



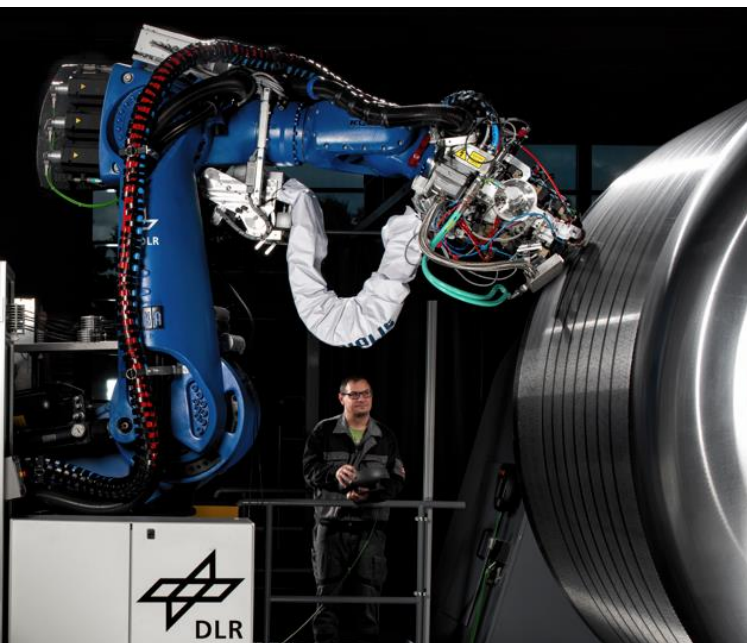
Hydrogen at DLR

Research for a competitive economy, sustainable mobility
and a resilient society



What we offer

- Many years of H₂ expertise in aerospace, aviation, energy and transport applications
- Development and validation from the basics and materials to industrial application
- Demand-orientated research for our partners from industry, the public sector and science
- Test environments for hydrogen systems
- Simulation methods and digital twins
- Demonstration plants: operation and thermal management
- Safety concepts and certification support
- Technology assessment and feasibility studies
- Hydrogen scenarios, market and trend analyses
- Distribution infrastructure planning and import strategies
- Assessment of macroeconomic influences and interaction with electricity markets



Lightweight tank for cryogenic hydrogen

Our H₂ expertise at a glance

Production



Electrolysis

(Alkaline electrolysis, PEM, AEM, SOEC, avoidance of critical materials)



Solar H₂ Production

(Concentrating solar technologies, thermochemical processes, PEC, photocatalysis)

Storage & Distribution



Pipelines

(Planning and design)



Cavern Storage

(Potential analysis, gas purity)



Liquefaction

(Operation, TEA)



Tanks

(CFRP tanks, LH₂ storage, boil-off Management, certification)



Conditioning

(Components & systems, pumps, heat exchangers)

Conversion



Fuel Cells

(PEM-FC, SOFC, efficiency increase, waste heat utilization)



Gas Turbines

(H₂ gas turbines, burner design, retrofit concepts)



Fuels

(Fuel design, PtL, SAFs)

Use



Aerospace

(Engine testing, sensor technology, fuel handling)



Aviation

(H₂ direct combustion, fuel cells)



Shipping

(Fuel cells, ammonia, methanol)



Commercial Vehicles

(Refueling, health-monitoring, thermal management)



Industry

(High-temperature heat, chemical raw materials)

System



Standardization & Certification

(DKE/K 245 Hydrogen Technologies)



Safety

(Operational safety, material testing, protection against external attacks)



System Analysis

(TEA, LCA, MCDA, macroeconomic influences, concepts for airports and ports)



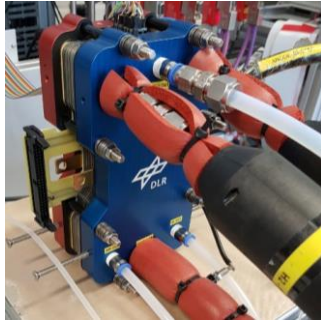
Climate Impact

(Emission measurements, impact assessment, leaks, climate chemistry simulations)

Hydrogen platforms at DLR



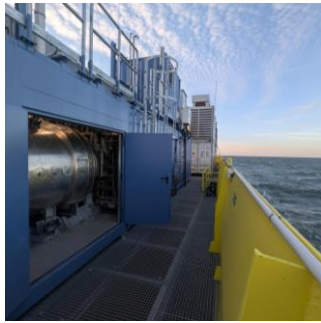
Hydrogen test infrastructure (gaseous and liquid)



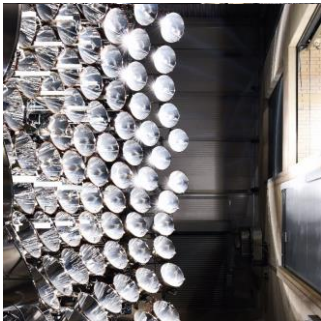
Fuel cell and electrolysis tests



Test stands for space propulsion systems



Maritime research platform



Test rigs for solar hydrogen production



Hydrogen purity tests

DLR sites with H₂ activity



Imprint

Publisher:
German Aerospace Center (DLR)
Programme Directorate Energy

Address:
Linder Höhe, 51147 Köln
e-mail: H2@dlr.de

DLR.de/en

Images DLR (CC BY-NC-ND 3.0), unless otherwise stated.
Icons designed by Freepik, Smachicons, surang, NeXore88, Mihimihi, srip, Vectors Tank, vectrosmarket15, Muhammad_Usman – available at <https://www.flaticon.com>
Coverimage, lower part: Thomas Ernsting / DLR



**Deutsches Zentrum
für Luft- und Raumfahrt**
German Aerospace Center

Contact: H2@dlr.de

