

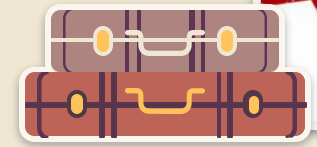


# RAPPORT OF ACTIVITY HAW-HAMBURG

**ADVENTURE  
WAITING**



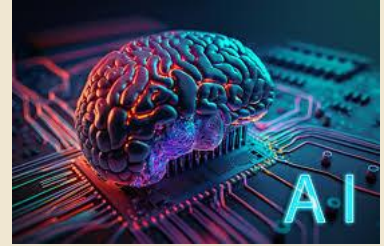
By Emmanuelle DOSSEH  
Supervised by Prof Alpha Ousmane TOURE



# Context



Climate change

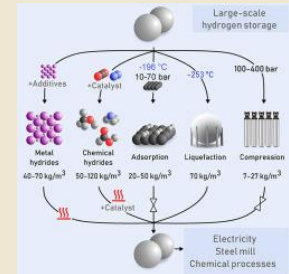


Innovation

CHARACTERISATION OF METAL HYDRIDES FOR SOLID HYDROGEN STORAGE UNDER THERMAL CYCLES ASSISTED BY ARTIFICIAL INTELLIGENCE



Energetic transition



Storage

---

# Problematic

The quality and the quantity of the data which integrate the phenomenology of materials for having best composition of metal hydride

02-10-2025

# From DAKAR to Hamburg



**NEXT  
DESTINATION**



09-10-2025

# Topic presentation



- thesis aim
- connect with Prof Hecht
- conncet with Nigerians PhD's



# Campus Visit

13-10-2025

- discover HAW university
- taking place at the CC4E



14/15-10-2025

# Multi Rotor Sytem Seminar

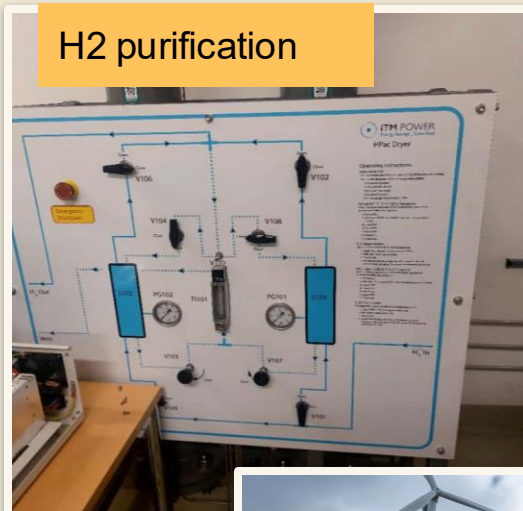
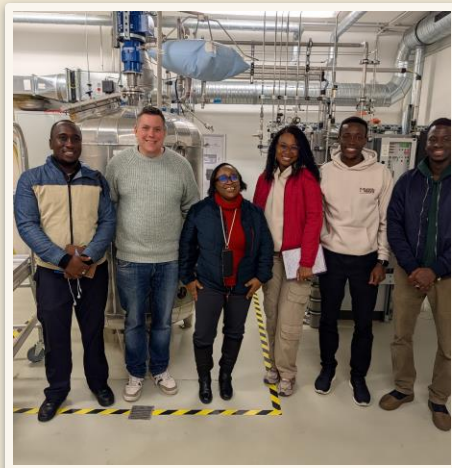
## Workshop

- importance of sizing
- hamburg offshore wind
- Connecting with specialists

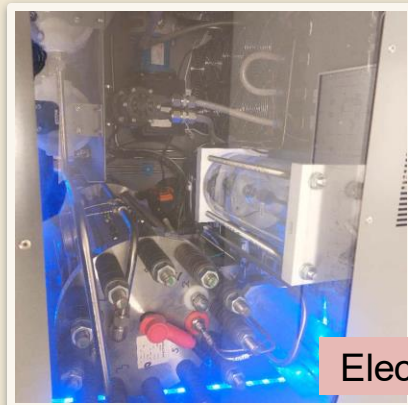


# CAMPUS ENERGY CC4E BERGEDORF

16-10-2025



H2 purification



Electrolyser



Carbon Capture



Wind farm  
2.14-3.15 MW

17-10-2025

# BERLIN TOUR



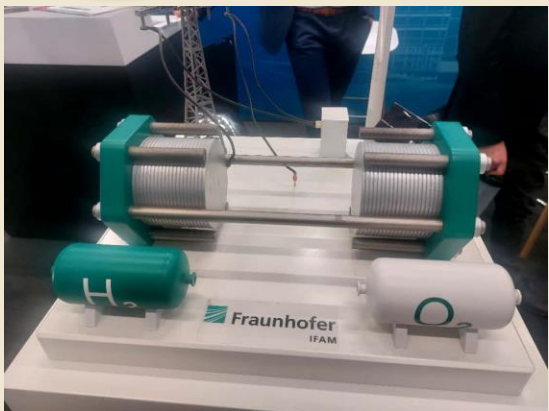
## KIWI DAAD POLICY TALK

How can African - European science  
diplomacy promote equitable  
partnerships



21/23-10-2025

# Exhibition

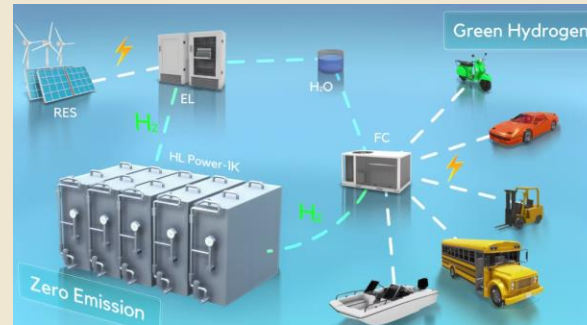
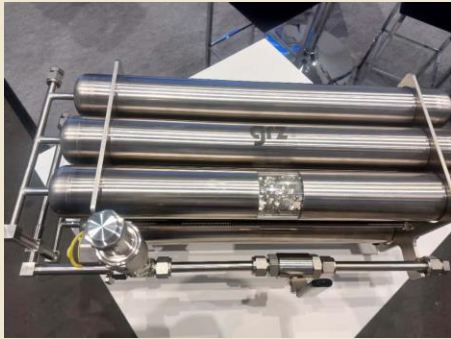


21/23-10-2025

# Exhibition



- ❖ Solid hydrogen storage via metal hydrides was very limited at the expo.
- ❖ Few exhibitors showcased it and remained discreet about their technologies.
- ❖ This indicates the field is underdeveloped but has strong innovation potential.

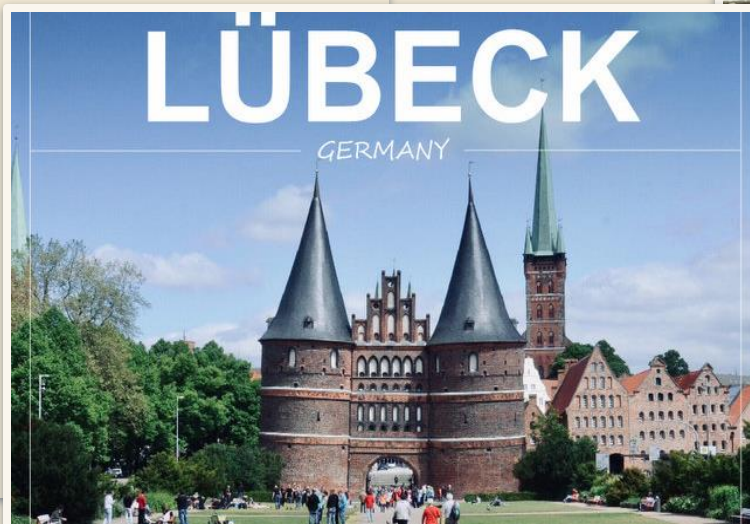
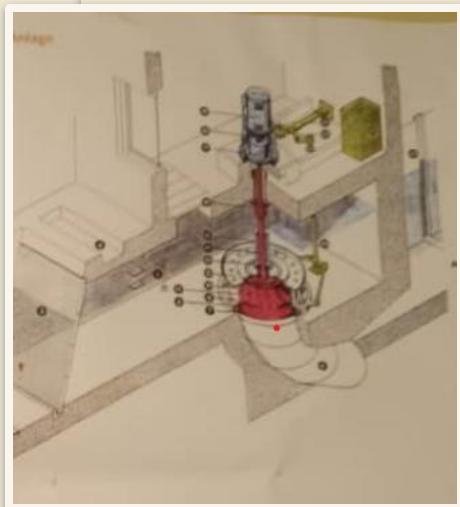


# Lubeck

25-10-2025



-hydraulic mil visit  
- Capacity of 30 kW



4-11-2025

# Renewable Energy Meeting

The logo for Renewable Energy Hamburg consists of several overlapping, rounded green shapes of various sizes, creating a stylized, organic form.

**Renewable Energy**  
Hamburg

**What role will CCS and CCU play in a future energy system?**

- ❖ Networking with women in industry
- ❖ Carbon capture and storage: technology, potential, risks
- ❖ From climate killer to valuable resource? CCU as a future strategy for industry and mobility
- ❖ panel discussion
- ❖ networking

5-11-2025

# HYDAC X HEREON

The logo for Renewable Energy Hamburg consists of several overlapping, rounded green shapes of varying sizes, creating a stylized, organic form.

## Renewable Energy Hamburg

- ❖ Discover the SET-Box, an innovative hydrogen microgrid.
- ❖ Integrated system: electrolysis, storage, compression, fuel cell power
- ❖ Key technology: metal hydrides for compact, efficient hydrogen storage
- ❖ A solution to stabilise renewable energy and enable long-term storage
- ❖ Unique opportunity to see the system in operation and meet the experts.

6/7-11-  
2025

# Lother Grupe



- ❖ the operation of petrol stations, energy trading and real estate.
- ❖ Transport of hydrogen
- ❖ Alternatives fuels (e methanol)
- ❖ Invest in research (caphenia with Lufthansa jet A1)
- ❖ e diesel for racing for public acceptance

# HELMHOLTZ-ZENTRUM HEREON

- Gain an understanding of hydrogen absorption/desorption mechanisms, reaction enthalpies, and thermal integration requirements;
- Learn to prepare selected hydride materials using high energy ball milling, and to characterise them with XRD, DSC/TGA, and PCT (Sieverts apparatus);
- Acquire and analyse isotherms (P-C-T), extract thermodynamic and kinetic parameters ( $\Delta H$ ,  $\Delta S$ ,  $E_a$ , rate laws);
- Relate material performance to reservoir pre-design (capacity, kinetics, thermal management) and to techno-economic considerations.





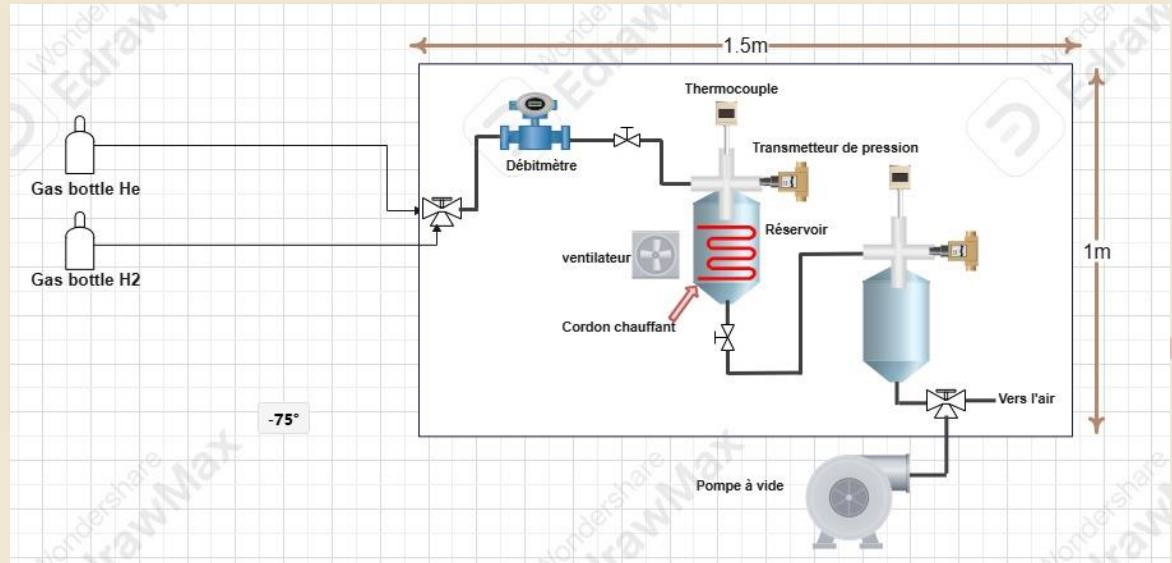
# Perspectives



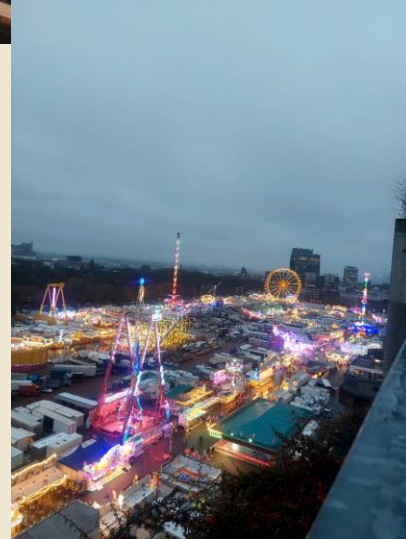
## Data set preparation

- CFD simulation
- Research papers

## Experimental Set Up



# Cultural Discovery





DANKE!

