



AUTOMATIC CONTROL & OPTIMIZATION RESEARCH GROUP

Main objectives and activities of the laboratory

- basic and applied research in the field of automatic control,
- development and implementation of control algorithms,
- development and implementation of real time optimization methods for the operation of large technological units,
- commercial contracts in the field of automatic control and optimization.

Professional focus of the laboratory

- model predictive control (MPC) and its applications, particularly in the field of heat and power engineering,
- real time operational and economic optimization of electricity and heating networks and other large systems,
- smart electricity grids and integration of renewable energy sources into electricity grids,
- application of nonstandard measuring systems (industrial tomography) in the process control
- development of control oriented mathematical models

Specific equipment and outputs

We use specialized software Matlab/Simulink and its toolboxes to perform research tasks, as well as Gurobi, GridLAB-D, Scilab, LabView, Step 7 and specialized software tools developed by our research group.

Offered technologies and expertise

- analysis of the properties of existing control systems and design of structural or parametric adjustments in cases where the achieved control performance is not sufficient,
- design of control structures and control algorithms of complex technological processes and machines,
- development and implementation of model predictive controllers for real time control and optimization of complex technological units using specialized software developed by our research group
- data analysis, development of monitoring and analytical software tools,
- programming of PLC-based control systems.

