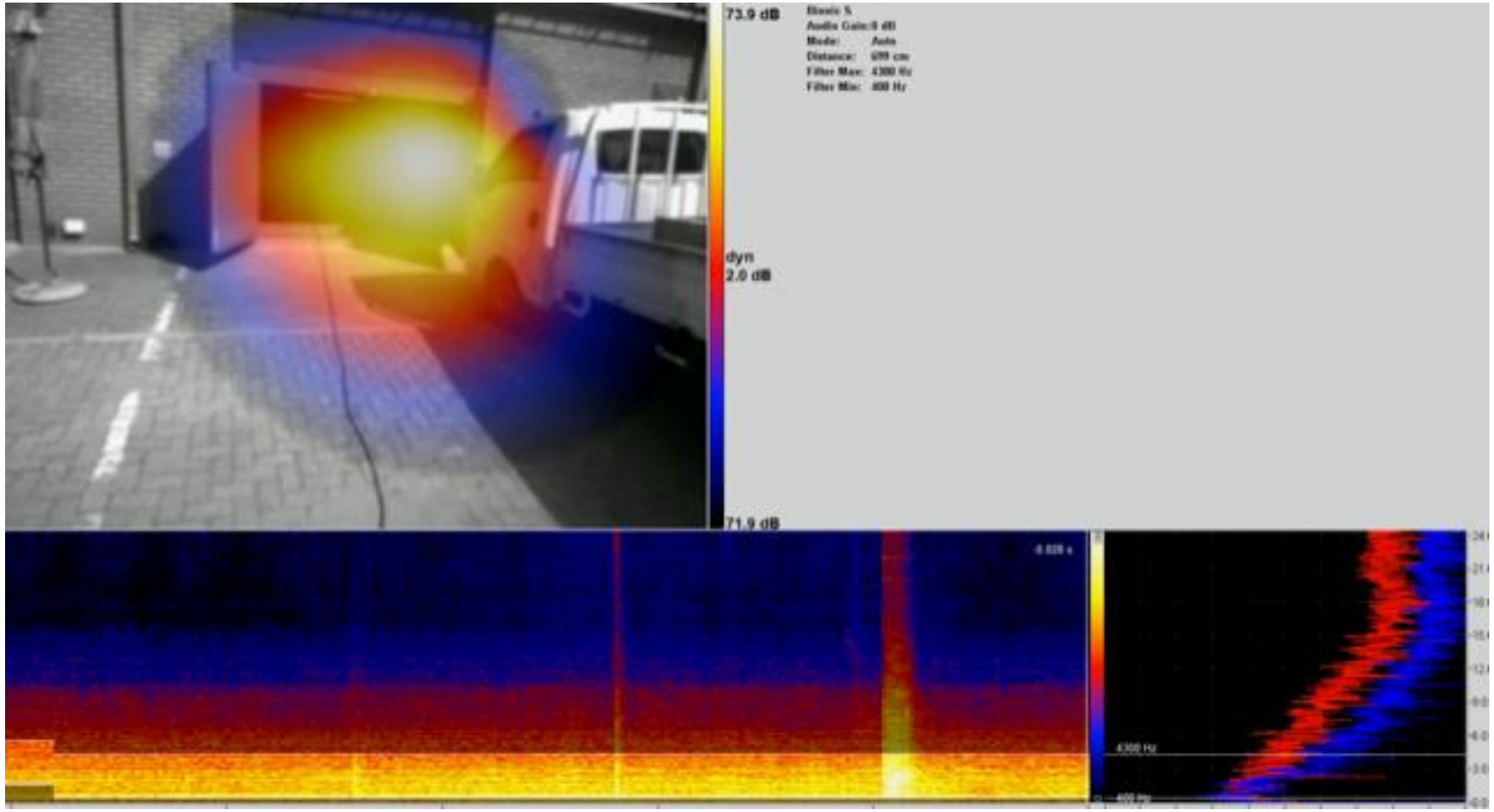
Verify & Test Soundproofing Result



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Verify & Test Soundproofing Result

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What Acoustic Cameras Can & Can’t Do

CAN

- Localise airborne sound in real time
- Show only a selected frequency range (e.g. 2-3 kHz)
- Trigger recordings based on a set sound level threshold
- Provide visual playback
- Provide audio playback
- Exclude background noise

What Acoustic Cameras Can’t Do

CAN’T

- Detect structure-borne vibration inside walls or enclosed steel
- Replace certified meters for legal noise compliance (yet)

Real-World Impact
What This Means for Your Mine

- Move beyond ‘noise level’ to source-specific diagnosis
- Diagnose and treat noise issues like fan hum, duct turbulence, or seal leaks
- Reduce energy loss from leaks or unnecessary equipment noise
- Demonstrate treatment effectiveness with before/after evidence
- Support H&S and compliance goals with smarter visuals

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From Insight to Action

1. **Detect** – Localise a noise source in seconds
2. **Diagnose** – Analyse frequency, pattern, and intensity
3. **Treat** – Apply appropriate acoustic, vibration, or maintenance solution
4. **Validate** – Re-test and visually prove improvement
5. **Reporting** – Generate easy-to-read PDF/Excel reports (where supported)

Gold Fields – South Deep

Thank you

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