



# Laboratory of Testing Mechanical Properties of Materials

## Principal goals and activities

- Mechanical tests – tensile test, bending test, impact bending test (Charpy), microbending test with electronic data recording.
- Heat treatment of steels.
- End-quench test of hardenability (Jominy).
- Ultrasonic diagnostic of internal defects.
- Topography of hardening depth.
- Structuroscopy – non-destructive methods for measurement of Young's modulus, graphite shape and material quality.
- Ultrasonic measurement of wall thickness.
- Measurement of wall thickness, defects and structure in electrically conductive materials using the eddy current method.
- Diagnostics of surface defects using dye penetration and magnetic particle inspection, including UV testing.
- Localized magnetic measurement of hardness and structure in ferromagnetic alloys using the magnetic particle inspection without corrupting the surface and coating integrity by grinding.
- Measurement of hardness.

## General focus of laboratory

- Mechanical testing of new materials (steels, alloys, composite materials).
- Realization of heat treatment in e.g. steels and monitoring of heat treatment effect on mechanical properties.
- Expert analyses in mechanical testing as required by the customer.
- Assessment of cooling performance of hardening media.
- Research and development of NDT methods in engineering applications.

## Specific instruments and outcomes

- Hardness meters for the Vickers, Brinell, and Rockwell methods.
- Testing instruments for static tensile tests – FP 100, LabTestII (range 0 – 100 kN), Instron LabTestII (range 0 – 5 kN), Instron 4202 (range 0 – 10 kN).
- Charpy hammer – 300 J, 0.5 – 50 J.
- Ivf SmartQuench – assessment of quenching materials.
- Chamber furnaces (range 0 – 1200 °C and 0 – 1400 °C).
- UCI hardness meter, type KT.
- Ultrasonic thickness meters DIO-570 and TM-8811.
- NORTEC 1000 – eddy currents.
- POSITECTOR 6000 – eddy currents.

