Adsorption energy systems library -
Modeling adsorption based chillers, heat pumps,
thermal storages and desiccant systems

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A library for dynamic modeling adsorption based thermal systems like chillers, heat pumps, thermal storages or desiccant units is presented. Adsorption devices can serve a wide range of applications but usually consist of the same basic components. By modeling these basic components, the presented model library allows to investigate any interesting topology. Thereby this adsorption library gives the user the opportunity to design and optimize adsorption systems quickly and efficiently. To demonstrate the flexibility of the library and the accuracy of the simulations, three validated examples are presented: A desiccant unit; a thermal storage; and an adsorption chiller.
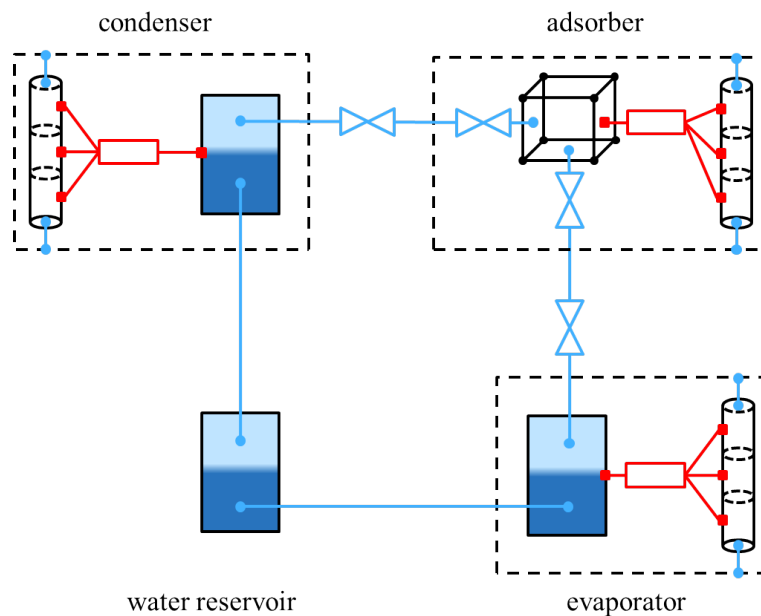
Figure 1: Scheme of adsorption chiller consisting of an adsorbent, evaporator, condenser, mass resistances, heat resistances, and a water reservoir model