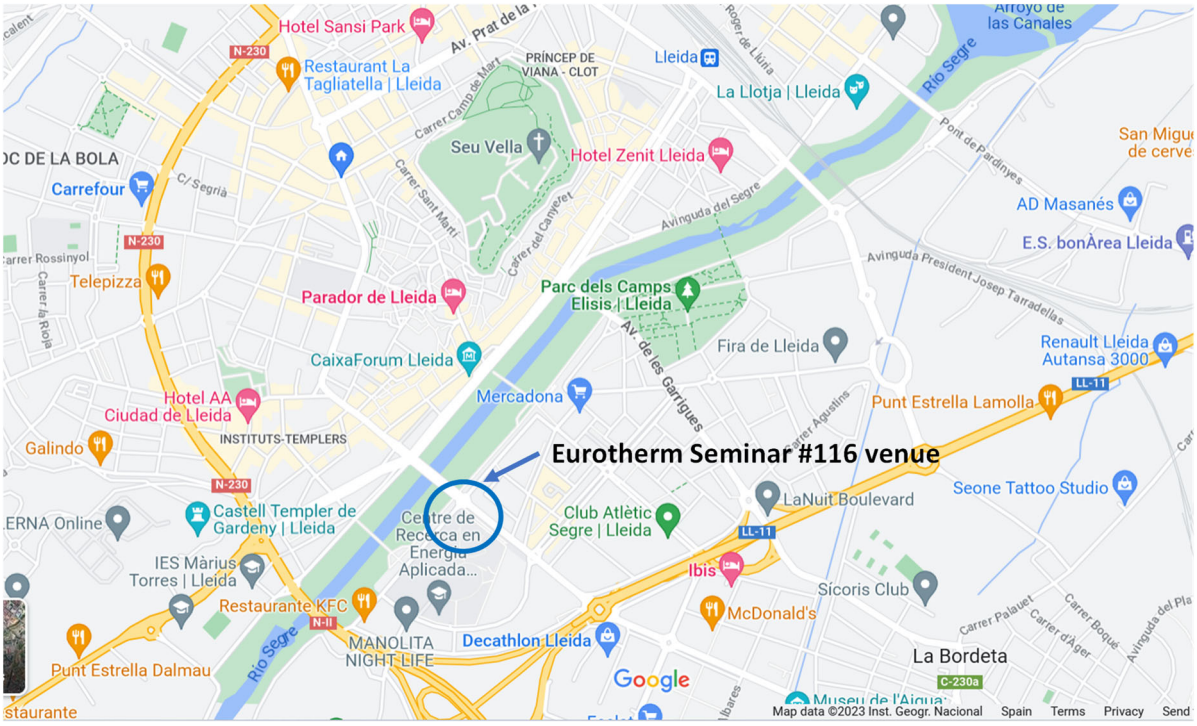
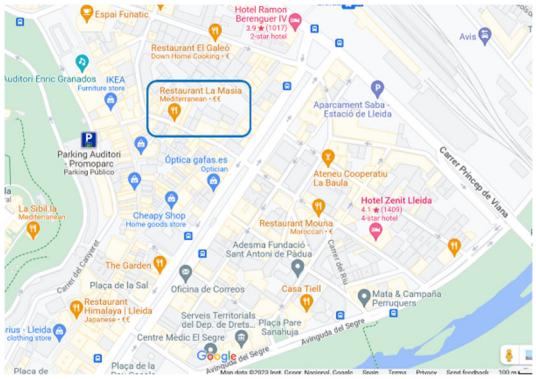
PROGRAM

Venue: Universitat de Lleida **-** Campus Cappont
Jaume II, 67
25001 Lleida



TUESDAY, 23 MAY 2023

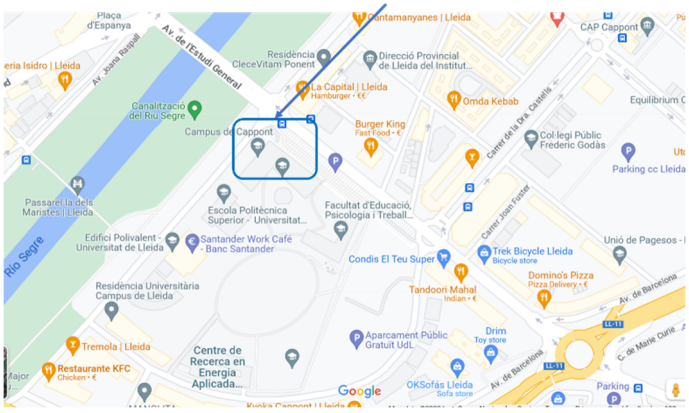
20:30 Optional dinner
(Needs registration prior to attendance)
Restaurant La Masia
c/ Democràcia, 16
Lleida



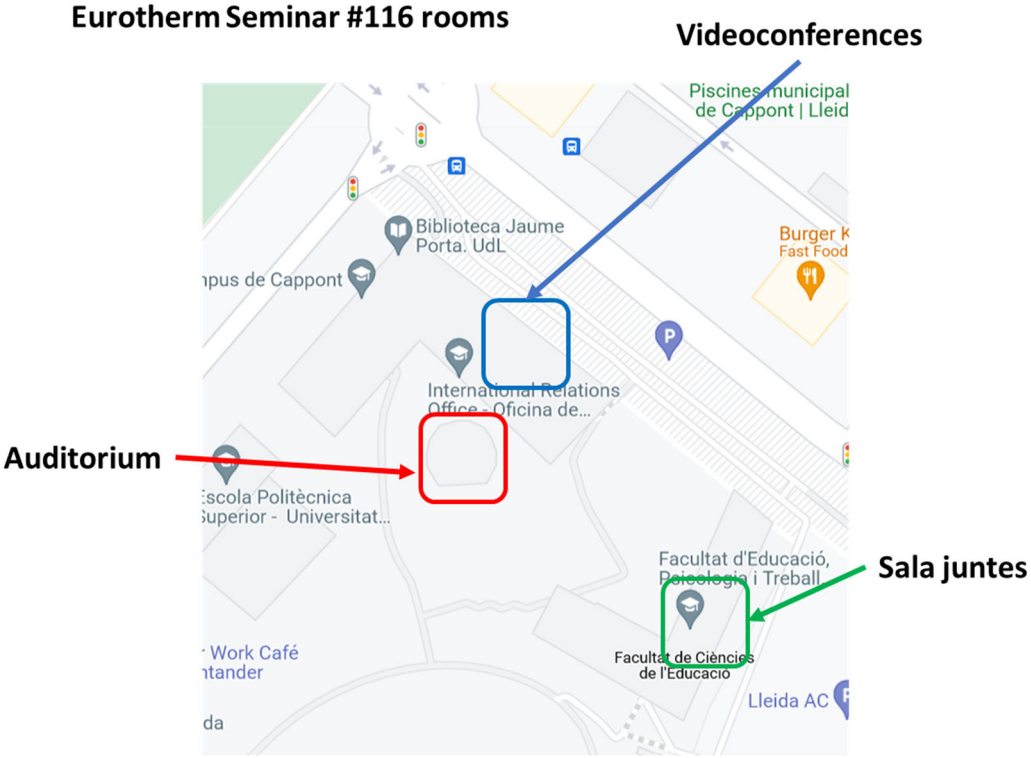
Sponsors:

WEDNESDAY, 24 MAY 2023

Eurotherm Seminar #116 entrance



Eurotherm Seminar #116 rooms



9:30 – 10:00 Opening Ceremony
Room: Auditorium

10:00 – 10:45 Plenary session 1 – Keynote: Dr. Marco Antonio Pantaleo
Room: Auditorium

10:45 – 11:15 Coffee break

Sponsors:

11:15 – 13:15 Parallel Session 1

Session 1A - Energy storage in buildings – 1
Chair: tbc; room: Videoconferences

H106 – J.F. Belmonte, J.A. Almendros-Ibáñez
Energy stored in terminal units of building heating systems. Dynamic modeling of radiators in building performance simulation tools
M138 – Gabriel Zsembinszki, Cèsar Fernández, Emiliano Borri, Luisa F. Cabeza
Study on control optimization of a hybrid solar-biomass system for residential buildings using deep learning techniques
C139 – Javier Fernández-Cantero, Emiliano Borri, Simone Arena, David Verez, Luisa F. Cabeza
Comparison of different control strategies of an energy system thermal energy storage for building applications: an experimental study
E174 – M. Paz Montero Gutiérrez, Teresa Palomo Amores, Rafael Monge Palma, M. Carmen Guerrero Delgado, José Sánchez Ramos, Servando Álvarez Domínguez
Radiant solution for thermal conditioning of short-term urban spaces
Y177 – Teresa Teresa Palomo Amores, Mª Carmen Guerrero Delgado, Rafael Monge Palma, Mª Paz Montero Gutierrez, José Sánchez Ramos, Servando Álvarez Domínguez
Innovative solutions using thermal energy storage in buildings

Session 1B - LHTES processes – 1
Chair: tbc; room: Auditorium

Y112 – Tomer Shockner, Inon Salman, Dmitry Portnikov, Gennady Ziskind
Close-contact melting of phase change material on two inclined surfaces for latent heat thermal energy storage
K122 – Wenwen Ye, J.M. Khodadadi
Effects of eccentricity on the melting performance of the PCM within L-shaped shell-and-tube latent heat thermal energy storage units
I146 – Alessandro Ribezzo, Emiliano Borri, Matteo Morciano, Luca Bergamasco, Matteo Fasano, Eliodoro Chiavazzo, Luisa F. Cabeza
A simplified approach for simulating the discharging process in shell and tube heat exchangers with PCMs
S169 – Fride Vullum-Bruer, Magnus Rotan, Jorge Salgado Beceiro, Olai Brevik Mykland, Ragnhild Sæterli, Alexis Sevault, José Lara Cruz, Jawad Rabbi, Jean-Pierre Bedecarrats
Exploring supercooling phenomena through extensive experimental method design
L170 – Jonas Tombrink, Alberto Egea Villarreal, Andrea Gutierrez
Evaluation of the scraping forces in active latent heat thermal energy storages

Session 1C - Materials – 1

Chair: tbc; room: Sala de juntes

L126 – Dacheng Li, Tiejun Lu, Yulong Ding, Yongliang Li
Experimental investigation on the CO_2 hydrate formation using a hollow shaft stirrer for cold thermal energy storage

P117 – Rajkumar Yadav, Nidhi Agrawal, Harald Mehling, Samit Jain
Enthalpy determination of phase change material objects by mixing calorimeter

W119 – Ana Carolina Rosa, Alejandro Calderon, Assed Haddad, Dieter Boer
Development of a Predictive Model for Thermal Characteristics of Thermal Energy Storage Materials

P130 – Emanuela Mastronardo, Elpida Piperopoulos, Luigi Calabrese, Edoardo Proverbio, Candida Milone
Organic salt hydrates as innovative materials for thermochemical energy storage

H133 – Tilman Barz, Adam Buruzs
Development of the solid/liquid phase change materials library - slPCMlib

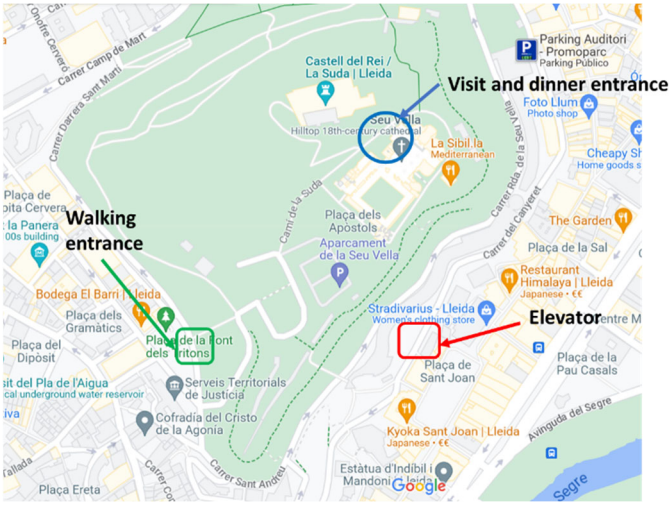
13:15 – 15:00 Lunch and poster session

15:00 – 17:00 Europe's corner: workshop on European research on TES
Detailed agenda to come

17:00 – 18:30 Coffee Break and networking session

19:30 Visit to La Seu Vella
Main entrance "Punt d'informació"

20:30 Dinner – La Seu Vella
Lleida



Sponsors:

THURSDAY, 25 MAY 2023

09:00 – 10:45 Plenary session 2 – Keynotes: Dr. Harald Mehling and Dr. Julian Blanco
Room: Auditorium

10:45 – 11:15 Coffee break

11:15 – 13:15 Parallel Session 2

Session 2A - Thermochemical – 1
Chair: tbc; room: Videoconferences

M107 – Henri Schmit, Tobia Schubert, Eberhard Lävemann, Stefan Hiebler
Experimental determination of characteristic curves of zeolites for sorption heat storage

T110 – Bram Kieskamp, Amirhoushang Mahmoudi, Mina Shahi
Reaction kinetics of the hydration of potassium carbonate including the influence of metastability

J131 – Emanuela Mastronardo, Emanuele Previti, Lucio Bonaccorsi, Elpida Piperopoulos, Luigi Calabrese, Edoardo Proverbio, Candida Milone
In-situ studies on sulfonate polyether ether ketone (SPEEK)-based composite coatings for thermochemical heat storage

U149 – Gabriele Marabello, Emanuela Mastronardo, Andrea Frazzica, Luigi Calabrese
Innovative 3D adsorbent structures based on sapo-34/S-PEEK composite materials for energy storage

U160 – Valeria Palomba, Omais Abdur Rehman, Davide La Rosa, Fabio Costa, Vincenza Brancato, Yannan Zhang, Andrea Frazzica, Gabriele Penello, Walter Mittelbach
Design and lab-scale testing of a mid-term thermochemical energy storage as a support to district heating networks

Session 2B - LHTES processes – 2
Chair: tbc; room: Auditorium

Y176 – Dan Gotesman, Tomer Shockner, Dmitry Portnikov, Elad Shoham, Michael Koenig, Gennady Ziskind
Development of PCM-based Heat Exchangers

W179 – Halvard Thon, Galina Simonsen, Paul Roger Leinan
Chemically enhanced phase separation in Direct Contact Thermal Energy Storage

X181 - Julio Bravoa, Ahmed Abdulridhab, Shuoyu Wangb, Dominic Matronea, Zheng Yaoa, , Clay Naitob, Spencer Quielb, Muhannad Suleimanb, Carlos Romeroa, Sudhakar Neti
Thermosyphon assisted Latent and Sensible Heat Thermal Battery

G186 – Robin Tassenoy, Wim Beyne, Wout De Keyser, Xander van Heule, Michel De Paepe
Characterizing melting in rectangular latent thermal energy storage heat exchangers using the melting time liquid fraction method

M189 – Christopher Wilson, Ming Jun Huang, Philip Griffiths, Neil Hewitt
Techno economic comparison of a commercial phase change material heat battery with a hot water tank operated with a high temperature air source heat pump

Session 2C - Materials – 2
Chair: tbc; room: Sala de juntes

B162 – Hongkun Ma, Mengxiang Jiang, Yi Wang, Boyang Zou, Li Wang, Yulong Ding
Performance enhancement and manufacturing of form-stable K_2CO_3-based thermochemical energy storage materials
I168 – Takahiro Kawaguchi, Melbert Jeem, Takahiro Nomura
Phase change microcapsule based composites for middle- to high-temperature thermal energy storage
Y171 – Konsta Turunen
Crystal growth velocity of cold crystallizing long-term thermal energy storage material
U172 – Marc Majó, Alejandro Calderón, Adela Svobodova-Sedlackova, Camila Barreneche, Inés Fernández
Solar salt and ceramic particles compatibility test and evaluation
G188 – Christopher Wilson, Ming Jun Huang, Philip Griffiths, Simon Hodge, Neil Hewitt
Thermal performance analysis of multi-pass macro encapsulated phase change material/expanded graphite compressed discs thermal energy storage unit

13:15 – 15:00 Lunch and poster session

15:00 – 17:00 Parallel Session 3

Session 3A - Thermochemical – 2
Chair: tbc; room: Videoconferences

B184 – Daniel Lager, Jovana Kovacevic
Evaluation of thermochemical materials for thermal energy storage applications using TGA-DSC and existing material databases
M199 – Venizelos E. Sourmelis T., Viktor Kühl, Marc Linder, Matthias Schmidt
Long-term Power-to-Heat Storage based on $Ca(OH)_2$ – Experimental Development of Pilot Plant
P210 – Urška Mlakar, Alenka Ristic, Uroš Stritih
Experimental system for testing adsorption heat storage materials
U216 – Y. Zhang, V. Brancato, D. Palamara, L. Calabrese, V. Palomba, F. Costa, D. La Rosa, G. Penello, W. Mittelbach, A. Frazzica
Development of innovative sorption-based technology for cooling and desalination of water on board of vessels

M221 – Andrea Frazzica, Alicia Crespo, Valeria Palomba, Vincenza Brancato, Makram Mikhaeil, Belal Dawoud, Ralph Herrmann, Emiliano Borri, Luisa F. Cabeza, Sven Pesson
Testing a new design of a thermal energy storage prototype based on selective water sorbents (SWS)

Session 3B - LHTES processes – 3
Chair: tbc; room: Auditorium

G190 – Maité Goderis, Kenny Couvreur, Wim Beyne, Michel De Paepe
Visual tracking of the phase change front in a tube in tube phase change material heat exchanger
R192 – Jorge Salgado-Beceiro, Alexis Sevault
Experimental investigation of phase change material integrated in a gasketed-plate heat exchanger
J198 – Deepti Sachan, Jishnu Bhattacharya
Revisiting the effect of nanoparticle concentration on melting of phase change material for latent heat energy storage systems
B211 – Omais Abdur Rehman, Valeria Palomba, Andrea Frazzica, Vincenza Brancato, David Verez, Emiliano Borri, Luisa F. Cabeza
Development of an experimentally validated model of a PCM tank for cold storage applications in combination with heat pumps
P213 – Benjamin Grégoire, Mengqi Bai, Song Yang, Tongtong Zhang, Anabel Palacios, Hongkun Ma, Yulong Ding
Utilisation of composite phase change materials in a novel mobile thermal energy storage (M-TES) system

Session 3C - Materials – 3
Chair: tbc; room: Sala de juntes

Q194 – Yuto Shimizu, Takahiro Nomura
Design of ternary Al-alloy phase change material
F195 – Rebeca Salgado-Pizarro, Camila Barreneche, A. Inés Fernandez
Copper base organometallic solid-solid phase change materials for energy storage materials
N196 – Mikel Duran, Angel Serrano, Artem Nikulin, Jean Luc Dauvergne, Jalel Labidi, Elena Palomo del Barrio
Alternative methods for the in-situ encapsulation of PCMs into polymeric fibres
K204 – Hannah T. Logan, David E. Oliver and Colin R. Pulham
Nucleation studies of a THF-hydrate phase-change material
D206 – Angel Serrano, Ricardo M. Silva, María Taeño, Luis González, Rui F. Silva, Elena Palomo del Barrio
Development of protective coatings for lithium/sodium sulfate salts intended for high-temperature thermal energy storage

17:00 – 17:30 Coffee Break

17:30 – 19:30 Parallel Session 4

Session 4a - Industrial systems – 1
Chair: tbc; room: Sala de juntes

D108 – Pablo Tagle-Salazar, Cristina Prieto, Luisa F. Cabeza
Development of a software tool for performance analysis of CSP plants in tower configuration with molten salt TES system
P111 – Chung-Yu Yeh, Amirhoushang Mahmoudi, Abhishek Singh, Mina Shahi
Model-based analysis of a dual thermal storage system in the district heating system
T116 – Yixuan Huang, Tongtong Zhang, Yulong Ding
Thermodynamic analysis and optimization of a liquid air energy storage system integrated with a high-temperature thermal energy store
H129 – Krueger, Benno; Dammel, Frank; Stephan, Peter
Investigating the influence of the aspect ratio on the exergetic performance of a large thermal energy storage system using a high-resolution CFD model
P132 – Asem Alemam, Nicolas Lopez Ferber, Valerie Eveloy, Nicolas Calvet
Experimental demonstration of a novel dispatchable high temperature latent heat storage system

Session 4B Environment and economics
Chair: tbc; room: Videoconferences

F136 – Emiliano Borri, Luisa F. Cabeza
Evaluation of the social impact during the life cycle of an energy system based on seasonal thermal energy storage
R173 – M. Paz Montero Gutiérrez, Teresa Palomo Amores, Rafael Monge Palma, M. Carmen Guerrero Delgado, José Sánchez Ramos, Servando Álvarez Domínguez
Tool for restoring street life through the design of thermal conditioning strategies
Y118 – Yixuan Huang, Tongtong Zhang, Yulong Ding
Enhancing the efficiency of solar district heating with seasonal thermal energy storage systems through machine learning controller
H155 – Alice Tosatto, Fabian Ochs
Role of thermal energy storage in the coverage of seasonal energy mismatch and comparison with other technologies

Session 4C - Sensible storage – 1

Chair: tbc; room: Auditorium

R150 – J.A. Almendros-Ibáñez, M. Castro-García, M. Díaz-Heras, J.F. Belmonte
Rotating Wheel Recovery (RWR) system with PCM: proof of concept

X147 – Wim Beyne, Michel De Paepe
Describing conduction dominated sensible thermal energy storage heat exchangers using thermal quadrupoles

S154 – L.M. Cerutti-Cristaldo, M. Díaz-Heras, J.C. Pérez-Flores, J. Canales-Vázquez, J.A. Almendros-Ibáñez
Darkening sand particles for CSP applications

G182 – Silvia Trevisan, Rafael Guedez
Thermodynamic performance assessment of an innovative layered radial-flow high-temperature packed bed thermal energy storage

F183 – Silvia Trevisan, Bjarke Buchbjerg, Rafael Guedez
Hybrid solar driven modular Heatcube for industrial process heat and power

20:30 Bus to the gala dinner
Entrance conference site

21:00 Gala Dinner in Palau de Margalef
25141 Torregrossa, Lleida

FRIDAY, 26 MAY 2023

09:40 – 11:00 Parallel Session 5

Session 5A Energy storage in buildings – 2
Chair: tbc; room: Videoconferences

W187 – Rabeb Ayed, Salwa Bouadila, Emiliano Borri, Luisa F. Cabeza, Mariem Lazaar
Impact of the combined addition of textile-reinforced mortar and phase change material on the thermal behavior of buildings

I191 – Matias Alvarez-Rodriguez, Mar Alonso-Martinez, Inés Suárez-Ramón
Adaptive envelopes using PCMs: numerical analysis of the effect of external environment and internal conditions in the thermal inertia

I193 – Giulia Righetti, Claudio Zilio, Dario Guarda, Domenico Feo, Marco Auerbach, Martin Butters, Simone Mancin
Bio-based latent thermal energy storage for air conditioning

K143 – Mohammad Rahjoo, Guido Goracci, Juan J Gaitero, Pavel Martauz, Esther Rojas, Jorge S Dolado
Optimizing geopolymer concrete thermal energy storage: A parametric study of key design parameters for high-temperature applications

Session 5B LHTES processes – 4
Chair: tbc; room: Videoconferences

N215 – Bernardo Buonomo, Oronzio Manca, Sergio Nardini, Renato Elpidio Plomitallo
Thermal investigation on different shell and tube thermal energy storage systems with inclined flat or wavy internal tubes and filled by PCM and metal foam

E220 – Stefan Gschwander
Stability investigation of PCM-emulsions

B109 – Elad Koronio, Ayelet Lecker, Gennady Ziskind
Comparative study on the passive cooling of electronic devices using metallic and organic phase change materials via latent heat storage

G145 – Kenny Couvreur, Maité Goderis, Wim Beyne, Michel De Paepe
The charging time energy fraction for describing different phases of charging a latent thermal storage heat exchanger

Session 5C Materials – 4
Chair: tbc; room: Sala de juntes

F214 – Ignacio Urzúa Parra, Jonathan Cofré-Toledo, Diego A. Vasco, Assed Haddad
Effect of the pressurization program on the thermal properties and stability of P. radiata wood impregnated with octadecane

V222 – Anastasia Stamatiou, Jorge Martinez-Garcia, Rebecca Ravotti, Poppy O'Neill, Benjamin Fenk, Dario Guarda, Simone Mancin, Damian Gwerder, Ludger J. Fischer, Jörg Worlitschek, Philipp Schuetz
Using in-situ X-ray computed tomography to study the crystallization of salt hydrates
B223 – Maryam Roza Yzadani
Leakage-free phase change insulation material for thermal management
Y233 – Piotr Lapka, Michal Kubis, Fabian Dietrich, Maris Sinka, Diana Bajare
Experimental and numerical estimation of thermal conductivity of bio-based building material with an enhanced thermal capacity

11:00 – 11:30 Coffee Break

11:30 – 12:30 Parallel Session 6

Session 6A Thermochemical – 3
Chair: tbc; room: Videoconferences

F229 – Natalia Mikos-Nuszkiewicz, Piotr Lapka, Piotr Furmanski
Determination of effective thermal conductivity of host matrices used for thermochemical energy storage material
B134 – Aastha Arya, Max Beving, Amirhoushang Mahmoudi, Mina Shahi
Volume variation in a thermochemical material- An experimental study
O148 – Gabriele Humbert; Adriano Sciacovelli
Topology optimization for multi-physics performance enhancement in thermochemical energy storage reactors

Session 6B Industrial systems – 2
Chair: tbc; room: Sala de juntes

W164 – Pouriya H Niknam, Stefano Barberis, Adriano Sciacovelli
High temperature industrial thermal energy storage – Assessment of potential applications and benefits toward industrial decarbonisation
Y185 – Qian Wang
Optimal control of sorption storage in the context of enhancing seasonable performance of low-temperature district heating
L205 – Annelies Vandersickel
The IEA energy storage TCP Task 36 – Carnot Batteries: Three years later, where do we stand now?

Session 6C Sensible storage – 2

Chair: tbc; room: Auditorium

M200 – William Delgado-Diaz, Adina Hochuli, Anastasia Stamatiou, Sophia Haussener, Jörg Worlitschek
Generation of packed bed structures and assessment of shape effects of various particle geometries

B201 – Ting Liang, Xiaohui She, Yongliang Li, Tongtong Zhang, Yulong Ding
The multi-objective optimization of a stand-alone liquid air energy storage

C212 – Vasilis Gkoutzamanis, Anestis Kalfas, Stefano Barberis, Tommaso Reboli, Silvia Trevisan, Rafael Guédez
Potential for high temperature waste material as thermal energy storage media for industrial heat decarbonization

12:30 – 13:30 Closing Ceremony and plenary session 3. Keynote: Dr. Gennady Ziskind
Room: Auditorium

13:30 – 15:30 Lunch