

HyCentA Research GmbH

Shaping the Sustainable Hydrogen Society

Project References Area 4: Circularity & System Optimization
Graz, August 2026

HyCentA Test Facilities



Competence Centers for
Excellent Technologies

Electrolysis System Test Bench 2.5MW, 2x 40 ft.

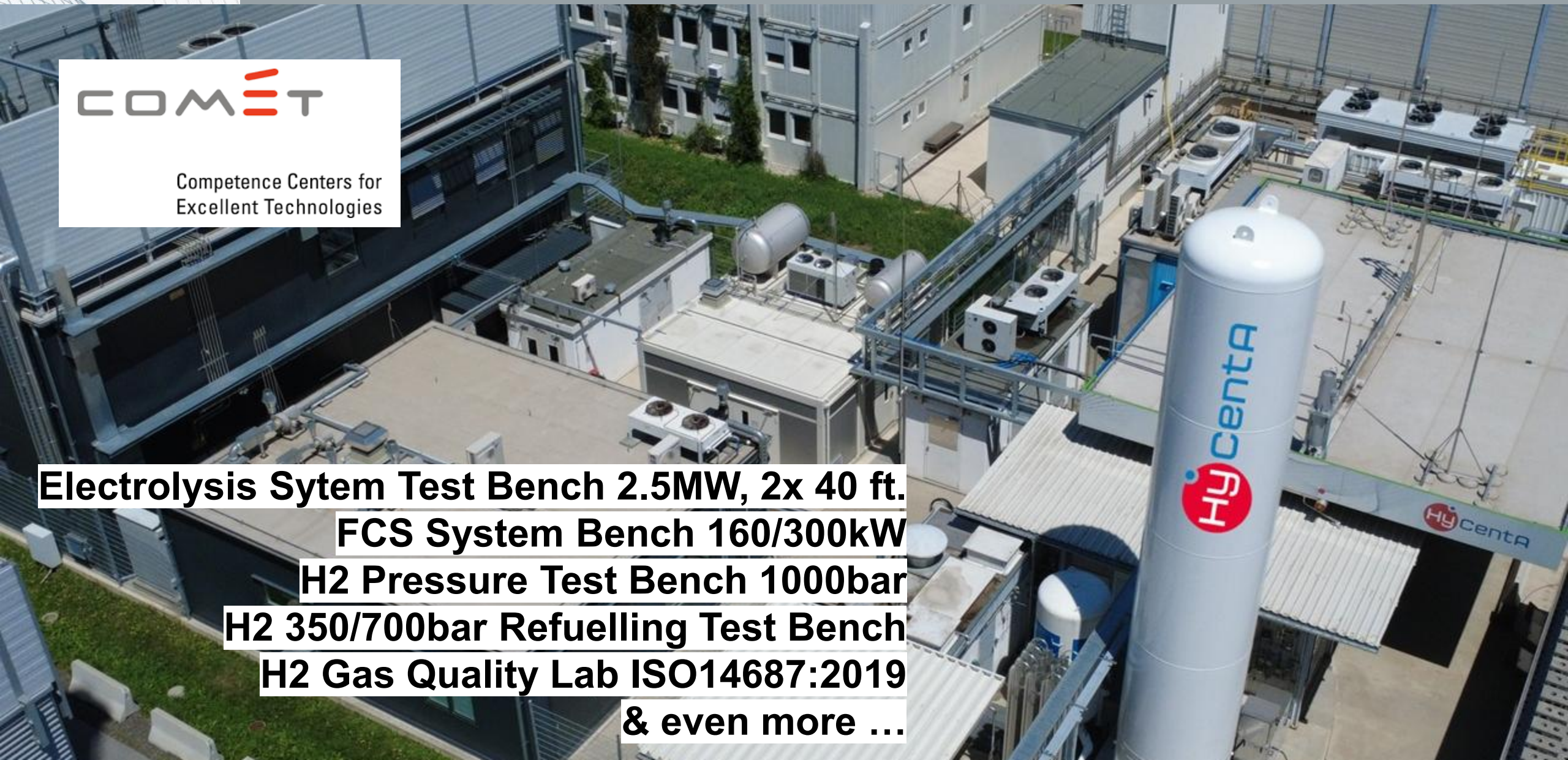
FCS System Bench 160/300kW

H2 Pressure Test Bench 1000bar

H2 350/700bar Refuelling Test Bench

H2 Gas Quality Lab ISO14687:2019

& even more ...



UpHy Projects: H₂ Certification

Unqiue Calibration Standard for H₂ refueling stations



PTB
Physikalisch-Technische Bundesanstalt
Nationales Metrologieinstitut


Bericht
Report

**Messeinrichtung für
Wasserstoffbetankungsanlagen
nach SAE J2601**

Einsatz für Konformitätsbewertungen und Eichungen
im Rahmen des gesetzlichen Messwesens

Auftraggeber:
Customer: HyCentra Research GmbH
Inffeldgasse 21A
8010 Graz
Österreich

Ort der Labortätigkeit:
Location of laboratory activity: PTB Braunschweig

Datum der Labortätigkeit:
Date of laboratory activity: 01.02.2025

Anzahl der Seiten:
Number of pages: 16

Geschäftszeichen:
Reference No.: PTB-1.42-4110417

Im Auftrag
On behalf of PTB: 
Dr. Daniel Schumann

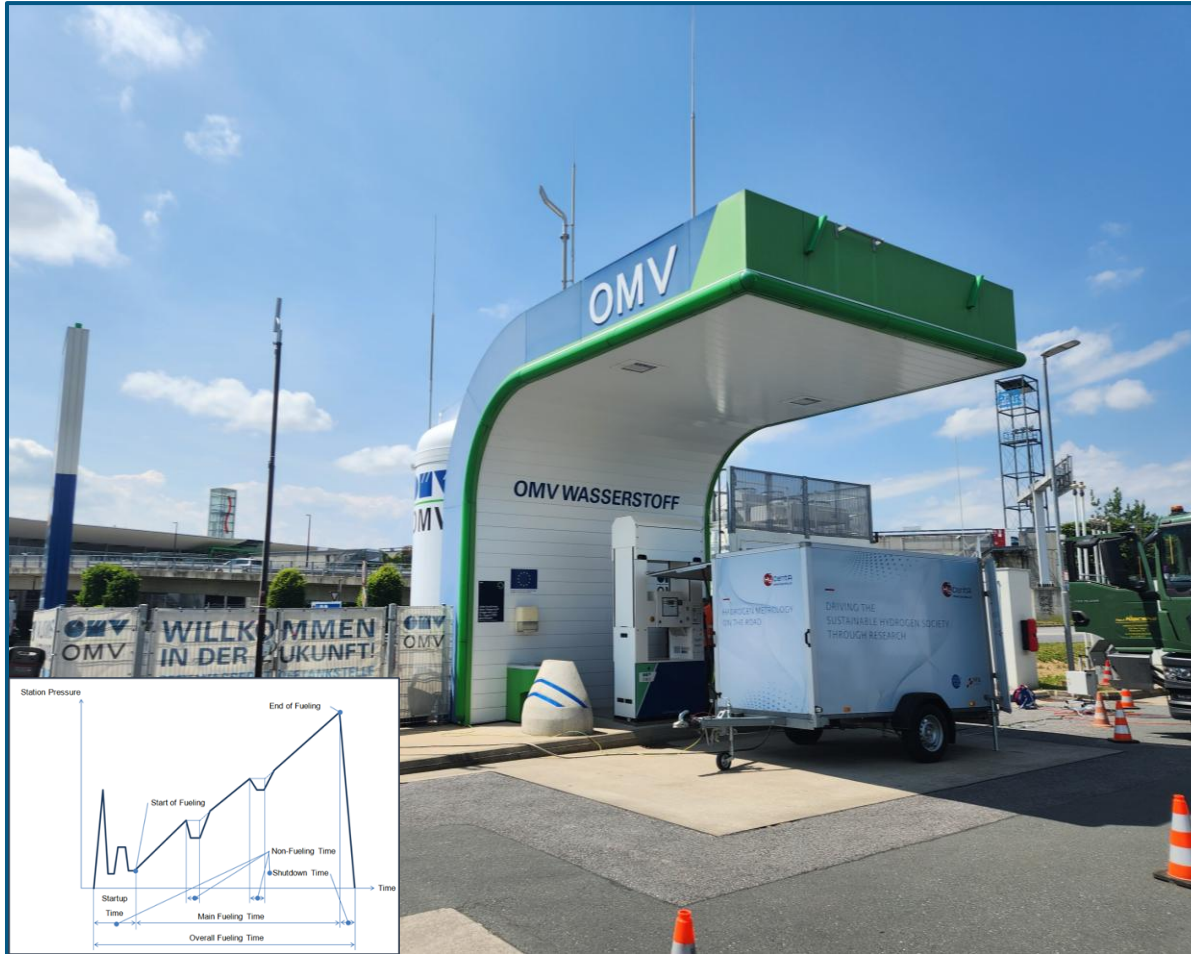
Im Auftrag
On behalf of PTB: 
Dr. Bodo Mikan



Berichte ohne Unterschrift und Siegel haben keine Gültigkeit. Dieser Bericht darf nur unverändert weitergegeben werden. Auszüge bedürfen der Genehmigung der Physikalisch-Technischen Bundesanstalt. Dargestellte Ergebnisse beziehen sich auf die Untersuchungen in diesem Zusammenhang.
Reports without signature and seal are not valid. This Report may not be reproduced or used in full. Extracts may be taken only with the permission of the Physikalisch-Technische Bundesanstalt. Presented results relate only to the corresponding examination.

- pVT - principle
 - **Highest accuracy:**
Maximum deviation of 0.4% (~20g H₂)
 - Combined H₂ sampling for efficiency
- Technical advantages:
- Robust measurement performance
 - Minimal station occupancy time
 - Integrated sampling system up to 1000bar for quality analysis according to ISO14687 Grade₃D

Unqiue Calibration Standard for H₂ refueling stations



- **Intensively tested at OMV HRS in Austria**
- Independent, high-precision measurement principle for evaluating flow sensors such as Coriolis sensors
- Robust measurement performance at field application: Unaffected by weather conditions, season, vibrations, and similar external influences
- This ensures high availability and reliability
- Minimal station occupancy time
- **Integrated H₂ sampling system** up to 1000bar for quality analysis according to ISO14687Grade D

Boltzmann Gas- and Materialanalysis Laboratory@HyCentA



- Austria's most advanced H₂ analysis lab
- Mobile ultra pure gas sampling up to **1000bar**
- H₂-Quality Analysis according to **ISO14687 Grade D** and beyond
- Mass- and quality certification for hydrogen industry
- Research and innovation hub for hydrogen metrology

Austria's largest green hydrogen electrolyzer: 10MW PEM now live



Foto: OMV Media Center

- 1,500 tons of green hydrogen per year
- Direct integration into **OMV Schwechat refinery** for real-time use
- Based on PEM electrolysis, powered **exclusively by renewables**
- Exceeds EU safety standards and achieves **ISCC-certified RFNBO status**
- From pilot to industrial scale: **140 MW coming next**

UpHy Projects: Award

Awarded with „Staatspreis Mobilität 2021“ for HyCenta



Foto: BMI



UpHy I & II were funded by the Climate and Energy Fund and realized within the framework of FFG Energy Model Region "WIVA P&G"

Project ReNEW 2023 – 2026

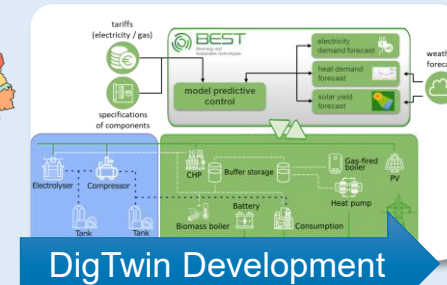
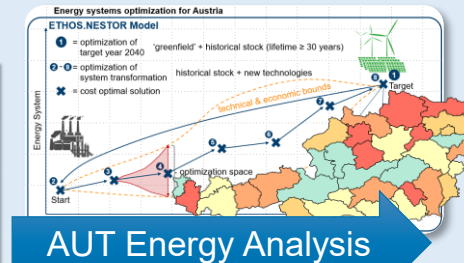
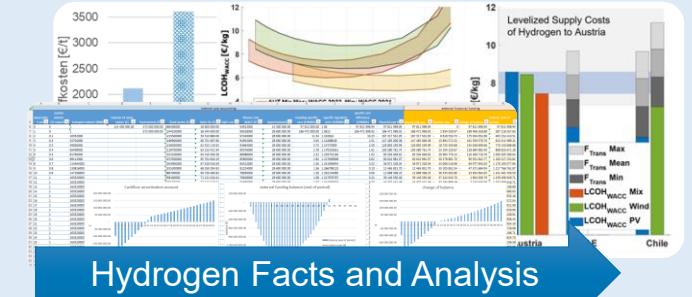
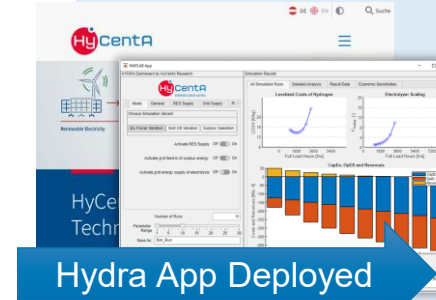
Hy Enable the **fast implementation** of renewable energy and **hydrogen technologies into reality** through **simulation tools and studies**.

Already finished and work in progress:

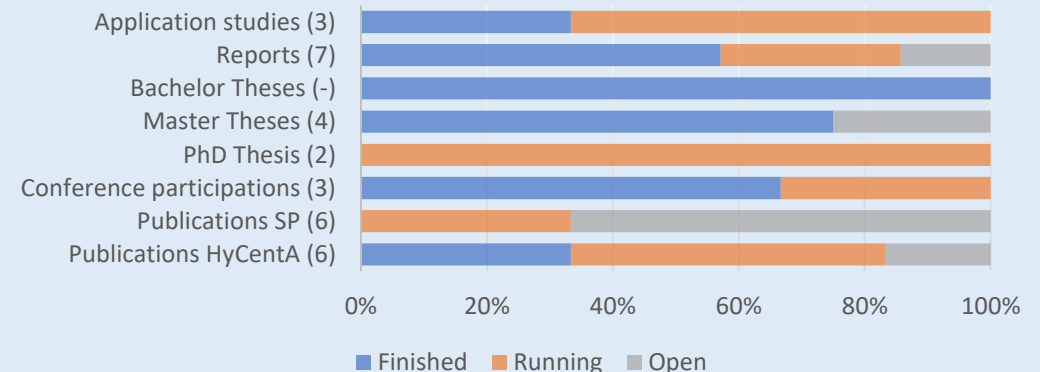
- **Techno-Economic H₂ Tool-Chain** - Development and distribution of techno-economic tools for hydrogen projects
- **H2Transport** - Expansion of the tool chain to include hydrogen transport options for complete mapping of the hydrogen value chain
- **Application Studies** such as the analysis of financing models for the H₂ pipeline infrastructure and associated transportation costs

What is yet to come:

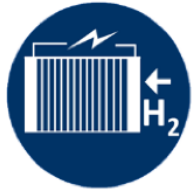
- **Digital Twin Implementation and Operation**– Implementation and operation of developed Digital Twin on test infrastructure
- **Austrian Renewable Energy System** – Results of the geographical spatialized technology pathway for the Austrian energy system 2040+
- **Scientific Exploitation** – Utilization of the developed tools and models for project-related research papers



KEY FACTS - APPLICATION AND ACADEMIC TARGETS



Measurement and Testing Technologies for Hydrogen Applications



Fuel Cell and Electrolysis:

- Seamless degradation tool chain on single cell, stack, system level
- Advanced diagnostic tools based on multi-physics measurements



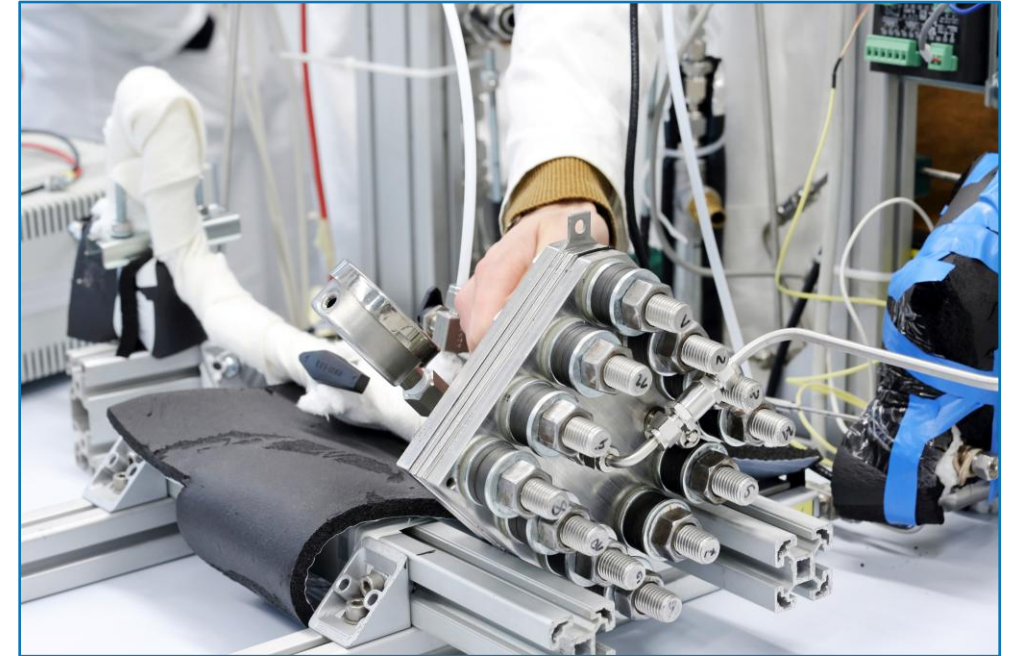
Materials suitability testing technology:

Enhancing high pressure applications with new testing methods



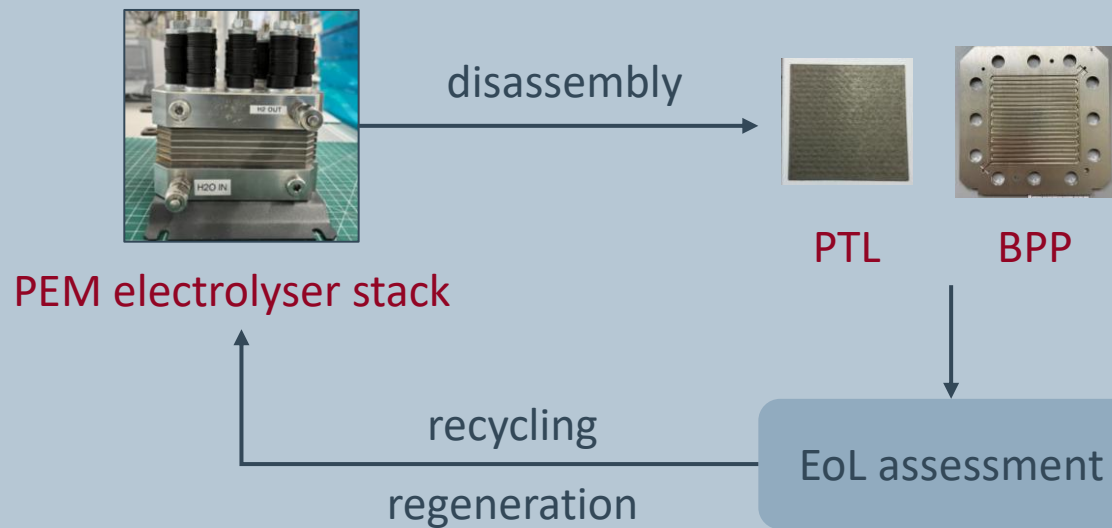
Hydrogen dispersion analysis and hazard potentials:

Accelerating H₂-Applications with effective and accurate safety concepts



Reduction of environmental impact and related recycling capacities of hydrogen technologies

Project scope



Project goals:

- Recycling roadmap for electrolyser stacks (focus on PTL and BPP)
- Improved recycling processes for PTL & BPP
- Evaluation of EoL degradation, 2nd life scenarios and regeneration techniques for PTL and BPP
- Environmental impact and economic viability
- Eco-design guidelines for PTL & BPP

Partners:



Join us in shaping the future of hydrogen technology!

HyCentA Research GmbH

Inffeldgasse 15

A-8010 Graz

- Phone: +43 316 873 9500
- office@hycenta.at
- www.hycenta.at



 Bundesministerium
Innovation, Mobilität
und Infrastruktur

 Bundesministerium
Wirtschaft, Energie
und Tourismus

