Energy management in HVAC, from classical optimization to artificial intelligence

Approximately 30% of energy consumption in Switzerland occurs in building climatization. Modern building HVAC systems, incorporating local energy production and storage as well as heat pumps have a correspondingly high potential to increase sustainability but require intelligent control algorithms for optimal performance. Equally important, besides considering resource efficiency, a building management system should also be designed to optimize comfort.

This talk presents results and insights from the development of a control system based on classical optimization algorithms focusing on resource-efficiency as well as the outline of a planned follow-up project, aimed at using machine learning methods to adapt to inhabitants needs and preferences.