

HYPSTER

HYDROGEN PILOT STORAGE FOR LARGE ECOSYSTEM REPLICATION

hypster
Hydrogen Storage

Project ID	101006751
PRR 2025	Pillar 2 – H ₂ storage and distribution
Call topic	FCH-02-7-2020
Project total cost	EUR 15 514 301.73
Clean H ₂ JU max. contribution	EUR 4 999 999.00
Project period	01-01-2021 - 30-06-2025
Coordinator Beneficiary	STORENGY SAS, FR
Beneficiaries	ERM FRANCE, ESK GMBH, ELEMENT ENERGY, S.A.S. BROUARD CONSULTING, STORENGY FRANCE, INOVYN CHLORVINYLS LIMITED, ENVIRONMENTAL RESOURCES MANAGEMENT LIMITED, EQUINOR ENERGY AS, AXELERA - ASSOCIATION CHIMIE-ENVIRONNEMENT LYON ET RHONE-ALPES, ELEMENT ENERGY LIMITED, ECOLE POLYTECHNIQUE, INSTITUT NATIONAL DE L'ENVIRONNEMENT INDUSTRIEL ET DES RISQUES – INERIS, ASSOCIATION POUR LA RECHERCHE ET LE DEVELOPPEMENT DES METHODES ET PROCESSUS INDUSTRIELS

<https://hypster-project.eu/>

PROJECT AND GENERAL OBJECTIVES

HypSTER aims to demonstrate the industrial-scale operation of cyclical hydrogen storage in salt caverns to support the emergence of the hydrogen energy economy in Europe in line with Hydrogen Europe's overall road mapping. The cavern is located in Etrez in Auvergne-Rhône-Alpes, France. For the production of green hydrogen, the Etrez storage site will rely on local renewable energy sources and a 1 MW PEM electrolyser. In the long run, this facility will produce 400 kg of hydrogen per day (equivalent to the consumption of 16 hydrogen-powered buses). The project's objective is to test industrial-scale green hydrogen production and storage in salt caverns and the technical and economic reproducibility of the process to other sites throughout Europe.

NON-QUANTITATIVE OBJECTIVES

- Assessment of the economic feasibility of cyclical hydrogen storage in salt caverns.
- Analysis of risk and environmental impacts.
- Definition of guidelines for regulation and normative adaptation in Europe.
- Study of the techno-economic replicability in Europe.
- Microbiological analysis.

PROGRESS, MAIN ACHIEVEMENTS AND RESULTS

- The workover of well EZ53 was successfully completed in 2023.
- All works (civil, piping, electrical, instrumentation, automation) have been carried out and all procured equipment has been installed and connected.

- Numerical simulation models for hydrogen storage in the salt cavern have been adapted.
- A risk analysis of underground hydrogen storage in the salt cavern has been performed.
- Commercial and microbiological analysis have started.
- The inauguration of the site was held in September 2023 in presence of Catherine Macgregor, CEO of Engie, and Mirela Atanasiu, Head of Unit Operations and Communications of the Clean Hydrogen Partnership. It was a key milestone and a highlight in the project's life.
- Nitrogen tightness test was successfully conducted in November 2023.
- Hot commissioning of the electrolyser was interrupted in October 2024 due to faulty transformers.
- A hydrogen tightness test was successfully conducted in October and November 2024.
- Cyclic tests started in December 2024.
- A public workshop was held in Paris in December 2024 with 140 participants, both in-person and online.

FUTURE STEPS AND PLANS

- Cycling tests finalised and post-trial assessments completed in summer 2025.
- Hydrogen production by electrolyser to resume in June 2025.
- Project wrap-up in summer 2025.

PROJECT TARGETS

Target source	Parameter	Unit	Target	Target achieved?
Project's own objectives	Power	MW	1	
	H ₂ Mass	kg	2 000	