

R&D DEPARTMENT OVERVIEW

The Research and Development department within EGU – HV Laboratory has a vast and long-term experience in consultancy and development in the electric power engineering area.

The R&D department deals with a wide spectrum of problems occurring in networks and substations with respect to the high voltage engineering, overvoltage, insulation, transients, and behavior of HV systems in general.

MAIN ACTIVITIES

- Transmission and distribution **network analysis**
- Optimization of **overvoltage protection** in substations and on lines
- Studies of all kinds of **transients in networks** using ATP–EMTP and EMTP–RW software
- **Field overvoltage** (6 kV–420 kV) measurement and monitoring
- Line and substation **grounding system** studies and measurements, assessment of touch and step voltages
- **Insulation coordination** studies
- **Analysis of HV equipment failures** and damages
- **HV cable** performance studies
- Calculation and measurement of **electric and magnetic field 50 Hz**
- Measurement and localization of **RFI**
- Measurement and calculation of overhead line **noise**
- Mitigation of **resonances and ferroresonances** in HV transmission and distribution networks – electromagnetic transients during black–starts and in island networks
- Electric and magnetic field simulations and modeling - COMSOL Multiphysics

MAIN PROJECTS

- ACM project – **Automatic Central Monitoring** of CEPS network
- **Partial discharge detection** on HV equipment in substations by the **in-house developed VYZER** detector
- **Contactless monitoring of switching transients** by the **in-house developed SEMPR** sensor
- Performance of insulators under **natural pollution**
- ET-LEADS project – **Impact of lightning events** on transmission and distribution systems

OTHER PROFESSIONAL ACTIVITIES

- Standardization activities (IEC, EN, ČSN, other technical standards)
- Long-term experience in CIGRE / IEC working group activities
- Membership in IEEE (PES and DEIS societies)
- Participation in many research projects
- International research activities

MAIN CUSTOMERS

Electricity transmission and distribution companies, Design companies of HV and MV power networks, ČEPS a.s. – Czech Transmission System Operator

