

Wednesday, 9 June 2021

9:00 - 9:50	Opening	
9:00 - 9:05	Alenka Ristić and Uroš Stritih, Organizers	
9:05 - 9:10	Mitja Kalin, dean, Faculty for Mechanical Engineering, UL	
9:10 - 9:15	Gregor Anderluh, director, National Institute of Chemistry	
9:15 - 9:20	Hinko Šolinc, general director, Directorate of Energy Ministry of Infrastructure Slovenia	
9:20 - 9:35	Teun Bokhoven, Chairman Energy Storage TCP (#112)	
9:35 - 9:45	Uroš Stritih, Slovenian delegate at TCP ES (#163)	
9:50 - 10:40	Plenary session P1 Chairperson:	
9:50 - 10:35	Plenary lecture PL 1: What is the value of energy storage? <u>Andreas Hauer</u> <i>ZAE Bayern, Germany</i>	
10:35 - 10:45	Short Break	
10:45 - 12:50	Morning session A1	TES applications
	Chairperson:	
10:45 - 11:10	Keynote lecture KL1 Thermal Energy Storage: developments and results for large scale technologies and for compact technologies (#101) <u>Wim van Helden</u> <i>AEE Intec, Austria</i>	
11:10 - 11:30	Development and implementation of PTES in Copenhagen (#135) <u>Christian Kok Skov</u> <i>Planenergi, Denmark</i>	
11:30 - 11:50	Simulation and performance evaluation of large-scale thermal energy storage in renewables-based district heating system (#120) <u>Alice Tosatto</u> <i>University of Innsbruck, Austria</i>	
11:50 - 12:10	Experimental investigation on a new highly efficient regeneration process for thermochemical energy storage (#186) <u>Henner Kerskes</u> <i>University of Stuttgart, Germany</i>	
12:10 - 12:30	Experimental results of a 182 kWh thermochemical heat storage system for domestic applications integrated in an orphanage in Warsaw (#16) <u>Samuel Knabl</u> <i>AEE Intec, Austria</i>	
12:30 - 12:50	Coated Ca(OH)₂ granules for thermochemical heat storage: real-time visualisation and analysis (#74) <u>Aldo Cosquillo Mejia</u>	

10:45 - 12:45	Morning session B1	TCM materials
Chairperson:		
10:45 - 11:05	Examining zeolitic imidazolate frameworks (ZIFs) for thermochemical heat storage and reallocation (#60) <u>Ciara Byrne</u> <i>National Institute of Chemistry, Slovenia</i>	
11:05 - 11:25	SWS composites based on LiCl for sorption thermal energy storage: thermochemical and kinetic properties (#48) <u>Andrea Frazzica</u> <i>CNR ITAE, Italy</i>	
11:25 - 11:45	Investigations on the water-adsorption characteristics of a novel composite material that couples adsorption and sensible heat storage particles (#215) <u>Igor Rangel Correa Ferreira</u> <i>Cea Tech, Cethil and Insa Lyon, France</i>	
11:45 - 12:05	Water composite sorbents based on gamma alumina for solar sorption heat storage (#34) <u>Nataša Zabukovec Logar</u> <i>National Institute of Chemistry, Slovenia</i>	
12:05 - 12:25	The 4-temperatures-approach - a method to evaluate thermochemical heat storage materials under application conditions (#41) <u>Christoph Rathgeber</u> <i>ZAE Bayern, Germany</i>	
12:25 - 12:45	Development and characterization of a LiCl based silicone foam for thermal energy storage applications (#131) <u>Luigi Calabrese</u> <i>University of Messina, Italy</i>	

10:45 - 12:45	Morning session C1	Systems
Chairperson:		
10:45 - 11:05	Operation and characteristics of a direct contact latent thermal energy storage (#56) <u>Stefan Krimmel</u> <i>Lucerne University of Applied Sciences and Arts, Switzerland</i>	
11:05 - 11:25	Insulation with controllable heat transfer for thermal energy storages (#91) <u>Jonina Felbinger</u> <i>German Aerospace Center, Germany</i>	
11:25 - 11:45	Large heat pumps with hot water store in local heating systems - Investigation of operation strategies (#58) <u>Shengqing Xiao</u> <i>Chemnitz University of Technology, Germany</i>	
11:45 - 12:05	Vertical rock bed for high temperature energy storage: pilot plant	

	findings (#176) <u>Kai Knobloch</u> <i>Technical University of Denmark, Denmark</i>
12:05 – 12:25	The IEA energy storage TCP Task 36 – a working group on Carnot Batteries (#158) <u>Dan Bauer</u> <i>German Aerospace Center, Germany</i>
12:25 – 12:45	Combined heat and power coal fired plants – the best choice of early grid-scale Carnot batteries applications (#174) <u>Vaclav Novotny</u> <i>Czech Technical University in Prague, Czech Republic</i>
12:45 – 13:00	Sponsor chat
13:00 – 14:00	Lunch break

14:00 – 16:00	Afternoon session A2	TES applications
	Chairperson:	
14:00 – 14:20	Tests with PCM in grouting of UTES borehole heat exchangers (#113) <u>Burkhard Sanner</u> <i>Ubeg Dr. Mands & Sauer GbR, Germany</i>	
14:20 – 14:40	Integrated energy systems using phase change materials as storage medium – experience from Norwegian installations. (#137) <u>Kirsti Midttømme</u> <i>Norce Norwegian Research Centre, Norway</i>	
14:40 – 15:00	Long-term performance of PP-HTR liners for pit thermal energy storages (#144) <u>Gernot M. Wallner</u> <i>University of Linz, Austria</i>	
15:00 – 15:20	Design and construction of an active latent thermal energy storage system (#220) <u>Ruth Herrero</u> <i>Polytechnic University of Cartagena, Spain</i>	
15:20 – 15:40	Design aspects for large-scale pit thermal energy storage (#99) <u>Thomas Schmidt</u> <i>Solites - Steinbeis Innovation gmbH, Germany</i>	
15:20 – 15:40	Utilisation of ice storage systems in Slovenia (#124) <u>Urška Mlakar</u> <i>University of Ljubljana, Slovenia</i>	

14:00 – 16:05	Afternoon session B2	EES materials
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Chairperson:	
14:00 – 14:25	Keynote lecture KL2 An overview on hybrid polymer electrolytes for next-gen solid-state batteries operating at ambient temperature (#175) <u>Claudio Gerbaldi</u> <i>DISAT, Politecnico di Torino, Italy</i>
14:25 – 14:45	Electrochemical degradation of carbon-supported gold nanoparticles (#61) <u>Milutin Smiljanić</u> <i>National Institute of Chemistry, Slovenia</i>
14:45 – 15:05	Unique solid carbonate-based single ion conducting block copolymer for high-voltage lithium metal batteries (#179) <u>Gabriele Lingua</u> <i>DISAT, Politecnico di Torino, Italy</i>
15:05 – 15:25	Development of a PCM-composite for the thermal management of Li-ion batteries (#169) <u>Sebastian Gamisch</u> <i>Fraunhofer Institute for Solar Energy Systems ISE, Germany</i>
15:25 – 15:45	Composite polymer membranes as electrolytes for lithium-based batteries (#188) <u>Marisa Falco</u> <i>DISAT, Politecnico di Torino, Italy</i>
15:45 – 16:05	Effective radial thermal conductivity measurements of cylindrical battery cells based on the heat flow meter method – a method validation approach (#182) <u>Daniel Lager</u> <i>AIT Austrian Institute of Technology GmbH, Austria</i>

14:00 – 16:00	Afternoon session	C2	PCM materials
Chairperson:			
14:00 – 14:20	Nucleation behaviour in organic PCM investigated by microscopy and molecular dynamic simulation (#88) <u>Stefanie Tafelmeier</u> <i>ZAE Bayern, Germany</i>		
14:20 – 14:40	Xylitol used as phase change material : nucleation mechanisms of the overcooling rupture by stirring (#55) <u>Piquard Louis</u> <i>CEA - LITEN Grenoble, France</i>		
14:40 – 15:00	Electric-field induced crystallization in erythritol (#146) <u>Jean-Luc Dauvergne</u> <i>CIC energiGUNE, Spain</i>		
15:00 – 15:20	Esters as phase change materials for latent heat storage applications: investigation and control of the polymorphic phases (#45) <u>Rebecca Ravotti</u> <i>Lucerne University of Applied Sciences and Arts, Switzerland</i>		
15:20 – 15:40	Validation of lauric acid as PCM: study of thermal degradation under quasi-real working conditions (#173) <u>Rocío Bayón</u>		

	<i>CIEMAT-PSA, Spain</i>
15:40 – 16:00	Compatibility of the novel Cu-67wt.%Mg phase change material in non-inertial thermal storage applications (#37) <u>Anthony Rawson</u> <i>German Aerospace Center, Germany</i>
16:00 – 16:15	Participant networking / Break

16:15 – 18:40	Short Oral-Poster session	TES applications
	Chairperson:	
16:15 – 16:21	Effect of residual heat recovery of Zeolite Boiler in thermochemical energy storage and transport system (#32) <u>Shoma Fujii</u> , <i>University of Tokyo, Japan</i>	
16:22 – 16:28	Numerical analysis of air-PCM compact heat exchangers using rectangular mini-tubes for free cooling in ventilation systems (#167) <u>Amir Abdi</u> , <i>KTH Royal Institute of Technology, Sweden</i>	
16:29 – 16:35	Application of macro-encapsulated PCM in light weight building structure for reduction of cooling energy use(#39) <u>Eva Zavrl</u> , <i>University of Ljubljana, Slovenia</i>	
16:36 – 16:42	Comparative performance and efficiency analysis of a latent heat storage using HDPE or erythritol for demand-side management (#183) <u>Lisa Deinert</u> , <i>Fraunhofer Institute for Environmental, Safety, and Energy Technology, Germany</i>	
16:43 – 16:49	Preliminary experimental study of a latent heat thermal energy storage system based on pillow plate technology (#106) <u>Ander Rojo Hurtado</u> , <i>Energetic Engineering Department of The UPV/EHU, Spain</i>	
16:50 – 16:56	Evaluation of latent heat storage integration in a Swedish multi-family heating system (#22) <u>Emma Nyholm Humire</u> , <i>KTH Royal Institute of Technology, Sweden</i>	
16:57 – 17:04	Design and optimization of closed-system thermochemical energy storage with surrogate models (#80) <u>Gabriele Humbert</u> , <i>University of Birmingham, United Kingdom</i>	
17:04 – 17:10	Hybrid storage system to increase self-consumption of buildings (#187) <u>Rebekka Köll</u> , <i>AEE Intec, Austria</i>	
17:11– 17:17	Relevance of thermochemical storage in TES field: a bibliometric study (#212) <u>A. Inés Fernández</u> , <i>University of Barcelona, Spain</i>	
17:18– 17:30	Questions	
17:31 – 17:37	Numerical analysis of combined heat pump ice energy storage systems to utilize waste heat arising in nonresidential buildings (#87)	

	<u>Marco Griesbach</u> , <i>University of Bayreuth, Germany</i>
17:38 – 17:44	Absorption cold storage based on partially crystallized aqueous LiBr-solution (#20) <u>Dieter Pressl</u> , <i>ZAE Bayern, Germany</i>
17:45 – 17:51	Development of a sensor for the detection of the charge status of ice storages (#93) <u>Stefanie Lott</u> , <i>University of Stuttgart, Germany</i>
17:51 – 17:57	Experimental investigation of zeolite placed in a ventilation duct for space heating (#128) <u>Urška Mlakar</u> , <i>University of Ljubljana, Slovenia</i>
17:58 – 18:04	Simulative designing of thermal high performance storages for electric bus heating (#25) <u>Werner Kraft</u> , <i>German Aerospace Center, Germany</i>
18:05 – 18:11	Latent thermal energy storage charging and discharging: a numerical study (#159) <u>Mateo Kirincic</u> , <i>University of Rijeka, Croatia</i>
18:11 – 18:17	Experimental investigation of latent heat storage integrated on top of wood stoves (#75) <u>Alexis Sevault</u> , <i>SINTEF Energy Research, Norway</i>
18:18 – 18:24	Impact of transient storage temperature on heat transport system design for a thermal energy storage unit in vehicle applications (#65) <u>Frank Nees</u> , <i>German Aerospace Center, Germany</i>
18:26 – 18:40	Questions

16:15 – 18:35	Short Oral-Poster session	TES materials
	Chairperson:	
16:15 – 16:21	Reactivity assessment of magnesium chloride and ammonia for thermochemical energy storage (#23) <u>Saki Yoshida</u> , <i>Tokyo Institute of Technology, Japan</i>	
16:22 – 16:28	Experimental performance analysis of a bench-scale NH₃-SrCl₂ thermochemical heat storage system (#123) <u>Saman Nimali Gunasekara</u> , <i>KTH Royal Institute of Technology, Sweden</i>	
16:29 – 16:35	Elaboration and characterization of Li₄(OH)₃Br-based shape stabilized composites for high temperature thermal energy storage (#100) <u>Imane Mahroug</u> , <i>CIC energiGUNE, Spain</i>	
16:36 – 16:42	Modeling and validation of the dehydration process for thermochemical energy storage using reaction rate equations (#206) <u>Ayeshah Alawadhi</u> , <i>University of Colorado – Boulder, United States</i>	
16:43 – 16:49	Evaluation of ad/desorption dynamics of S-PEEK/Zeolite composite coatings by T-LTJ method (#133) <u>Davide Palamara</u> , <i>University of Messina, Italy</i>	
16:50 – 16:56	Canadian natural zeolites as stable host matrices for low-cost, high-	

	performance composite thermochemical energy storage materials (#201) <i>Dylan Bardy, Natural Resources Canada, Canada</i>
16:57 – 17:04	Processing salt-hydrates to thermochemical storage composite materials (#132) <i>Gayaneh Issayan, University of Applied Sciences Upper Austria, Austria</i>
17:05 – 17:11	Tailoring water adsorption capacity of aluminophosphate $AlPO_4-34$ (#62) <i>Alenka Ristić, National Institute of Chemistry, Slovenia</i>
Poster	Thermochemical water-sorption materials screening for thermal energy storage: building application (#205) <i>Anabel Palacios Trujillo, University of Birmingham, United Kingdom</i>
17:12– 17:22	Questions
17:23 – 17:29	Preparation of PCL based SS-PCM and shaping using 3D printing (#156) <i>Rebeca Salgado, University of Barcelona, Spain</i>
17:30 – 17:36	Overview on CSP systems and current advanced technologies used as storage media (#189) <i>Helena Navarro, University of Birmingham, United Kingdom</i>
17:37 – 17:44	Speed of reaching the full potential heat capacity of a basalt product: mathematical model based on experimental results (#218) <i>Karin Edel, Czech Technical University in Prague, Czech Republic</i>
17:45 – 17:51	Systematic characterization of various filler configurations for application in molten salt under similar conditions with water (#145) <i>Julius Weiss, Fraunhofer Institute for Solar Energy Systems ISE, Germany</i>
17:52 – 17:56	Steel slag concrete: thermo-mechanical stability under high-temperature cycles (#30) <i>Laura Boquera, University of Lleida, Spain</i>
17:57 – 18:03	Modeling of combined convective and close-contact melting in a vertical cylindrical enclosure (#147) <i>Tomer Shockner, Ben Gurion Universit, Israel</i>
18:04 – 18:10	PCM absorbed exfoliated graphite/polymer composites for thermal management of Lithium-ion batteries (#76) <i>Manikantan Kota, Pluss Avanced Technologies Pvt.Ltd, India</i>
18:11 – 18:35	Questions

16:15 – 18:45	Short Oral-Poster session	Systems
	Chairperson:	
16:15 – 16:21	Configuration and strategy optimizations for a new distributed energy system combining multi-energy storage techniques (#166) <i>Zhijian Liu, North China Electric Power University, China</i>	

16:22 – 16:28	An investigation into the use of biomimetic designs for improved efficiency in both solar thermal and solar photovoltaic applications. (#149) <i>Adam Lunnon-Collery, Trinity College Dublin, Ireland</i>
16:29 – 16:35	Optimizing Carnot battery configuration for waste heat recovery integrated system with ORC (#177) <i>Miroslav Rathan, Czech Technical University in Prague, Czech Republic</i>
16:36 – 16:42	Building stock quantification approach for building retrofit analysis. A case study for PV potential and Energy demand reduction (#178) <i>Dieter Boer, Universitat Rovira I Virgili, Spain</i>
16:43 – 16:49	Demand orientated steam generation from phase change material by using a rotating drum heat exchanger (#7) <i>Jonas Tombrink, German Aerospace Center, Germany</i>
16:50 – 16:56	Experimental study on the effect of flat and thin slab encapsulation design on a PCM tank (#18) <i>David Vérez, University of Lleida, Spain</i>
16:57 – 17:04	Analysis of the behavior of a thermocline tank consists on a packed bed with solid particles (#9) <i>Minerva Díaz, Castilla-La Mancha University, Spain</i>
17:04 – 17:10	Low-emission heat supply with heat pumps and hot water storage – Optimal design and operation (#57) <i>Dimitri Nefodov, Chemnitz University of Technology, Germany</i>
17:11 – 17:17	Use of reinforcement learning to optimize the control of solar thermal collectors coupled to seasonal thermal energy storage (#31) <i>Alicia Crespo, University of Lleida, Spain</i>
17:20– 17:30	Questions
17:31 – 17:37	Effective thermal conductivity from thermal response tests increases with time when sufficient groundwater flow is present (#136) <i>Karoline Kvalsvik, Norwegian University of Science and Technology, Norway</i>
17:38 – 17:44	Opportunities for BTES in existing buildings – ideas and first results from project GEO4CIVHIC (#126) <i>Burkhard Sanner, UbeG Dr. Mands & Sauer GbR, Germany</i>
17:45 – 17:51	Modeling of the total efficiency of hybrid photovoltaic/thermal collector working in the direct solar energy absorption mode (#109) <i>Artem Nikulin, CIC energiGUNE, Spain</i>
17:51 – 17:57	Design and build of a novel dual-tube PCM storage unit (#8) <i>Maike Johnson, German Aerospace Center, Germany</i>
17:58 – 18:04	Life cycle assessment of an innovative hybrid energy storage system for residential buildings (#28) <i>Noelia Llantoy, University Of Lleida, Spain</i>
18:05 – 18:11	Large-scale cold water storage - German state of the art (#42) <i>Thorsten Urbaneck, Chemnitz University of Technology, Germany</i>
18:11 – 18:17	Numerical simulation of a fluidized bed with concentrated radiation directly on SiC particles (#10) <i>Minerva Díaz, Castilla-La Mancha University, Spain</i>
18:18 – 18:24	CFD analysis of large scale high temperature thermal energy storage

	unit (#139) <i>Yousif Muhammad, Technical University of Denmark, Denmark</i>
18:25 – 18:31	Different Cycle Layouts for Pumped Thermal Energy Storage (PTES) Systems with Zeotropic Working Fluids (#96) <i>Aiko Bernehed, German Aerospace Center, Germany</i>
18:33 – 18:45	Questions
18:50 – 19:30	Welcome / Photo shooting