

3rd International Workshop on Carnot Batteries

September 27-28, 2022 | Stuttgart, Germany

A G E N D A

TUESDAY, September 27, 2022

- 09:00 AM Opening André Thess, DLR
- 09:15 AM KEYNOTE: The Carnot-Batterie of LEAG** Thomas Hörtinger, LEAG
- 09:45 AM KEYNOTE: Repowering Coal Plants as Pumped Thermal Energy Storage** Benjamin Bollinger, Malta
- 10:15 AM KEYNOTE: Regulatory Framework and Business Models for Carnot Batteries as Energy Storage** Christian Bauer, Watson Farley & Williams LLP
- 10:45 AM COFFEE BREAK

Systems and Demonstration I

- 11:15 AM Experimental characterization of a reversible heat pump - ORC pilot plant with sensible thermal energy storage Maximilian Weitzer, Friedrich-Alexander-Universität Erlangen
- 11:35 AM Waste heat recovery in European supermarkets using Carnot batteries Alanis Zeoli, University of Liège
- 11:55 AM Techno-economic prospects of small cogeneration coal fired plants conversion to Carnot batteries Vaclav Novotny, Czech Technical University in Prague
- 12:15 PM Optimal management and sizing of reversible heat pump/ORC Carnot batteries working in synergy with a district heating substation Chiara Poletto, University of Bologna
- 12:35 PM LUNCH

Materials and Components

- 01:30 PM KEYNOTE: Research and development: Pumps and valves for high temperature applications** David Lauer, KSB SE & Co. KGaA
- 02:00 PM Testing key components for Carnot batteries in molten lead and molten salt at elevated temperatures Klarissa Niedermeier, Karlsruhe Institute of Technology
Thomas Bauer, DLR
- 02:20 PM Application of Turbomachines in Carnot Batteries Sebastian Schuster, University of Duisburg-Essen
- 02:40 PM COFFEE BREAK and POSTER SESSION

Thermal Energy Storage I

- 03:40 PM Rock Bed Thermal Energy Storage in Industrial Business Parks Kai Knobloch, Technical University of Denmark
- 04:00 PM Multilayer Packed Bed Based Latent & Sensible Heat Storage for Liquid Air Energy Storage Efficiency Enhancement Lejin Xu, University of Birmingham
- 04:20 PM System and Component Development of a Thermal Battery Using Low-Cost Stable Solid Particles Zhiwen Ma, NREL (USA)
- 04:40 PM KEYNOTE: Design, build and initial operation of the CHESTER system** Dan Bauer, HFT Stuttgart
Maïke Johnson, DLR
- 05:10 PM Support instruments for mid to long term and systems integrated energy storage: the EIC pathfinder challenge and Horizon EU funding opportunities Antonio Marco Pantaleo, European Innovation Council
- 05:20 PM CLOSING OF THE DAY
- 06:00 PM EVENING EVENT

WEDNESDAY, September 28, 2022

- 09:00 AM Opening
- 09:15 AM KEYNOTE: Echogen CO2-based Pumped Thermal Energy Storage** Tim Held, Echogen Power Systems, LLC, USA
- 09:45 AM KEYNOTE: Thermal storage - the centerpiece of every Carnot-Battery** Annelies Vandersickel, DLR
A unique solution for each Carnot Battery Concept
- 10:15 AM KEYNOTE: Net-zero Power – Long duration energy storage for a renewable grid** Michael Geyer, VP LDESC
- 10:45 AM COFFEE BREAK

Systems & Demonstration II

- 11:15 AM Development and simulation of a novel Carnot Battery for decentralized sector coupling Michel Textor, University of Applied Sciences Mittelhessen
- 11:35 AM Optimal Dispatch Strategies For A Packed Bed TES Based Carnot Battery To Maximize Renewable Penetration Muhammad Taimoor, KTH Royal Institute of Technology
- 11:55 AM Experimental Investigation of a Thermally Integrated Carnot Battery Using a Reversible Heat Pump/Organic Rankine Cycle: Influence of System Charge on Performance of the Reversible Scroll Compressor/Expander and Global Performance Robin Tassenoy, Ghent University
- 12:15 PM OPTES-GT Battery, a novel CAPEX-optimized Brayton-cycle-concept with P-VHTTES and HTTES Günther Schneider, enolcon gmbh
- 12:35 PM LUNCH

Life Cycle and Cost Analysis

- 01:30 PM KEYNOTE: Thermophotovoltaics (TPV) Energy Storage Systems – an update on FOAK demonstration plant progress and TPV module performance** Adrienne Little, Antora Energy
- 02:00 PM Life Cycle Analysis of a Carnot battery using a reversible 10 kWe HP/ORC system Olivier Dumont, University of Liège
- 02:20 PM Carnot batteries in future 100% renewable national energy systems Peter Sorknaes, Aalborg University
- 02:40 PM Techno-economic assessment of a Carnot Battery for industrial application Silvia Trevisan, KTH Royal Institute of Technology
- 03:00 PM Power-to-Heat integration in a two-stage Brayton Battery configuration: Increasing system Cost Efficiency and Flexibility Sergej Belik, DLR
- 03:20 PM COFFEE BREAK

Thermal Energy Storage II

- 03:40 PM Influence of fillers on performance of molten salt thermocline storage Julius Weiss, Fraunhofer Institute for Solar Energy Systems (ISE)
- 04:00 PM Improving cycling behaviour of packed bed thermal energy storage by using redox materials Timo Roeder, German Aerospace Center, Institute of Future Fuels
- 04:20 PM multiTESS – The flexible energy storage Rabea Dluhosch, Solar-Institute Jülich
- 04:40 PM CLOSING