Hydrogen storage in salt caverns
The Hypster project

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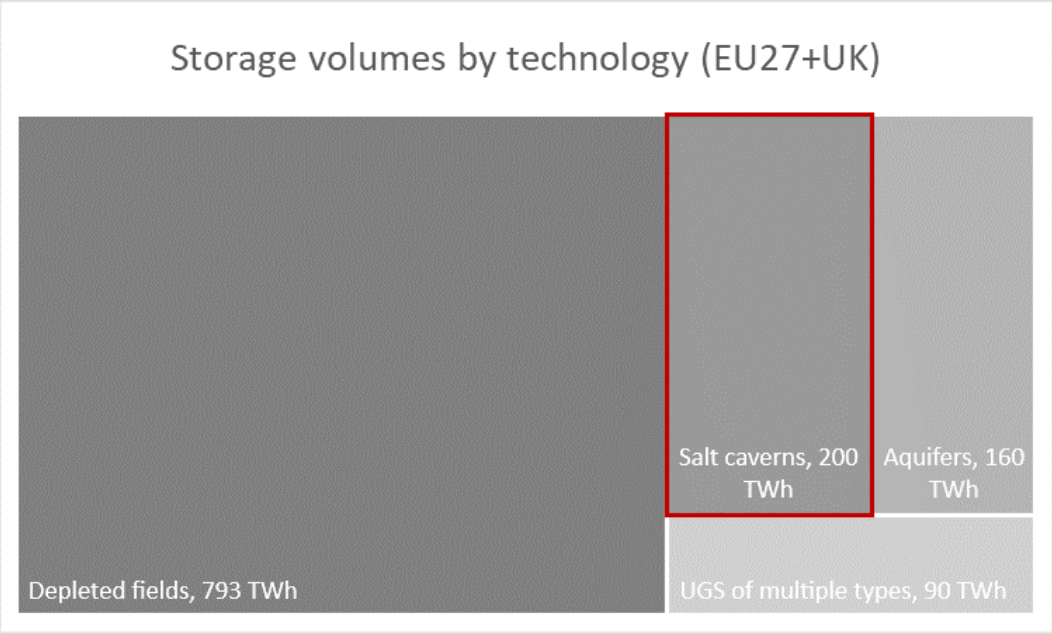
What are the technical solutions to store hydrogen?

Three technologies are used to store natural gas underground :



Salt caverns are the best option to store hydrogen in the short term

Salt Caverns

TRL 9 (Commercial)

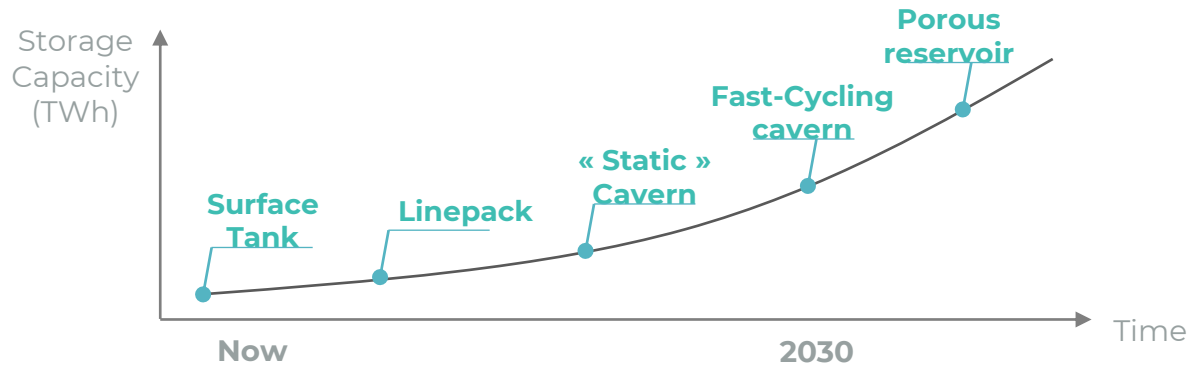
Fast Cycling Salt Caverns

TRL 7 (Pilot)

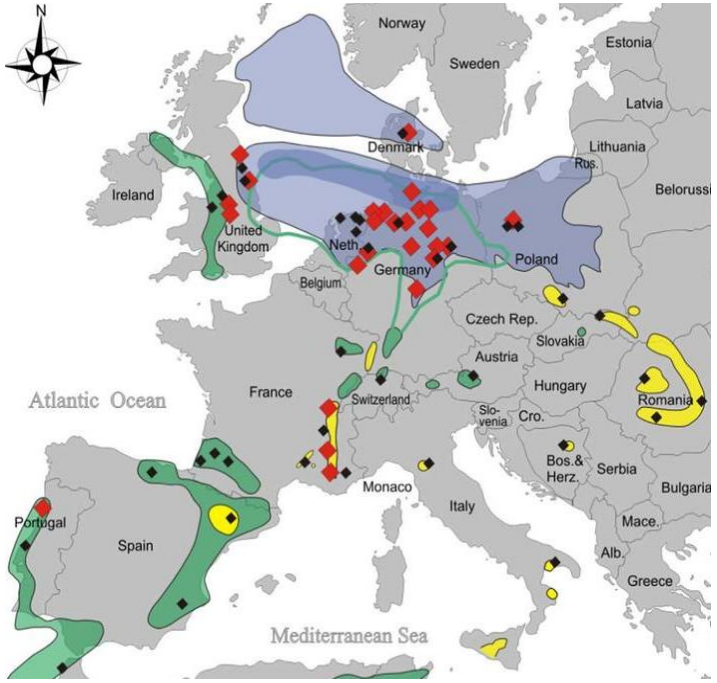
from 6 to 14 full cycles/year

Porous Reservoirs

TRL 2-3 (R&D)

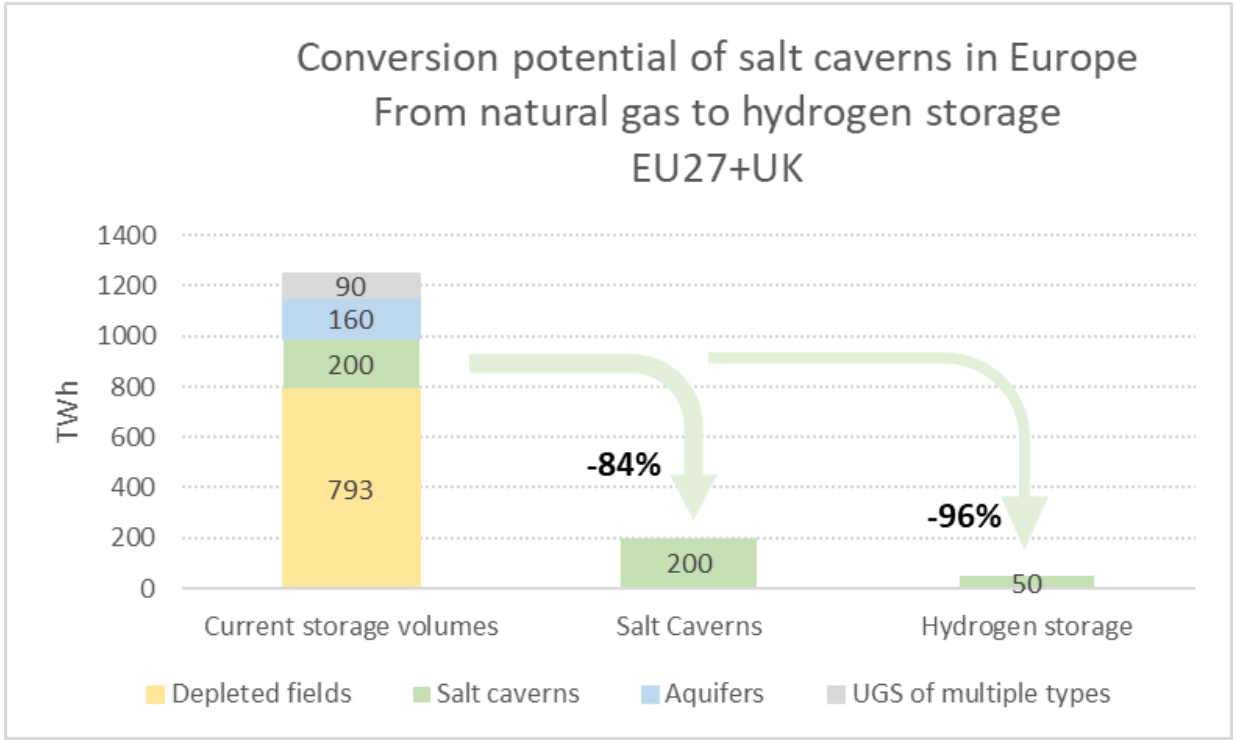


Europe’s underground storage potential

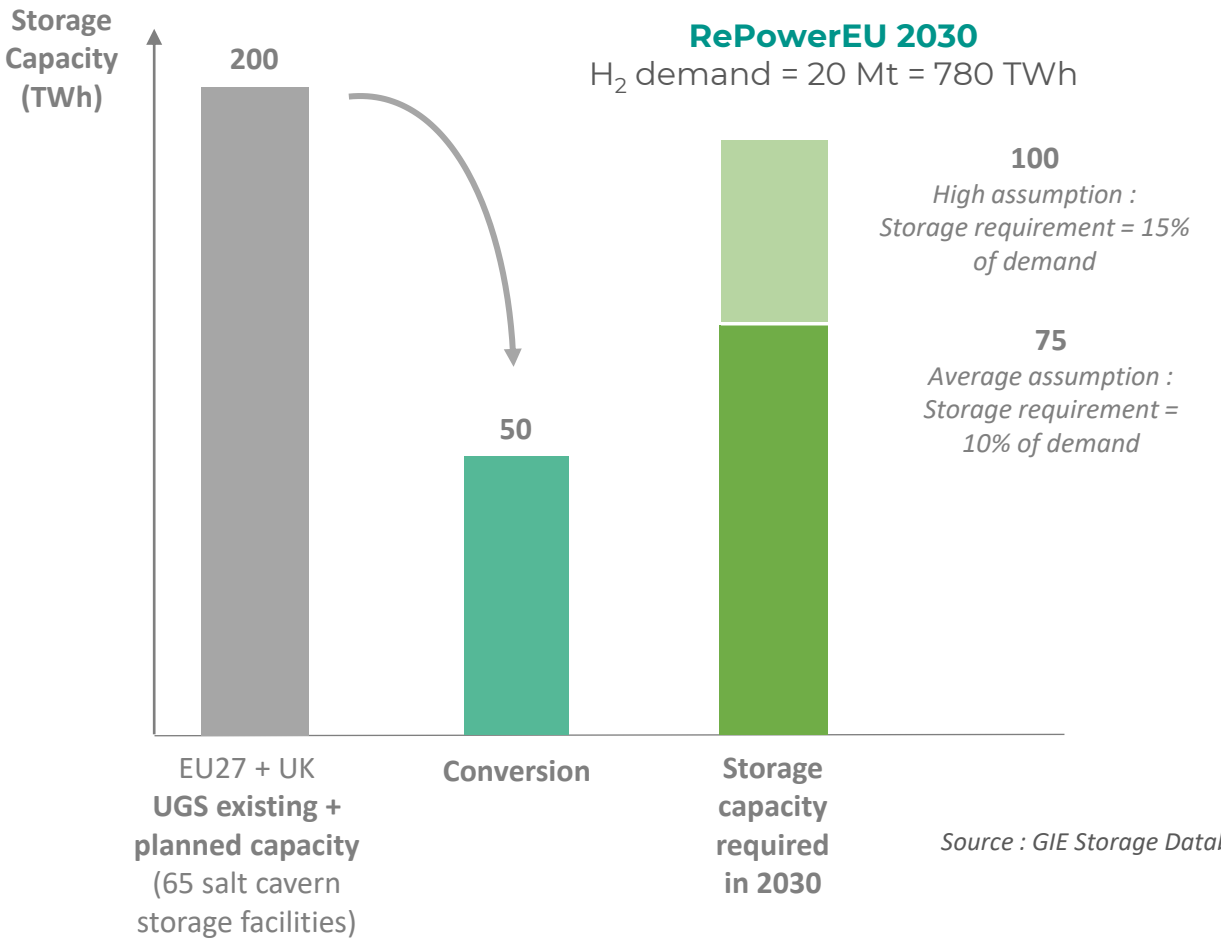


Gillhaus A. Natural gas storage in salt caverns - Present status, developments and future trends in Europe. Spring 2007 Conference:19; 2007.

- Hydrogen has a **lower energy content** than natural gas
- Conversion of all salt caverns represent **4% of actual capacity**



REPowerEU ambition drives infrastructure needs



Source : GIE Storage Database

By 2030

New H_2 storage projects required

Projects must start asap and before 2025

Salt caverns are the ideal short term solution (TRL 9)

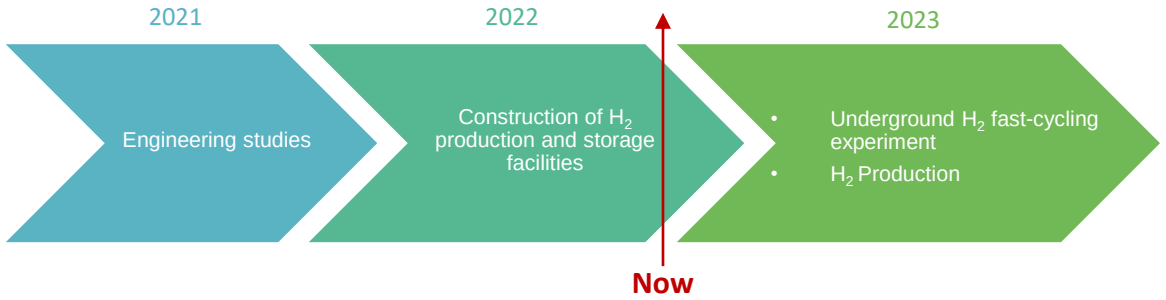
Porous reservoirs will be key in the medium term (~ TRL 3)

Energy density ratio H_2 / CH_4 : 26%
Storage capacity required :
- *20% of demand if mainly renewable H_2, 10% if mainly blue H_2*
- *24% for NG*

The hypster project

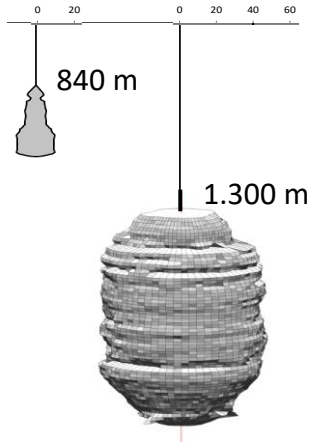
Hydrogen Storage

Project start : January 2021
Location : Etrez (Ain) France
End of Pilot Phase : 2023



HyPSTER cavern

Geometric volume : 7 000 m3
Total gas: 45,5 MMcf
Equiv H2 : 44 tons



Typical cavern in Etrez

Geometric volume : 570 000 m3
Total gas: 4.75 Bcf
Equiv H2 : 6.3 ktons

Consortium Partners

H2 & Subsurface expertise

storengy, ESK, ARMINES, BROUARD CONSULTING

Regulation & Safety

INERIS

Storage replication potential

inovyn, storengy

Technical and economic assessments

elementenergy

Bacteriology Purification

equinor

Communication

axelera

Coordination

storengy, elementenergy

2 Strategic partnerships

Schneider Electric, TechnipFMC

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Hydrogen Tech World Conference 2023

Thank your for your attention