



1 *Thermal storage system
zeolite / water.*

THERMOCHEMICAL HEAT STORAGE

The transition away from nuclear and fossil-fuel energy means that the storage, conversion and use of waste heat is becoming increasingly important. Through the development of individual storage systems aligned to the application profile of the user, the consumption of primary energy can be reduced.

Thermal storage systems can be subdivided into sensitive heat storage devices, phase change materials and sorptive thermal storage devices, depending on the physical mechanism involved.

In the case of sorptive thermal storage devices, the release of energy from adsorption and desorption processes is exploited. One such system with a high energy density is composed of the components zeolite and water.

These components are held separately during the storage process and are brought together specifically for a reaction, meaning that there is no energy dissipation during storage. Consequently thermochemical storage systems enable a temporally decoupled provision of heat and cold.

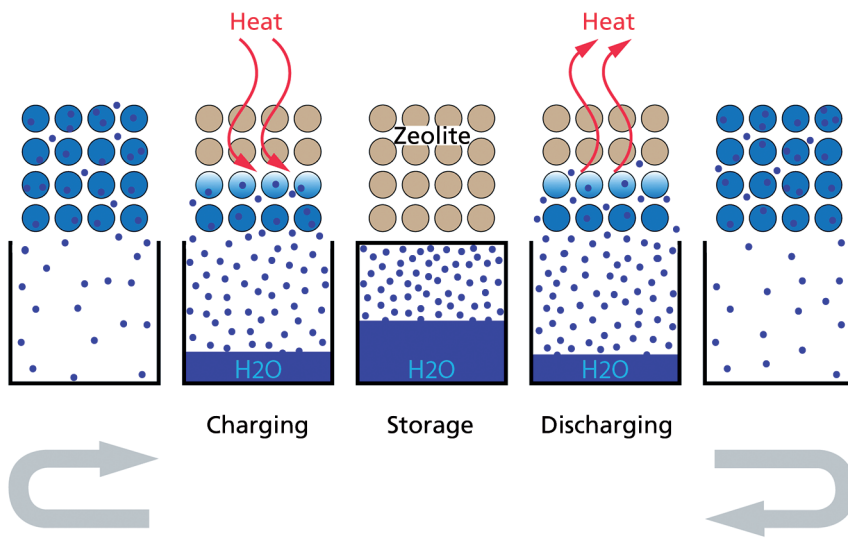
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2 Storage process in zeolite-water system.

Range of services

We offer our project partners and customers a comprehensive system analysis, including material characterization, system design and system development. The requirements placed on the process components and safety devices also form part of our expertise.

Materials

- Characterization
- Kinetic evaluation of charging and discharging process
- Modification / functionalization

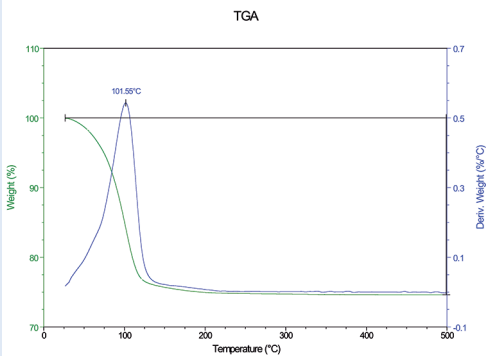
System design

- Thermodynamic approaches
- Dynamics of charging and discharging
- Corrosion
- Safety

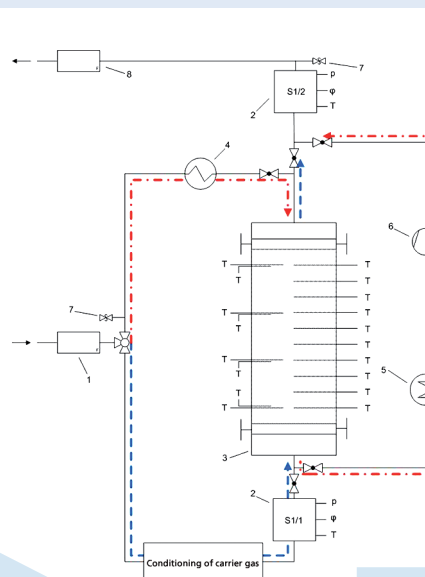
System development

- Construction / design
- Compatibility
- Production
- Demonstrators
- Economic assessment

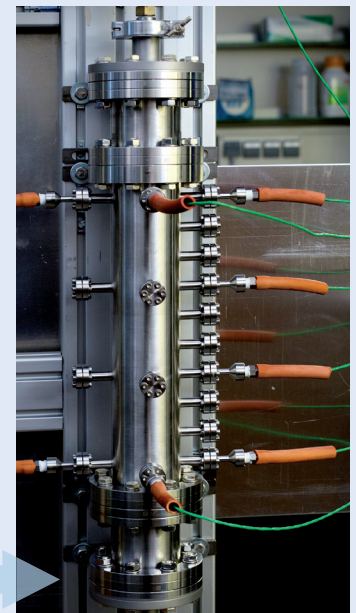
Smart systems



Material characterization



System design



System development