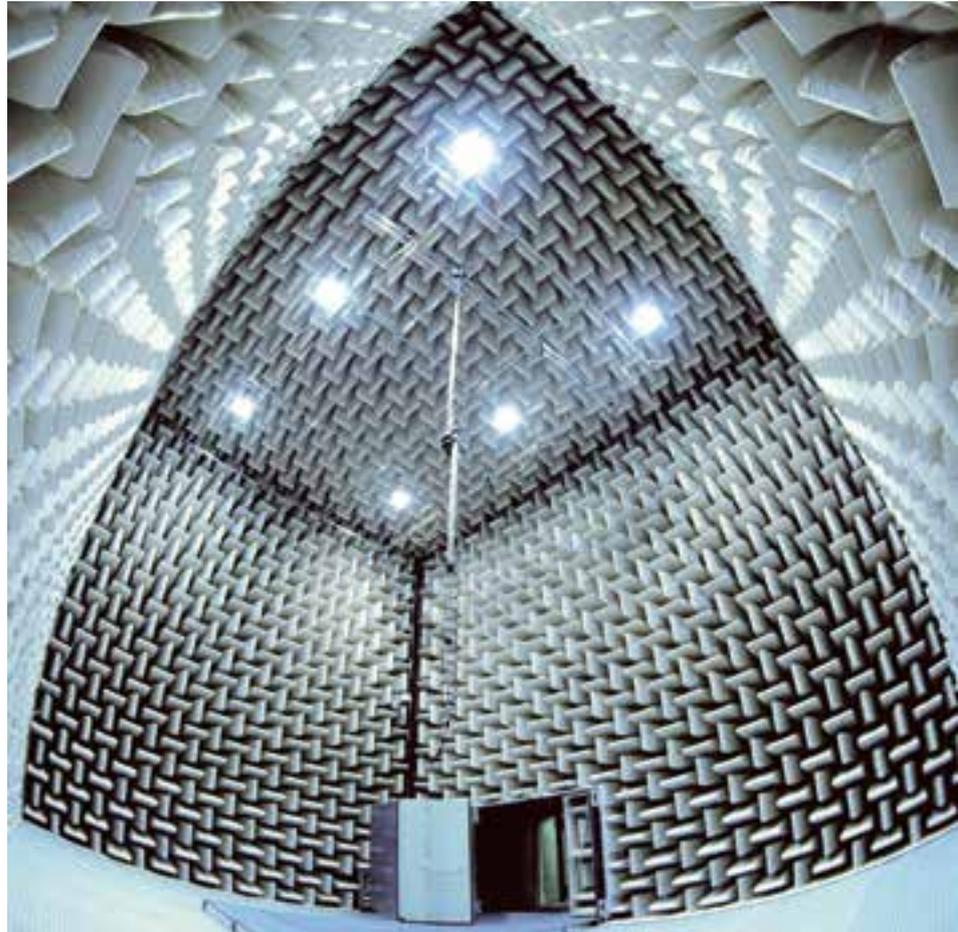




G+H NOISE CONTROL

Customized Engineering Solutions



**Suppressing noise,
creating sounds:
competence for industry
and technology**

Solutions for a quieter world

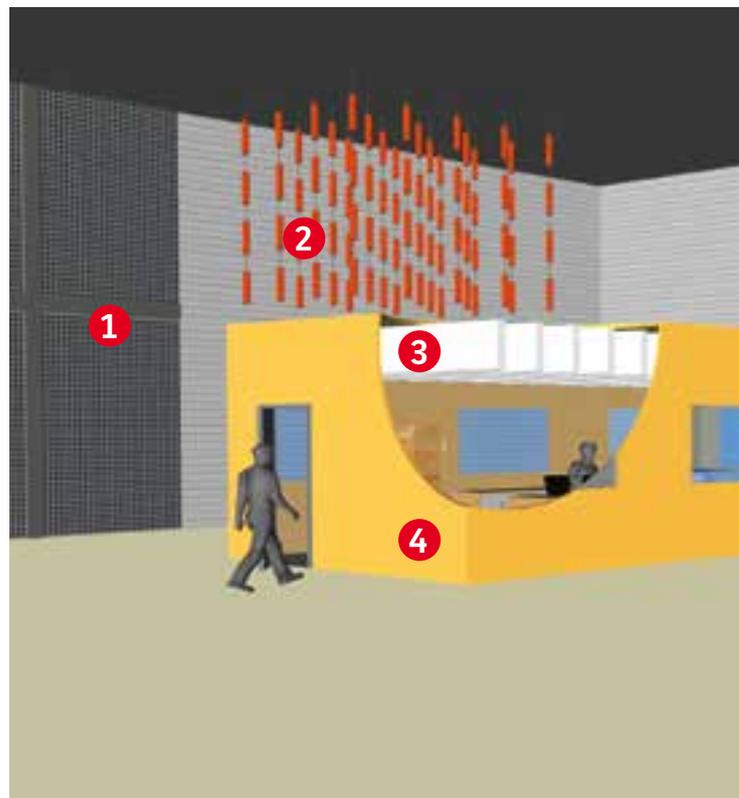


G+H Noise Control is your partner who has all the expertise required when it comes to combating noisy environments, dampening vibrations or creating conditions where you could hear a pin drop. And it is our customers who reap the benefits – in industry, measuring and acoustic laboratories and recording studios.

Noise and vibrations are part and parcel of industrial and engineering processes. They are not just a disturbance – they can also impact on health and cause damage to buildings and systems. Solutions from G+H Noise Control tackle such problems head on, quickly and efficiently. They are very versatile, too, as they can protect, enclose, absorb, insulate or dampen depending on the application requirements. And they are also effective in areas where externally induced emissions, such as traffic noise and vibrations have to be combated.

Our solutions have been setting standards for more than 50 years:

- Our acoustical enclosures and booths, absorber systems and linings are used predominantly in the processing industry.
- Our silencers have a proven track record in industry and in process, climate and energy technology – and anywhere else where media flows generate noise.

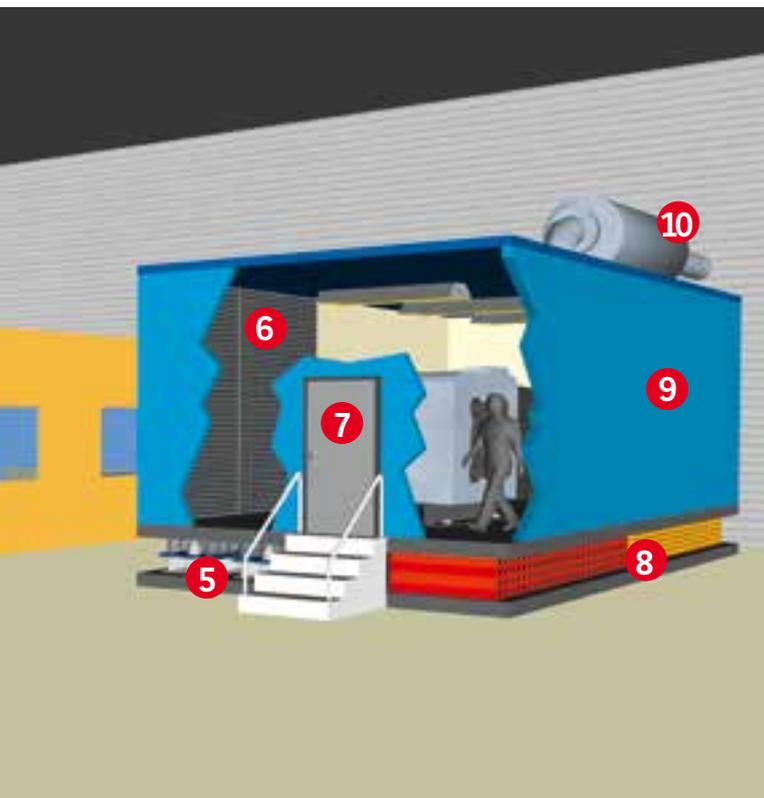




- Our solutions for protecting against vibrations and structure-borne noise dampen vibrations from industrial machinery and provide effective sound insulation for individual rooms and entire buildings.
- Our interior constructions with precisely tuned acoustics ensure optimum conditions in studios and measuring rooms.

Our range of services is extensive. It includes consulting, planning, project management, production and installation. We also supply components and construction elements.

- Our engineers specialize in technical acoustics and realize system solutions for our customers.
- A project manager with overall responsibility coordinates the team, providing a single point of contact for customers.
- Our services are tailored precisely to customer requirements and cover everything up to and including turnkey installation.



- 1 Wall linings
- 2 Compact absorbers
- 3 Ceiling linings
- 4 Booths
- 5 Spring elements
- 6 Wall linings
- 7 Gates doors and windows
- 8 Insulation boards
- 9 Enclosures
- 10 Silencers

Effective in industrial systems: Enclosures and booths



Wherever staff and the environment are affected by noise from machinery, G+H Noise Control has the solution. Acoustical enclosures seal off sources of noise from the surrounding environment, while acoustical booths create quiet areas in noisy factories.

Many powerful machines, such as punches, presses, processing robots and drive units, generate noise levels that make it impossible to stay in the surrounding area without protection. Sound-insulating enclosures get to the root of the problem by enclosing the source of the noise and ensuring that only a fraction of the sound energy escapes. Solutions from G+H Noise Control stand apart from the crowd by delivering:

- Precise acoustic design
- Easy access to machinery and systems
- Continuous production processes thanks to an uninterrupted material flow
- Optimized ventilation

Our solutions are also designed to meet special requirements and conditions. For example, they can be applied to both individual machines and networked production lines. For complete systems, we develop special designs that extend from partial enclosures and screening walls to complete encapsulations. In addition to enclosures for use indoors, we also plan and build enclosures for outdoor use in order to cut the noise level of refrigerating machines, emergency power supplies and generators, for example.



Acoustical booths create oases of peace in noise exposed environments. As room-in-room systems, they are ideal for control centers, switch rooms, office and recreation rooms and places for reporting and interpreting work.

In developing our acoustical enclosures and booths, we use sound-insulating and sound-absorbing system elements that exhibit excellent acoustic properties and a robust design. The modular design with its self-supporting components makes for cost-effective and flexible solutions that are intended to cope with the tough day-to-day conditions of industrial environments. The booths are also easy to assemble, dismantle, extend and supplement.

Acoustical booths from G+H create a pleasant, modern environment. We customize our booths to meet the precise requirements of our clients – covering everything from lighting, ventilation and cabling to the floor covering and the color of surfaces.

Our system elements also have a proven track record in large-scale solutions. Thanks to their convincing acoustic and static properties, they are used as partitions in factories and provide an effective solution for sealing off noisy areas.

Screening walls: Convincing design and functionality



People need peace and quiet. There's no getting around the fact that traffic infrastructures and industrial operations generate noise. By applying screening walls from G+H Noise Control we may all be getting along well with each other.

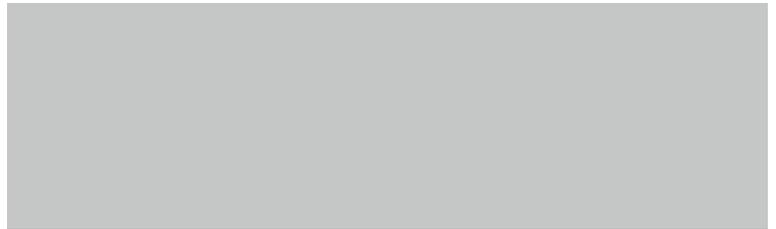
Noise is often a large-scale problem, with freeways and railroad lines running noisily through our cities, and loud industrial facilities lying cheek by jowl with residential areas. In cases where it is not possible to combat noise at source, large-scale sound-absorbing screening walls really come into their own.

G+H screening walls set limits to noise and fit harmoniously in their surroundings, while their design and functionality dovetail perfectly. Absorbing linings, concave curvatures and noise-deflecting top parts do not only contribute to an appealing appearance, but at the same time they increase the noise reducing effect.

The materials used and the surface structures have a big impact on the acoustic and visual properties. Modules made of sheet steel and aluminum in particular – both with and without absorbing cores – and glass elements

provide a wide range of design options and offer resistance against environmental influences. As large-scale components, they can also be installed quickly and efficiently.

G+H Noise Control provides noise protection walls from a single source, taking in everything from planning and acoustic design to installation. The results not only offer effective acoustic protection – they look good, too.



Doors, gates and windows: Also for demanding applications



Gates, doors and windows play a decisive role in sound insulation. As it is always the weakest element that determines the overall degree of insulation, these units have a particularly important role to play in insulation scenarios. G+H Noise Control has the requisite expertise and a comprehensive portfolio of supplies, thus enabling it to resolve even the trickiest of problems.

Many built-in components create a sound-insulating effect simply through their surface mass. However, acoustical doors and gates have to combine the possibility of easy opening and easy closing – something that becomes increasingly difficult as the weight increases. That's why special fittings, locks and hinge bands are just as important as effective and smooth-running rebate seals in doors and gates. Specialist expertise in acoustical door design is required from as little as 30 decibels (dB), and demands rise with every additional dB.

We produce acoustical doors and gates in our TSS 6 program as single- and double-leaf versions in a range of sizes and meet special customer requirements with tailor-made applications. We develop made-to-measure solutions, prove their acoustic efficiency, and ensure their utmost precision, optimum and lasting sound insulation and

extreme ease of operation. Our portfolio also includes the requisite drive technology. Equipped with electric, pneumatic or hydraulic drives, our doors and gates can be opened and closed either vertically or horizontally.

Our solutions far exceed standard expectations.
We also offer our customers:

- Single- or double-leaf sliding doors
- Lifting gates, e.g. for machines, production systems and halls
- Doors and gates for acoustical enclosures, studios, measuring rooms, production systems and test facilities
- Gates for theaters and partitions between the main stage and wings, providing sound insulation of up to 65 dB
- Acoustical gate systems with crane openings
- Airlock-type gate systems



- Doors for overpressure and vacuum situations, e.g. for fan test facilities

Acoustical windows and glass walls also have to satisfy high requirements. They create visual contact with the inside areas of recording studios, production systems and test facilities. Requirements over and above noise control – such as fire protection, reflection protection, antireflection coating and safety glass glazing – also have to be taken into account. We develop and implement the right solution for your requirements.

Our portfolio covers:

- Control room windows for theaters, auditoriums and lecture halls
- Glass walls for recording and television studios
- Glazing for the control rooms of test benches
- Overhead and diagonal glazings
- Test facility windows with and without sight screens
- Armored glass and fire-resistant glass glazings
- Antireflection coatings and reflection protection

Absorbing wall and ceiling linings: First class in acoustics, technology and aesthetics



If noise sources cannot be confined through enclosures, then sound-absorbing wall and ceiling linings can help reduce the reverberation and, consequently, abate the noise levels significantly. At the same time they improve room acoustics, which makes them ideal not just for factories but also for laboratories, test rooms and studios.

Noise absorption converts sound energy into inaudible vibrational energy, which in turn is converted to heat. Open pored materials with a large interior surface are particularly effective in this regard.

However, these positive acoustic material properties can prove problematic in terms of statics, structural physics and fire prevention technology. If these elements are not taken into account, safety risks and structural damage

may result, e.g. if the temperature drops below the dew point. In close cooperation with our clients we develop customized solutions tailored to each application and the prevailing operating conditions. We offer a broad range of absorber solutions for this purpose. Here is a selection of some of the products in our portfolio:

- SONEX® W for wall and ceiling linings in production facilities, laboratories, test rooms and studios

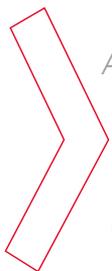


- SONO® R and B compact absorbers for production facilities, event rooms, canteens and swimming pools
- SONO® H compact absorbers for use in food production facilities, bottling plants and any other applications that place high requirements on humidity resistance and hygiene

technical and acoustic properties, but also through their aesthetically appealing design. They fit harmoniously into the building and are equipped to deal with the tough day-to-day requirements of production operations.

Sound-absorbing wall and ceiling linings from G+H Noise Control are not only convincing through high-quality

Silencers for technical systems: Designed for extreme conditions



As components in large-scale technical systems, silencers must function reliably even under extreme conditions. Companies both inside and outside Germany trust in the know-how of G+H Noise Control in process, energy and structural engineering.

Many media – be they gases, vapors or liquids – generate noise, particularly when they are under pressure, set to high flow speeds, or involved in suction or blow off processes.

- For air-conditioning and ventilation in buildings
- In dampening exhaust systems, pumps and compressors
- In power plant technology

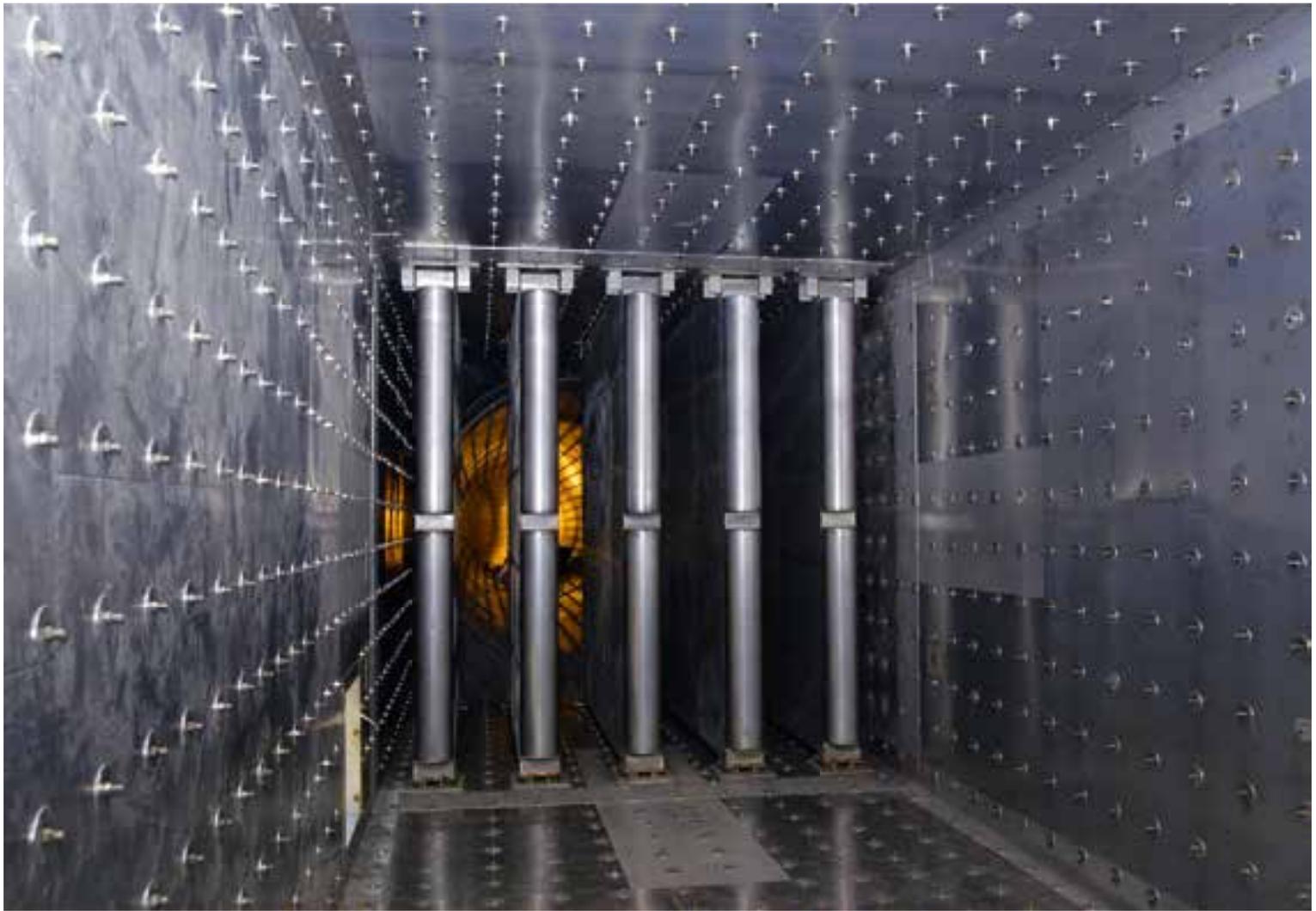
Silencers from G+H Noise Control combat these noise emissions reliably without having a negative impact on the media flow. Among other applications they are used:

- In the chemical industry and process engineering

The functional principle (absorption, reflection, resonator principle, pressure release) and materials of silencers

must be matched precisely to the specifications of the technical system. Key factors in this respect include the properties of the media flow, the





frequency spectrum of the noise emission and the targeted noise reduction.

G+H Noise Control provides silencers for every application scenario and to meet even the most demanding requirements, including:

- High temperature conditions
- High pressures and extreme flow conditions
- Contaminated media flows
- Reduction of pressure pulsing
- Noise level reduction for individual sounds
- Lightweight design

An interdisciplinary team of experienced engineers is put in place for each project, taking care of everything from planning and engineering to construction, supply and installation. For this purpose, all the team members have access to a well-equipped acoustics laboratory in the G+H development center. This is also where we confirm the latest research results with measurements from practical applications.

Protection against vibrations and structure-borne noise: Vibrations don't stand a chance

G+H Noise Control has more than 50 years' experience in the field of vibration isolation and structure-borne noise dampening. The solutions from G+H Noise Control provide effective and economical protection for people, machinery and buildings. We are more than just a supplier – we offer a complete range of services from a single source.

Vibrations occur wherever large masses are moving. These vibrations are not just a disturbance. They can also damage buildings, impair technical systems and distort measurement and test results. G+H Noise Control has the know-how, procedures and products required to ensure highly effective protection against vibrations and structure-borne noise. Its expertise includes isolating sources of vibration and shielding objects that are sensitive to vibrations. Exemplary areas of application are:

- Heavy-duty machinery, mills, presses, punches, hammers and turbines
- Assemblies and systems such as compressors, motor generator sets, combined heat and power units, fans and generators

- Measuring rooms, test facilities and measuring devices
- Buildings, studios, sprung floors and gymnasiums

We use powerful, state-of-the-art measuring technology to analyze vibrations and structure-borne noise, and employ cutting-edge computer programs to plan and develop customized solutions. As a full-service provider, we offer measuring, engineering and installation services.

What's more, we also supply tried-and-tested products for protection against vibrations and structure-borne noise.

Among other items our comprehensive program includes:

- Steel isolation springs
- Insulation boards
- Spring strips
- Rubber metal elements



Hitting the right note: Top-quality studios



No matter whether they are recording classical piano recitals, radio sessions or movies, anyone playing music, speaking text or creating sound effects can only strike the right note if they are able to work in a room that is free of interference. G+H Noise Control plans and erects top-quality recording studios and offers consultancy services for studio operators.

Recording studios and control rooms are usually equipped with sound-absorbing components. Research and development facilities place even higher demands on these kinds of systems. For example, the requirements relating to room geometry, volume and reverberation time in line with ITU-R BS.1116 (ITU-R: International Telecommunication Union – Radiocommunication Bureau) are so strict that very few companies can actually implement them in their structural designs.

Studios planned and built by G+H Noise Control feature balanced and defined room acoustics that provide ideal recording conditions. What's more, special linings give them an appealing visual design. Our portfolio includes, of course, all the requisite accessories, such as highly effective sound-absorbing door systems and control room windows.

Measuring and test rooms: Ideal conditions for accurate results



Scientists and engineers can only accurately measure and examine large numbers of acoustic properties under laboratory conditions. G+H Noise Control creates the ideal conditions for this. Worldwide we have implemented more than 500 measuring and test rooms based on our customers' specific requirements.

Acoustic measurements, e.g. in product development, material tests and the medical sector, require defined and reproducible ambient conditions. Research institutes, universities and industrial companies rely on the experience of G+H Noise Control. We plan and build turnkey solutions – including all the requisite components, such as flexible suspension, foot netting, gratings and shielding.

Anechoic and highly absorbent

Anechoic and highly absorbent rooms replicate the measuring conditions outdoors, but without interfering ambient noises and weather conditions. They offer the ideal conditions for testing and optimizing the acoustic properties of products.

We offer these rooms in two designs:

- Anechoic acoustic measuring rooms in accuracy class 1 (precision method) meet the strict conditions of DIN EN ISO 3745-2003
- Highly absorbent acoustic measuring rooms in accuracy class 2 (engineering method) meet the strict conditions of DIN EN ISO 3744

Reverberation rooms

Reverberation rooms are highly effective measuring facilities. We plan and build:

- Reverberation rooms for absorbance measurements in accordance with DIN EN ISO 354

TEST FACILITIES AND ACOUSTIC MEASURING ROOMS



- Test facilities for measuring the sound insulation of components in accordance with DIN EN ISO 140

We provide reverberation rooms for acoustic power measurements in two designs:

- Accuracy class 1 (precision method) in accordance with DIN EN ISO 3741
- Accuracy class 2 (engineering method) in accordance with DIN EN ISO 3743-1 (comparative method) or DIN EN ISO 3743-2 (special reverberation rooms)

Wind tunnels

Wind tunnels place particularly high demands on measuring airflow noises on vehicles. It is not just the

plenum itself that has to be constructed in accordance with the acoustical requirements but the entire plant design (deflection corners, fan silencers, etc.), including the technical equipment. Solutions from G+H Noise Control have proved successful time and again in the automotive industry.

Audiometric rooms

In clinics and medical practices, audiometric rooms facilitate accurate and reliable hearing tests. Audiometric rooms from G+H Noise Control are based on a room-in-room design using optimized linings and fittings. As a result, they meet the requirements of Keller and ISO 8253.

Know-how has a name: G+H Noise Control



G+H Noise Control is one of the leading companies in the technical acoustics industry. Our solutions are the result of over half a century of research, development and project experience. We are there for you in every corner of the globe. You will find our solutions in power plants and industrial plants, factories and production sites, measuring rooms and test facilities – anywhere where the environment must be protected from noise and vibration.

G+H Noise Control is a full-service provider. We compile the complete range of service modules of technical acoustics – from analysis and application-oriented development in our own acoustics laboratory to consultation, planning, project management and turnkey implementation.

We are a tried-and-tested partner for all industries and applications in which noise control and acoustics play a role. We provide a quieter working environment, a quieter environment in general, make for a good sound, and ensure perfect acoustic conditions – in industrial operations, process engineering, power plant technology and structural engineering as well as in the aviation industry, product development, research institutes and the medical sector.

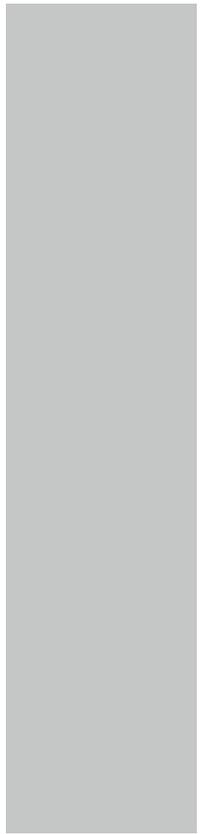
What's more, we realize integrated solutions from a single source. In industrial plants in particular, we consider ourselves as a partner whose services and expertise extend far beyond

noise control alone. We plan, design and install complete system components such as intake, exhaust gas and exhaust air systems that play a key role in the operation of gas turbines.

Our projects worldwide are coordinated from our headquarters in Mannheim, Germany. The company is certified to DIN EN ISO 9001:2000. G+H Noise Control thus combines flexibility with all the resources and potential of a global player.

G+H Noise Control is part of the international VINCI S.A. group, the world's leading company for concessions, construction and related services.

No matter the scope of your project, when you choose G+H Noise Control, you can be confident you are gaining an expert partner you can rely on.





G+H NOISE CONTROL

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