

## Graduation assignment: experimental study of a vacuum-based thermochemical battery

There is a growing mismatch between energy supply and demand in the Dutch energy system. To address the mismatch between supply and demand, ARES is working on thermochemical energy storage systems, which can store heat without loss. Additionally, the energy storage density is 4 to 5 times greater than that of sensible heat storage.

### Assignment description

The student will conduct experimental research to evaluate, analyze and improve the performance of a novel vacuum-based reactor containing thermochemical material (TCM). A 1kg test setup is ready and available for this (see diagram). Various parameters will be measured. Key factors include vapor transport into the packed bed of the TCM and into individual particles, the speed of the TCM's (de)hydration reaction, and heat transfer in and out of the TCM. All experiments will be conducted at ARES, where the necessary equipment is available. The analysis of results and report writing can be done (partially) from home.

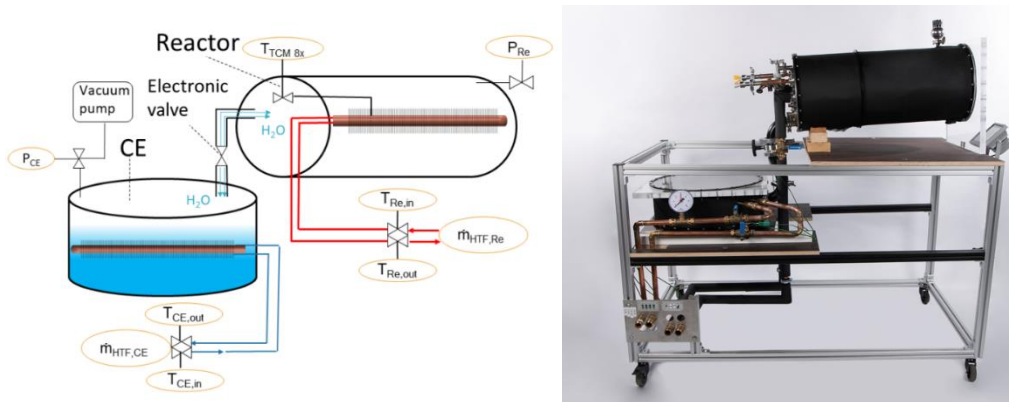


Diagram (left) and photo (right) of the test setup

### Company Description

ARES B.V., based in Zevenaar, is globally renowned for the development of solid-state absorption heat pumps. ARES successfully introduced Solabcool, a cooling machine, to the market. Solid-state heat pumps have a wide range of applications. ARES B.V. works closely with Beijer RTB, JAZO Zevenaar and various universities, ensuring that theoretical knowledge and practical applicability form the foundation of ARES. We offer all students an internship allowance and flexible working conditions.

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