



Laboratory of Technical Diagnostics

Principal goals and activities

The Laboratory of Technical Diagnostics combines activities related to preventive maintenance of machines, measurement and analysis of vibration and noise, training and consultancy in these fields. All activities are focused on collaboration with industrial practice.

The laboratory is an approved testing centre of the Association of Technical Diagnostics of the Czech Republic for certification of staff in position Engineering Diagnostics Specialist – Vibration Diagnostics Specialist. The laboratory is a member of a network of training sites that engage in:

- Predictive maintenance of machines.
- Vibration in machines, products and buildings
- Acoustic noise of machines and products
- Reduction of vibration and noise
- Development of sound-dampening and insulating materials

General focus of laboratory

- Vibration diagnostics of machines
- Thermographic diagnostics of machines
- Measurement and analysis of vibration in machines and products
- Measurement and analysis of noise in machines and products
- Design of measures to reduce (remove) source of vibration and noise
- Measurement of vibration and noise in buildings (acoustics of buildings)

- Measurement of vibration and noise in automotive design
- Balancing of rotors
- Computer stroboscopy
- Training of theory and practice in the field of vibration and noise
- Collaboration in the development of sound-dampening and insulating materials

Specific instruments and outcomes

- Measurement system for determination of sound absorption parameters – Alpha Cabin. The system determines acoustic absorption from a sample in the dimensions of 1.0 m × 1.2 m. It also determines the rate of acoustic absorption in complete products (e.g. car seats and other structures); it is also possible to measure the absorption rate in small enclosed spaces (a car's interior, for example).
- Impedance tube for determination of sound absorption and insulation (by Brüel&Kjaer). The tube analyses samples in diameters up to 100 mm; it is useful especially in the development of insulation materials and comparison of individual variants.
- PULSE measuring system (by Brüel&Kjaer) with extensive accessories for measurement and analysis of vibration and acoustic signals.
- MICROLOG measurement system (by SKF) with accessories for measurement and analysis of vibration at rotor balancing in one or several planes.
- FLIER thermal imaging system.

Offer of technology and expertise

- Determination of acoustic absorption of samples in the α cabin, including a standardized test report.
- Determination of acoustic absorption in the impedance tube.
- Determination of measurable parameters of vibration and acoustic noise (primarily frequency spectra and time development in static and moving objects), identification of sources.
- Determination of acoustic performance.
- Determination of operational shape of frequencies in dynamic systems.
- Experiment modal analysis.
- Balancing of rotors
- Training in the field of vibration, acoustics and related topics.

