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Noise Source Identification Using Sound Intensity and Acoustic Holography

Threshold: 44 dB
Scaling: 3x10⁻⁸ m
Elevation: 45°
Azimuth: 135°

Positive: 0 10 20 30 40 50 60 70 80 90 100 110 120 m
Negative: 0 10 20 30 40 50 60 70 80 90 100 110 120 m

NSI using Intensity_1

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- [What is Noise Source Identification?](#)
- Using Intensity for NSI
- Advanced NSI Techniques

NSI using Intensity_2

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Noise Source Identification Defined

- **Definition of Noise Source Identification (NSI):**
 - NSI is a generic term for a series of different measurement techniques that help visually identify noise sources on a product.
 - There are many different techniques that can be applied for identifying noises: sound intensity, sound pressure, and acoustic holography.

NSI using Intensity_3

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Different NSI Techniques

- **Sound Pressure Mapping**
 - » Traditional SPL mapping
 - Easy, cheap
 - Beamforming
 - Fast, high freq range
- **Sound Intensity**
 - » Peak Search
 - Fast, easy
 - » Intensity Mapping
 - Definitive results, sound power
 - Several variants
 - » Acoustic Holography
 - Fast, definitive results, sound power

NSI using Intensity_4

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- What is Noise Source Identification?
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NSI using Intensity_5

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Why Use Intensity?

Under free-field conditions:

- **Sound Intensity** is a vector quantity that measures energy flow.
 - Directionality
 - Independent of acoustic environment
 - Can measure in near and far field
- **Sound Pressure** is the product of the energy radiation and the environment.
 - Room characteristics
 - Must be in far field
 - No direction

NSI using Intensity_6

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