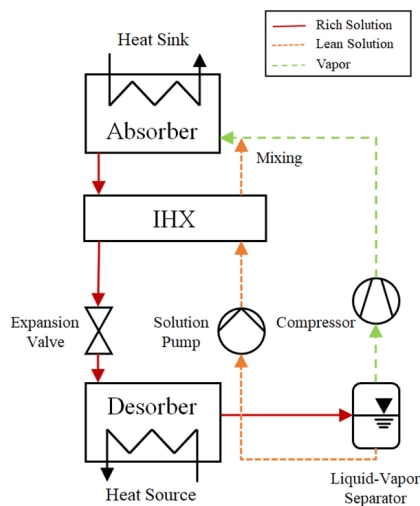


# Osenbrück 4.0 - Heat Pump Cycle

## Combined absorption-compression heat pump with $\text{NH}_3\text{-H}_2\text{O}$ mixture as natural working fluid

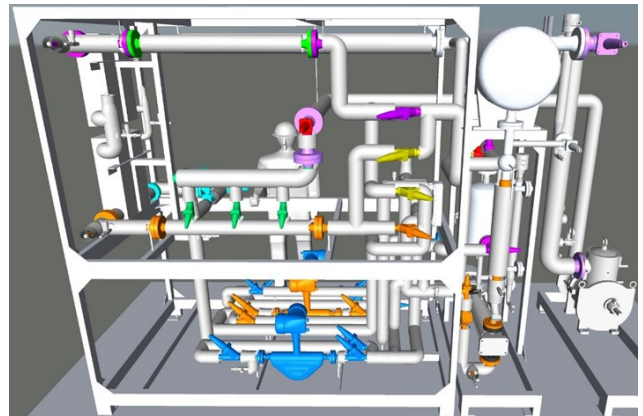
The combined  $\text{NH}_3\text{-H}_2\text{O}$  absorption-compression heat pump (CACHP) cycle combines the technologies of an absorption and vapor compression heat pump with a mixture of

ammonia and water as natural working fluid. Heat is extracted and released at non-constant temperature glides and the required compression ratio is lower compared to conventional vapor compression heat pumps. These properties make the CACHP system interesting for the use in various industrial high temperature applications up to  $150\text{ }^\circ\text{C}$ .



### Schematic representation of the CACHP test rig

Aim of the CACHP test rig is to provide a flexible system for the experimental performance and analysis of various conditions and components.



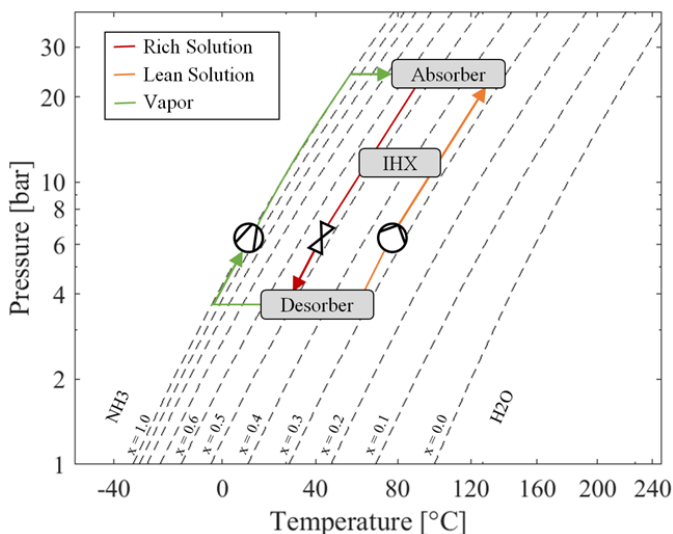
### Potential research and industry interest

#### Research

- Improving the understanding of system design and operation
- Investigation of system behavior for various boundary and operation conditions
- Development and testing of new compressor and absorber solutions
- Further development and validation of numerical models and results

#### Industry

- Design and testing of various operation cases for user-specific industrial applications
- System and component manufacturers



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