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The network of Horizon Europe Cluster 5 National Contact Point.



The Iberian Centre for Research in Energy Storage (CIIAE)

European Hydrogen Week

European Hydrogen Week 2024
GREENET Pitch session
TechForum, 19th November 2024

Clean Hydrogen Partnership

The GREENET project has received funding from the EU Horizon Europe programme under Grant Agreement No 101069604

The Iberian Centre for Research in Energy Storage (CIIAE)

- **Type of Institution**:

  Research and Technology Organisation (RTO)

- **Department**:

  Hydrogen and Power-to-X

- **Representatives at the EU Hydrogen Week 2024:**

Find us in Cáceres, (Spain)

Follow us!

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FUNDECYTPCTEX
Ciemat Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas

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Call and/or area(s) of interest
- based on the Clean Hydrogen Partnership SRIA -

- ✓ Renewable H_2 production (electrolysis, other routes)
- ✓ H_2 storage, compression, purification, matering solutions
- ✓ H_2 end uses (transport, clean heat and power)
- ✓ Cross-cutting issues (sustainability, LCSA, recycling, eco-design)

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3 Research Areas of Activity
(+ Prototyping and Pilot Plan Sections)

TRL 2 → TRL 7

1 H_2 generation, storage, transport & uses

- **Low T electrolysers and fuel cells**
- **High T electrolysers and fuel cells**
- **Hydrogen storage and transport**

2 Synthetic fuels and chemicals

- **CO_2 capture & uses**
- **Heterogeneous catalysis**
- **Electrocatalysis**
- **Photo- and photoelectro-catalysis**

3 Multi-scale modelling (DFT, CFD, LCA, TEA) and Regulation

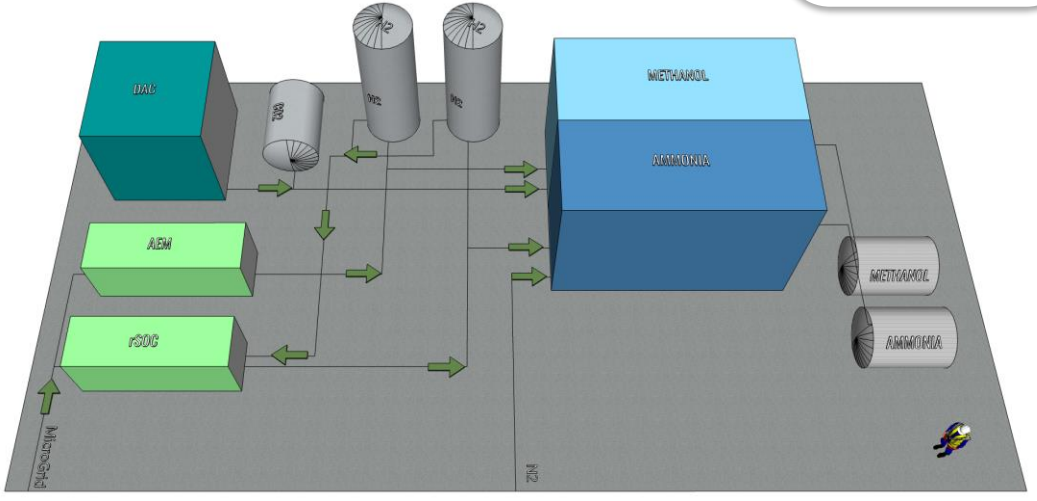
+ Prototyping and Pilot Plant

Fundamental Research Activities, Resources and Prototyping

- **Fundamental research in**:
  - Low and high temperature electrolysers and fuel cells (e.g. AEL, AEM, PEM, r-SOC, co-SOEC, PCEL)
  - Hydrogen storage and transport (e.g. Metal hydrides, Adsorbents, LOHCs, NH_3, MeOH)
  - CO_2 capture and uses (e.g. Amines, Direct Air Capture)
  - Catalysis for chemical and synthetic fuels (e.g. Direct CO_2 hydrogenation, Methanol and NH_3 synthesis, Electro-, Photo- and Photoelectro- CO_2 reduction)
- **Full SoA laboratories** for structural, microstructural, thermal, mechanical and physicochemical, (XRD, SEM/FIB, TEM, AFM, RMN, FTIR, RAMAN, DSC, TGA, STA, GC-MS, Dilatometry, Reometers, DVS, etc.), and electrical & electrochemical characterization.
- **Prototyping** (1kW r-SOEC/co-SOEC, 1kW AEM)

Hydrogen and Power-to-X Pilot Plant

- Flexible and automated SoA technologies
- Modular units
- Thermal integration and process optimization
- Testing and validation at high TRLs
- Own and third party developments

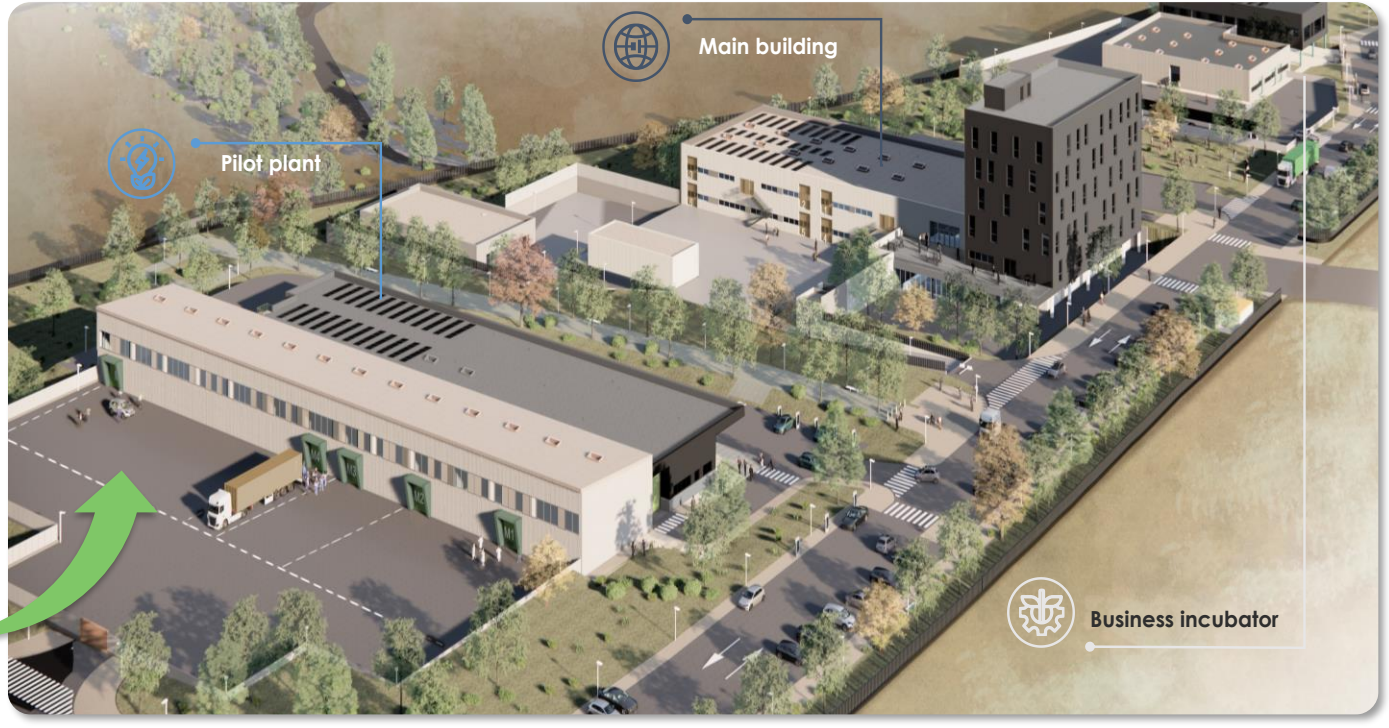


- r-SOEC (co-COEC) (40 kW)
- AEM (40 kW)
- DAC (10 ton CO_2/Yr.)
- Ammonia reactors (50 and 5 l)
- Methanol reactors (50 and 5 l)
- Microgrid up to 2 MW

Thank you for your attention!

Find us in Cáceres, (Spain)

3 new buildings under construction!



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