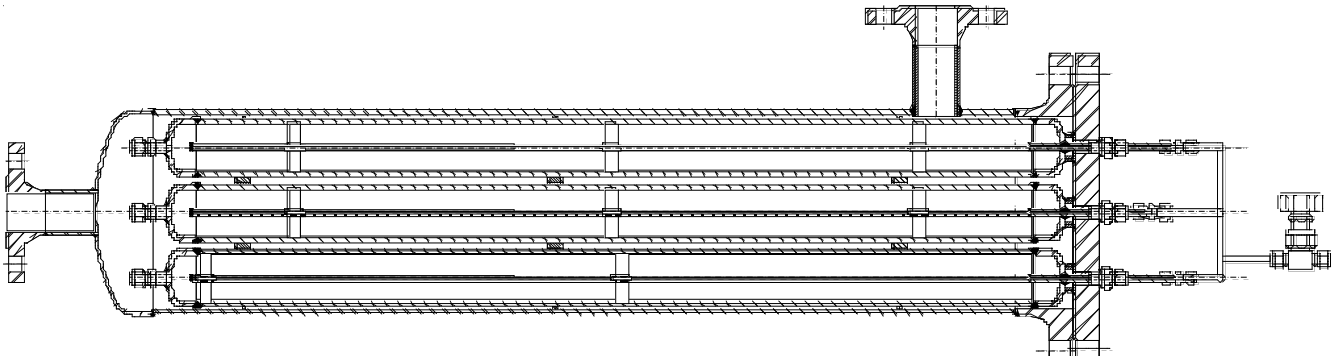


## Subproject Solid Storage: Bread Board Tank

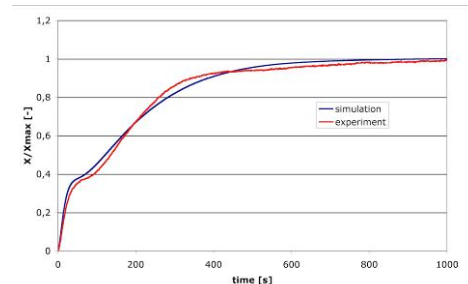
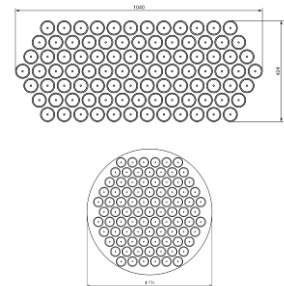
### Objectives

- ❖ Design and construction of a tank in the scale of ~ 8 kg alanate (1/10<sup>th</sup> of the full-scale tank) optimized for best sorption kinetics

### Achievements



- ❖ Several different configurations were considered such as plate exchanger and tube-and-shell.
- ❖ After careful evaluation, a tube-and-shell geometry with cross flow for the heat exchanging fluid was selected. Its advantages:
  - Modularity: the concept can easily be upscaled and the geometry is free.
  - Easy access for maintenance
  - Good heat exchange characteristics.
- ❖ The design has been optimized for fast kinetics, without consideration of gravimetric or volumetric capacity.
- ❖ Operation parameters:
  - Charging: 100 bar, 125 °C.
  - Discharging: vacuum to ca. 5-10 bar, 150 °C
  - Simulations confirm a charging time to 80 % of less than 5 minutes in agreement with StorHy targets.



### Future Perspectives

- ❖ Heat exchange phenomena will be thoroughly investigated in the bread board tank.
- ❖ Cycling behaviour, as well as system integration, will be also a focus of research.
- ❖ Research will lastly be concentrated on new high capacity solid H<sub>2</sub> storage materials, e.g. LiBH<sub>4</sub> / MgH<sub>2</sub> with 11.4 wt %.

### Partners

- ❖ GKSS Research Centre Geesthacht GmbH
- ❖ Technische Universität Hamburg-Harburg



### Website

[www.storhy.net](http://www.storhy.net)



The project partners wish to thank the European Commission for financial support of the Integrated Project StorHy– Hydrogen Storage Systems for Automotive Application (Contract No.: SES6-CT-2004-502667) within the 6<sup>th</sup> RTD Framework Programme.