

HYDROGEN VALUE CHAIN



A unique **partnership** to assess the in-service behaviour of materials and components

The strength of the **two major research players** in France at the service of the hydrogen sector

SERVICES & EXPERTISE



NEW COMPONENTS, EQUIPMENT DEVELOPMENT AND INDUSTRIALISATION

- Design support
- Expertise and selection of forming, assembly and sealing technologies
- Identification and development of dedicated characterisation and testing equipment



MORE RELIABLE PRODUCTION AND LOWER COSTS

- Representative qualification tests
- Techno-economic assessment
- Life Cycle Assessment (LCA)



MANUFACTURING

- Forming and assembly processes
- Quality control
- Standards compliance



SIMULATION

- Model identification and development
- In-service behaviour modelling
- Validation tests



COMPLIANCE WITH TECHNOLOGICAL, NORMATIVE AND REGULATORY DEVELOPMENTS

- Implementation support
- Analysis of standards & recommendations
- Regulatory watch

COMPATIBILITY OF MATERIALS in hydrogen environment

MATERIAL BEHAVIOUR

- Materials selection
- Standardized or tailor-made tests
- Tests under representative conditions

ASSESSMENT OF THE H₂ INFLUENCE ON EQUIPMENT AND PROCESSES

- Process selection support
- Characterisation under operating conditions
- Durability and ageing

MICROSTRUCTURAL & PHYSICO-CHEMICAL CHARACTERISATION

- Electrochemical & gas permeation tests
- Hydrogen dosing
- Microstructural characterisation (SEM, EBSD, nanoindentation, etc.)

MECHANICAL AND TRIBOLOGICAL CHARACTERISATION

- Unique fleet of 7 mechanical environmental machines
- Wide pressure range (0 to 400 bar) and temperature range (-253°C to 450°C)
- Disc burst tests
- Tribological tests - pressure (up to 80 bar) temperature (-55°C to 150°C)

MODELLING

- Behaviour laws, diffusion, ageing
- Analysis and test support



CONTACTS

yann.goerger@cetim.fr
laurent.bedel@cea.fr

