

2nd Underground Energy Storage Workshop
“Underground Thermal Energy Storage Systems (COST-GEOHERMAL DHHC)”

**2nd European
Underground Energy
Storage Workshop**



Date and time of the workshop: 23-24 May 2023

Location: Hotel “L’Échiquier Opéra”, Paris, France

About the workshop

On May 23 and 24, the COST Action Geothermal-DHC, the ENeRG network, the EuroGeoSurvey, and the the Histories project, a two-year project funded by the European Union to support the technical development for hydrogen storage, co-organised the “2nd Underground Energy Storage Workshop”, which took place at the Hotel “L’Échiquier Opéra” in Paris, France.

The workshop was dedicated in the memory of our colleague from the Czech Geological Survey, Vit Hladik, who contributed enormously to the organization of the first edition and initiated the organisation of this second edition.

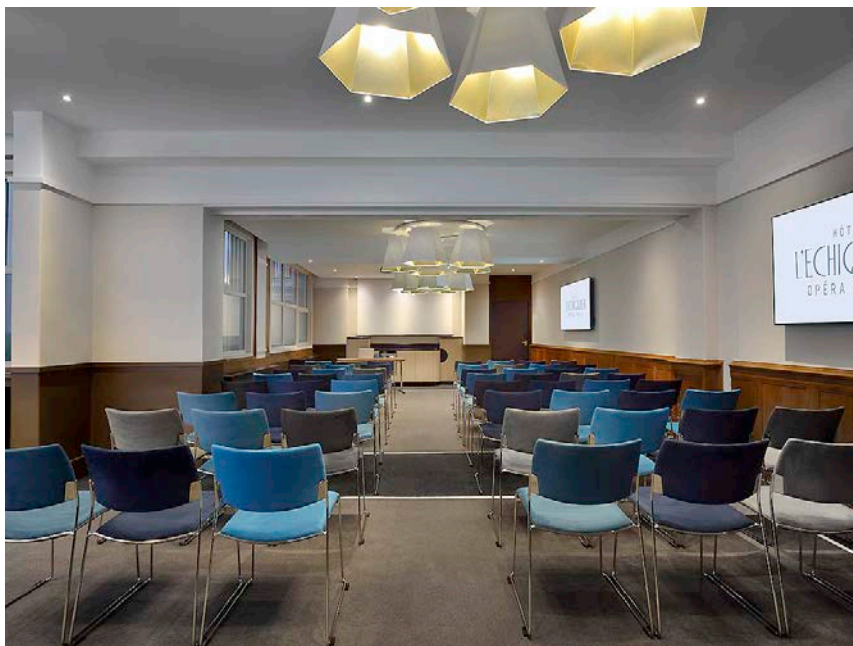


Figure 1. The location of the workshop at the Hotel “L’Échiquier Opéra” in Paris, France

The objectives of the workshop were to discuss the current technological status and research needs for the development of the subsurface energy storage technologies, and to exchange knowledge with energy producers and consumers who need energy storage solutions.

In this framework, the Geothermal-DHC has organised two special sessions dealing with the underground thermal energy storage (UTES) systems. These sessions were mainly organised by the Chair of the COST Action Gregor Goetzl from EVN Wärme GmbH, and by Jessica Maria Chicco, MC member and deputy coordinator of the PWG1 “Technology”, from the University of Turin (Italy). In particular, the two sessions have thus been arranged as follows (Figure 2):

- **session 4:** “Overview of the main technological aspects”, chaired by Jessica Maria Chicco and Vasiliki Gemeni, the latter also MC member of the Action from the HAEE (Greece).
- **session 5:** “Challenges in the development of UES across Europe”, chaired by Jessica Maria Chicco

Session 4 (Figure 3; 4), consisted of six oral presentations who have faced to the main UTES technologies in the 5th generation and district heating and cooling (DHC) grids, describing their

characteristics and the state of the art across Europe. During this session, an interesting debate about challenges in the development of these technologies (especially in some European Countries), and how to improve these systems for a better integration in DHC networks, has been done. The six oral talks allowed understanding how UTES work and how many advantages can be obtained from them, through the presentation of real and operative case studies, in specific Countries.

Underground Thermal Energy Storage Systems (COST-GEOTHERMAL DHC)			
Session 4. Overview of the main technological aspects <i>chairs: Jessica Maria Chicco, University of Torino & Vasiliki Gemeni, HAEE</i>			
13:00	The Role of the UTES Systems in the 5th Generation Technologies and DHC Grids	Saqib Javed & Marwan Abugabbara	Lund University (Sweden)
13:25	Drivers for Widespread Adoption of ATEs Systems	Martin Bloemendal	TU Delft (The Netherlands)
13:50	Current Status of ATEs in UK	Carl Jacquemyin	Imperial College London (UK)
14:15	Borehole Thermal Energy Storage (BTES): LT and HT BTES with Case Studies	Charles Maragna	BRGM (France)
14:40	BTES Case Studies in Scandinavian Countries	Saqib Javed	Lund University (Sweden)
15:05	Mine Thermal Energy Storage (MTES): Case Studies from Northern Germany	René Verhoeven	Fraunhofer IEG (Germany)
15:30	<i>Coffee break & posters</i>		
Session 5: Challenges in the development of UES across Europe <i>chair: Jessica Maria Chicco, University of Torino</i>			
16:00	Costs, Benefits and Potential of UTES	Giulia Conforto	e-Think Vienna (Austria)
16:25	The Role of the Communication: Raising Knowledge among Stakeholders and Non-scientific People	Vasiliki Gemeni	HAEE (Greece)
16:50	Facilitating the Development of UES to Fight Against Energy Poverty	Meltem Ş. Ucal	Khadir Has University (Türkiye)
17:15	<i>Round table and closing remarks</i>		
17:45	End of the workshop		

Figure 2. Program of the two sessions organised by the Cost Action



Figure 3. Some moments during the session 4

This debate continued during session 5 (Figure 4), in which specific oral presentations focusing on some important aspects that helps in developing of such technologies, has been addressed.



Figure 4. Some moments during the session 4 and 5

The main discussed topics have concerned the importance of communication to improve the knowledge of these technologies even among not academics such as stakeholders and local communities; this is very important to increase the confidence in these systems between users and investors. Another important aspect that has been addressed concerned how good economic policies can facilitate the development of such systems, and how it is important to have a clear cost/benefits analysis which indicate the advantages of facilities, if integrated in

a DHC networks. Session 5 also faced the need of good financial and legal policies, which is greater in remote or poorly economic areas and could help in fighting against energy poverty. All these topics were deeply discussed during the final round table, where interesting issues to be solved for a better integration of geothermal energy and then of UTES systems in DHC grids, were highlighted.

A fruitful and interesting poster session was also organised, between session 4 and session 5. Here below the poster presented by COST Action participants (Figure 5).

New synergy concept of geothermal energy recovery, CO2 and green hydrogen geological storage in the Baltic offshore structure	Kazbulat Shogenov & Alla Shogenova	TalTech & SHOGenergy (Estonia)
Driven Geothermal Energy Pile: An innovative heating/cooling solution	Rao Martand Singh	NTNU (Norway)
Utilization of empty caverns in oil fields of Albania for the underground storage of natural gas arriving from TAP	Altin Maraj	Polytechnic University of Tirana (Albania)
A Successful ATEs deployment in the UK Chalk Aquifer, London	Hayley Firth	Imperial College London (UK)

Figure 5. Poster presentations by Cost Action participants

You can access the presentations and the posters through the following link:

[2nd European Workshop on Underground Energy Storage \[Presentations & Photos\] – ENeRG, the European Network for Research in Geo-Energy \(energnet.eu\)](#)