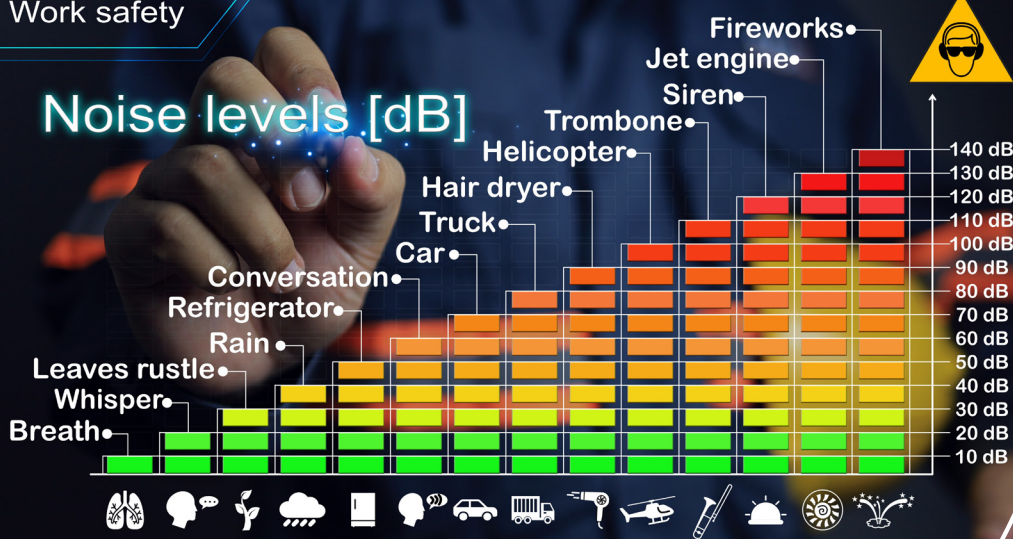


Work safety

Noise levels [dB]



Occupational Noise Monitoring

Axiometrix Solutions

APPLICATION NOTE // By Lars Winberg

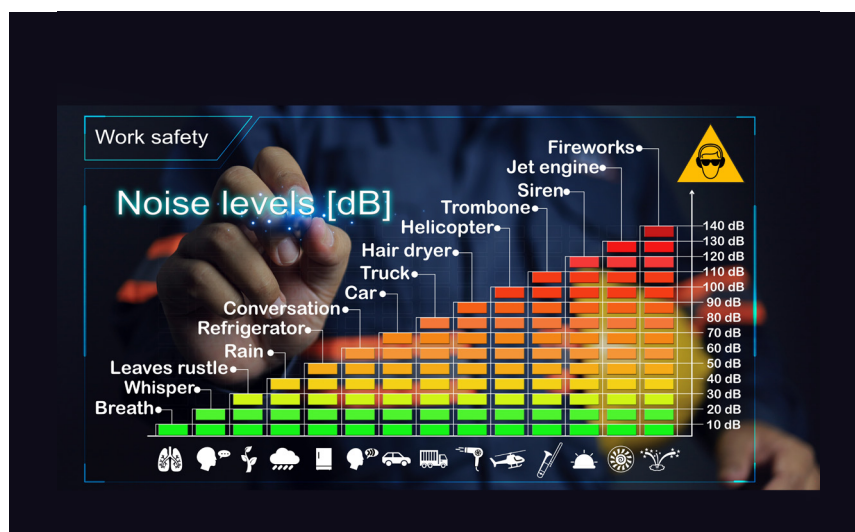
Advanced Solutions for Occupational Noise Monitoring

Effective occupational noise monitoring is essential for ensuring crew safety, assessing hearing protection adequacy, and maintaining compliance with occupational safety standards. GRAS Sound & Vibration provides state-of-the-art acoustic measurement tools designed for continuous monitoring of noise exposure in operational environments, including cockpits, vehicle compartments, engine rooms, and submarines. With precision and reliability, our solutions help safeguard personnel and optimize noise management strategies.

Specialized Equipment for Noise Monitoring

GRAS offers a comprehensive range of high-performance acoustic measurement solutions tailored to the needs of occupational noise monitoring:

- **Measurement Microphones:** Industry-leading microphones designed for precise and continuous noise measurement in demanding environments.
- **Head-and-Torso Simulators (KEMAR):** Simulate human hearing to evaluate the adequacy of hearing protection devices in real-world conditions.
- **Environmental Noise Monitoring Systems:** Robust solutions for long-term noise exposure monitoring in operational settings, ensuring accurate data collection over extended periods.
- **Impulse Noise Measurement Tools:** Specialized equipment for assessing exposure to high-intensity, short-duration sounds, such as in engine rooms or during operational training.



Applications in Occupational Noise Monitoring

GRAS solutions are trusted by defense and industrial organizations worldwide to monitor and manage noise exposure in various operational environments:

- **Cockpits and Vehicle Compartments:** Measure and track noise levels in aircraft, tanks, and other vehicles to ensure crew safety and comfort.
- **Engine Rooms and Machinery Spaces:** Monitor continuous and impulse noise exposure in high-noise environments to assess the effectiveness of hearing protection.
- **Submarines and Enclosed Spaces:** Evaluate noise exposure in confined environments where sound propagation is unique and requires specialized measurement techniques.
- **Cumulative Noise Exposure Tracking:** Collect and analyse long-term noise data to ensure compliance with occupational safety regulations and standards.

Why Choose GRAS for Occupational Noise Monitoring?

Unmatched Precision: GRAS microphones and measurement tools deliver industry-leading accuracy, ensuring reliable noise exposure data.

- **Proven Expertise:** With decades of experience in acoustic measurement, GRAS is a trusted partner for defense and industrial organizations worldwide.
- **Robust and Reliable:** Our equipment is built to withstand the harshest operational environments, ensuring consistent performance over time.
- **Compliance Support:** GRAS solutions are designed to meet international occupational safety standards, helping you ensure compliance and protect your workforce.
- **Tailored Solutions:** We provide customized configurations to meet the specific requirements of your noise monitoring applications.

Supporting Occupational Safety and Compliance

GRAS Sound & Vibration is committed to helping organizations protect their workforce and achieve compliance with occupational noise standards. Our advanced acoustic measurement solutions empower you to monitor, assess, and mitigate noise exposure in even the most challenging environments.





GRAS 46AE



GRAS 146AE



imc ARGUSfit



imc FAMOS



GRAS 45BB-4 KEMAR

Recommended Solution Configuration

Based on the application requirements and environmental conditions, Axiometrix recommends a tailored measurement solution combining high-precision microphones, signal conditioning, and analysis systems to ensure reliable, repeatable, and standards-compliant results in demanding defense environments.

Typical recommended solutions may include:

Occupational Noise Monitoring can be divided up in two main groups.

General Noise Monitoring, is often measured in the operator position

- **GRAS 46AE or GRAS 146AE** 1/2" CCP Free-field Microphone Set
- **imc ARGUSfit** for onboard and mobile acquisition
- **imc Studio**
- **imc FAMOS**

In Operator/Driver positioning, where the influence of the Human in the sound field is importance.

- **GRAS 45BB-4** KEMAR Head & Torso for Sound Quality Recording, 2-Ch CCP

Occupational Noise Monitoring

Noise Dose:

For monitoring a worker/soldier for how much noise they have been exposed for during s working day is a Noise Dose meter often used. The worker/soldier is wearis the meter during the whole day and by the end of the day is the Noise Dose (exposure level) read cut. GRAS do supply microphones for manufacture of Noise Dose Meters. Noise Measured in the operator position.

For more information or application-specific recommendations, please contact our team of specialists.

About Axiometrix Solutions

Axiometrix Solutions is a global leader in advanced test and measurement solutions, supporting customers across aerospace, automotive, defense, audio, and electronics industries. With a strong focus on precision, reliability, and innovation, Axiometrix delivers technologies that enable accurate measurement and analysis in even the most demanding environments.

Axiometrix Solutions brings together three world-class brands:

- **GRAS Acoustics** – Specialists in high-precision measurement microphones and acoustic solutions, trusted for their accuracy, durability, and repeatability.
- **imc Test & Measurement** – Experts in intelligent data acquisition systems and real-time analysis for mechanical and mechatronic testing.
- **Audio Precision** – The industry standard in audio analyzers and electroacoustic test solutions.

Together, these brands provide a comprehensive portfolio of solutions that empower engineers and researchers worldwide to measure, analyze, and improve performance across a wide range of applications. Axiometrix Solutions operates globally through subsidiaries and distributors in more than 40 countries. Learn more at www.axiometrixsolutions.com