

Laboratory of Machining Technology and Processes

Principal goals and activities

The LTT laboratory examines theoretical and practical aspects of machining and their application in the optimization of the cutting process in terms of the cutting tool, the workpiece and operating conditions in turning, milling, boring and grinding. Research is oriented in machining tools and processes which are analyzed in terms of workability, optimization and using environmentally friendly process fluids.

General focus of laboratory

- Assessment of technology characteristics and reliability of cutting tools.
- Assessment of technology characteristics of process fluids.
- Specification of cutting conditions and their optimization in terms of the cutting tool and material being machined.
- Assessment of chip formation at turning with tools having a defined edge geometry.
- Assessment of grinding wheel performance and workability by grinding.

Specific instruments and outcomes

Machinery and instruments

- Lathes – CHEVALIER FLC 400, SU 50 / 1500, etc.
- Mills – FNG 32, FA4A – V
- Borers – VS40 sprint, MAS VR4, etc.
- Grinders – BPH 320A, BUA 16A, BN 102 Kameníček, etc.
- Saw – PILOUS AGR 300H+
- Vertical slotter – HOV 13, aj.

Instruments and metering systems

- Piezoelectric dynamometer KISTLER 9265 B
- Tensometric, dual-component dynamometer for boring
- Microlubrication system Accu-Lube
- Dynamic balancing system SBS
- System for monitoring the plane grinding process
- System for measurement of acoustic emission during machining

Offer of technology and expertise

Cutting tools

- Design and optimization of cutting tools
- Assessment of durability and reliability of cutting tools
- Assessment of tool materials and their applications

Machined materials

- Workability tests
- Assessment of materials that are difficult to machine
- Assessment of volumetric coefficient of chips
- Assessment of surface integrity in the workpiece

Cutting conditions

- Design, assessment and optimization of cutting conditions during machining
- Assessment of impact of the cutting environment
- Assessment of process fluids –counter-stick properties, sticking, etc.

Monitoring

- Assessment of technology parameters – cutting force, temperature, deformation, vibration, etc.
- Research in smart machining
- Research in signal sensing at acoustic emission

