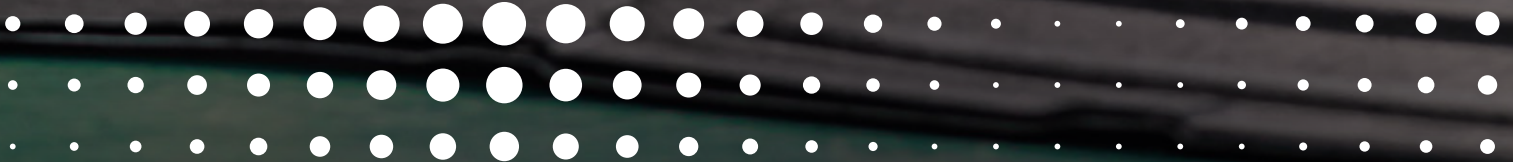# autoneum

Product portfolio

Interior · Exterior
New Mobility · Autoneum Pure.
Measurement Systems · Simulation Tools

Measurement Systems

Autoneum has been the leading supplier of specialized measurement tools in automotive acoustics for 50 years. The innovative systems can be used to assess and compare noise-reducing components in next to no time. This facilitates the compilation of sound packages for vehicle manufacturers, while at the same time ensuring that customers receive a product that is optimally tailored to their needs. Autoneum's measurement systems have become globally recognized industry standards that are successfully used by vehicle manufacturers, suppliers and research institutes alike.

AFR

The AFR (Airflow Resistance Measurement) system was designed to measure the airflow resistance of porous materials in an easy way without compromising measurement quality. The results comply with ISO standard 9053-1:2018.

- Extremely robust, stable and durable construction
- Easy and intuitive operation
- Measurement of thin materials (fabrics or non-wovens)

Dimensions	600 x 600 x 1 240 mm (L x W x H)
Sample diameter	100 mm
Airflow Source	Vacuum pump or compressed air
Standards	ISO standard 9053-1:2018
Output	Airflow resistance, airflow resistivity

Alpha Cabin

Alpha Cabin is the leading system to measure acoustic absorption properties of materials and components that contribute to noise reduction in vehicles. The system is particularly suitable for validation and quality assurance of the measured data. A recognized standard by car makers, the system is used in over 20 countries worldwide.
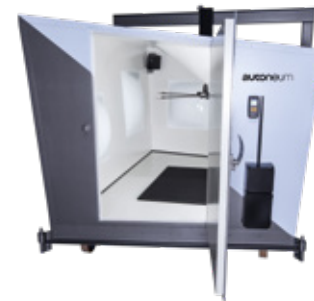
- Results enable specifications for the absorption properties of NVH products
- Fast and repeatable measurement processes
- Significantly smaller than normal reverberation rooms

Dimensions	3 220 x 2 370 x 2 030 mm (L x W x H)
Volume	6.44 m³
Sample surface area	1.2 m² (standard sample), 0.6 – 2.4 m²
Frequency range	400 – 10 000 Hz
Standards	Based on ISO 354:2003
Output	Absorption coefficient, equivalent absorption area

APAMAT II

APAMAT II compares and classifies the complex range of soundproofing solutions currently used in the automotive industry. For instance, the system evaluates the effectiveness of NVH materials in terms of noise control, noise damping and noise insulation in just one system. Optionally, the system is compatible with the airborne excitation only, allowing the installation of loudspeakers in the excitation chamber.

- Measurement of acoustic efficiency by reproducing material performance in the car
- Combination of structure-borne and airborne excitation
- Quick and easy measurement

Dimensions	1 740 x 1 180 x 1 865 mm (L x W x H)
Sample size	840 x 840 mm
Frequency range	100 – 10 000 Hz
Output	Overall acoustic efficiency

ARTIS3

The innovative ARTIS3 system features an optimized experimental set-up for the performance assessment of structure-borne noise of acoustic packages. The dedicated software for testing, archiving and analysis makes it easy for the user to find the best solution in terms of performance, weight or cost.

- Robust evaluation of the acoustic effectiveness of a passive treatment versus structure-borne noise
- Immediate and easy measurement process
- Easy to transport thanks to comparatively small size

Dimensions	920 x 920 x 1 490 mm (L x W x H)
Frequency range	100 – 800 Hz
Sample size	643 x 544 mm
Output	Structure-borne insertion loss

CARE+

The control of airflow resistance in the production of materials and components is a growing requirement in the automotive industry. CARE+ (Concentric Airflow Resistance Evaluator) is an apparatus designed to measure the airflow resistance of materials and parts.

- Non-destructive air flow resistance measurements
- Quality control adequate to manufacturing environment
- Easy to transport

Dimensions	440 x 180 x 305 mm (L x W x H)
Bell overall dimensions	145 mm
Range of airflow resistances	200 – 4 000 Ns/m³
Recommended sample thickness	less than 20 mm
Output	Airflow resistance

Carpet Cleanability Analyzer

Autoneum developed the Carpet Cleanability Analyzer measuring system to conceptualize carpet systems during predevelopment of new vehicle models. The underlying process enables the cleanability and dirt resistance of different carpet surfaces to be analyzed and compared. It can be supplied together with standardized soiling particles and tools for sample soiling preparation.

- Works with all carpet surfaces (tufted and non-woven)
- Repeatability of the results ensured
- Quantitative assessment of carpet cleanability

Dimensions	1 500 x 950 x 1 800 mm (L x W x H)
Dimensions of standard sample	180 x 620 mm
Suction head speed	7 m/min
Output	Cleanability index, dirt repellency index

ELWIS

ELWIS (Evaluation of Light Weight Impedance System) offers a full, reliable and rapid characterization of the physical parameters of the porous materials (Biot-Allard parameters). The system consists of the ELWIS-A and ELWIS-S devices, which can be used independently from each other, although both applications are needed for a complete material modeling.

BENEFITS

- Rapid, easy and reliable data evaluation
- Adaptable to a wide range of materials and parts
- Easy-to-operate

Dimensions	850 x 2210 x 1240 mm (L x W x H)
Sample size	ELWIS-A: 60 mm diameter additional option: 29 mm diameter ELWIS-S: 100 mm diameter
Frequency range	ELWIS-A: 200 – 3400 Hz additional option: 1000 – 6300 Hz ELWIS-S: 50 – 800 Hz
Standards	Fulfills ASTM (E-1050) and ISO (10534-1/2) For impedance tube measurements (measurements between 200 and 3400 Hz or up to 6300 Hz with the additional option)
Output	Acoustical and structural Biot-Allard parameters

Isokell

Isokell offers a flexible method geared specifically to the needs of the automotive industry for measuring airborne noise insulation and the transmission loss of vehicle components. The system is easier to use and less costly than traditional transmission loss suites.

BENEFITS

- Measurement of flat samples or components
- Fast and easy measurement procedure
- Used in combination with Alpha Cabin, it can also measure absorption
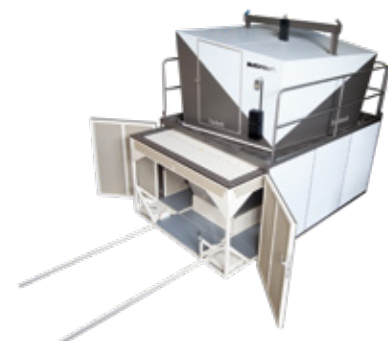
Dimensions	3400 x 2500 x 3750 mm (L x W x H)
Sample apertures	1.0 x 1.2 m (standard flat samples) 1.0 x 1.8 m (dashboards) 1.5 x 2.0 m (larger parts)
Frequency range	125 – 6300 Hz (extendable up to 10 kHz)
Output	Transmission loss, insertion loss

PORPOS

PORPOS measures the porosity (ratio of air to overall volume) of felts and foams on the basis of the so-called air-based method. Via a process of alternately compressing and decompressing air, the porosity of the sample under analysis can be derived from the resulting pressure changes.
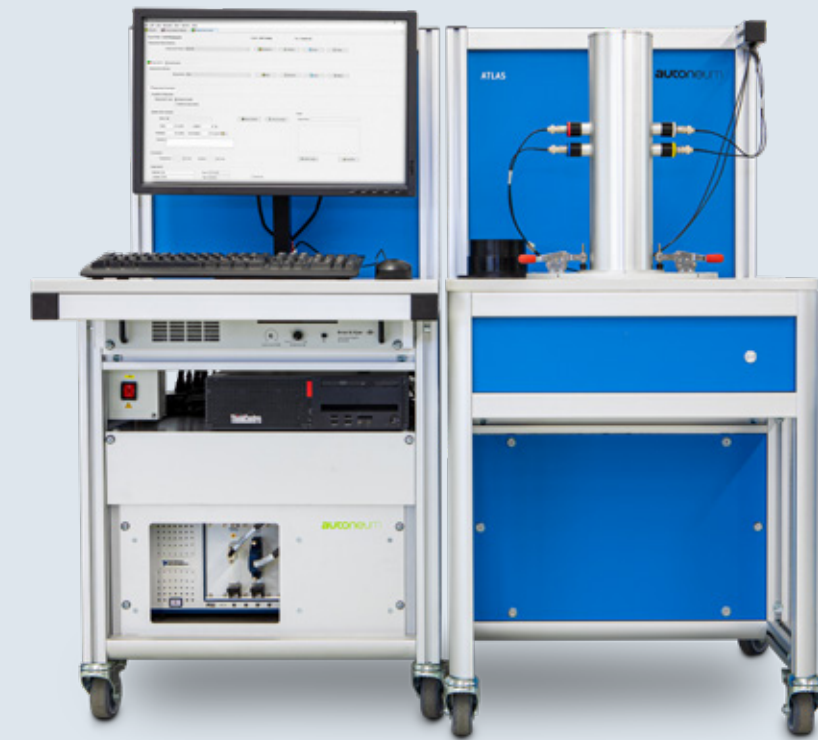
BENEFITS

- Fast and easy measurement procedure
- Automatic evaluation of the measurement results
- Suitable for a wide range of porous materials such as felts and foams

Dimensions	600 x 600 x 1240 mm (L x W x H)
Sample holder length	50 mm
Sample diameter	40 mm
Output	Porosity

ATLAS
New testing standard for measurement of acoustic insulation

ATLAS – short for "Airborne Transmission Loss Analysis System" – measures the acoustic insulation and transmission loss of interior components such as carpets, inner dashes and floor insulators. While developers previously had to analyze the NVH behavior of interior parts using material samples of around one square meter in size, ATLAS makes this process faster, cheaper and more environmentally-friendly. It enables measurements of small samples with a diameter of no more than ten centimeters, which substantially decreases the amount of material used. Thanks to four highly sensitive microphones, only two trials are required to collect precise and valid test data, making the system especially suitable for quality assurance and repeatability of the results obtained. Users also benefit from time savings of up to 50 % compared to the previous testing standard.

BENEFITS

Overcomes limitations of current methods

Measures insertion loss of single layers and multilayers on small samples

Rapid, easy and reliable data evaluation

Dimensions	850 x 1210 x 1240 mm (L x W x H)
Frequency range	100 to 3000 Hz
Sample size	100 mm diameter
Output	Normal incidence transmission loss

Autoneum. Mastering sound and heat.