

## Table of Contents

1_system_configuration	<ul style="list-style-type: none"> <li>• <i>MENB_system_configuration.pdf</i>: A detailed description of the system configuration, comprising an electrical distribution network, a district heating network, a power-to-heat facility, consumers (electrical and thermal) and PV systems.</li> </ul>
2_use_case	<ul style="list-style-type: none"> <li>• <i>MENB_system_configuration.pdf</i>: Describes a use case that aims at the increase of the collective self-consumption in a sub-urban local energy community, where the local PV generation is utilized for operating a power-to-heat facility.</li> </ul>
3_test_case	<ul style="list-style-type: none"> <li>• <i>MENB_test_case.pdf</i>: This test case addresses issues related to self-consumption in a local energy community by characterizing the effects of a voltage controller within a multi-energy network setup.</li> </ul>
4_model_description	<ul style="list-style-type: none"> <li>• <i>MENB_heat_pump.pdf</i>: A detailed description of the heat pump model used as part of the power-to-heat facility, providing a coupling point between the electrical network and the thermal network.</li> </ul>
5_control	<ul style="list-style-type: none"> <li>• <i>MENB_voltage_controller.pdf</i>: The specified controller intends to prevent overvoltages due to high PV generation and simultaneous low power consumption by governing the operation of the heat pump accordingly. In the same way, it should prevent undervoltages due to increased power consumption and reduced PV generation.</li> <li>• <i>MENB_flex_heat_controller.pdf</i>: The specified controller coordinates the heat generation, heat storage and network support in the power-to-heat facility.</li> </ul>
6_test_specification	<ul style="list-style-type: none"> <li>• <i>MENB_test_specification.pdf</i>: Defines a simulation-based assessment of the operation of the overall system over a period of 1 week, during which both PV generation and heat demand are significant. This allows to analyze the effect of the voltage controller on the overall system, i.e., its interplay with the flex heat controller as well as the resulting impact on the electrical and thermal sub-systems.</li> </ul>
7_data_sets	<ul style="list-style-type: none"> <li>• <i>MENB_heat_pump_test.zip</i>: This dataset contains the simulation results for the model validation test setup for the heat pump model.</li> <li>• <i>MENB-TS01_timeseries.zip</i>: This dataset contains the generation and demand profiles for test specification MENB-TS01.</li> <li>• <i>MENB-TS01_sim_results.zip</i>: This dataset contains simulation results for test specification MENB-TS01 from a reference implementation (<i>cosim_disheatlib_pandapower</i>).</li> </ul>