

Model-Based Design of Integrative Energy Concepts for Building Quarters using Modelica

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Increasing energy prices as well as outdated building systems present the housing industry with the challenge of finding new complex system solutions including renewable energy and storage systems. The municipality Lohmen (Germany) and the local housing association contracted EA Systems and IB Dr. Lerche to develop an integrative energy system concept for its historic town center.

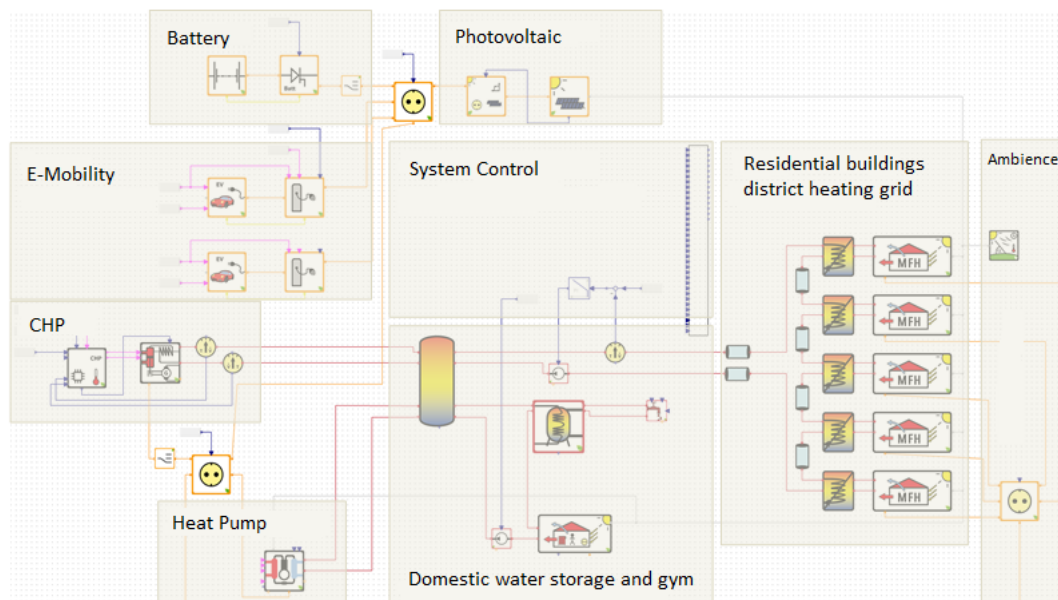


Figure 1: Modelica-based simulation model of renewable energy system concept for historic town center in Lohmen (Germany)

This paper deals with modeling and simulating different energy system variants for the existing building structure using the Modelica-based ‘Green Building’ library and SimulationX. The discussion illustrates the challenges of the modeling process, innovative solutions and the simulation results.