

Monday 8th July: UHS Master classes

In-depth exploration of underground hydrogen storage with our expert-led masterclasses.

All registered attendees of the conference also have access to these optional masterclasses.

Hawthorn teaching studio, 2nd Floor, Nucleus Building, University of Edinburgh, Thomas Bayes Rd, Edinburgh EH9 3FG (and online)

Masterclasses 8 th July	Topic	Presenter
UHS Masterclasses		
12:30 – 13:00	Arrival, check-in	
13:00 – 13:45	Hydrogen Overview	Dr. Katriona Edlmann (University of Edinburgh, UK)
13:45 – 14:30	Hydrogen storage in porous rocks	Dr. Niklas Heinemann (University of Edinburgh, UK)
14:30 – 15:30	Hydrogen storage in salt caverns	Dr. Evan Passaris (bp, UK)
15:30 – 15:50	Coffee break	
15:50 – 16:45	Microbiology vs hydrogen	Dr. An-Stepec Biwen (NORCE)
16:45 – 17:40	Geochemistry vs hydrogen	Prof. Catherine Peters (Princeton University, USA)

Tuesday 9th July: Main Conference (Day 1)

Oak theatre, Nucleus Building, University of Edinburgh, Thomas Bayes Rd, Edinburgh EH9 3FG (and online)

Conference Day 1 9 th July	Topic	Presenter
Wider perspective and overview		
08:45-09:20	Arrival, check-in	
09:20 -09:25	Welcome	Dr. Katriona Edlmann (University of Edinburgh, UK)
09:25 – 09:50	Scotland's hydrogen ambitions	Stuart McKay (Scottish Government, UK)
09:50 - 10:15	Hydrogen: Scotland in Europe	Dr Nigel Holmes (Hydrogen Scotland, UK)
10:15-10:40	Hydrogen: an export commodity, possible cooperation with DE	Rieke Arendt (DE embassy London)
10:40-10:55	Coffee break	
10:55-11:20	Integration and importance of UHS in our future energy system for net zero	Dr. Grant Wilson (University of Birmingham, UK)

11:20-11:45	North Sea Hydrogen Transmission and Storage Infrastructure – an overview of three proposed projects	Martyn Tulloch (Net Zero Technology Centre)
11:45– 12:05	Coffee break	
12:05-12:30	Hydrogen production	Philip Hardman (Scottish Power, UK)
12:30– 12:55	Hydrogen risk assessment	Murray Urquhart (Crain Risk, UK)
12:55-13:40	Lunch	
Case studies		
13:40-13:50	Introduction to intermediate storage	Dr. Katriona Edlmann (University of Edinburgh, UK)
13:50 – 14:10	Surface/Chemical Storage	Prof. Chris Slootweg (University of Amsterdam, NL)
14:10-14:30	Lined Rock Shafts (Intermediate storage)	Jack Trevail (Gravitricity, UK)
14:30-14:50	Lined caverns	Louis Londe (GeoStock, FR)
14:50 – 15:15	Q&A and panel discussion; role of intermediate storage	Dr. Tim Armitage (BGS, UK)
15:15-15:30	Coffee break	
15:30 – 15:50	Porous rock onshore (RAG)	Marcus Pichler (RAG, AT)
15:50 – 16:10	Porous rock offshore (Rough, Centrica)	Chris McLane (Centrica Storage, UK)
16:10 – 16:30	Salt cavern UK (SSE Thermal Aldborough)	Dr. Victoria Spooner (SSE Thermal, UK)
16:30-17:00	Q&A and panel session – challenges – onshore/offshore (gaps in regulations)	Prof. Eric Mckay (Heriot Watt University, UK)
17:00	Finish of the day	
19:00 Welcome dinner with Ceilidh in Ghillie Dhu		

Wednesday 10th July: Main Conference (Day 2)

Oak theatre, Nucleus Building, University of Edinburgh, Thomas Bayes Rd, Edinburgh EH9 3FG (and online)

Conference Day 2 10 th July	Topic	Presenter
Technicalities of UHS 1		
08:45 – 9:10	Arrival and coffee	
09:10-09:30	Salt Geomechanics	Prof. Karl-Heinz Lux (TU Clausthal, DE)
09:30-09:50	Geological considerations in developing salt caverns including planning for hydrogen use	Patryk Tomaszewski (AtkinsRealis, UK)
09:50-10:10	Development challenges of UHS in salt caverns	Eddy Kuperus (Gasunie, NL)
10:10-10:40	Q&A and panel discussion on salt caverns	Dr. Evan Passaris (BP, UK)
10:40-11:00	Coffee break	
11:00-11:20	Multiphase flow (what's new)	Dr. Maartje Boon (University of Stuttgart, DE)
11:20-11:40	Cushion gas and gas mixing	Dr. Niklas Heinemann (University of Edinburgh, UK)
11:40-12:00	Simulation of portfolio of gas fields	Germonda Reijnen-Mooij (EBN, NL)
12:00-12:30	Q&A and panel discussion on operational performance and industry application	Dr. Gang Wang (Heriot Watt University, UK)
12:30-13:15	Lunch	
Technicalities of UHS 2		
13:15-13:35	Microbiology vs hydrogen (what's new?)	Dr. Nicole Dopffel (NORCE, NO)
13:35-13:55	Geochemistry vs hydrogen (what's new?)	Dr. Lauren Beckingham (Auburn University, USA)
13:55-14:15	Coupled microbial activities and geochemistry	Ahmadreza Shojaee (Heriot Watt University, UK)
14:15-14:45	Q&A and panel session on risks/benefits related to microbiology and geochemistry	Prof. Catherine Peters, (Princeton University, USA)
14:45-15:00	Coffee break	
15:00-15:20	Caprocks integrity and sealing capacity	Prof. Anthony Kovscek (Stanford University, USA)
15:20-15:40	Downhole Completion Technology for Hydrogen Storage	Fraser Murray (Halliburton, USA)
15:40 – 16:00	Geomechanics of porous rocks	Vincent Soustelle (TNO, NL)
16:00-16:30	Q&A and panel discussion on storage integrity	Dr. Sam Xie (Curtin University, AU)
16:30	Beer and soft drink poster session	
Free evening		

Thursday 11th July: Main Conference (Day 3)

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Day 3; 11 th July	Topic	Presenter
Hydrogen in nature		
08:45 – 9:10	Arrival and coffee	
09:10-09:40	Naturally occurring hydrogen – is it a new game changing energy resource?	Dr. Juergen Groetsch, (Friedrich Alexander University, Shell DE)
09:40-10:00	Hydrogen tracing in subsurface	Dr. Ruta Karolyte (Oxford University, UK)
10:00– 10:15	Implications of atmospheric concentrations	Hannah Bryant (University of Edinburgh, UK)
10:15 – 10:45	Panel discussion session	Prof. David Stevenson (University of Edinburgh, UK)
10:45-11:00	Coffee break	
Hydrogen site screening and monitoring		
11:00 – 11:20	Monitoring of hydrogen storage	Dr. Stanislav Glubokowskikh (Berkeley Laboratory, USA)
11:20 – 11:40	UHS field screening and monitoring approach – an industry perspective (Depleted Gas Fields)	Claudio Filomena (Shell, NL)
11:40– 12:00	Screening ranking and selection	Prof. Josh White (LLNL, USA)
12:00 – 12:15	Site selection for salt cavern	Christian Garvey ARUP, UK
12:15-12:45	Q&A and panel session on screening parameters and different ranking approaches	Silke van Klaveren (EBN, NL)
12:45-13:30	Lunch	
13:30 – 13:55	Key Considerations and Test Design for Assessing the Lifetime of Materials in UHS	Arpana Verma (Halliburton, USA)
13:55 – 14:20	Geophysical techniques for rock salt exploration and assessment of storage capacity	Carla Martin Clave (AtkinsRealis UK)
14:20 – 14:45	Techno-economics of H2 Storage	Dr. Remco Groenenberg (TNO, NL)
14:45-14:55	Coffee break	
14:55 – 15:20	Screen for TE and cost modelling	Michiel Damoiseaux (EBN, NL)
15:20-15:45	Planning for UHS	Sigrid Kramer (SodM, NL)
15:45-16:10	Public perception and communication	Connor Smith (University of Edinburgh, UK)
16:10-16:15	Coffee break	

16:15-17:00	TCP-Task42: building confidence in UHS development (reflection on progress and evolution)	Serge van Gessel (TNO), Prof. Hadi Hajibeygi (TU Delft)
17:00	Finish of the day	
19:00 Good-bye dinner in Scottish Café (Gallery)		

Friday 12th July: Optional field trips

Make the most of your summer school experience with our exciting field trips:

- **DNV Spadeadam Hydrogen Testing Facility**
 - Departure: 08:30, Return: 17:30
 - Details: Explore cutting-edge hydrogen pipeline research at one of the world's leading testing facilities.
 - Highlights: See innovative testing techniques and state-of-the-art equipment in action.
 - More info: <https://www.dnv.com/news/dnv-to-support-uk-national-gas-transmission-with-world-first-hydrogen-pipeline-research-facility-250142/>
- **Geological Field Visit to Siccar Point**
 - Departure: 10:00, Return: 16:00
 - Details: Discover the birthplace of modern geology with expert guidance from Mark Wilkinson.
 - Highlights: Learn about James Hutton's famous unconformity and the dramatic coastal landscapes. <https://www.scottishgeologytrust.org/geology/51-best-places/siccar-point/>
- **Logan Energy Manufacturing Facility (now fully booked)**
 - Departure: 10:30, Return: 13:00
 - Details: Visit a leader in hydrogen energy solutions and manufacturing.
 - Highlights: Tour the facility and witness hydrogen technology innovations in production.
 - More info: <https://www.loganenergy.com/>
- **Edinburgh University Laboratory Facilities**
 - Start: 14:00, Finish: 16:00
 - Details: Explore cutting-edge research labs at the University of Edinburgh.
 - Highlights: Engage with advanced hydrogen storage experiments and meet leading researchers. <https://www.ed.ac.uk/geosciences/about/facilities/all/applied-geoscience> and <https://www.flowavett.co.uk/>