



Range & Test Facility Monitoring

Axiometrix Solutions

APPLICATION NOTE // By Lars Winberg



Advanced Solutions for Range & Test Facility Monitoring

In high-stakes environments such as weapons testing, aircraft certification, engine tests, and explosive ordnance disposal (EOD) operations, real-time acoustic monitoring is critical for ensuring personnel safety, validating hearing protection, and characterizing acoustic hazards. GRAS Sound & Vibration provides robust and high-precision acoustic measurement solutions tailored for range and test facility monitoring, enabling safe and effective operations in high-level test environments.

Specialized Acoustic Measurement Solutions

GRAS offers a range of cutting-edge acoustic monitoring tools designed to meet the rigorous demands of test facilities and operational ranges:

- **High-Performance Measurement Microphones:** Industry-leading microphones capable of capturing high-intensity sound levels with precision, ensuring accurate acoustic hazard characterization.
- **Real-Time Monitoring Systems:** Acoustic solutions for continuous, real-time monitoring during weapons testing, engine tests, and explosive ordnance operations.
- **Head-and-Torso Simulators (KEMAR):** Simulate human hearing to evaluate the adequacy of hearing protection devices under extreme acoustic conditions.
- **Impulse Noise Measurement Tools:** Specialized systems for capturing and analysing short-duration, high-intensity noise events, such as explosions and supersonic aircraft tests.
- **Weather-Resistant Sensors:** Ruggedized microphones and systems designed to perform reliably in outdoor and challenging environmental conditions.

Applications in Range & Test Facility Monitoring

GRAS solutions are trusted by defense organizations, aerospace manufacturers, and industrial test facilities worldwide for real-time acoustic monitoring in critical applications:

- **Weapons Testing:** Monitor and analyse the acoustic impact of live-fire exercises and weapons systems to ensure personnel safety and compliance with noise exposure limits.
- **Aircraft Certification:** Characterize and validate the acoustic performance of aircraft during take-off, landing, and flight testing to meet regulatory standards.
- **Engine Testing:** Measure and analyse high-intensity noise levels generated by jet engines, turbines, and other propulsion systems in controlled test environments.
- **Explosive Ordnance Disposal (EOD):** Monitor acoustic hazards during controlled detonations to protect personnel and validate safety measures.
- **High-Level Test Facilities:** Provide continuous acoustic monitoring in advanced testing environments to ensure operational safety and compliance with industry standards.

Why Choose GRAS for Range & Test Facility Monitoring?

- **Unmatched Accuracy:** GRAS microphones and systems deliver precise, reliable data, even in the most extreme acoustic environments.
- **Proven Expertise:** With decades of experience in acoustic measurement, GRAS is a trusted partner for defense, aerospace, and industrial testing organizations.
- **Durable and Reliable:** Our products are built to withstand high-intensity noise levels, environmental challenges, and demanding test conditions.
- **Customizable Solutions:** GRAS provides tailored systems to address the unique requirements of your range or test facility.
- **Global Standards Compliance:** Our solutions support testing in accordance with international safety and acoustic standards, ensuring regulatory compliance.

Enhancing Safety and Performance in Test Facilities

GRAS Sound & Vibration is committed to enabling safe and effective operations in range and test facility environments. Our advanced acoustic measurement solutions provide the precision, reliability, and customization needed to monitor, protect, and optimize your testing processes.

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.

Range a test Facility monitoring can be divided up in 3 main groups.

- Monitoring of noise in the surrounded environment of the test range/facility.
- Monitoring of noise at the test range/facility to protect the workers/solders performing the test.
- Monitoring of the individual acoustic tests, performance tests and certification tests.





Typical test setup for these tree groups:

Surrounded environment:

For measuring the impact of a military range and test facilities are a certain number of Environmental Microphones placed critical places around the test-facilities. Recommended equipment :

Typical recommended solutions may include:

- GRAS 41AC-3 CCP Outdoor Microphone
- imc ARGUSfit for onboard and mobile acquisition
- imc Studio
- imc Famos

Individual Product Test:

Noise from the product is measured and monitored.

Recommended instrumentation:

- GRAS 46AE 1/2" CCP Free-field Standard Microphone Set

or

- GRAS 46BE
- imc ARGUSfit for onboard and mobile acquisition
- imc Studio
- imc Famos

Protection solders/workers:

Measuring the noise in the position in which the operator will be.

- GRAS 45CB
- GRAS 46AE 1/2" CCP Free-field Standard Microphone Set

or

- GRAS 46BE
- imc ARGUSfit for onboard and mobile acquisition
- imc Studio
- imc Famos

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

GRAS 45CB



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