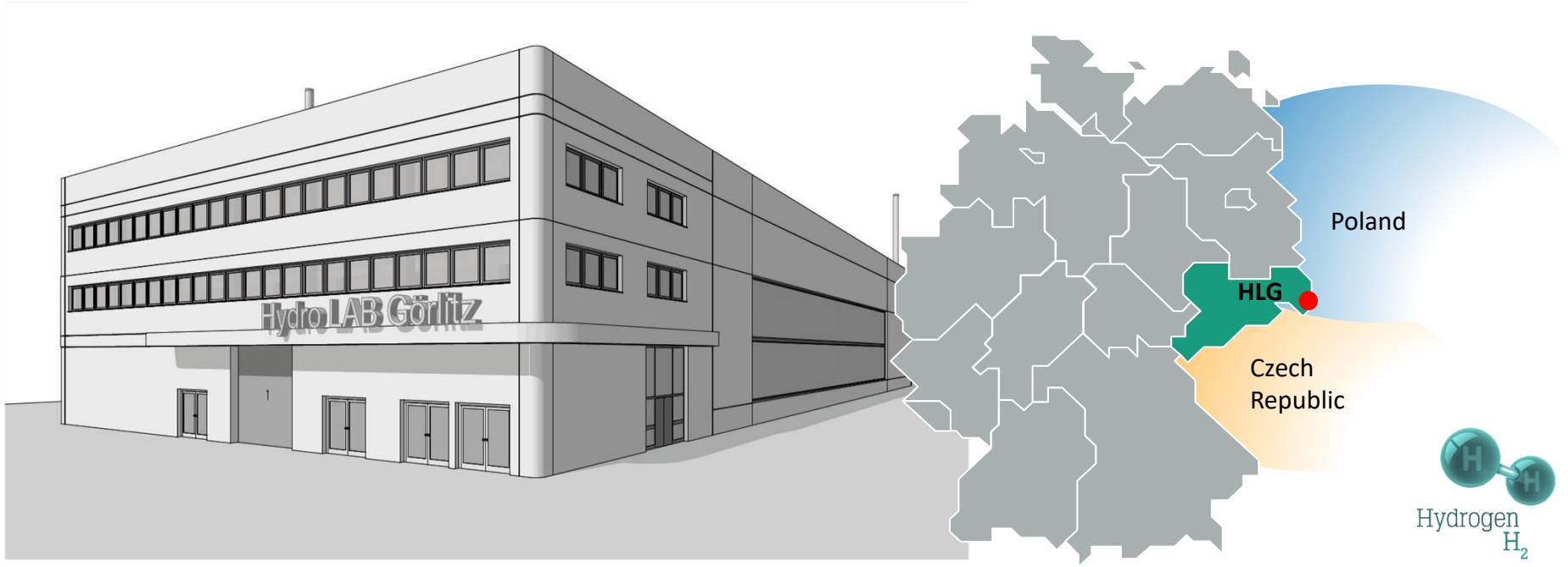
FRAUNHOFER HYDROGEN LAB GÖRLITZ (HLG) AND GERMAN-CZECH HIGH-PERFORMANCE CENTRE (HPC)

SIXTH BUSINESS FORUM OF THE ÚSTÍ REGION

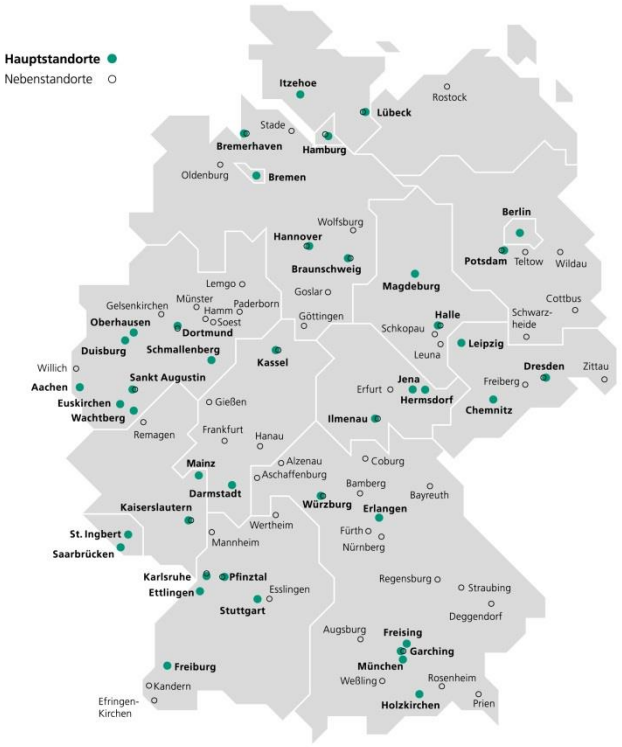
Ústí nad Labem, September 24, 2021



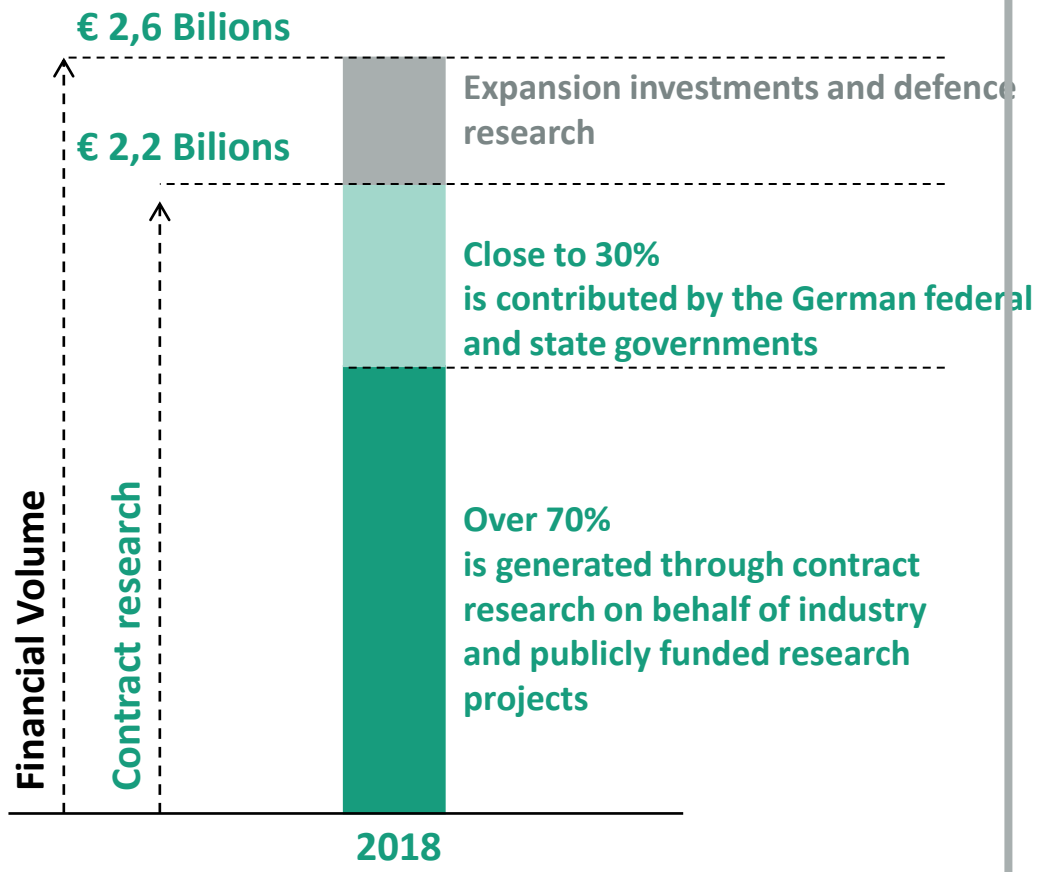
Content

Applied research for direct industrial use and for the benefit of society

More than **26 000** staff members



72 Institutes and research units

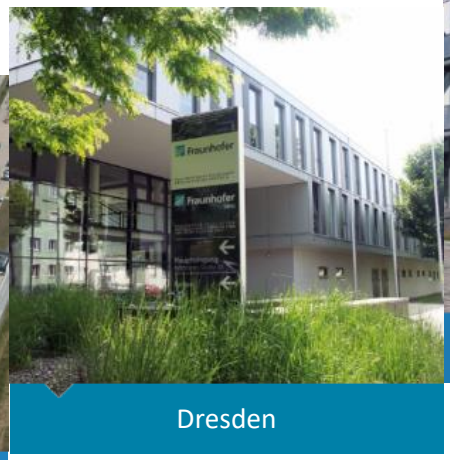


Fraunhofer IWU

Research under the key topic »resource-efficient production «

- Foundation July 1, 1991
- Currently approx. 600 employees
- Approx. 40 million euros research volume
- Locations: Chemnitz (headquarter)
  Dresden, Zittau/Görlitz, Wolfsburg

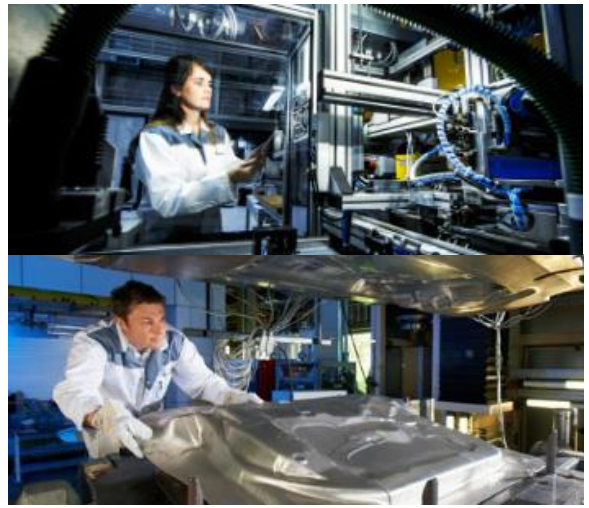

Chemnitz


Dresden


Zittau

- 3 science areas :

Mechatronics and functional lightweight construction	Forming technology	Machine tools, production systems and machining technology



Content

1. Fraunhofer-Gesellschaft and its Institute for Machine Tools and Forming Technology (IWU)

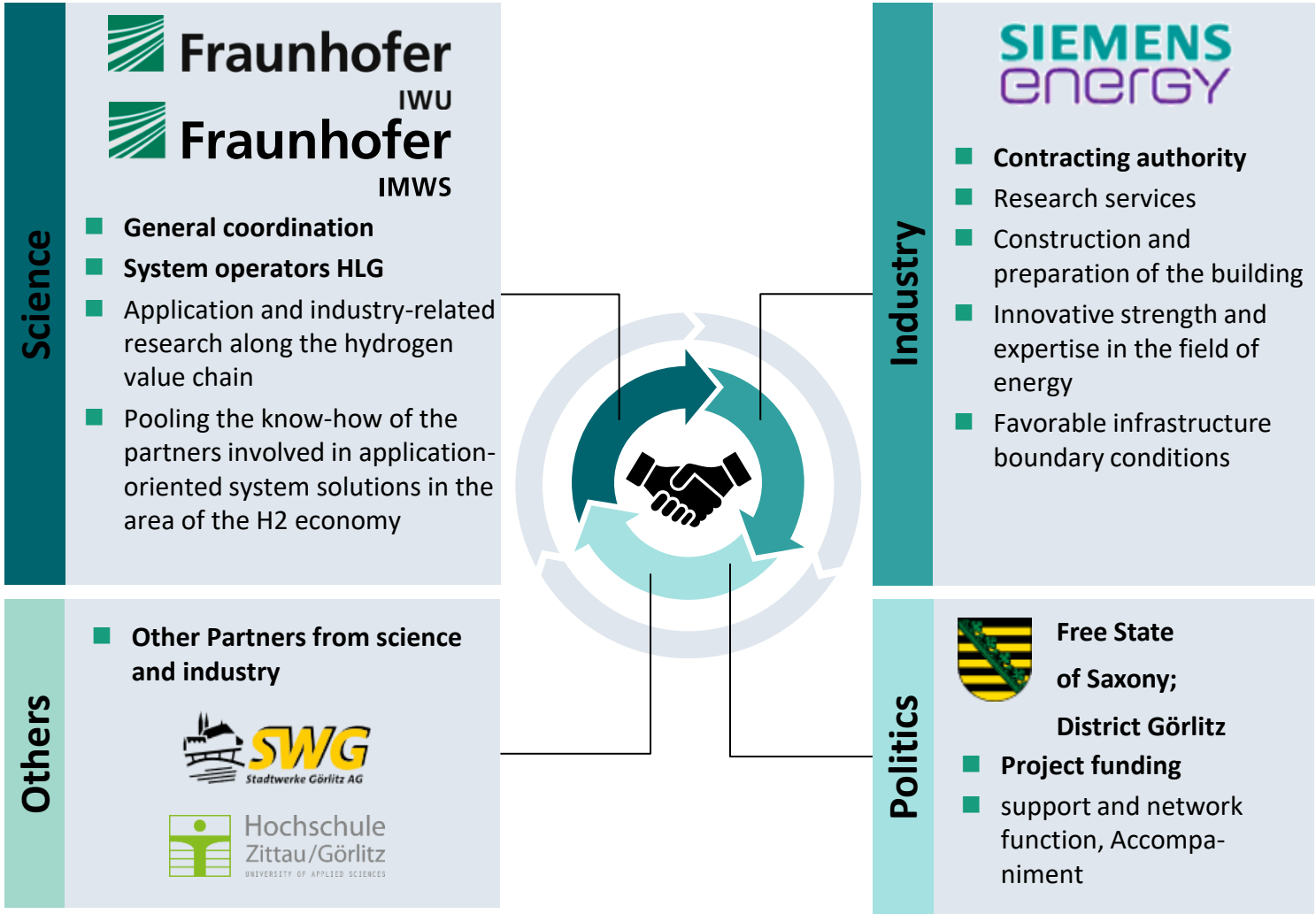
2. **Project: Fraunhofer Hydrogen Lab Görlitz (HLG)**

3. Project: German-Czech High-Performance Centre (HPC) for transdisciplinary systems research and transfer (Deutsch-Tschechisches Leistungszentrum)

Hydrogen Lab Görlitz - HLG

Cooperation between science, industry, politics and other partners

- **Common goal:**
  - Development of Lusatia as an innovation and energy region
  - Creation of new economic sectors, prospects and jobs
- **Main topics:**
  - Innovative solutions for H_2 and storage technologies
  - National testing and certification center for H_2 and storage technologies
  - Digitalization and Simulation
- **Clustering of know-how:**
  - Joint research platform with partners from science and industry and support for Saxony and local politics



Hydrogen Lab Görlitz - HLG

Roadmap – where are we now?

Signing of the Future Agreement

08/2019

09/2019

Kickoff of the Fraunhofer HLG

Project team

Conceptual phase

Funding application

HLG operating concept

Partner acquisition

2019-2020

2020-2021

06/2021

Funding handover

Planning phase

Plant planning

Permits

Invest.-Procurements

Supply infrastructure

2022-2023

setup and start-up

New building construction

Plant structure

System networking

06/2023

Installation HLG

Start of practical research at the HLG

from 2024

Expansion phase

Performance increase
6 MW → 12 MW

Expansion of research activities

Knowledge transfer

Fraunhofer IWU

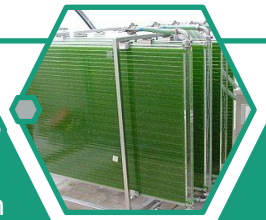
Hydrogen Lab Görlitz - HLG

What do we do?

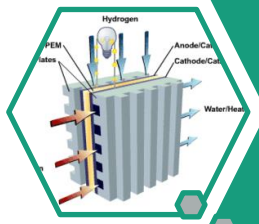
- A research facility for industrial scale applications along the entire H_2 value chain
- H_2 production, purification, compression, storage and consumption
- scientific service provider, development & testing of new H_2-technologies and strategies
- Final electrolysis power 8 - 12 MW on 4000 m²

Research topics

Hydrogen Lab Görlitz



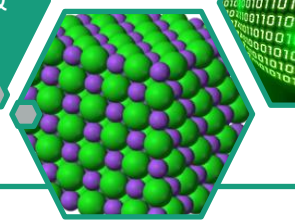
Pro-duction processes



Micro-structure diagnostic & in-line analytics

Stack and system evaluation

Digitali-zation & simulation



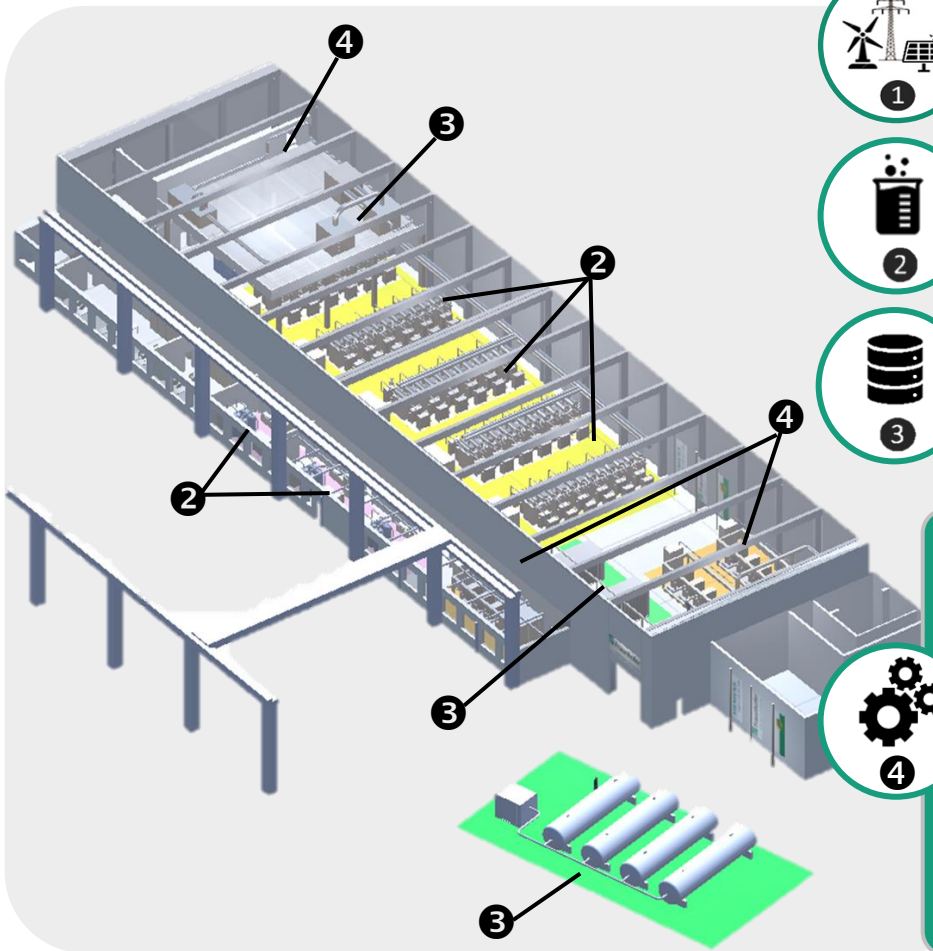
Certifi-cation

Other technology - related research topics

Fraunhofer IWU

Hydrogen Lab Görlitz - HLG

System components



Hydrogen value chain

1. Generation of renewable energy
2. Conversion to H2 (Power-to-X)
3. Storage and distribution
4. Sector coupling - decarbonization of end applications
   - Power generation
   - Industrial power generation
   - Transport
   - Heat and electricity for buildings

Components of Hydrogen Lab Görlitz (HLG)

Perspective: regional PV and wind power

Electrolysis: Basic equipment and test fields in the MW range

Preparation: Basic equipment and test fields for purification and compression

Storage: Basic equipment and test fields

Distribution: Test field for pipes, fittings and measuring technology

Fuel cells: Basic equipment and test fields in the MW range

Media supply and utilization: Water, nitrogen, oxygen, hydrogen, etc.

perspective with regard to the National Hydrogen Strategy: Decarbonization in the sectors of industry, transport, housing etc. through cooperation:

- Siemens Görlitz
- TU Dresden
- Stadtwerke Görlitz
- Hydrogen storage for transport

Content

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3. **Project: German-Czech High-Performance Centre (HPC) for transdisciplinary systems research and transfer (Deutsch-Tschechisches Leistungszentrum)**

German-Czech High-Performance Centre - HPC

General points

- **Memorandum of understanding** between Liberec University of Technology and Fraunhofer IWU was signed on August 21, 2020 to initiate scientific cooperation between both institutions and further Czech partners.

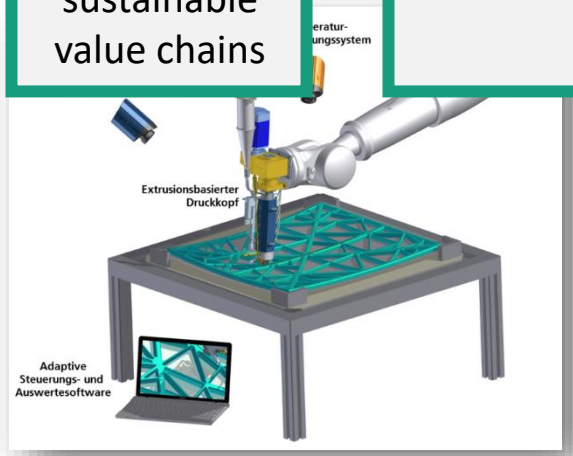
- **Main objectives** are:
  - Support the establishment of a High-Performance Center (HPC) for transdisciplinary systems research and technology transfer.
  - Development of joint research projects in areas of interest and the necessary conditions for researcher exchange between participants
  - Development of a roadmap for permanent cooperation between the research institutions
  - Identification and definition of joint working models with local industry in Germany and the Czech Republic
  - Evaluation, preparation and development of future R&D projects with high added value (knowledge transfer) for regional industrial partners

German-Czech High-Performance Centre - HPC

Research areas

HPC D-CZ

Trans-disciplinary Industry 4.0 Technologies for resilient and sustainable value chains	3D-Printing Technologies and Smart Materials	Plastics and Textile Technologies	Innovative vehicle technologies	**Hydrogen Production and Applications**



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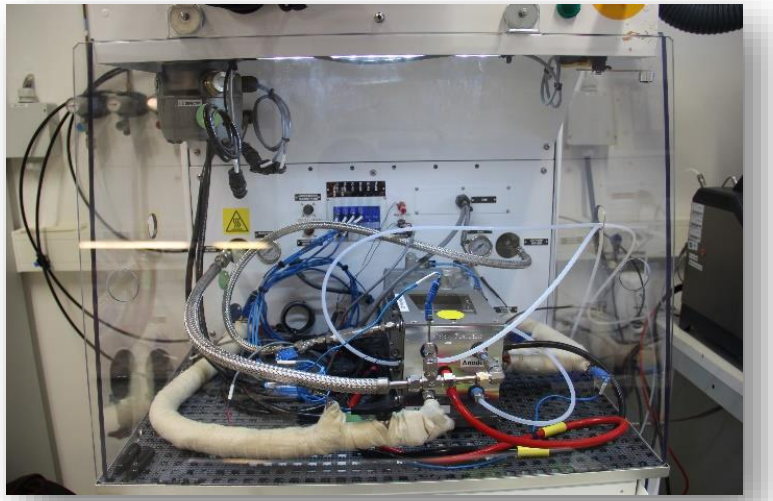
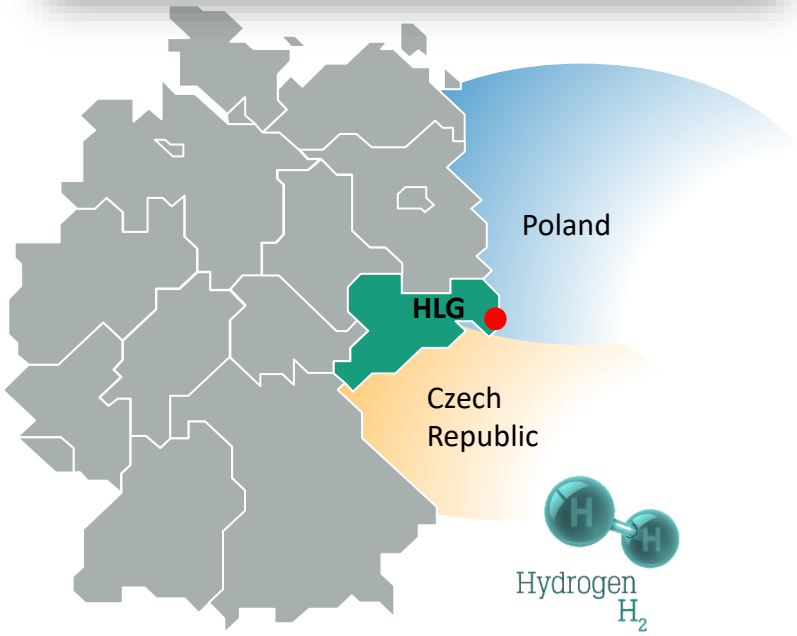
German-Czech High-Performance Centre - HPC

Research area Hydrogen Production an Applications



- Step 1 - Preparation of a **potential study** together with Czech partners, Objective:
  - Evaluation and possibilities to build cross-border H2 value chains with focus on industry, mobility, production processes
  - Duration: approx. 6 months
  - Realization of several workshops for specific exchange and project processing

- Step 2 - Development of **cross-border H2 value chains**:
  - together with czech and german partners
  - from 2022
  - focus on industry, mobility, production processes



Fraunhofer IWU

German-Czech High-Performance Centre - HPC

further Information and Questions

- Search for Czech partners for cooperation in potential study
  - Announcement: Kickoff event / workshop in mid-November

- Search for Czech partners for long-term cooperation to build up cross-border H2 value chains

Thank you very much for your attention!

We look forward to working with you.

Děkuji za pozornost! Těšíme se na spolupráci.

Dr.-Ing. Sebastian Schmidt

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Hydrogen Lab Görlitz

https://www.hydrogen-lab.de/

Lusatian Hydrogen Network „DurchH_2atmen“

https://durchatmen.org/

The HLG is funded by tax money based on the budget decided by the Landtag of Saxony