



WORKSHOP ON APPLICATIONS FOR INDUSTRIAL THERMAL ENERGY STORAGE

AGENDA

Date Tuesday, 7 November 2023
Time 9.00 - 21.00
Location TNO Utrecht, Princetonlaan 6, NL-3584 CB Utrecht
Stream link Click [here](#) for a live streaming of the event

1. Concept

In December 2022, the White Paper on "Industrial Thermal Energy Storage - Supporting the transition to decarbonise industry", developed within the scope of activities of the European Energy Research Alliance (EERA), was launched. As a follow up, the EERA **Joint Programmes Energy Storage (JP ES)**, **Geothermal (JP GE)** and **Energy Efficiency in Industrial Processes (JP EEIP)** organised a workshop on *Applications for Industrial Thermal Energy Storage* that will take place on 7 November 2023 in Utrecht, the Netherlands. The workshop will include contributions from policymakers, industry and research structured in a series of panel discussions as well as a site visit.

2. Agenda

EERA JPS EEIP, ES & GE workshop on Applications for Industrial Thermal Energy Storage

		Chair: Myriam E. Gil Bardaji (EERA JP ES) David Bruhn (EERA JP GE) Yvonne van Delft (EERA JP EEIP)
08:30		Registration
09:00	Welcome TNO	Tirza van Daalen TNO (Confirmed)
09:10	The transition to decarbonise industry through thermal energy storage	Tony Roskilly Durham University (Confirmed)
09:30	Innovation trends, research needs and market barriers in Thermal Energy Storage for industrial sector: the role of EIC	Marco Pantaleo European Innovation Council (Confirmed)
09:50	Applications for Thermal Energy Storage and conversion in the industrial field	Prof. Adriano Sciacovelli University of Birmingham (Confirmed)
10:10	Full-scale application and development of seasonal heat storage	Martin Bloemendal TUDelft & KWR (Confirmed)



10:30	Coffee break	
10:55	Industry panel discussion 1: Decarbonization of industry by thermal energy storage/ integration of heat pumps	Moderator: Tony Roskilly Panel members: Carlijn Lahaye (ENERGYNEST) Olav Galteland (SINTEF) Anton Wemmers (Huhtamaki)
11:55	Industry panel discussion 2: Policy & regulation for the application of industrial thermal energy storage	Moderator: Salvatore Vasta Panel members: Marco Pantaleo (European Innovation Council) Kees Biesheuvel (Dow) Eric Lecomte (DG Energy) Klaus Peters (ESTEP)
13:00	Lunch	
14:00	Industry panel discussion 3: Exploiting geothermal resources for industrial thermal storage	Moderator: David Bruhn (EERA JP GE) Panel members: Martin Bloemendal (TUDelft) Jasper Kwee (IF Technology) Mike Spence (BGS) Dorien Dinkelman (TNO)
15:00	Bus transfer to site visit	
16:00	Site visit	Rijswijk - Energy Cave
19:00	Network Dinner at Stadskasteel Oudaen	



TRAVEL GUIDELINES | ACCOMMODATION

1. Venue of the event

Venue location: TNO Utrecht, Princetonlaan 6, NL-3584 CB Utrecht

Visitors to the TNO location in Utrecht can park their *cars* in the green marked parking lot on Princetonplein. Parking on Princetonplein is only for permit holders, visitors receive a temporary day permit at the reception. Visitors can also park for a fee in the Transferium. See the green dotted line for the car route.

The venue can be reached by *public transport* from Leiden Central train station with tram 20 and 21 towards Science Park (10 minutes to the Padualaan stop). From there it is an 8-minute walk to Princetonlaan 6.



2. Network dinner

At 19.00 a network dinner is organised at Restaurant Stadskasteel Oudaen, Oudegracht 99, 3511 AE Utrecht. During your online registration you could have registered for dinner. Please inform Ilona Kaandorp (ilona.kaandorp@tno.nl) if you changed your plans.

[Restaurant Oudaen - Uit eten in Utrecht bij Stadskasteel Oudaen](#)

3. Bus transfer site visit

If you registered for the site visit to the Energy Cave in Rijswijk, bus transportation will be provided. Please note that the bus will leave TNO at 15.00. The bus will be waiting in front of the building. For the back trip to Utrecht the bus will leave at 17.15 and will bring us to the Vredenburgknoop. This is at 400 meter walking distance from Restaurant Stadskasteel Oudaen.



4. Accommodation

4 star Hotel:

[Inntel Hotels Utrecht Centre](#) Ask for TNO rate
[Park Plaza hotel, special rate TNO](#) (with this link)
[NH Centre Utrecht](#)
[NH Utrecht](#)
[Malie Hotel Utrecht](#)
[Court Hotel City Centre](#)

3 star Hotel:

[IBIS Utrecht](#)
[Hotel Sleep Well](#)

2 star Hotel:

[Hotel Oorsprongpark](#)

5. Main contact



Ilona Kaandorp
E: ilona.kaandorp@tno.nl

6. Hosts



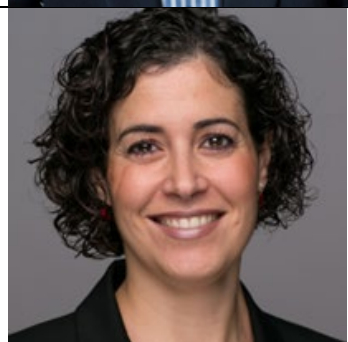
Yvonne van Delft (EERA JP EEIP)

Yvonne van Delft holds a degree in Chemical Engineering from the Twente University. Since 1997 she works at ECN (now TNO) in the energy transition in Industry with a focus on separation and conversion technologies. Yvonne co-developed the Shared Innovation Program Voltachem for Electrification of the Chemical Industry in 2014, leading the programme P2Hydrogen, P2heat and Upcoming P2X. She was Innovation Manager Industrial Efficiency & Circularity within the TNO roadmap CO2 neutral Industry from 2018 till 2021. At the moment Yvonne is coordinator of the EERA Joint programme Energy efficiency in Industrial Processes and senior project manager of several national and european R&D projects on the industrial application of energy efficient separation & conversion technologies.



David Bruhn (EERA JP GE)

David Bruhn is the chair of the EERA Joint Programme Geothermal. He is professor for Geothermal Engineering at TU Delft. In addition, he is appointed at Fraunhofer Institution for Energy Infrastructures and Geothermal Systems (IEG) in Cottbus/Germany as Head of the Competence Centre Global Georesources. He has a PhD degree in experimental rock deformation of ETH Zürich/Switzerland.





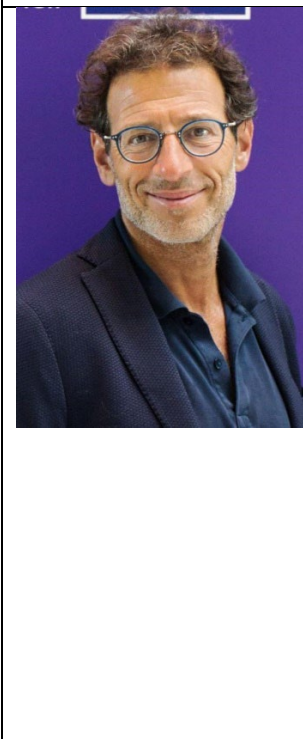
Myriam E. Gil Bardají (EERA JP ES)

Myriam E. Gil Bardají successfully completed her chemistry studies at the University of Zaragoza (Spain) and in 2006 received her PhD in Supramolecular Chemistry at the TU Dortmund (Germany). In 2007 she started as postdoctoral researcher in the field of solid state hydrogen storage and later on electrochemical energy storage at the Karlsruhe Institute of Technology (KIT). She has been working in the field of energy storage since more than 15 years. She is contributing author of the Join EASE/EERA Energy Storage Technology Development Roadmap (2017) and the mission-oriented Study on Energy Storage to speed up the Energy Transition (2018). She is author/co-author of over 40 publications in peer-reviewed international scientific journals and she has participated in 10 European projects dealing with energy storage, including two as co-coordinator. Since 2021 is the deputy coordinator of the H2020 project StoRIES dealing with hybrid energy storage solutions. In 2022 she has been elected as leader of the EERA JP on Energy Storage.



KEYNOTE SPEAKERS, MODERATORS & PANEL MEMBERS

1. Keynote speakers


	<p>Tirza van Daalen (TNO) - Director Geological Survey of the Netherlands</p> <p>Tirza received her mSc in Geology in 1994 at Utrecht University. Before joining the GSN-TNO in 2009, Tirza van Daalen worked in IT as a management consultant and has been active as publisher in Geoscience for Elsevier Science. She has extensive experience in management of innovative projects. Currently is responsible for subsurface related activities within TNO ranging from research programmes in the domain of geoenery, groundwater & subsidence. Next to that the information programme which holds the Dutch “Key register of the Subsurface” (Basisregistratie Ondergrond; BRO).</p>
	<p>Professor Tony Roskilly (Durham University)</p> <p>He is Chair of Energy Systems at Durham University and has 30 years of experience in the design, control, and operational optimisation of energy systems. He is a Director of Durham Energy Institute and Director of the UK National Clean Maritime Research Hub. Professor Roskilly is the UK lead for the European Energy Research Alliance Joint Programmes for Energy Efficiency in Industrial Processes and Energy Systems Integration, and the Academic Lead for the Teesside Industrial Cluster. Professor Roskilly leads a large group conducting research which includes high efficiency power and propulsion systems and oxygen-hydrogen closed power cycles; integrated hydrogen fuelled energy hubs; thermo-chemical energy recovery, storage and trigeneration systems and energy system modelling and analysis.</p>
	<p>Antonio (Marco) Pantaleo (European Innovation Counsel) - Programme Manager Energy systems and green technologies</p> <p>He has 20 years of experience in multidisciplinary research projects in renewable and clean energy technologies (solar, wind, biomass, and hybrid), energy systems integration, biosystems engineering, energy use in agricultural engineering and food processing. He holds a first degree in electric engineering from Politecnico of Bari and a PhD in process systems engineering from Imperial College London, where he is affiliated as research fellow to the Clean Energy Processes Lab (CEP) and Centre for Process Systems Engineering (CPSE) of the Department of Chemical Engineering. He is an associate professor of clean energy technologies at the Department of Agro-environmental Sciences of the University of Bari. Before becoming professor, he co-founded an energy service company, joined Edison Energie Speciali and the strategic planning division of GSE (Gestore dei Servizi Energetici). He also worked as scientific expert and consultant for public and private organisations, including the Italian Ministry of Research, and was vice-Rector for energy policy of University of Bari. Antonio authored over 100 scientific papers, and is member of IEA working group on energy storage, of ASME technical committee on clean</p>






	<p>fuels, delegate for energy in the Italian Sustainable Universities network. Since October 2020, he is programme manager at EIC for energy systems and green technologies.</p>
	<p>Professor Adriano Sciacovelli (University of Birmingham) Dr Adriano Sciacovelli is Associate Professor at the University of Birmingham; he is an international leader in the field of Sustainable Thermal Energy Conversion and Storage. His background spans Mechanical Engineering and Energy Engineering and he has wide expertise in thermodynamic, mechanical, chemical and thermo-fluids sciences. The overarching objective of his research is to propose and develop integrated solutions for Sustainable Conversion and Storage of Thermal Energy, expanding the fundamental understanding and knowledge in thermal sciences under the drive of end-users' applications.</p>
	<p>Martin Bloemendal (TUDelft & KWR) Dr. Martin Bloemendal is an assistant professor at Delft University of Technology as well as senior researcher at KWR water research. At TU Delft Martin works on various projects to further develop ATES and BHE and he teaches courses at different levels and faculties. The combination KWR-TU Delft allows Martin to develop proof of concept of new ideas at the university and subsequently implement these in pilot projects with industry in KWR projects (bridging science to practice). Martin Bloemendal also manages the research agenda for the Dutch ATES and BHE industry. Key research topics are: integration of subsurface and surface/building facilities for optimal energy performance, HT-ATES and HT-BTES, legislation and environmental impacts.</p>

2. Moderators & panel members

Industry panel 1: Decarbonization of industry by thermal energy storage/ integration of heat pumps

	<p>Professor Tony Roskilly (Durham University) – Moderator He is Chair of Energy Systems at Durham University and has 30 years of experience in the design, control, and operational optimisation of energy systems. He is a Director of Durham Energy Institute and Director of the UK National Clean Maritime Research Hub. Professor Roskilly is the UK lead for the European Energy Research Alliance Joint Programmes for Energy Efficiency in Industrial Processes and Energy Systems Integration, and the Academic Lead for the Teesside Industrial Cluster. Professor Roskilly leads a large group conducting research which includes high efficiency power and propulsion systems and oxygen-hydrogen closed power cycles; integrated hydrogen fuelled energy hubs; thermo-chemical energy recovery, storage and trigeneration systems and energy system modelling and analysis.</p>
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	<p>Carlijn Lahaye (ENERGYNEST)</p> <p>Carlijn Lahaye is Director Project Development and Managing Director for the Netherlands at ENERGYNEST, a leading company in the field of thermal energy storage. She is responsible for all commercial activities in the Benelux. Carlijn has 20 years' experience in the energy industry and is passionate about sustainable business opportunities. She previously worked for Eneco, Attero, Air Liquide and Ventolines in the development of wind and solar, renewable natural gas and industrial gasses. Carlijn holds a Master in International Management and a Master of Science in Business Administration from Rotterdam School of Management.</p>
	<p>Olav Galteland (SINTEF)</p> <p>Olav holds a PhD degree in Physical chemistry from the Norwegian University of Science and Technology. Since 2022 he works for SINTEF Energy Research as research scientist developing smart energy systems with novel energy storage technologies for industry, energy producers, office buildings, and households. In 2023 Olav became research manager for the Energy Storage team at the Department of Thermal Energy.</p>
	<p>Anton Wemmers (Huhtamaki)</p> <p>Anton studied Mechanical Engineering at the TU-Delft. He worked in industry (Stork, Huhtamaki) and research institutes (TNO, ECN) on energy efficiency in industry. Anton initiated and/or managed seven (7) large (several million € each) development projects on industrial compression heat pumps. He joined Huhtamaki Fiber Technology (HFT, ~140 employees) in August 2021 as Functional Specialist to improve the energy efficiency of Huhtamaki technologies. HFT develops, builds, and maintains production lines for molded fiber products. One of the reasons he joined HFT was the opportunity to complete the development of a processes integrated heat pump into a mature technology.</p>

Industry panel 2: Policy & regulation for the application of industrial thermal energy storage

	<p>Salvatore Vasta (CNR-ITAE) - Moderator</p> <p>Salvatore completed his Ph.D. in Materials and Chemical Engineering at the University of Messina (Italy) in 2011. In 2001, he began his career as a fellow researcher at CNR-ITAE in Messina and has since progressed to become a Full Researcher at CNR-ITAE starting in 2011. Throughout his career, he has been actively involved in research, project development, and project management within the field of energy technologies, with a particular focus on solar energy, thermally-driven heat pumps, solar cooling, and heat storage systems. Salvator has contributed with authorship of four book chapters and over 120 papers published in scientific journals and conference proceedings. Since 2016, he has been at the helm of the thermal technologies research group at CNR-ITAE, leading innovative research endeavors in this domain. He has served as an expert in multiple tasks</p>
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	<p>within the Solar Heating and Cooling (SHC) and Energy Conservation in Buildings and Community Systems (ECES) programs of the International Energy Agency (IEA). Furthermore, since 2020, he has assumed the role of coordinator for SP3 Thermal Energy Storage within the JP Energy Storage under the European Energy Research Alliance (EERA).</p>
	<p>Antonio (Marco) Pantaleo (European Innovation Counsel) - Programme Manager Energy systems and green technologies He is an associate professor of clean energy technologies at the Department of Agro-environmental Sciences of the University of Bari. Before becoming professor, he co-founded an energy service company, joined Edison Energie Speciali and the strategic planning division of GSE (Gestore dei Servizi Energetici). He also worked as scientific expert and consultant for public and private organisations, including the Italian Ministry of Research, and was vice-Rector for energy policy of University of Bari. Antonio authored over 100 scientific papers, and is member of IEA working group on energy storage, of ASME technical committee on clean fuels, delegate for energy in the Italian Sustainable Universities network. Since October 2020, he is programme manager at EIC for energy systems and green technologies.</p>
	<p>Kees Biesheuvel (Dow Benelux) He holds an Engineering degree from the Rotterdam University of Applied Sciences. Kees works already for more than 20 years for Dow Benelux first a process automation specialist and later as Technology Innovation manager. At Dow Benelux he implemented several innovative technologies like steam recompression to upgrade and re-use steam. He is program director Heat & Technology and Circular Carbon at the Institute of Sustainable Process Technology.</p>
	<p>Eric Lecomte (DG Energy) Eric Lecomte is Policy Officer at the European Commission's DG Energy since 2015. As Policy Officer in the DG Energy, Eric is in charge notably of: energy efficiency and transition to carbon neutrality in industry; heat pumps for industrial, commercial and residential applications; Direct Current technologies (high, medium and low voltage DC). Prior to this, he was Research Programme Officer at DG Research and Innovation for six years. Before joining the European Commission in 2009, Eric worked in industry for 19 years, mainly for Thales Alenia Space, as head of the Electrical Power Conditioning Units product line for space application. Eric Lecomte has an Engineering degree from the Université Catholique de Louvain, Belgium, as well as a Master's degree in Electrical Engineering from Stanford University, US.</p>



Klaus Peters (ESTEP)

Dr. Klaus Peters qualified as Doctor of Engineering in 1993 and as state doctorate (Habilitation) in 1998 (RWTH Aachen), started his industrial career with thyssenkrupp Steel Europe (tkSE). His senior experiences include production, sales, quality and R&D both on national and international level. From 2011, Dr. Peters joined several working groups and committees of the European Steel Technology Platform (ESTEP) and was in charge of international research projects and European funding of tkSE. He became in July 2015 Secretary General of ESTEP. Amongst others, he is member of the Steel Advisory Group (SAG) of the Research Fund for Coal and Steel (RFCS) and member of the Board of the public-private partnership Processes4Planet. He is the Executive Director of the Horizon Europe Clean Steel Partnership.

Industry panel 3: Exploiting geothermal resources for industrial thermal storage



David Bruhn (EERA JP GE) - Moderator




David Bruhn is the chair of the EERA Joint Programme Geothermal. He is professor for Geothermal Engineering at TU Delft. In addition, he is appointed at Fraunhofer Institution for Energy Infrastructures and Geothermal Systems (IEG) in Cottbus/Germany as Head of the Competence Centre Global Georesources. He has a PhD degree in experimental rock deformation of ETH Zürich/Switzerland.



Martin Bloemendal (TUDelft & KWR)

Dr. Martin Bloemendal is an assistant professor at Delft University of Technology as well as senior researcher at KWR water research. At TU Delft Martin works on various projects to further develop ATES and BHE and he teaches courses at different levels and faculties. The combination KWR-TU Delft allows Martin to develop proof of concept of new ideas at the university and subsequently implement these in pilot projects with industry in KWR projects (bridging science to practice). Martin Bloemendal also manages the research agenda for the Dutch ATES and BHE industry. Key research topics are: integration of subsurface and surface/building facilities for optimal energy performance, HT-ATES and HT-BTES, legislation and environmental impacts.



	<p>Jasper Kwee (IF Technology) Jasper Kwee is a senior consultant and project manager for geothermal projects at IF Technology. He is involved in multiple project mapping geothermal potential of the subsurface, like geothermal potential study done for the Provinces of North-Holland and Flevoland last year. This brings him in contact with several government agencies and geothermal operators. Due to his background in geology and geophysics, Jasper likes to translate complex geological results into clear and understandable information for non-geoscientists. Besides deep geothermal projects he is IF's project manager for the exploitation phase of the only working HT-ATES in the Netherlands in Middenmeer, witnessing the combination of geothermal energy and energy storage at first hand.</p>
	<p>Mike Spence (BGS) Mike Spence is Director of Science for the UK Geoenergy Observatories, which are being developed to improve scientific understanding around subsurface energy storage. His responsibilities include coordination of BGS science input to facility development, oversight of facility commissioning and outreach to the UK and worldwide research community. His academic background is in geology (BSc Cantab) and geochemistry (MSc, PhD) and he has 13 years of industry experience in the development of laboratory and subsurface test facilities and cross-sector research programme management.</p>
	<p>Dorien Dinkelman (TNO) Researcher in the field of earth sciences and sustainable development. Mainly focusing on subsurface simulation, potential mapping and feasibility studies of high-temperature aquifer thermal energy storage (HT-ATES) and geothermal energy. Also performing modelling studies on the integration of storage in local heating grids. Contributed to (inter)national projects like HEATSTORE and WarmingUP.</p>