DATE

September 15 - 16, 2020

REGISTRATION

Online only: https://iwcb2020.besl-eventservice.de

REGISTRATION FEE - ONLINE PARTICIPATION

Due to the pandemic and the local regulations, we have decided to hold the event exclusively virtually.

Early Bird online (ends on August 15, 2020)**

Regular participant (without presentation)	€ 190,00
Student* (without presentation)	€ 40,00

**This special rate applies also to confirmed presenters taking part online analogue to the onsite participation until September 14, 2020.

Regular online (ends on September 14, 2020)

Regular Participant (without presentation)	€ 220,00
Student* (without presentation)	€ 60,00

*Student: Please note that during the registration process, students will be asked to upload a proof of their status (for example, a valid student ID) as a method of verification.

MOTIVATION

The 2nd International Workshop on Carnot Batteries will bring together experts in energy storage, in particular thermal energy storage, to discuss the state of the art of research and demonstration of Carnot batteries. In a two-day lecture programme, a broad overview of innovative research approaches will be provided, and topics of different Carnot battery concepts and their demonstration and integration into the power grid and sector coupling will be addressed. The workshop serves as an international platform to present latest results in Carnot batteries research and make them internationally visible.

CONTACT

Chairman:

Deutsches Zentrum für Luft- und Raumfahrt
German Aerospace Center

André Thess, DLR and University of Stuttgart

Co-Chairman:

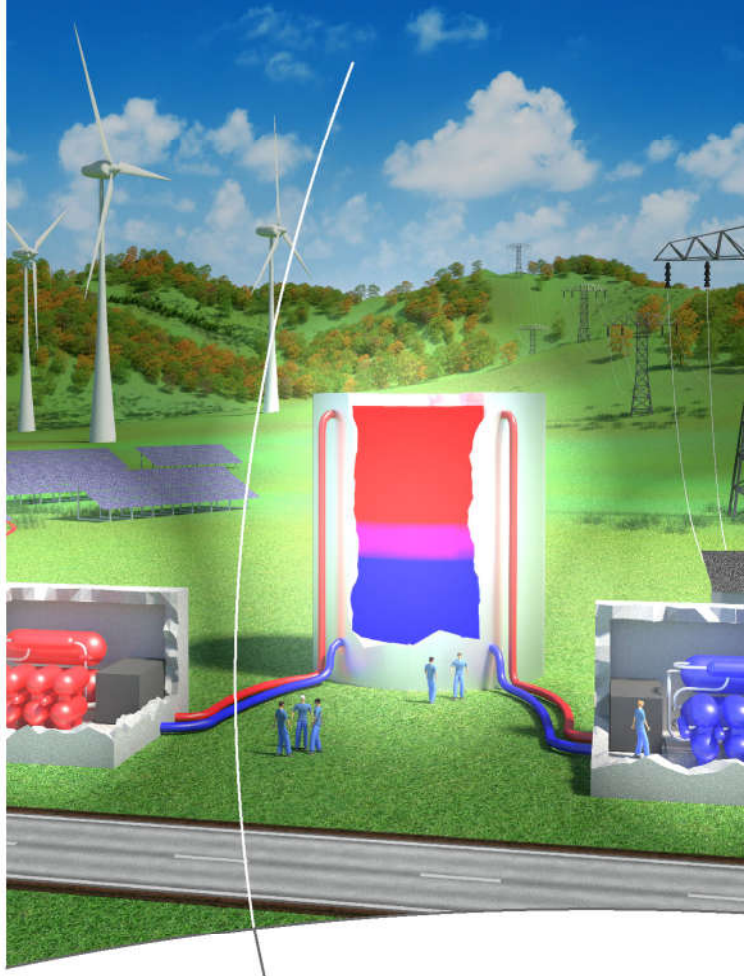
KIT Karlsruhe Institute of Technology

Thomas Wetzel, Karlsruhe Institute of Technology

Head of Organizing Committee:

Universität Stuttgart

Henner Kerskes, University of Stuttgart
henner.kerskes@igte.uni-stuttgart.de



Power-Heat-Power

2. International Workshop on Carnot Batteries

September 15 - 16, 2020

Stuttgart, Germany

KIT Karlsruhe Institute of Technology · Universität Stuttgart · DLR Deutsches Zentrum für Luft- und Raumfahrt German Aerospace Center

2. International Workshop on Carnot Batteries 2020

DAY 1 - TUESDAY, 15.09.2020

09.00 am **OPENING**
Karsten Lemmer, DLR, Germany

09.20 am **Introduction to the Workshop**
André Thess, DLR, Germany

10.00 am **Sector Coupling: the Essential Key to Decarbonization**
Raymond C. Decorvet, MAN Energy Solutions AG, Switzerland

10.30 am **StoretoPower - Pilot plant for the development of a heat storage power plant**
Witold Arnold, RWE Power AG, Germany

11.00 am **The Low Temperature (80-120 °C) Carnot Battery and its Potential for the Integrated Energy System**
Joachim Karthäuser, Climeon, Sweden

11.30 am **COFFEE BREAK**

12.00 pm **First Experimental Results of a Thermally Integrated Carnot Battery Using a Reversible Heat Pump/Organic Rankine Cycle**
Olivier Dumont, University of Liège, Belgium

12.30 pm **Thermal Energy Storage for a Net (Nearly Net) Zero Carbon Energy Future**
Yulong Ding, University of Birmingham, United Kingdom

01.00 pm **LUNCH**

02.00 pm **BatMarines**
Andreas Class, Karlsruhe Institute of Technology, Germany

02.20 pm **Efficiency of a Carnot Battery with Horizontal Flow Packed Bed Thermal Storage**
Michael von der Heyde, Hamburg University of Technology, Germany

02.40 pm **Design and Built of a First Laboratory CHEST Systeme**
Thilo Weller, DLR, Germany

03.00 pm **Techno-Economic Assessment of a Combined Power-to-Heat-to-Power Energy Storage Coupled with a District Heating System**
Sven Stark, University of Stuttgart, Germany

03.20 pm **High performance Carnot Batteries based on hybrid cycles**
Pau Farres-Antunez, University of Cambridge, United Kingdom

03.40 pm **COFFEE BREAK**

4.00 pm **Carnot Battery for an Industrial Waste Heat Recovery Application** - Case Study, Comprehensive Modelling and Considerations for a Pilot Installation
Vaclav Novotny, Czech Technical University, Prague, Czech Republic

04.20 pm **Development and Simulation of a High-Temperature Heat Pump Based on the Reverse Brayton Cycle**
Göksel Özuylasi, DLR, Germany

04.30 pm **100-GWh Heat Storage with Crushed Rock and Oil or Nitrate Salt Heat Transfer for Heat Generating Systems and Carnot Storage**
Charles Forsberg, Massachusetts Institute of Technology, United States.

04.40 pm **Dynamic Simulation of a Packed Bed Thermal Energy Storage System: Validation und Use Case**
Kai Knobloch, Hamburg University of Technology, Germany

04.50 pm **Adsorption Heat Storage: State of the Art and Future Perspectives**
Salvatore Vasta, Italian National Research Council, Italy

05.00 pm **Applications of Thermal Energy Storage for Grid Electric Storage**
Zhiwen Ma, National Renewable Energy Laboratory (NREL), United States

05.30 pm **CLOSING FOR THE DAY**

DAY 2 - WEDNESDAY, 16.09.2020

09.00 am **OPENING**

09.30 am **Heat Storage at High Temperatures When Producing Glass: Industrial Practice and New Ideas in the Context of Energy Transition**
Bernhard Fleischmann, Hüttentechnische Vereinigung der Deutschen Glasindustrie e.V. (HVG)

10.00 am **Experimental Results and Modelling of a Grid-scale Pumped Heat Energy Storage Demonstrator**
Andrew Smallbone, University of Durham, United Kingdom

10.30 am **Decarbonization of Coal-fired Power Plants with Carnot Batteries**
Michael Geyer, DLR, Germany

11.00 am **Experimental Results for a Medium-Scale Rock Bed Thermal Energy Storage**
Kurt Engelbrecht, Technical University of Denmark, Denmark

11.30 am **COFFEE BREAK**

12.00 pm **Numerical Study of Metal-Based Micro Encapsulated Phase Change Material for High-Temperature Heat Storage System**
Hiroaki Koide, Hokkaido University, Japan

12.20 pm **Research on a Carnot Battery and a Supercritical Carbon Dioxide Power Cycle in KIER**
Junhyun Cho, Korea Institute of Energy Research, Soutch Korea

12.40 pm **Malta Pumped Heat Electricity Storage (PHES) for Coal Exit and Energy Transition from Fossil to Renewable Energy**
Benjamin Bollinger, Malta Inc., United States

01.00 pm **LUNCH**

02.00 pm **High-Temperature Storage with Liquid Metals – Design of a Prototype Storage System and Material Testing**
Klarissa Niedermeier, KIT, Germany

02.20 pm **Thermodynamic Design and Optimisation of Pumped Thermal Electricity Storage (PTES) Systems Based on Transcritical Rankine Cycles**
Yongliang Zhao, Imperial College London, United Kingdom

02.40 pm **Heat Transformation and Storage Facility – Efficiency Enhancement of Transcritical CO2 Heat Pump by Coupling to Adsorption Unit and Storage Integration**
Ferdinand Schmidt, KIT, Germany

03.00 pm **Low Temperature Pumped Thermal Energy Storage with Kalina Cycles**
Antoine Koen, University of Cambridge, United Kingdom

03.20 pm **Power-to-Heat Integration in Brayton Battery: Increasing System Cost Efficiency and Flexibility**
Sergej Belik, DLR, Germany

03.40 pm **COFFEE BREAK**

04.00 pm **Role of High Temperature Carnot Batteries in Sector Coupling**
Louisa Schmeken, Steinmüller Engineering, Germany

04.20 pm **DOE's Energy Storage Grand Challenge and the Integration of Energy**
Briggs White, US Department of Energy, United States

04.40 pm **Where are the Carnot Batteries?: A Discussion on the Design Decisions that Influence Technology Deployment**
Adrienne Little, Malta Inc., United States

05.00 pm **CLOSING**