

SAVE the DATE: Geomechanical challenges in industrial CO₂ and H₂ storage in geological formation



In-person event : 1 day conference

Ecole des Mines de Paris, 60 bd de Saint Michel

Come to learn more about real industrial project : [HYPSTER](#) (Ain, France), [Aramis CCS](#) (Hollande), [Bleue Lorraine Permit](#) (Coalbed methane, Lorraine, France) projects and related geomechanics topics



Meet Speakers

Gregoire Hevin, **Storengy**
Arnaud Réveillère, **Geostock**
Gatelier Nicola, **Geostock**
Ahmed Rouabhi, **Ecole des Mines de Paris**
Hippolyte Djizanne, **INERIS**
Sabine Delahaye, **TotalEnergies**
Nicolas Agenet, **TotalEnergies**
Nicolas Mottet, Freric Bourgeois, **TotalEnergies**
Vincenzo De Gennaro, **SLB**
Elisabeth Bemmer, Jeremy Frey, **IFPEN**
Thomas Le Guenan, Hideo Aochi, **BRGM**
Maria PEREZ-FERNANDEZ, Mohamed Oukil BENMESBAH, Kun Su, **TotalEnergies**



On 4th April 2024 from 9:00am to 17:00pm

Don't miss out our special in-person event of the year 2024.



CFMR
COMITÉ FRANÇAIS
DE MÉCANIQUE
DES ROCHES



France Section



Paris Chapter

Technical Session, 4th April 2024, at Ecole des Mines de Paris, 60 bd Saint Michel, Paris

Geomechanical challenges in industrial CO₂ and H₂ storage in geological formation

Many industrial operators around the world are committed to developing CO₂ storage projects (CCS) in highly permeable sandstone or carbonate reservoirs in order to meet the goals of net zero as per the Paris Agreement (COP21). At the same time, the storage of H₂ in subsurface salt cavities or reservoirs is also the subject of numerous studies at the pre-development stage.

The design and operation of each CO₂ or H₂ storage project require many inputs from various geomechanical topics, from rock mechanics characterization on reservoir rock samples to 3D hydromechanical or thermo-hydro-mechanical numerical simulation of the long-term behavior of host formation and its overburden, including field monitoring and assessment of risk of induced seismicity. Most of them can be addressed with the same methodologies used in conventional oil and gas developments. Others are more specific, and some are considered as game changers, for example, the maximum allowable injection pressure of CO₂ regarding the subsurface integrity from Geomechanical point of view.

Co-organized by CFMR, SPE France section, and EAGE Paris Chapter, this technical session focuses on key geomechanical topics related to industrial projects of CO₂ and H₂ storage in geological formations. The session aims to discuss progress made and remaining challenges in Geomechanics. Furthermore, it seeks to provide valuable insights to guide the R&D efforts of the French Rock Mechanics community regarding current issues related to CO₂ and H₂ storage. In addition, the session aims to attract young professionals to engage within the realm of Rock Mechanics.



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Geomechanical challenges in industrial CO₂ and H₂ storage in geological formation

Technical Session, 9H00-17h00, 4th April 2024, Room V106, at Ecole des Mines de Paris, 60 bd Saint Michel, Paris

9h00: Mots du President CFMR

9h05 (25 min / présentation)

1. HyPSTER, 1er pilote de stockage d'hydrogène en cavité saline en France
2. Hystories project: Hydrogen Storage in European Subsurface
3. Hydrogen Storage in lined mined rock cavern : geomechanical aspects

Gregoire Hevin, **Storengy**
Arnaud Réveillère, **Geostock**
Nicolas Gatelier, **Geostock**

Pause : 10h20-10h40

4. Stockage de l'hydrogène en cavités salines : quelques points qui mériteraient des réponses
5. Numerical modeling for risk control around UHS
6. H2 offshore storage project

Ahmed Rouabhi, **Ecole des Mines de Paris**
Hippolyte Djizanne, **INERIS**
Sabine Delahaye, **TotalEnergies**

Buffet du midi 12:15- 13:30

13:30

(25 min / présentation)

7. Aramis CCS project and related geomechanics topics
8. Aramis CCS project: Cap rock integrity and faults stability:
9. ECBM Feasibility, a case study of the Northeastern Lorrain basin (Grand-Est, France)

Nicolas Agenet, **TotalEnergies**
Nicolas Mottet, Frederic Bourgeois, **TotalEnergies**
Vincenzo De Gennaro, **SLB**

Pause : 14h50-15h10

10. Workflow de remplissage en propriétés pétrophysiques et mécaniques d'un modèle géomécanique à l'échelle d'un site de stockage de CO₂
11. Démarche d'analyse de risque appliquée à un site de stockage de CO₂
12. Experimental and numerical modelling of CO₂ injector to THM cyclic loading

Elisabeth Bemer, Jeremy Frey, **IFPEN**
Thomas Le Guenan, Hideo Aochi, **BRGM**
Maria PEREZ-FERNANDEZ, &
Mohamed Oukil BENMESBAH, Kun Su, **TotalEnergies**

16:30-17h00

13. Discussions



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The 4th April 2024, Room L108_B, at Ecole des Mines de Paris, 60 bd Saint Michel, Paris

With the supports from:



Organization Committee:

- **CFMR:** Philippe Cosenza, Kun Su, Laura Blanco Martin, Nicolas Guy, Nicolas Gatellier, Gregoire Hevin, Siavash Ghabezloo
- **SPE France:** Zahraa Alkalby, Natalia Quisel
- **EAGE Paris Chapter:** Guillaume Henin

