

Pure competence in air.



THE LAS LABORATORY FOR ACOUSTICS & FLOW ENGINEERING

LAS - INFO BROCHURE

Proper ventilation and a pleasant climate in work or comfort environments are no coincidence.

In cases where the detailed characteristics of an air handling system are unknown due to architectural specifications, SCHAKO provides comprehensive support for any ideas with regard to system design.

We plan and design the perfect solution together with you. And we simulate your calculations in a specific room setup according to your requirements.

Info brochure on the
LAS Laboratory for Acoustics & Flow Engineering
of SCHAKO KG

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The SCHAKO Laboratory for Acoustics & Flow Engineering (LAS)

The SCHAKO in-house Laboratory for Acoustics and Flow Technology (LAS) has conducted customer-specific testing and extensive product testing on a total area of approximately 350 m² since 1970.

All new SCHAKO developments are tested here for their functionality, flow behaviour in cooling and heating mode, and their acoustic characteristics in the SCHAKO LAS. Existing SCHAKO products are also examined in the SCHAKO LAS as part of optimization efforts to achieve even more efficiency with SCHAKO products. We focus on high-quality SCHAKO products with "Pure competence in air".

Experimental research

Research and development is another key area of our laboratory work. Among other things, we conduct experimental research in the fields of acoustics and flow mechanics in close cooperation with universities and technical colleges within the framework of student research projects. For this purpose, modern computer simulation systems (numerical flow simulation, CFD) and acoustic simulation equipment (finite element acoustics, FEA) are available in addition to sophisticated flow and acoustics laboratories.

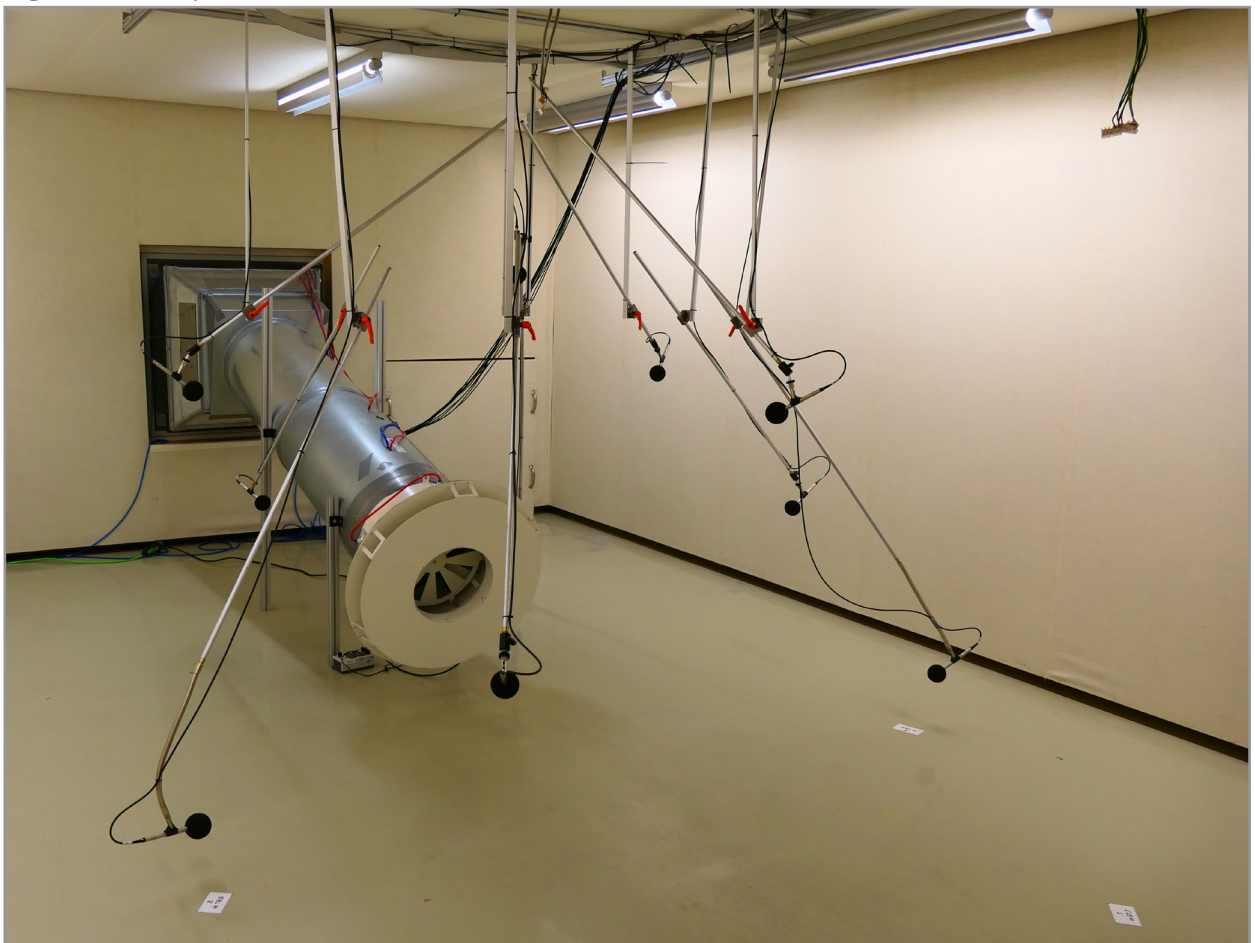
Customer-specific laboratory testing

Customer-specific laboratory testing is a strength of the SCHAKO laboratory. These tests are set up with a 1:1 scale whenever possible in order to find the perfect solution for the customer, to give the planner (building owner) a secure feeling about the planned design, and to enable us to react efficiently to any customer-specific scenario.

The decoupled sound measurement room

The sound measurement room, which is decoupled from structure-borne sound in accordance with accuracy class II defined in DIN EN ISO 3744, forms the core of the acoustic equipment. This is where the highly precise calibrated Nor850 sound measurement system by Norsonic measures the sound pressure level and uses it to calculate the sound power level of the measured object within a hemispherical enveloping surface (radius 1.50 m) in one-third octave bands from 100 Hz to 10 kHz.

Fig. 1: The decoupled sound measurement room



The variable flow laboratory

The flow laboratory is the second key component of the SCHAKO LAS. The adjustable height of the ceiling enables flexible adaptation of the measuring room height between 1 and 4.5 metres. Various air and water connections, supply and exhaust air volumes of up to 8,000 m³/h and supply air temperature control from 5 to 60 °C allow us to recreate almost any ventilation scenario imaginable. The same applies to any customer room designs, which can be set up in SCHAKO LAS in great detail and full scale.

Fig. 2: Customer-specific test



The ComfortSense measuring system

The ComfortSense measuring system by DANTEC DYNAMICS simultaneously provides important parameters such as flow velocity, turbulence intensity, temperature curve, and draft risk.



Fig. 3: Customer-specific test

Fig. 4: The ComfortSense measuring system

Leakage measurement acc. to DIN EN 1751

Enclosure or damper blade leakage measurements are another important parameter of ventilation technology. Enclosure leakage measurements acc. to DIN EN 1751 determine the tightness, i.e. the air flow rate attributable to air leakage under pressure, of a closed object to be measured using a flow meter and a pressure gauge. Similarly, the tightness of an object closed by a shut-off or throttle damper can also be measured.

Fig. 5: Leakage measurement acc. to DIN EN 1751



Filter leakage testing

Determination of the tightness between the filter enclosure and the filter under test, i.e. its sealing surfaces, by measuring the escaping particle concentration according to the requirements for clean room technology acc. to DIN EN ISO 14644-3 is another aspect of leak testing.

Fig. 6: Filter leakage testing





Fig. 7: Measuring setup for insertion loss measurement



Fig. 8: Measuring setup for transmission loss measurement

Fig. 9: Air flow test setup




The setups for insertion and transmission loss measurement

Systematic volume reduction of noise sources is a priority in these times of increased noise emissions. Ventilation ducts are fitted with absorbers or silencers for this purpose. The insertion loss acc. to DIN EN ISO 7235 across the frequency range is determined with a separate test setup in the SCHAKO LAS using the substitution method. The process involves a comparison of test duct sound measurements with and without objects to be measured. When cross-talk sound attenuation boxes are to be used in lightweight walls, the SCHAKO LAS measures the transmission attenuation of the supply air, exhaust air and bypass functions between two acoustically separated rooms based on DIN EN 11820.

The air flow test setup

The LAS scope of capabilities is completed by two calibrated air flow measuring setups. They are used to calibrate volumetric flow controllers and measuring lines with a volumetric flow measuring cross or Venturi nozzles as well as to verify the control behaviour of mechanical and electrical flow rate controllers and to determine the flow rate coefficient (heat capacity factor).

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SCHAKO offers its international customers an extensive scope of engineering services in the fields of flow mechanics and acoustics.

Our goal is to ensure customer satisfaction in the long run. Therefore, quality and diligence as well as cost efficiency and good cooperation are our top priorities.



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