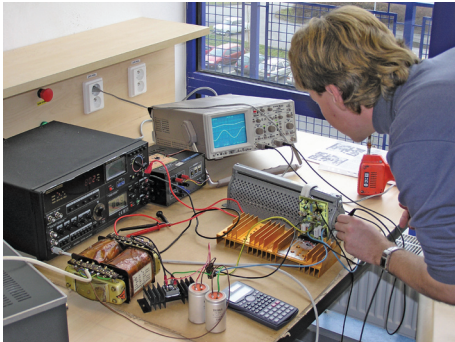


K Department of **A** Applied Electronics and **E** Telecommunications



Main Research Areas

- computer-aided design of analogue and digital systems
- development of devices with embedded computers
- programming; development of application software
- development of automotive electronic control systems
- development and monitoring of control systems based on industrial buses (CAN, LIN, LonWorks, etc.)
- development of means for diagnostics of electronic systems
- applications of programmable logic devices FPGA
- systems description and simulation in VHDL language
- development of electronic systems with high reliability
- implementation of artificial intelligence systems
- development of switching power supplies, chargers and power converters
- digital signal processing; applications of digital signal processors

Main Research Areas

- mathematical modelling and simulation of operating and failure conditions in power systems
- power quality and power delivery reliability
- impact of power generation and transmission on the environment
- conception and design of protection devices in power systems
- application of alternative power sources
- software for the prediction of short-term voltage drops
- optimization of energy conversions
- calculation and measurement of lighting systems
- electroheat technology
- electromagnetic compatibility (EMC)
- analysis of switching-off phenomena, investigation into contact resistances
- research and development activities in high-voltage technology, investigation into partial discharges (coronas)

K Department of **E** Electrical Power Engineering **E** and Environmental Engineering



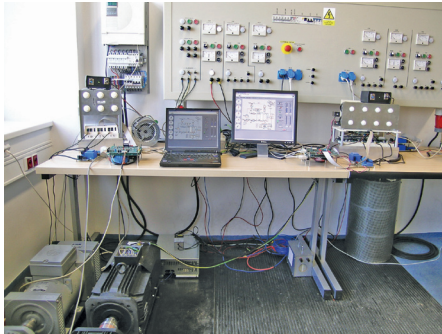
K Department of **E** Technologies and **T** Measurement



Main Research Areas

- analysis of physical and chemical phenomena in materials
- development, design and optimization of elements, materials, technologies and insulation systems of devices
- diagnostics of elements, materials and insulation systems of electronic and electrical devices
- instrumentation for DC and low-frequency measurements
- development of measuring system software
- methods for sound power measurement
- design and evaluation of experiments, data analysis
- computer-aided design (CAD) of electronic systems with special emphasis on their longterm operation
- industrial process control in electrical and electronic production
- reliability of electrical and electronic devices and materials

K
E
V Department of
Electromechanical Engineering
and Power Electronics



Main Research Areas

- new technologies in electric drives and power electronic converters for transport engineering, power engineering and renewable energy sources
- modern principles of electromechanical energy conversions
- development of new topologies of power electronic converters
- applies research into new materials and power electronic devices, especially SiC
- hybrid drives and systems
- mechatronic systems (e.g. highly dynamic drives, servodrives, intelligent drives, small power drives)
- energy storage systems and their use in transport and power engineering
- electromagnetic compatibility of regulated electric drives and power electronic systems

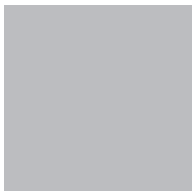
Main Research Areas

- analysis of stationary and non-stationary electromagnetic fields in 2D and 3D configurations and investigation into consequent effects (interactions) caused by these fields (e.g. action of forces, dielectric stress of insulation systems, and evaluation of system parameters)
- coupled problems characterized by simultaneous interaction between several physical fields
- electromagnetic-metallurgical problems – with special emphasis on induction heating and consequent hardening
- magneto-hydrodynamic problems – stirring of molten metal by means of magnetic fields
- application of integral equations to electromagnetic field analysis
- stability of magnetically levitated solid bodies and liquids
- design of radial and axial bearings based on permanent magnets

K
T
E Department of
Electrical Engineering
Theory



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