

# Electrochemical Hydrogen Charging Cell (H2)

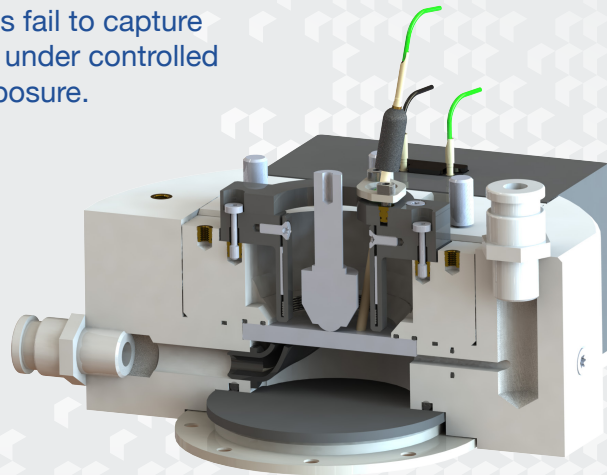
For Advanced Hydrogen Green Energies Tribology Testing

Understand, how Hydrogen Changes Friction & Wear, hydrogen embrittlement and hydrogen-induced degradation are critical challenges for metals

used in energy, mobility and infrastructure. Traditional tribology tests fail to capture these effects under controlled hydrogen exposure.

## Our solution:

An electrochemical hydrogen charging cell integrated with a tribometer, enabling in-situ tribological testing under controlled hydrogen charging.



## Why Electrochemical H2 Charging?

- Generates **atomic hydrogen** directly on the metal surface.
- Enables **controlled hydrogen** uptake via current density and electrolyte.
- Avoids **complex** and **hazardous** high-pressure hydrogen systems.
- Widely recognized as a **reliable method** for hydrogen embrittlement studies.

## Who Is It For?

- Research laboratories & universities
- Materials scientists & tribologists
- Energy, hydrogen and mobility industries
- R&D centers working on hydrogen-compatible materials
- From **Research** to **Reliable Testing**

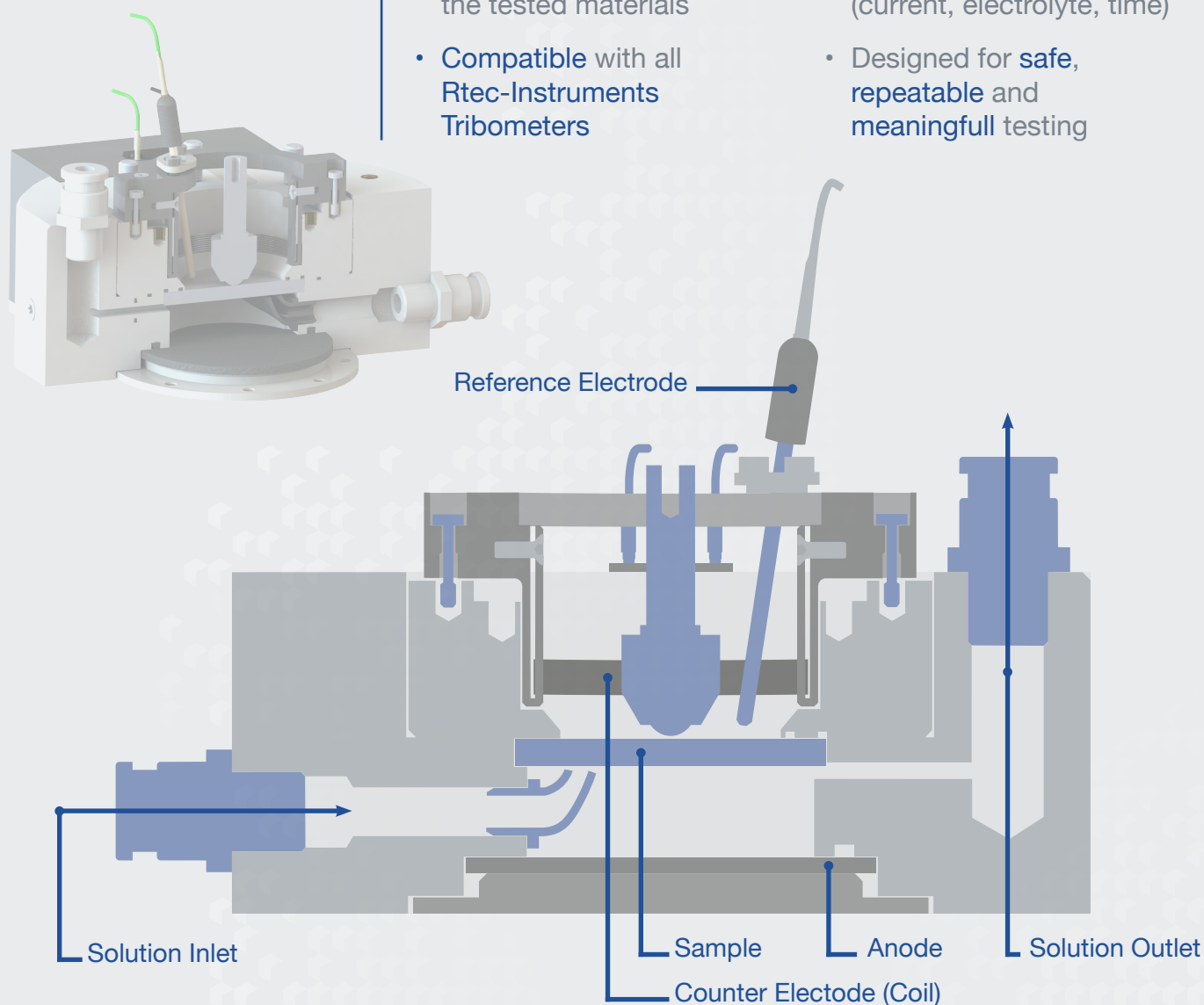
## What You Can Study ?

- Friction and wear under hydrogen exposure.
- Hydrogen embrittlement effects on **rolling** fatigue and during sliding contacts.
- Performance and durability of **alloys**, coatings and surface **treatments**.
- Functional **material behavior** for hydrogen infrastructure applications.



## Key Features

- Integrated electrochemical cell for hydrogen in situ charging.
- Constant quantification of Hydrogen content into the tested materials
- Compatible with all Rtec-Instruments Tribometers
- Controlled electrolyte flow, gas evacuation and sensor monitoring
- Adjustable charging conditions (current, electrolyte, time)
- Designed for safe, repeatable and meaningful testing



Developed through close collaboration between Rtec and academic partners, this system bridges the gap between fundamental hydrogen research and practical tribological evaluation.